Inspired solutions. On call.
Delivering the technology and procedural support for knee revisions.

DePuy Synthes Joint Reconstruction
Revision Knee Portfolio

Revision Knee Solutions from DePuy Synthes Joint Reconstruction address the top reasons for revisions: loosening and instability, through the use of Rotating Platform and Metaphyseal Sleeve technologies. These innovative solutions offer multiple portfolio options with intra-operative flexibility that provide a strong foundation for implant stability.

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Inspired solutions. On call.
Delivering the right technology and procedural support for shoulder reconstruction.

Introducing the GLOBAL® UNITE® Platform Shoulder Arthroplasty System, a modular shoulder system that provides surgeons principled adaptability within the Operating Room without compromising recognized biomechanical principles.

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Inspired solutions. On call.

Delivering the technology and procedural support for hip reconstruction.

PINNACLE® Acetabular Cup System

The PINNACLE® Acetabular Cup System was designed with multiple-bearing options to meet the specific needs of each patient. For more than 10 years, the PINNACLE Acetabular Cup System has been one of the most widely used and clinically successful modular acetabular cup systems for hip replacement. The PINNACLE Cup System has been provided for more than one million patients.¹ In addition, the PINNACLE System combined with the CORAIL® Hip Stem showed 95.9% survivorship at 7 years for 54,019 patients across all bearing combinations.²

PINNACLE: The Power to Choose without Compromise.

¹ Data on file, DePuy Synthes Joint Reconstruction.

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# Table of Contents

## General

4  Opening Ceremony  
4  Ceremonial Meeting  
4  Guest Speakers  
5  Welcome  
6  Board of Directors  
10  Business Meetings  
11  AAOS Award Presentations  
12  Daily Schedule  
16  Important Information  
• CME Credit  
• Disclaimer  
• FDA Statement  
• Meeting Objectives  
19  Hotel Map  
20  Hotel Shuttle Bus Routes  
24  General Meeting Information  
• Advocacy Booth  
• Allied Organization Displays  
• Housing  
• Job Placement Center  
• Offices  
• Planning Committees  
• Registration  
• Resource Center  
• Resource Center Theater  
• Safety  
32  Social Program  
34  Resource Center Theater Schedule  
37  Specialty Day  

## Educational Programs

47  Other Educational Programs  
48  Tuesday Highlights  
50  Faculty Development Sessions  
51  Poster Tours  
52  Orthopaedic Review Course  
54  Symposia Webcast  
56  Instructional Courses, Symposia & Paper Presentation  
• Tuesday, March 19  
• Wednesday, March 20  
• Thursday, March 21  
• Friday, March 22  
203  Orthopaedic Video Theater  
211  Scientific Exhibits  
221  Posters  
287  Nursing and Allied Health Program  

## Disclosures

291  Disclosures  

## Technical Exhibits

340  Electronic Skills Pavilion  
341  Ask an Expert Sessions  
342  Technical Exhibits Alphabetical Listing  
369  Technical Exhibits Product Listing  

## About our Members and Volunteers

382  AAOS Committee, Affiliate & Alumni Meetings  
396  Class of 2013  
400  New International Affiliate Members  
406  Member Volunteers  
422  In Memoriam  

## Participant Index

429  Index
General
Special Events

**Opening Ceremony**
Wednesday, March 20
4:00 – 5:30 PM

- Welcome to Canada as the Guest Nation
- Recognition of Industry Donors
- Chief Executive Officer Report
- Kappa Delta & OREF Awards

**Business Meetings:**
Thursday, March 21, 9:00 AM

**Ceremonial Meeting:**
Thursday, March 21, 10:00 AM

**John R. Tongue, MD**
President Address
“Winds of Change: Meeting the Challenges Together”

**Joshua J. Jacobs, MD**
Incoming Presidential Address
“Moving Forward: From Curses to Blessings”

**Frederick M. Azar, MD**
Incoming First Vice Presidential Remarks
“A Standing Call To Action”

**AAOS Presidential Guest Speakers Alan Simpson and Erskine Bowles**
Thursday, March 21, 11:00 AM
*America's Debt and Deficit Crisis: Issues and Solutions*

Alan K. Simpson and Erskine B. Bowles, Co-Chairs of the 2010 National Commission on Fiscal Responsibility and Reform, will address the 2013 AAOS Annual Meeting in Chicago. Mr. Simpson is a former Republican Senator from Wyoming; Mr. Bowles served as White House Chief of Staff under President Clinton.

Together Mr. Bowles and Mr. Simpson will provide a bipartisan discourse on what America’s leaders must do to confront what many see as the largest and most critical economic, social, business, and national security threat that the country faces. This is a presentation you won’t want to miss.
Welcome to Chicago for the American Academy of Orthopaedic Surgeons’ 2013 Annual Meeting! Your participation and support is vital to the Academy’s success.

Whatever you currently need to learn, it’s all here with new energy and deeper connections to your colleagues and faculty. Annual Meeting Committee Chair Chad Price, MD, and his team have created an outstanding program. Along with their respective committees, Central Program Committee Chair Steve Frick, MD, Central Instructional Course Committee Chair Bob Hart, MD, and Exhibits Committee Chair Bill Seitz, MD, have produced an exciting selection of educational opportunities—a commitment to education that includes 28 symposia by the world’s experts on exciting and timely topics, 825 papers and 580 posters on the latest scientific and clinical studies, 217 instructional courses presented by world-renowned faculty, more than 88 scientific exhibits on extended studies or complex procedures and to conclude the meeting Specialty Day on Saturday, offers 14 Specialty Society sessions covering the latest news in their area of expertise.

Be sure to visit over 600 technical exhibits displaying the “latest and greatest” in orthopaedic products and services.

Other important Annual Meeting events include the Opening Ceremony on Wednesday, at 4:00 PM, where we kick off the meeting and recognize Canada as this year’s Guest Nation. On Thursday, the Ceremonial Meeting incorporates the presentations of the Humanitarian and Diversity Awards, Joshua J. Jacobs, MD incoming president’s address, and the presidential guest speakers, Erskine Bowles & Alan Simpson.

On behalf of the Board of Directors, I sincerely want to thank all the supportive volunteers and staff for their continued time and efforts that make this meeting the foremost orthopaedic educational experience.

Enjoy the meeting!

John R. Tongue, MD
President

As the local co-chairs, we are delighted to welcome everyone to “our kind of town.” The McCormick facility enables us to provide a wide variety of educational opportunities for everyone.

We feel that Chicago is our “Type of Town.” We intend to show you around and bet that you will enjoy it. There is jogging along our beautiful lake front, great shops and dining along the “Magnificent Mile”, theaters, art galleries, and museums, many close to the convention center. There are numerous outstanding restaurants in the city that will provide an opportunity for fine dining and small gatherings to get together with friends. You are encouraged to look at AAOS NOW Daily for several lists of restaurants that have been provided by a local member of the editorial board of Now; as well as, chief residents.

For members and guests arriving early, we hope that you can join us as we build this year’s playground at St. Sabina. It is an event that will bring you satisfaction, provide a playground for the community and camaraderie with your fellow orthopaedic surgeons, and guests.

When you leave we know that you will have had the time of your life in Chicago our home town.

Mike Schafer, MD and John Sarwark, MD
Local Co-Chairs

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Board of Directors

John R. Tongue, MD
President
Tualatin, Oregon

Joshua J. Jacobs, MD
First Vice-President
Chicago, Illinois

Frederick M. Azar, MD
Second Vice-President
Memphis, Tennessee

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Board of Councilors
Jefferson City, Tennessee

Gregory A. Mencio, MD
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Board of Specialty Societies
Nashville, Tennessee

Steven D.K. Ross, MD
Chair-Elect
Board of Specialty Societies
Orange, California

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About our Board of Directors

The Board of Directors manages the affairs of the ACADEMY and the ASSOCIATION. It is the administrative authority of the ACADEMY and the ASSOCIATION and considers all of its activities and determines its policies.
Welcome from the Governor of Illinois

Pat Quinn
GOVERNOR

Office of the Governor
Springfield, Illinois 62706

March 19, 2013

Greetings!

As Governor of the State of Illinois, I am pleased to welcome everyone gathered for the American Academy of Orthopaedic Surgeons (AAOS) 2013 Annual Meeting.

Since 1933, your organization has worked diligently to establish the world’s largest medical association of musculoskeletal specialists. Your annual meetings present a wonderful opportunity for medical professionals across the state to come together with the common goal of advancing medical education.

I commend the American Academy of Orthopaedic Surgeons on your remarkable accomplishments over the years. During this event, I encourage you to continue in your mission of empowering families and communities through your various medical endeavors. I also encourage everyone present to continue lending your support to this worthy organization, so that they may continue to provide valuable programs that expand throughout this great state.

On behalf of the people of Illinois, I offer my best wishes for a productive and memorable event.

Sincerely,

Pat Quinn
Governor
Dear Attendees:

As Mayor and on behalf of the City of Chicago, I am pleased to offer warmest greetings to those attending the 2013 Annual Meeting of the American Academy of Orthopaedic Surgeons.

Established in 1933, the American Academy of Orthopaedic Surgeons (AAOS) has always been dedicated to providing excellent musculoskeletal education to orthopaedic surgeons and others throughout the world. Now, 80 years later, the AAOS has grown into the world’s largest medical association of musculoskeletal specialists. This event presents a wonderful opportunity to come together and continue pioneering medical education.

The American Academy of Orthopaedic Surgeons has been headquartered in Chicago since its founding. This city is also home to some of the world’s finest physicians and preeminent medical institutions. The multifaceted research, projects and initiatives of AAOS impacts the global community. I commend the American Academy of Orthopaedic Surgeons for enhancing the medical scope of our city and for dynamic work in bettering the lives of the world’s citizens.

It is my hope that after coming together and discussing the latest in musculoskeletal research, you will take the time to explore and take advantage of everything Chicago has to offer. An exciting variety of restaurants, nightlife, great universities and world-class museums accented by our iconic skyline and incredible lakefront make Chicago one of the world’s greatest cities.

On behalf of the people of Chicago, I hope you have an enjoyable and productive meeting. Best wishes for much continued success.

Sincerely,

Rahm Emanuel
Mayor
Annual Business Meetings
All Fellows are urged to attend the Annual Business Meetings held in the Grand Ballroom of McCormick Place. The business meetings will be held on Thursday, March 21, 2013, at 9:00 AM. There will be one business meeting for the American Academy of Orthopaedic Surgeons (“Academy”), the 501(c)(3) organization, immediately followed by the business meeting of the American Association of Orthopaedic Surgeons (“Association”), the 501(c)(6) organization. All registrants are welcome to attend, but only Active, Inactive, and Emeritus Fellows may vote.

Agenda for the Business Meeting of the American Academy of Orthopaedic Surgeons
Thursday, March 21 at 9:00 AM
McCormick Place, Grand Ballroom
John R. Tongue, MD, Presiding
1. Call to Order and Appointments
2. Report of the Treasurer
4. Report of the Orthopaedic Research and Education Foundation (OREF)
5. Report of the Resolutions Committee [DISCUSSION]
6. Adjournment

Agenda for the Business Meeting of the American Association of Orthopaedic Surgeons
Thursday, March 21 at 9:20 AM
McCormick Place, Grand Ballroom
John R. Tongue, MD, Presiding
1. Call to Order and Appointments
2. Nominations for the 2014 Nominating Committee. Those ineligible to serve on the 2014 Nominating Committee, pursuant to Article XII, Paragraph 12.2 of the Association Bylaws, are Inactive Fellows, Emeritus Fellows, current members of the Board of Directors, and:
   - James R. Andrews, MD ('12)
   - Champ L. Baker, Jr., MD ('12)
   - James H. Beaty, MD ('11)
   - John A. Bergfeld, MD ('13)
   - Louis C. Bigliani, MD ('11 and elected 3-plus terms)
   - David S. Bradford, MD (elected 3-plus terms)
   - Robert W. Bucholz, MD ('13)
   - S. Terry Canale, MD ('12)
   - Michael W. Chapman, MD (elected 3-plus terms)
   - Robert D. D’Ambrosia, MD (elected 3-plus terms)
   - Kenneth E. DeHaven, MD (elected 3-plus terms)
   - Lawrence D. Dorf, MD ('12)
   - Charles H. Epps, Jr., MD (elected 3-plus terms)
   - Freddie H. Fu, MD ('11 and elected 3-plus terms)
   - Christopher D. Harner, MD ('12)
   - James D. Heckman, MD ('13)
   - James H. Herndon, MD ('13)
   - Joseph P. Iannotti, MD ('11 and elected 3-plus terms)
   - Douglas W. Jackson, Jr., MD (elected 3-plus terms)
   - Frank B. Kelly, MD ('11)
   - Mark D. Miller, MD ('13)
   - E. Anthony Rankin, MD ('12)
   - Charles A. Rockwood, Jr., MD (elected 3-plus terms)
   - Felix (Buddy) H. Savoie, III, MD ('11)
   - Marc F. Swiontkowski, MD (elected 3-plus terms)
   - Roby C. Thompson, Jr., MD (elected 3-plus terms)
   - Laura L. Tosi, MD ('11)
   - James R. Urbaniak, MD (elected 3-plus terms)
   - Russell F. Warren, MD (elected 3-plus years)
   - Augustus A. White, III, MD ('13 and elected 3-plus terms)
   - Robert A. Winquist, MD (elected 3-plus years)
   - Ken Yamaguchi, MD ('12)
3. Report of the Political Action Committee of the American Association of Orthopaedic Surgeons (Orthopaedic PAC)
4. Report of the Resolutions Committee [DISCUSSION]
5. Report of the Election of AAOS Officer and Other Positions
6. Recognition of Retiring Members of the Board of the American Academy of Orthopaedic Surgeons and the American Association of Orthopaedic Surgeons
7. Recognition of New Members of the Board of the American Academy of Orthopaedic Surgeons and the American Association of Orthopaedic Surgeons
8. Adjournment

Agenda for the Ceremonial Meeting
Thursday, March 21, 10:00 AM
McCormick Place, Grand Ballroom
John R. Tongue, MD, Presiding
1. Call to Order
2. Introduction of Board of Directors, Council/Cabinet Chairs and Annual Meeting Chairs
3. Presentation of Awards
   A. William W. Tipton, Jr., MD, Leadership Award
   B. Humanitarian Award
   C. Diversity Award
4. Introduction of Frederick M. Azar, MD, Incoming First Vice-President
5. Incoming First Vice-Presidential Remarks – Frederick M. Azar, MD
6. Introduction of Joshua J. Jacobs, MD, Incoming President
7. Incoming Presidential Address – Joshua J. Jacobs, MD
8. Recognition of Past President John R. Tongue, MD, and Presentation of Past President’s Pin, Gavel, and Silver Seal
9. Adjournment

Resolutions Committee
The members of the 2013 Resolutions Committee are:
- Michael L. Parks, MD, Chair
- M. Scott Beall, Jr., MD
- Mark E. Fahey, MD
- Thomas M. Green, MD
- Mark D. Perry, MD
- Todd A. Schmidt, MD
- Edward A. Toriello, MD

The Resolutions Committee will conduct an Open Hearing on the two new duly proposed resolutions and the seven resolutions undergoing their five-year review on Wednesday, March 20,
beginning at 1:00 PM in Room S101B of McCormick Place. During the Open Hearing, all Fellows are invited to discuss the resolutions under consideration. At the business meetings on March 21, the Resolutions Committee will present its recommendations regarding each resolution under consideration. Shortly after the Annual Meeting, these recommendations will be voted on by the Fellowship. To be adopted, a resolution requires that at least twenty percent of the eligible Fellows vote on the resolution and that of those voting, at least fifty percent vote to adopt the resolution as AAOS policy.

Bylaws Committee
The members of the 2013 Bylaws Committee are:
George T. Shybut, MD, Chair
Russell J. Crider, MD
James H. Herndon, MD
Alan H. Morris, MD
William M. Strassberg, MD

As there are no proposed bylaw amendments or proposed or revised Standards of Professionalism (SOPs) to be considered at the 2013 Annual Meeting, the Bylaws Committee will not be meeting.

2013 Nominating Committee
In May, the Fellowship by ballot elected six members of the 2013 Nominating Committee. The Board of Directors appointed the Chair of the Nominating Committee in February. The members of the 2013 Nominating Committee are:
Joseph D. Zuckerman, MD (NY), Chair
John A. Bergfeld, MD (OH)

Robert W. Bucholz, MD (TX)
James D. Heckman, MD (VT)
James H. Herndon, MD (MA)
Mark D. Miller, MD (VA)
Augustus A. White, III, MD (MA)

By February 21, the AAOS will prepare a ballot and information regarding all candidates nominated to serve in the office of Second Vice-President, At-large members of the Board of Directors (one no age designation, one under age 45), member of the National Membership Committee, and four nominees to the American Board of Orthopaedic Surgery (ABOS).

Beginning on March 6 and through 1:00 pm on March 20, Fellows will be asked to vote electronically on this ballot. The results of the balloting will be announced by the President during the Association business meeting on Thursday, March 21.

Nominations for the 2014 Nominating Committee
At the business meeting of the American Association of Orthopaedic Surgeons on Thursday, March 21, an unlimited number of nominations will be accepted for individuals to serve on the Nominating Committee; Inactive or Emeritus Fellows or Active Fellows who have been elected to serve on the Nominating Committee more than three terms are not eligible for election. All persons nominated will be sent a notification and a form containing a statement for them to sign regarding their willingness to serve on this Nominating Committee. A ballot containing a list of these nominated and willing to serve will be sent to all Fellows.

Award Presentations at the Annual Meeting
Join the American Academy of Orthopaedic Surgeons as we recognize the 2013 Kappa Delta and OREF Clinical Research Award Winners

Wednesday, March 20, 4:00-5:30 PM, McCormick Place, Grand Ballroom

2013 Kappa Delta Young Investigator Award
Control of Bone Healing by Mechanical Factors
Elise Morgan, PhD
Boston University

2013 Kappa Delta Ann Doner Vaughn Award
The Biology of ACL Injury and Repair
Martha Murray, MD
Co-Author: Braden C. Fleming, PhD
Boston Children’s Hospital

2013 Kappa Delta Elizabeth Winston Lanier Award
Design of Human Skeletal Muscles: Implications For Orthopaedic Surgery
Rick Lieber, PhD
Co-Authors: Samuel R. Ward, PT, PhD; Jan Friden, MD, PhD
University of California, San Diego

2013 OREF Clinical Research Award
Improving Outcomes for Posterolateral Knee Injuries
Running Title: he Posterolateral Corner of the Knee
Robert LaPrade, MD, PhD
Co-Authors: Steinar Johansen, MD; Lars Engebretsen, MD, PhD; Chad J, Griffith, MD / Benjamin R. Coobs, MD; Andrew G. Geeslin, MD
Steadman Philippon Research Institute
### TUESDAY, MARCH 19

<table>
<thead>
<tr>
<th>Education</th>
<th>Location – McCormick Place</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing and Allied Health Courses – NUR1 &amp; NUR2</td>
<td>Lakeside, Room E450a</td>
<td>7:30 AM – 12:00 PM, 1:30 – 6:00 PM</td>
</tr>
<tr>
<td>Instructional Courses</td>
<td>See Schedule or pages 56–202 for room numbers</td>
<td>8:00 – 10:00 AM, 8:00 – 11:00 AM, 10:30 AM – 12:30 PM, 1:30 – 3:30 PM, 1:30 – 4:30 PM, 1:30 – 6:00 PM, 4:00 – 6:00 PM</td>
</tr>
<tr>
<td>Symposia &amp; Paper Presentations</td>
<td>See pages 56–202 for room numbers</td>
<td>8:00 – 10:00 AM, 10:30 AM – 12:30 PM, 1:30 – 3:30 PM, 4:00 – 6:00 PM</td>
</tr>
</tbody>
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- **Posters, Scientific Exhibits, Orthopaedic Video Theater**
  - Location: Academy Hall B
  - Time: 8:00 AM – 6:00 PM

- **Basics of Coding for Starting Your Practice #150**
  - Location: Lakeside, Room E354a
  - Time: 8:00 – 11:00 AM

- **Practice Management Symposium for Practicing Orthopaedic Surgeons #152**
  - Location: Room S102
  - Time: 9:00 AM – 5:00 PM

- **Practice Management Symposium for Orthopaedic Residents #151**
  - Location: Lakeside, Room E354a
  - Time: 12:00 – 5:30 PM

- **The Top 10 Coding Errors Made by Practicing Orthopaedic Surgeons #153**
  - Location: Room N228
  - Time: 1:30 – 4:30 PM

- **Community Orthopaedic Surgeon Workshop #154**
  - Location: Room N227b
  - Time: 1:30 – 5:30 PM

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<thead>
<tr>
<th>General</th>
<th>Location – McCormick Place</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready Rooms</td>
<td>Rooms S401, N226, Lakeside E253c</td>
<td>6:30 AM – 6:00 PM</td>
</tr>
<tr>
<td>Registration – Physician</td>
<td>Academy Hall B &amp; South Lobby</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Registration – Social Program</td>
<td>Academy Hall B</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Playground Build</td>
<td>Shuttles depart every 30 minutes from Gate 21</td>
<td>7:30 AM – 2:00 PM</td>
</tr>
<tr>
<td>Job Placement Center</td>
<td>Academy Hall B</td>
<td>8:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Resource Center</td>
<td>Academy Hall B</td>
<td>8:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Guest Nation Booth – Canada</td>
<td>Academy Hall B</td>
<td>8:00 AM – 6:00 PM</td>
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<tr>
<td>American Board of Orthopaedic Surgery Booth</td>
<td>Academy Hall B</td>
<td>8:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>American Joint Replacement Surgery Booth</td>
<td>Academy Hall B</td>
<td>8:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Research &amp; Education Foundation Booth</td>
<td>Academy Hall B</td>
<td>8:00 AM – 6:00 PM</td>
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### WEDNESDAY, MARCH 20

<table>
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<tr>
<th>Education</th>
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<tr>
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<td>See Schedule or pages 56–202 for room numbers</td>
<td>8:00 – 10:00 AM, 10:30 AM – 12:30 PM, 1:30 – 3:30 PM, 1:30 – 4:30 PM, 1:30 – 6:00 PM, 4:00 – 6:00 PM</td>
</tr>
</tbody>
</table>

- **Posters, Scientific Exhibits, Orthopaedic Video Theater**
  - Location: Academy Hall B
  - Time: 8:00 AM – 6:00 PM

- **Nursing and Allied Health Courses – NUR3 & NUR4**
  - Location: Lakeside, Room E450a
  - Time: 7:30 AM – 12:00 PM, 1:30 – 6:00 PM

- **Symposia & Paper Presentations**
  - Location: See pages 56–202 for room numbers
  - Time: 8:00 – 10:00 AM, 10:30 AM – 12:30 PM, 1:30 – 3:30 PM, 4:00 – 6:00 PM

<table>
<thead>
<tr>
<th>Exhibit Hall</th>
<th>Location – McCormick Place</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Exhibits</td>
<td>Hall A</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>AAOS Advocacy Booth</td>
<td>Hall A, Booth 1600</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>AAOS Exhibit Hall Resource Center</td>
<td>Hall A, Booth 1265</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Learning Center Booth</td>
<td>Hall A, Booth 1602</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>Event</td>
<td>Location - McCormick Place</td>
<td>Time</td>
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<tr>
<td>Ask an Expert Sessions</td>
<td>Hall A, Booth 465</td>
<td>9:30 AM – 4:15 PM</td>
</tr>
<tr>
<td>Electronic Skills Pavilion</td>
<td>Hall A, Booth 5236</td>
<td>9:30 AM – 4:15 PM</td>
</tr>
<tr>
<td>Unopposed Exhibit Time*</td>
<td>Hall A</td>
<td>12:30 – 1:30 PM</td>
</tr>
<tr>
<td>Complimentary Beverage Break</td>
<td>Hall A</td>
<td>3:30 – 4:00 PM</td>
</tr>
<tr>
<td>General</td>
<td>Location - McCormick Place</td>
<td>Time</td>
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<td>Ready Rooms</td>
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<td>Orthopaedic Research &amp; Education Foundation Booth</td>
<td>Academy Hall B</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>American Joint Replacement Registry Informational Session</td>
<td>Room S405</td>
<td>9:00 – 11:00 AM</td>
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<tr>
<td>Resolutions Committee Open Hearing</td>
<td>Room S101b</td>
<td>1:00 PM</td>
</tr>
<tr>
<td>Opening Ceremony</td>
<td>Grand Ballroom</td>
<td>4:00 – 5:30 PM</td>
</tr>
</tbody>
</table>

*No other educational activities are scheduled.

**THURSDAY, MARCH 21**

<table>
<thead>
<tr>
<th>Event</th>
<th>Location – McCormick Place</th>
<th>Time</th>
</tr>
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<tbody>
<tr>
<td>Instructional Courses</td>
<td>See Schedule or pages 56–202 for room numbers</td>
<td>7:00 – 10:00 AM 8:00 – 10:00 AM 8:00 – 11:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 1:30 – 4:30 PM 4:00 – 6:00 PM</td>
</tr>
<tr>
<td>Posters, Scientific Exhibits, Orthopaedic Video Theater</td>
<td>Academy Hall B</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Symposia &amp; Paper Presentations</td>
<td>See pages 56–202 for room numbers</td>
<td>8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM</td>
</tr>
<tr>
<td>Nursing and Allied Health Course – CAST1</td>
<td>Lakeside, Room E451b</td>
<td>8:15 AM – 5:45 PM</td>
</tr>
</tbody>
</table>

**Exhibit Hall**

<table>
<thead>
<tr>
<th>Event</th>
<th>Location – McCormick Place</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Exhibits</td>
<td>Hall A</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>AAOS Advocacy Booth</td>
<td>Hall A, Booth 1600</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>AAOS Exhibit Hall Resource Center</td>
<td>Hall A, Booth 1265</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Learning Center Booth</td>
<td>Hall A, Booth 1602</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>Ask an Expert Sessions</td>
<td>Hall A, Booth 465</td>
<td>9:30 AM – 4:15 PM</td>
</tr>
<tr>
<td>Electronic Skills Pavilion</td>
<td>Hall A, Booth 5236</td>
<td>9:30 AM – 4:15 PM</td>
</tr>
<tr>
<td>Unopposed Exhibit Time*</td>
<td>Hall A</td>
<td>12:30 – 1:30 PM</td>
</tr>
<tr>
<td>Complimentary Beverage Break</td>
<td>Hall A</td>
<td>3:30 – 4:00 PM</td>
</tr>
</tbody>
</table>

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# DAILY SCHEDULE

## Resource Center
Academy Hall B | 7:00 AM – 6:00 PM
--- | ---

## Guest Nation Booth – Canada
Academy Hall B | 7:00 AM – 6:00 PM
--- | ---

## American Board of Orthopaedic Surgery Booth
Academy Hall B | 7:00 AM – 6:00 PM
--- | ---

## American Joint Replacement Surgery Booth
Academy Hall B | 7:00 AM – 6:00 PM
--- | ---

## Orthopaedic Research & Education Foundation Booth
Academy Hall B | 7:00 AM – 6:00 PM
--- | ---

## Business Meetings
Grand Ballroom | 9:00 AM
--- | ---

## Ceremonial Meeting
Grand Ballroom | 10:00 AM
--- | ---

## Forum for Young Orthopaedic Surgeons
Room S101b | 10:30 AM – 12:30 PM
--- | ---

## Presidential Guest Speakers Erskine Bowles & Alan Simpson
Grand Ballroom | 11:00 AM
--- | ---

*No other educational activities are scheduled.

## FRIDAY, MARCH 22

### Education

<table>
<thead>
<tr>
<th>Education</th>
<th>Location – McCormick Place</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Courses</td>
<td>See Schedule or pages 56–202 for room numbers</td>
<td>7:00 – 10:00 AM 8:00 – 10:00 AM 8:00 – 11:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 1:30 – 4:30 PM 4:00 – 6:00 PM</td>
</tr>
<tr>
<td>Posters, Scientific Exhibits, Orthopaedic Video Theater</td>
<td>Academy Hall B</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Symposia &amp; Paper Presentations</td>
<td>See pages 56–202 for room numbers</td>
<td>8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Review Course</td>
<td>Lakeside, Room E354a</td>
<td>8:00 AM – 5:35 PM</td>
</tr>
<tr>
<td>Nursing and Allied Health Course – CAST2</td>
<td>Lakeside, Room E451b</td>
<td>8:15 AM – 5:45 PM</td>
</tr>
</tbody>
</table>

### Exhibit Hall

<table>
<thead>
<tr>
<th>Exhibit Hall</th>
<th>Location – McCormick Place</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Exhibits</td>
<td>Hall A</td>
<td>9:00 AM – 4:00 PM</td>
</tr>
<tr>
<td>AAOS Advocacy Booth</td>
<td>Hall A, Booth 1600</td>
<td>9:00 AM – 4:00 PM</td>
</tr>
<tr>
<td>AAOS Exhibit Hall Resource Center</td>
<td>Hall A, Booth 1265</td>
<td>9:00 AM – 4:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Learning Center Booth</td>
<td>Hall A, Booth 1602</td>
<td>9:00 AM – 4:00 PM</td>
</tr>
<tr>
<td>Ask an Expert Sessions</td>
<td>Hall A, Booth 465 See page 341 for schedule</td>
<td>9:30 AM – 3:15 PM</td>
</tr>
<tr>
<td>Electronic Skills Pavilion</td>
<td>Hall A, Booth S236 See page 340 for schedule</td>
<td>9:30 AM – 3:15 PM</td>
</tr>
<tr>
<td>Complimentary Beverage Break</td>
<td>Hall A</td>
<td>10:00 – 10:30 AM</td>
</tr>
<tr>
<td>Complimentary AAOS Souvenir Photo</td>
<td>Hall A</td>
<td>10:00 AM – 2:00 PM</td>
</tr>
<tr>
<td>Unopposed Exhibit Time*</td>
<td>Hall A</td>
<td>12:30 – 1:30 PM</td>
</tr>
<tr>
<td>Ice Cream Social</td>
<td>Hall A</td>
<td>2:00 – 3:30 PM</td>
</tr>
</tbody>
</table>

*No other educational activities are scheduled.

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Orthopaedic Surgeons Keep

*A Nation in Motion*

Our campaign continues to increase the public understanding about the value of orthopaedic care. Stop by the *A Nation in Motion*® booth in Academy Row, or visit ANationInMotion.org, to learn more about the campaign and get involved.

**How?**

1. **Share Orthopaedic Surgeon Stories**
   These stories reveal the faces, passion and real-life stories behind the practice of orthopaedics.

2. **Submit an Ortho-pinion**
   A short, patient-friendly article about various aspects of orthopaedics you encounter in every-day practice.

3. **Ask Your Patients to Submit Their Stories**
   Because of their orthopaedic care, your patients are able to continue to do the things they love and are the cornerstone of this public awareness campaign.

**Why?**

With an aging population, the need for orthopaedic care is increasing significantly and will continue for years to come. AAOS members are compassionate physicians who dedicate their lives to helping people regain their mobility, reduce their pain, and reclaim their freedom to do what they love at every stage of life.

Your participation in this campaign shows the value orthopaedic surgeons bring to the quality of life of every patient every day.

© 2013 American Academy of Orthopaedic Surgeons
Accreditation
The American Academy of Orthopaedic Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

CME Credit
U.S. Physicians: The AAOS designates this live activity for a maximum of 38.5 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

International Physicians: The AMA has determined that physicians not licensed in the United States but who participate in this CME activity are eligible for AMA PRA Category 1 Credits™.

Allied Health Professionals: The AAOS is not accredited to offer credit for nurses and other allied health professionals. To determine if activities offering AMA PRA Category 1 Credits™ are acceptable for your licensing or certification needs please contact the relevant organizations directly.

IMPORTANT – It is important for you to check in as soon as you arrive. The AAOS transcript system will not allow you to claim CME credit for any educational activities you participated in before you officially check in to the meeting. For instance, if you arrive at the meeting on Wednesday but do not check in until Thursday, you will not be able to claim CME credits for your Wednesday attendance. The CME credit system is an honor system. You should claim only the number of credits for the learning activities at the Annual Meeting in which you actively participated. For example, if you attend only on Wednesday and Thursday, the maximum amount you may claim is 20 credits. The grid below outlines the number of credit hours available per day:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
<th>Time(s)</th>
<th>CME Credit Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Courses</td>
<td>Tuesday, March 19</td>
<td>8:00 AM – 12:30 PM</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Wednesday – Friday, March 20-22</td>
<td>1:30 PM – 6:00 PM</td>
<td></td>
</tr>
<tr>
<td>Symposia/ Paper Presentations</td>
<td>Tuesday – Friday, March 19 - 22</td>
<td>8:00 AM – 10:00 AM</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:30 AM – 12:30 PM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1:30 PM – 3:30 PM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4:00 PM – 6:00 PM</td>
<td></td>
</tr>
<tr>
<td>Posters and Scientific Exhibits</td>
<td>Wednesday – Friday, March 20 – 22 (only when the presenter is required to be present)</td>
<td>11:30 AM – 12:30 PM</td>
<td>Yes</td>
</tr>
<tr>
<td>Orthopaedic Video Theater (formerly known as the Multimedia Education Center (MEC))</td>
<td>Tuesday, March 19</td>
<td>8:00 AM – 6:00 PM</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Wednesday – Friday, March 20-22</td>
<td>7:00 AM – 6:00 PM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Saturday, March 23</td>
<td>7:00 AM – 5:30 PM</td>
<td></td>
</tr>
<tr>
<td>Opening Ceremony</td>
<td>Wednesday, March 20</td>
<td>4:00 PM</td>
<td>No</td>
</tr>
<tr>
<td>Business Meetings</td>
<td>Thursday, March 21</td>
<td>9:00 AM</td>
<td>No</td>
</tr>
<tr>
<td>Ceremonial Meeting</td>
<td>Thursday, March 21</td>
<td>10:00 AM</td>
<td>No</td>
</tr>
<tr>
<td>Electronic Skills Pavilion</td>
<td>Wednesday – Thursday, March 20-21</td>
<td>9:00 AM – 5:00 PM</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Friday, March 22</td>
<td>9:00 AM – 4:00 PM</td>
<td></td>
</tr>
<tr>
<td>Technical Exhibits</td>
<td>Wednesday – Thursday, March 20-21</td>
<td>9:00 AM – 5:00 PM</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Friday, March 22</td>
<td>9:00 AM – 4:00 PM</td>
<td></td>
</tr>
<tr>
<td>Specialty Day</td>
<td>Saturday, March 23</td>
<td>Varies by society</td>
<td>Yes</td>
</tr>
</tbody>
</table>

CME Certificates
The AAOS transcript system will not allow you to claim available CME credit before you officially check in to the meeting. Therefore it is important to check in as soon as you arrive. Physicians should claim only the number of credits for the learning activities at the Annual Meeting in which they actively participated.

The grid below outlines the types of activities that are available at the Annual Meeting and notes which qualify for AMA PRA Category 1 Credits™:
Specialty Day CME
Listed below are the Specialty Societies designations of AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
- American Orthopaedic Foot and Ankle Society – 9 credits
- American Orthopaedic Society for Sports Medicine – 5.75 credits
- American Shoulder and Elbow Surgeons – 8 credits
- American Society of Surgery of the Hand/American Association for Hand Surgery – 8 credits
- Arthroscopy Association of North America – 5.75 credits
- Federation of Spine Associations – 8.25 credits
- Hip Society/American Association of Hip and Knee Surgeons – 7 credits
- Knee Society/American Association of Hip and Knee Surgeons – 7 credits
- Limb Lengthening and Reconstruction Society – 8 credits
- Musculoskeletal Tumor Society – 7.5 credits
- Orthopaedic Trauma Association – 8 credits
- Pediatric Orthopaedic Society of North America – 7 credits

Disclaimer
The material presented at the Annual Meeting has been made available by the American Academy of Orthopaedic Surgeons for educational purposes only. This material is not intended to represent the only, nor necessarily best, method or procedure appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement or opinion of the faculty which may be helpful to others who face similar situations. The AAOS disclaims any and all liability for injury or other damages resulting to any individual attending a session and for all claims which may arise out of the use of the techniques demonstrated therein by such individuals, whether these claims shall be asserted by a physician or any other person.

No reproductions of any kind, including audiotapes and videotape, may be made of the presentation at the Academy’s Annual Meeting. The Academy reserves all of its rights to such material, and commercial reproduction is specifically prohibited.

FDA Statement
Some drugs or medical devices demonstrated at the Annual Meeting have been cleared by the FDA for specific purposes only or have not been cleared by the FDA. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice. Academy policy provides that “off label” uses of a drug or medical device may be described in the Academy’s CME activities so long as the “off label” use of the drug or medical device is also specifically disclosed (i.e. it must be disclosed that the FDA has not cleared the drug or device for the described purpose). Any drug or medical device is being used “off label” if the described use is not set forth on the product’s approval label.

2013 Annual Meeting Objectives

Global Objectives
- Develop and refine a perspective on the broad range of orthopaedic knowledge, care and surgical practice
- Expand and integrate an understanding of the scientific and clinical tenets of orthopaedic surgery to better treat and prevent musculoskeletal disease.
- Develop an understanding of economic and practice management challenges that can lead to strategies that protect continued access to care for patients and viability of the profession.
- Provide a forum to strengthen professional relationships and develop networks that lead to better patient care, individual surgeon career satisfaction, and a more robust profession as a whole.

Instructional Objectives
- To facilitate a personalized educational experience through a comprehensive offering of instructional courses, symposia, scientific presentations and surgical skills courses.
- Support a forum for discussion of current issues in orthopaedics including patient safety, advocacy, practice management, and culturally competent care.
- Offer complementing formats to facilitate career-long education that meets the expectations of patients, colleagues and Maintenance of Certification.
- To provide a forum for the presentation of basic and clinical research with current as well as future potential applications in the management of patients with musculoskeletal disease or injury.

Learner Objectives
- Synthesize a basis for the practice of delivering evidence-based, cost effective orthopaedic care
- Integrate current basic science, translational research, and state-of-the art procedures and technology into clinical practice.
- Become more informed and involved in advocacy issues related to orthopaedics.
- To provide a forum for resident education on current clinical practice, relevant basic science, practice management, and advocacy issues in preparation for careers as competent and ethical orthopaedic surgeons.

Private Meeting
The AAOS 2013 Annual Meeting is a private meeting. The AAOS reserves the right to control space and ask people to leave the meeting who are not qualified to attend.
Technology at the Annual Meeting

**AAOS Mobile Meeting Guide**
The AAOS Mobile Meeting Guide application is available free from the App Store or Google Play. View, search and schedule scientific programming – including all AAOS educational opportunities – Technical Exhibitor information, Social Program, Committee and Affiliate Meetings, and Special Events. You may even add personal events to your schedule.

A mapping program for meeting room location and exhibiting companies within McCormick Place is also included. Need some assistance? Visit the help desk located in the Resource Center, Academy Hall B.

**Audience Response System**
Selected Instructional Courses will make use of Smartphone technology as part of an Audience Response System.

**Electronic Skills Pavilion - Hall A, Booth 5236**
Presentations that showcase current technology, products, and applications that are developed for the orthopaedic surgeon take place here. Handouts and evaluations will be accessible electronically through QR codes available on-site at the Electronic Skills Pavilion.

**Evaluations**
Instructional Courses and Symposia evaluations can be accessed through the AAOS Mobile Meeting Guide available for your Smartphone or internet connected device.

**Event Touch Digital Signage**
LCD touch screens are available at the Welcome and Information Booths located throughout McCormick Place and will function as an interactive “You Are Here.” This technology allows you to engage directly with the display, assisting with a visual directional to meeting rooms / educational sessions, technical exhibits, Academy Hall and special events.

**iPosters and New! iScientific Exhibits**
Academy Hall B
iPosters and iScientific Exhibits provides a digital version of the poster or scientific exhibit at the Annual Meeting. The audio recorded by the presenter will be a narrative of the poster or scientific exhibit and offered on playback by Smartphone and tablets as the attendee views the poster and scientific exhibit. A blog will allow viewers to question the authors creating an ongoing dialog. Kiosks are available within Academy Hall B where attendees can view, hear the audio, and also decide whether or not to view the actual poster or scientific exhibit. The iPosters and iScientific Exhibits create an excellent post meeting opportunity to view this important research in your office or home.

**Proceedings**
Be sure to get your copy of the Annual Meeting Proceedings CD-ROM. Pick up your CD at the bins located in registration. An ebook will be available for download to your tablet at www.aaos.org/proceedings.

**Webcasting**
View over 20 symposia webcasts as they are simulcast live from the Annual Meeting. Choose from a variety of topics addressing joint replacement procedures including shoulder, hip, and sports. Did you miss the live simulcasts? View the webcasts free anytime 24 hours after the start of the symposium during the Annual Meeting. Both the AAOS.org website and the Meeting App “AAOS Mobile Meeting Guide” provide access links for the webcasts for both meeting attendees and virtual participants.

On April 1, the webcasts become available for purchase and download from the AAOS Website Store www.aaos.org/webcast.

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Hotel Map

Hotel Map

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## Hotel Shuttle Bus Routes

**HOTEL SHUTTLE**

**Hours of Operation:**
- Monday 2:00 PM – 6:30 PM (Limited Service)
- Tuesday-Friday 6:30 AM – 6:30 PM
- Saturday 6:30 AM – 6:00 PM

**ADA Requests:** (415) 926-2529

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**AIRPORT SHUTTLE**

Departs: Gate 3 – South // Gate 27 – North (Upon Request)

**Hours of Operation:**
- Tuesday–Saturday 8:00 AM – 6:30 PM

**Group Code:** AAOS

**Phone:** (888) 284-3826

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<table>
<thead>
<tr>
<th>ROUTE #</th>
<th>HOTEL</th>
<th>GATE – BUILDING @ McCormick Place</th>
<th>BOARDING LOCATION @ Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 3</td>
<td>ACME Hotel Chicago</td>
<td>2 – South</td>
<td>Chicago Marriott Downtown (Ohio &amp; Rush)</td>
</tr>
<tr>
<td>Route 6</td>
<td>Allegro Hotel</td>
<td>27 – North</td>
<td>Randolph Street Entrance</td>
</tr>
<tr>
<td>Route 4</td>
<td>Allerton</td>
<td>1 – South</td>
<td>Omni of Chicago (Rush &amp; Huron, Northwest Corner)</td>
</tr>
<tr>
<td>Route 3</td>
<td>Amalfi</td>
<td>2 – South</td>
<td>Westin River North (Kinzie &amp; Dearborn, Southeast Corner)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Avenue Crowne Plaza</td>
<td>1 – South</td>
<td>Omni of Chicago (Rush &amp; Huron, Northwest Corner)</td>
</tr>
<tr>
<td>Route 3</td>
<td>Chicago Marriott Downtown</td>
<td>2 – South</td>
<td>Ohio &amp; Rush</td>
</tr>
<tr>
<td>Route 3</td>
<td>Conrad Chicago</td>
<td>2 – South</td>
<td>Chicago Marriott Downtown (Ohio &amp; Rush)</td>
</tr>
<tr>
<td>Route 3</td>
<td>Courtyard Marriott – River North</td>
<td>2 – South</td>
<td>Westin River North (Kinzie &amp; Dearborn, Southeast Corner)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Courtyard Marriott – Magnificent Mile</td>
<td>1 – South</td>
<td>Omni of Chicago (Rush &amp; Huron, Northwest Corner)</td>
</tr>
<tr>
<td>Route 2</td>
<td>Doubletree Magnificent Mile</td>
<td>3 – South</td>
<td>Sheraton Chicago (Convention Entrance – off Columbus Drive)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Drake</td>
<td>1 – South</td>
<td>Westin Michigan Avenue (Delaware &amp; Michigan, Southeast Corner)</td>
</tr>
<tr>
<td>Route 3</td>
<td>Embassy Suites Downtown</td>
<td>2 – South</td>
<td>Chicago Marriott Downtown (Ohio &amp; Rush)</td>
</tr>
<tr>
<td>Route 2</td>
<td>Embassy Suites Lakefront</td>
<td>3 – South</td>
<td>Sheraton Chicago (Convention Entrance – off Columbus Drive)</td>
</tr>
<tr>
<td>Route 5</td>
<td>Fairmont Chicago</td>
<td>1 – South</td>
<td>Hyatt Regency Chicago (East Wacker Drive &amp; Stetson)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Four Seasons</td>
<td>1 – South</td>
<td>Michigan &amp; Delaware (West Side of Street)</td>
</tr>
<tr>
<td>Route 6</td>
<td>Hard Rock Hotel</td>
<td>27 – North</td>
<td>Renaissance Downtown (Wacker Drive Entrance)</td>
</tr>
<tr>
<td>Route 1</td>
<td>Hilton Chicago</td>
<td>26 – North</td>
<td>8th Street Entrance</td>
</tr>
<tr>
<td>Route 3</td>
<td>Hilton Garden Inn – Magnificent Mile</td>
<td>2 – South</td>
<td>Chicago Marriott Downtown (Ohio &amp; Rush)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Hilton Suites</td>
<td>1 – South</td>
<td>Westin Michigan Avenue (Delaware &amp; Michigan, Southeast Corner)</td>
</tr>
<tr>
<td>Route 6</td>
<td>Hotel 71</td>
<td>27 – North</td>
<td>Renaissance Downtown (Wacker Drive Entrance)</td>
</tr>
<tr>
<td>Route 1</td>
<td>Hotel Burnham</td>
<td>26 – North</td>
<td>Palmer House Hilton (Wabash &amp; Monroe)</td>
</tr>
<tr>
<td>Route 6</td>
<td>Hotel Monaco</td>
<td>27 – North</td>
<td>Renaissance Downtown (Wacker Drive Entrance)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Hyatt Chicago Magnificent Mile</td>
<td>1 – South</td>
<td>Omni of Chicago (Rush &amp; Huron, Northwest Corner)</td>
</tr>
<tr>
<td>No Service</td>
<td>Hyatt McCormick Place</td>
<td>Walk</td>
<td>Adjacent to Convention Center</td>
</tr>
<tr>
<td>Route 5</td>
<td>Hyatt Regency Chicago</td>
<td>1 – South</td>
<td>East Wacker Drive &amp; Stetson</td>
</tr>
<tr>
<td>Route 3</td>
<td>Inn of Chicago</td>
<td>2 – South</td>
<td>Chicago Marriott Downtown (Ohio &amp; Rush)</td>
</tr>
<tr>
<td>Route 3</td>
<td>Intercontinental</td>
<td>2 – South</td>
<td>Chicago Marriott Downtown (Ohio &amp; Rush)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Knickerbocker</td>
<td>1 – South</td>
<td>Westin Michigan Avenue (Delaware &amp; Michigan, Southeast Corner)</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>ROUTE #</th>
<th>HOTEL</th>
<th>GATE – BUILDING @ McCormick Place</th>
<th>BOARDING LOCATION @ Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 4</td>
<td>Omni of Chicago</td>
<td>1 – South</td>
<td>Rush &amp; Huron, Northwest Corner</td>
</tr>
<tr>
<td>Route 1</td>
<td>Palmer House Hilton</td>
<td>26 – North</td>
<td>Wabash Entrance</td>
</tr>
<tr>
<td>Route 3</td>
<td>Palomar Chicago</td>
<td>2 – South</td>
<td>@ Chicago Marriott Downtown (Ohio &amp; Rush)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Park Hyatt</td>
<td>1 – South</td>
<td>@ Omni of Chicago (Rush &amp; Huron, Northwest Corner)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Peninsula</td>
<td>1 – South</td>
<td>@ Omni of Chicago (Rush &amp; Huron, Northwest Corner)</td>
</tr>
<tr>
<td>Route 5</td>
<td>Radisson Blue Aqua</td>
<td>1 – South</td>
<td>@ Hyatt Regency Chicago (East Wacker Drive &amp; Stetson)</td>
</tr>
<tr>
<td>Route 1</td>
<td>Renaissance Blackstone</td>
<td>26 – North</td>
<td>@ Hilton Chicago (8th Street &amp; Michigan Avenue)</td>
</tr>
<tr>
<td>Route 6</td>
<td>Renaissance Downtown</td>
<td>27 – North</td>
<td>Wacker Drive Entrance</td>
</tr>
<tr>
<td>Route 3</td>
<td>Residence Inn – River North</td>
<td>2 – South</td>
<td>@ Westin River North (Kinzie &amp; Dearborn, Southeast Corner)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Ritz Carlton</td>
<td>1 – South</td>
<td>Pearson &amp; Mies Van Der Rohe</td>
</tr>
<tr>
<td>Route 3</td>
<td>Sax Chicago</td>
<td>2 – South</td>
<td>@ Westin River North (Kinzie &amp; Dearborn, Southeast Corner)</td>
</tr>
<tr>
<td>Route 2</td>
<td>Sheraton Chicago</td>
<td>3 – South</td>
<td>Convention Entrance (off Columbus Drive)</td>
</tr>
<tr>
<td>Route 1</td>
<td>Silversmith Hotel &amp; Suites</td>
<td>26 – North</td>
<td>@ Palmer House Hilton (Wabash &amp; Monroe)</td>
</tr>
<tr>
<td>Route 4</td>
<td>Sofitel</td>
<td>1 – South</td>
<td>@ Four Seasons (Michigan &amp; Delaware, West Side of Street)</td>
</tr>
<tr>
<td>Route 3</td>
<td>Springhill Suites</td>
<td>2 – South</td>
<td>@ Westin River North (Kinzie &amp; Dearborn, Southeast Corner)</td>
</tr>
<tr>
<td>Route 5</td>
<td>Swissotel</td>
<td>1 – South</td>
<td>@ Hyatt Regency Chicago (East Wacker Drive &amp; Stetson)</td>
</tr>
<tr>
<td>Route 6</td>
<td>The Wit</td>
<td>27 – North</td>
<td>@ Renaissance Downtown (Wacker Drive Entrance)</td>
</tr>
<tr>
<td>Route 2</td>
<td>W Lakeshore</td>
<td>3 – South</td>
<td>Ontario at Fairbanks Street</td>
</tr>
<tr>
<td>Route 4</td>
<td>Westin Michigan Avenue</td>
<td>1 – South</td>
<td>Delaware &amp; Michigan, Southeast Corner</td>
</tr>
<tr>
<td>Route 3</td>
<td>Westin River North</td>
<td>2 – South</td>
<td>Kinzie &amp; Dearborn Streets (Southeast Corner)</td>
</tr>
</tbody>
</table>

Be part of something special – a community of orthopaedic surgeons investing in the future

THE AAOS EDUCATION ENHANCEMENT FUND

Help the Academy continue to develop the highest quality orthopaedic educational offerings using innovative, state-of-the-art learning technologies. Become a lasting part of enhancing the education of orthopaedic surgeons and improving patient care through your contribution to the AAOS Education Enhancement Fund (AEEF).

Contribute online at [www.oref.org/aaos-education](http://www.oref.org/aaos-education)
Understanding the legislative issues that affect you as an orthopaedic surgeon is a critical first step in becoming more politically active. Political advocacy covers a wide range of activities, including voting in elections, lobbying a Member of Congress, or contributing to the Political Action Committee of the American Association of Orthopaedic Surgeons (Orthopaedic PAC). Formed in 1999, the Orthopaedic PAC works to advance issues that face orthopaedic surgeons.

The Orthopaedic PAC supports candidates for Federal office who advocate for the issues that you as orthopaedic surgeons face on a daily basis. It is the only national political action committee in Washington, D.C. representing orthopaedic surgeons before Congress. The Orthopaedic PAC works to build a coalition of pro physician members in Congress who will fight for legislation that supports the practice of medicine.

The Orthopaedic PAC also enhances other advocacy activities of the AAOS, such as the National Orthopaedic Leadership Conference (NOLC), Research Capitol Hill Day, and grassroots outreach programs such as the Washington Health Policy Fellowship.

The Orthopaedic PAC concluded the 2011-2012 election cycle with another strong showing. In total, the Orthopaedic PAC was involved in 252 congressional races and had an 86% success rate in supporting candidates. The Orthopaedic PAC also dispersed $3,082,254—more than any other health professional PAC—to elect candidates who understand and support physician issues.

Learn more about AAOS’ legislative and regulatory activities and the Orthopaedic PAC at the AAOS Advocacy Booth located in McCormick Place, Hall A, Booth 1600.

www.aaos.org/PAC
The Academy would like to thank the Annual Meeting Committee for their hard work and contributions to the 2013 Annual Meeting.

Joseph A. Abboud, MD
OREF Research Grant Recipient

Joseph A. Abboud, MD dreams of reducing and even predicting tendon disease. He balances his clinical practice treating patients with shoulder and elbow disorders with his passion for research. Together with his mentor Louis J. Soslowsky, PhD, Dr. Abboud received a 2008 OREF Research Grant to explore the correlation between high cholesterol, and tendon composition and biomechanics. He hopes his work will help reduce the extent of tendon damage in patients and clarify the role cholesterol-lowering drugs may play in healing after tendon injury.

Contribute to OREF’s 2013 Annual Campaign
today

www.oref.org/donate13
**General Information**

**Safety**

**Emergency Numbers**
- Fire/Police Emergency: In case of an Emergency please use any house phone located throughout McCormick Place and dial extension 6060.
- McCormick Place Security Control (24 hours): (312) 791-6060
- City Police Emergency: 911
- City Police Non-Emergency: 311
- Poison Control: (800) 222-1222 (Nationwide)

**Nearest Hospitals**
- Mercy Hospital & Medical Center
  2525 South Michigan Ave, (312) 567-2000
  0.3 miles
- Northwestern Memorial Hospital
  251 East Huron Street, (312) 926-2000
  4.5 miles
- University of Illinois Hospital
  1740 West Taylor Street, (312) 355-4000
  4.7 miles
- Rush University Medical Center
  1653 West Congress Pkwy, (312) 942-5000
  5.3 miles

**First Aid - McCormick Place - (312) 791-6060**
- South Level 2.5 (near the FedEx Office)
- Lakeside Level 1 (near the Arie Crown Theater dressing room)

These stations are fully equipped and staffed by a licensed medical professional and include automated external defibrillators for reviving heart attack victims.

- **Hours of Operation:**
  - Tuesday – Saturday......................................7:00 AM – 6:00 PM

**Drug Stores**
- CVS, 2545 Martin Luther King Drive, (312) 842-5700
  - **Hours of Operation:**
    - Monday – Friday...........................................9:00 AM – 7:00 PM
    - Saturday.....................................................9:00 AM – 5:00 PM
  - **Pharmacy Hours:**
    - Monday – Friday...........................................9:00 AM – 7:00 PM
    - Saturday.....................................................9:00 AM – 5:00 PM
- Walgreens, 2 E Roosevelt Rd, (312) 212-1583
  - **Hours of Operation:**
    - Monday – Saturday.................................7:00 AM – 12:00 Midnight
  - **Pharmacy Hours:**
    - Monday – Friday...........................................8:00 AM – 10:00 PM
    - Saturday.....................................................9:00 AM – 5:00 PM

**Drug Stores continued**
- Walgreens, 1653 West Congress Pkwy, (312) 942-5000
  - **Hours of Operation:**
    - Monday – Saturday.................................7:00 AM – 12:00 Midnight
  - **Pharmacy Hours:**
    - Monday – Friday...........................................8:00 AM – 10:00 PM
    - Saturday.....................................................9:00 AM – 5:00 PM

**AAOS 2013 Annual Meeting Sunrise 5K Run**
Due to Daylight Savings Time, the Academy will not be hosting the Sunrise 5K in Chicago.

**AAOS Now**
The Daily Edition of AAOS Now, the official newspaper of the AAOS Annual Meeting, is published Tuesday through Friday. Pick up a copy from the newspaper racks located throughout the convention center and on the shuttle buses. Each issue contains coverage of events and scientific presentations, news items, and reports on guest speakers and award winners, along with late-breaking news. It’s your source for news during the Annual Meeting!

**AAOS Privacy Policy – Use of Personal Information**
Annual Meeting registration lists, including the medical registrant’s name, postal mailing address, and phone number, are available for sale to exhibitors in advance of and after the Annual Meeting. In addition, certain personal information, including the medical registrant’s name, postal mailing address, phone number, hospital affiliation, and practice focus, is available at the Annual Meeting to exhibitors through a “lead retrieval system” mechanism.

For additional information, please refer to the entire AAOS Privacy Policy by visiting www.aaos.org/privacy.

**Academy Lounges**
McCormick Place, Exhibit Hall A and Academy Hall B
Need a comfortable place to surf the web, catch up with a colleague, and keep up with the Annual Meeting Twitter feed? Relax with your colleagues in the Academy Lounge.

**ADA Needs**
McCormick Place is ADA compliant. In accordance with the ADA, they are responsible for permanent premises access accommodations, such as, but not limited to, elevator standards, door width standards and restroom accessibility. It is the group’s responsibility to provide non-permanent accessibility requirements, such as, but not limited to, hearing-assisted or visually-assisted devices, and temporary seating accessibility and/ or interpreters. Wheelchairs are available through the following company:

Scoot-Around Mobility Solutions
(888) 441-7575 or www.scootaround.com/rentals/m/mccormickplace
Advocacy Booth
McCormick Place, Hall A, Booth 1600
Learn more about AAOS’ legislative and regulatory activities and the Orthopaedic PAC.

• Hours of Operation:
  Wednesday – Thursday .............................. 9:00 AM – 5:00 PM
  Friday .......................................................... 9:00 AM – 4:00 PM

Airline Information
If you need to make, change or reconfirm your reservation, please contact the airline direct. Toll-free numbers for major airlines and CorpTrav are listed below. Change fees may apply and will be charged according to the airline’s policy at the time the change is made.

American Airlines ...................................... (800) 433-7300
Continental ................................................... (800) 523-3273
Delta .............................................................. (800) 221-1212
United Airlines ............................................ (800) 864-8331
CorpTrav ......................................................... (800) 318-3846

Airport Shuttle Booths
McCormick Place, South Level 1 Lobby and North Level 1 Lobby
Go Airport Express will provide door-to-door transportation service between O’Hare (ORD) and Midway (MDW) Airports and downtown hotels or McCormick Place in shared ride vans that make multiple stops. Telephone reservations can be made at (888) 284-3826. Use Group Code: AAOS.

• Hours of Operation:
  Tuesday – Saturday ........................................ 8:00 AM – 6:30 PM

<table>
<thead>
<tr>
<th>Pricing</th>
<th>O’Hare Airport</th>
<th>Midway Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Person – One Way</td>
<td>$29</td>
<td>$24</td>
</tr>
<tr>
<td>1 Person – Round Trip</td>
<td>$53</td>
<td>$44</td>
</tr>
<tr>
<td>2 People – One Way</td>
<td>$20</td>
<td>$16</td>
</tr>
<tr>
<td>2 People – Round Trip</td>
<td>$37</td>
<td>$29</td>
</tr>
<tr>
<td>3+ People – One Way</td>
<td>$15</td>
<td>$13</td>
</tr>
<tr>
<td>3+ People – Round Trip</td>
<td>$29</td>
<td>$24</td>
</tr>
<tr>
<td>Private Van</td>
<td>$135</td>
<td>$117</td>
</tr>
</tbody>
</table>

Allied Organization Displays
McCormick Place, Hall A
The booths will be staffed during the following hours:
  Wednesday – Thursday ......................... 9:00 AM – 5:00 PM
  Friday ................................................. 9:00 AM – 4:00 PM

American Orthopaedic Society for Sports Medicine /
STOP Sports Injuries Campaign ................... Booth 406B
American Society of Orthopaedic Physician’s
  Assistants - ASOPA .................................. Booth 505A
Asociacion Argentina de Ortopedia y Traumatologia Booth 706B
Chinese Orthopaedic Association .................. Booth 604B
Eastern, Southern & Western Orthopaedic
  Associations ........................................... Booth 704A
European Federation of National Associations of
  Orthopaedics and Traumatology - EFORT ........ Booth 604A
Federacion de Sociedades de Ortopedia y Traumatologia de America Latina - SALT ............... Booth 705A
Indonesian Orthopaedic Association - IOA ........ Booth 306B
International Cartilage Repair Society - ICRS .... Booth 506A
International Congress for Joint Reconstruction .... Booth 406A
Mercy Ships ............................................. Booth 404A
National Association of Orthopaedic Technologists - NAOT ................. Booth 405B
Operation Walk USA ....................................... Booth 605B
Orthopaedic Research Society ..................... Booth 706A
Orthopaedics Overseas ................................ Booth 306A
SICOT ...................................................... Booth 305B
SIGN Fracture Care International .................. Booth 304B
Sociedad Colombiana de Cirugia Ortopedica y
  Traumatologia – Grupo Corporativo - SCCOT .... Booth 605A
Sociedad Espanola de Cirugia Ortopedica y
  Traumatologia – SECOT ................................. Booth 504A
United States Bone and Joint Initiative .......... Booth 405A

Please note the different locations and hours for the following booths:

American Board of Orthopaedic Surgery ........ Academy Hall B
American Joint Replacement Registry ............ Academy Hall B

These booths will be staffed during the following hours:
  Tuesday ................................................. 8:00 AM – 6:00 PM
  Wednesday – Friday ................................. 7:00 AM – 6:00 PM
  Saturday ............................................... 7:00 AM – 5:30 PM

Orthopaedic Learning Center ...................... Hall A, Booth 1602
The booth will be staffed during the following hours:
  Wednesday – Thursday ......................... 9:00 AM – 5:00 PM
  Friday ................................................. 9:00 AM – 4:00 PM

Audio Sales
McCormick Place, Academy Hall B
Digital audio downloads of selected sessions may be ordered for post meeting delivery. Orders may be placed at the sales desk.
Most educational sessions are recorded.

• Hours of Operation:
  Tuesday ................................................. 8:00 AM – 6:00 PM
  Wednesday – Friday ................................. 7:00 AM – 6:00 PM
  Saturday ............................................... 7:00 AM – 5:30 PM

Badge Information
Everyone who attends the AAOS Annual Meeting must register.
Badges are required for entrance to the Exhibit Hall and to attend all other official AAOS sessions. The following badge holder and badge stock colors have been issued:

Badge Holders
Yellow........AAOS Fellow
Tan..........AAOS Members, Resident/Candidate Member,
  International Members
Blue........Non-Member Physician, International Attendee, and
  U.S. Residency/U.S. Fellowship
Gray........U.S. Allied Health
Clear.........Social Program
Black.........AAOS Staff
Pink..........Press
Badge Stock Colors
Lavender ....Social Program
Orange.......Commercial Representative
Green.......Technical Exhibitor

Business Centers – FedEx Offices - (312) 949-2100
McCormick Place, South Level 2.5 and Lakeside Level 2
McCormick Place provides full service business needs for your convenience from photocopying, faxing, computer workstations with Internet access, printing services, and shipping. Shipping services are provided by FedEx. Office supplies are also available for purchase. VISA, MasterCard, and American Express are accepted.

- **Hours of Operation:**
  - Tuesday – Friday: 8:00 AM – 6:00 PM
  - Saturday: 8:00 AM – 5:00 PM

Cash Station/ATM
McCormick Place
- South Level 2.5 in the Convenience Center
- North Level 2 near McDonalds
- Lakeside Level 2 near the Arie Crown Theater box office

Charging Stations
Stop by the electrical plug-in stations to recharge your cell phones, laptops, and tablets.

- **McCormick Place, Academy Hall B**
  - **Hours of Operation:**
    - Tuesday: 8:00 AM – 6:00 PM
    - Wednesday – Friday: 7:00 AM – 6:00 PM
    - Saturday: 7:00 AM – 5:30 PM

- **McCormick Place, Hall A, Booths 1870 and 5433**
  - **Hours of Operation:**
    - Wednesday – Thursday: 9:00 AM – 5:00 PM
    - Friday: 9:00 AM – 4:00 PM

Children
The following guidelines have been approved for the Annual Meeting. Only children 16 or over will be admitted to the educational programs, including the exhibit hall.

Children and individuals of any age, providing they are not disruptive to the meeting, are welcome in the following activities:
- Opening Ceremony
- Posters
- Scientific Exhibits

Children under the age of 16 are not permitted in the following areas of the meeting:
- Technical Exhibit Hall
- Educational Sessions (paper presentations, symposia, instructional courses)
- Business Meetings
- Ceremonial Meeting
- Guest Speaker Presentation

The Academy does provide a Social Program which is open to all spouse, family members and guests accompanying members and attendees to the meeting. Tours and events are offered daily during the meeting.

Please see the Social Program on page 32 for family friendly events.

CME Kiosks
McCormick Place, Academy Hall B, South Level 1, and North Level 1
Print your CME certificate for the Annual Meeting and participating Specialty Societies

- **Hours of Operation:**
  - Tuesday: 8:00 AM – 6:00 PM
  - Wednesday – Friday: 7:00 AM – 6:00 PM
  - Saturday: 7:00 AM – 5:30 PM

Coat and Luggage Check
McCormick Place, North Level 1 and Room S101a
For identification, please leave a business card in your pocket.

- **Hours of Operation:**
  - Tuesday – Saturday: 6:30 AM – 6:30 PM

E-Mail Stations
McCormick Place
- Concourse Level 2.5
- Academy Hall B
- South Levels 1, 4, and 5

Access your email and connect to the internet. These convenient stations provide you with a computer and printer.

- **Hours of Operation:**
  - Tuesday – Friday: 8:00 AM – 6:00 PM
  - Saturday: 7:00 AM – 5:30 PM

McGovern Place, Hall A, Booths 1670 and 5433

- **Hours of Operation:**
  - Wednesday – Thursday: 9:00 AM – 5:00 PM
  - Friday: 9:00 AM – 4:00 PM

Food Service
McCormick Place has ample food and beverage concession areas to satisfy any appetite. Food and beverage schedule is subject to change. Detailed menu and location information is available at the Welcome & Information Booths located throughout McCormick Place.

New: AAOS Bistro located in Hall A with an all-inclusive buffet lunch and available table reservations, Wednesday – Friday, from 11:00 AM – 2:30 PM. Tickets can be purchased in Academy Hall B.

Guest Nation - Canada
Help us welcome Canada as the Guest Nation for the AAOS 2013 Annual Meeting. Look for special events and activities that will focus on Canada and the issues facing the Canadian orthopaedic community, including 10 special posters from Canada, and a speech by the President of the Canadian Orthopaedic Association (COA) during the opening ceremony. Please stop by the Guest Nation exhibit, located in Academy Hall B, to learn more.
**Handout Sales**
Resource Center, McCormick Place, Academy Hall B
Selected Instructional Course handout CDs and flash drives will be available for purchase.

- **Hours of Operation:**
  - Tuesday ........................................8:00 AM – 6:00 PM
  - Wednesday – Friday......................7:00 AM – 6:00 PM
  - Saturday ....................................7:00 AM – 5:30 PM

**Hotel Shuttle Bus Routes**
Complimentary shuttle service will run between AAOS hotels and McCormick Place.

- **Hours of Operation:**
  - Monday ......................................2:00 PM – 6:30 PM
  - Tuesday – Friday.......................6:30 AM – 6:30 PM
  - Saturday ..................................6:30 AM – 6:00 PM

Items left on the shuttles will be turned in to the Academy Headquarters Office in Room N231.

For the complete details on the Shuttle Schedule and Hotel Map, see pages 19–21.

Hotel without shuttle service (walking distance):
- Hyatt Regency McCormick Place

For wheelchair-accessible vehicles please call (415) 926-2529.

Please allow two hour notice for this service.

**Hotel Reservations – 2014 Annual Meeting**
McCormick Place, Academy Hall B
AAOS Members attending this year’s Annual Meeting can make hotel reservations for the 2014 Annual Meeting in New Orleans. Stop by the 2014 Member Housing counters today.

**Housing Help Desk**
McCormick Place, Academy Hall B
The official housing bureau, Wyndham Jade, provides housing assistance to all attendees during the meeting. If you have a problem with your reservation or need to change hotels, please go to the Housing Help Desk.

- **Hours of Operation:**
  - Monday ......................................2:00 PM – 6:00 PM
  - Tuesday – Friday.......................6:30 AM – 6:00 PM
  - Saturday ..................................7:00 AM – 5:30 PM

**Image Capture**
The Academy is videotaping certain portions of the Annual Meeting. The tapes will be used for educational purposes and/or may be sold alone or in connection with other AAOS products. Please note that by attending the Annual Meeting, your image and/or voice may be captured and included if you take part in one of these events.

**Instructional Course Ticket Exchange**
McCormick Place, Academy Hall B
Tickets purchased in advance may be exchanged at the Ticket Exchange counter. The registrant must pay the difference between the advance purchase price and the onsite purchase price in order to exchange a ticket. The difference for the Orthopaedic Review Course is $100. No exchanges after the start of a course.

**International Business Office and Surgeons Lounge**
McCormick Place, Room N229
Academy staff are available in the International Business Office to help assist you with any issues. Registration inquiries will be handled at registration in Academy Hall B.

We invite International Surgeons to join AAOS at the International Surgeons Lounge for refreshments (coffee, tea and water), to relax, meet with other international colleagues and browse information on AAOS international activities.

- **Hours of Operation:**
  - Tuesday ......................................8:00 AM – 6:00 PM
  - Wednesday – Friday......................7:00 AM – 6:00 PM
  - Saturday ....................................7:00 AM – 5:30 PM

**International Groups Department**
McCormick Place, Academy Hall B
Hotel and registration assistance is available to international guests who used this service.

**Job Placement Center**
McCormick Place, Academy Hall B
The Academy’s job placement service, providing a list of employment opportunities and candidates, is available during the Annual Meeting.

- **Hours of Operation:**
  - Tuesday ......................................8:00 AM – 6:00 PM
  - Wednesday – Friday......................7:00 AM – 6:00 PM
  - Saturday ....................................7:00 AM – 5:30 PM

**Participants**
The Job Placement Center has been established for the benefit of the Academy membership. In addition, hospital or practice administrators and medical staff personnel are permitted to access the Job Placement Center. All participants must have an active listing. Professional recruiters are not allowed to participate in this service. This policy is strictly upheld by the Academy. Due to space limitations, we ask that you limit attendance to 2 representatives per company.

**Registration Fees/Check-In**
All participants MUST register for the Annual Meeting to gain entry to the Job Placement Center. On-site registration fee is $250 per person.

*All participants must check-in at the on-site Job Placement Center in order for your practice opportunity or Job Seekers listing to be advertised in the on-site booklets. Listings checked-in before 3:00 PM will appear in the next day’s books.*

The listings of Job Seekers and Practice Opportunities, represented at the meeting, will be available Tuesday at 8:00 AM and Wednesday through Saturday at 7:30 AM.

**New Listings**
You can submit a new ad for an employment opportunity on-site for a fee. There is no fee to orthopaedic surgeons looking for employment. Listings can be submitted or edited directly from the AAOS website: [www.aaos.org/placement](http://www.aaos.org/placement).

**Bulletin Boards**
All participants must check-in prior to posting their ad on the bulletin board. An active listing is required in order to post your ad on-site. Only orthopaedic surgery opportunities will be posted.
General Information

Posted items should NOT exceed 8.5” x 11”. Due to space limitations, only one poster per practice is allowed.

Interview Booths
The Job Placement Center may be used to conduct on-site interviews. Private interview space may be reserved on-site at the Job Placement Center. Booths are not intended to be used as exhibit space nor may they be occupied by a candidate or employer for an extended period of time.

Lost and Found
Academy Headquarters Office, McCormick Place, Room N231

• Hours of Operation:
  Monday ...................................................... 7:00 AM – 7:00 PM
  Tuesday ...................................................... 6:30 AM – 6:00 PM
  Wednesday – Saturday ................................ 6:30 AM – 6:00 PM

AAOS Mobile Meeting Guide - Available free in the App Store or Google Play
View and search scientific programming, technical exhibitor information, and other data for use during the meeting. The Mobile Meeting Guide easy to navigate and includes links to webcasts, session evaluations, iPosters, and iScientific Exhibits. Search capabilities are also available for all education including program participants, key words, special events, and exhibitors. A mapping program for meeting room location and exhibiting companies within McCormick Place is also included. Need some assistance? Visit the Technology Support Booth located in the Resource Center, McCormick Place, Academy Hall B.

Non-Smoking Policy
The AAOS Annual Meeting is a non-smoking meeting. Smoking is banned within 20 feet of business entrances or in restaurants, bars, public offices, parks, beaches, transit stations or bus stop shelters, taxis, movie theaters, concerts, ATMs, sporting events, hotel rooms and lobbies, McCormick Place, Midway International Airport, and O’Hare International Airport except where designated.

Nursing and Allied Health Program
McCormick Place, Lakeside, Rooms E450a and E451b

The American Academy of Orthopaedic Surgeons (AAOS), the National Association of Orthopaedic Nurses (NAON) and the National Association of Orthopaedic Technologists (NAOT) have collaborated to develop the Nursing and Allied Health Program. The program consists of six courses (NUR1, NUR2, NUR3, NUR4, CAST1 and CAST2) designed for registered and licensed practical nurses, physician assistants, orthopaedic technologists, and physical and occupational therapists. In addition, applications have been made to the orthopaedic technologists, physician assistants, and the American Nursing Credentialing Center in order to provide multiple types of contact hours for the aforementioned courses.

To attend any of the Nursing and Allied Health courses, you need to register for the AAOS Annual Meeting and purchase a ticket for each course. The Annual Meeting on-site registration fee is $250.

Tickets for NUR courses are $140 per course. Tickets for the CAST1 and CAST2 courses are $220. A complete listing of the courses can be found on pages 287-290.

Offices
McCormick Place
Academy Headquarters Room N231 (312) 808-2012
Exhibits Office Room S400b (312) 791-6600
International Business Office Room N229 (312) 808-2023
Media Briefing Room N132
Newspaper Office Room N136 (312) 808-2027
Press Office Room N137 (312) 808-2032
Ready Rooms Room S401 (312) 791-6605
Room N226 (312) 808-2007
Lakeside, E253c (312) 949-3201

Parking
McCormick Place Chicago is located at 2301 S. Lake Shore Drive, Chicago, IL 60616. There are three main parking lots on the McCormick Place campus. All are in close proximity and walking distance to the convention complex. Events in Lakeside Center designate Lot C as the primary parking location, while events in the North and South Buildings designate Lot A or B.

Lot A (8’ h clearance) is a six level garage with 2,100 parking spaces and is located on Martin Luther King Drive, adjacent to the West Building. Covered walkways from Lot A lead directly into McCormick Place and the Hyatt Regency McCormick Place Hotel also provide added convenience. The parking rate is $19 for up to 16 hours and $30 from 16 to 24 hours. There are no in-and-out privileges. Overnight parking is available in Lot A only. Lost tickets will pay the $30 (overnight) fee per day.

Lot B (also known as 31st Street Lot) is an outdoor surface parking lot located at 31st Street near Lake Shore Drive South and Moe Drive. It holds over 1,800 vehicles. The parking rate is a flat fee of $14 per day with no in-and-out privileges. This parking lot is open throughout event hours. Overnight parking is not available.

Lot C (6’4” h clearance) is an underground garage with 1,900 parking spaces and is located on W. Dearborn Drive, adjacent to the Lakeside Center. The parking rate is a flat fee of $19 per day with no in-and-out privileges. This parking lot is open throughout event hours. Overnight parking is not available. Parking fees can be paid by cash or credit card; VISA, MasterCard and American Express are accepted.

Planning Committees
2013 Central Program Committee
Steven L. Frick, MD, Orlando, FL, Chair
Annunziato Amendola, MD, Iowa City, IA
Brian J. Cole, MD, Chicago, IL
William M. Mihalko, MD, PhD, Memphis, TN
Michael J. Stuart, MD, Rochester, MN

2013 Central Instructional Course Committee
Robert A. Hart, MD, Portland, OR, Chair
Craig J. Della Valle, MD, Chicago, IL
Mark W. Pagnano, MD, Rochester, MN
Thomas W. Throckmorton, MD, Germantown, TN
Paul Tornetta III, MD, Boston, MA
Dempsey S. Springfield, MD, Boston, MA, Ex-Officio

2013 Exhibits Committee
William H. Seitz Jr, MD, Cleveland, OH, Chair
George W. Balfour, MD, Van Nuys, CA
Dennis B. Brooks, MD, Pepper Pike, OH

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Redemption Centers
McCormick Place, Hall A, Booths 365, 3275, and 5409
All registered medical attendees will receive coupons in their registration packet that can only be redeemed at AAOS Redemption Centers located in the exhibit hall. A complimentary tote bag will be given to all attendees who turn in their coupon.
On Thursday and Friday, drop off your coupons to enter the drawings for free airfare, hotel rooms for next year's Annual Meeting, iPads, and other items.

Hours of Operation:
Wednesday – Thursday..........................9:00 AM – 5:00 PM
Friday ......................................................9:00 AM – 4:00 PM

Refund Policy
The Academy will not issue refunds on-site during the meeting.
All requests for refunds (registration and/or instructional courses) must have been received in the Academy office on or before February 8, 2013.

Registration On-Site
McCormick Place, Academy Hall B
Registration On-Site

Registration Fees (On-Site)
AAOS Fellows, Members, Resident/Candidate Members in good standing, and International Affiliate Members ..............$150
International Resident Members ........................................$$150
AAOS Official Participants ..................................................No Fee
U.S. Non-Member Physician or Attendee ..............................$1,000
Non-Member International Medical Attendees – Including Canada ..........................................................$800
U.S. Fellowship/U.S. Residency ..............................................$150
U.S. Allied Health is limited to individuals directly employed by a hospital, Healthcare network, University, or freestanding facility administering to patients (i.e. RN, OPA, PA, OTC, ATC, PT, office staff) ...............$250

Hours of Operation:
Monday ..............................................2:00 PM – 6:00 PM
Tuesday – Friday .....................................7:00 AM – 6:00 PM
Saturday ................................................7:00 AM – 5:30 PM

Rental Cars
AAOS has negotiated special rates for rental cars during the meeting.
Car reservations can be made via CorpTrav, your travel agent, or direct with the rental car companies. Call the number below and mention the discount code listed.

Car Company  Meeting Code  Phone  Internet
Hertz  CV# 02KS0018  (800) 654-2240  www.hertz.com

Follow the AAOS Annual Meeting:
www.facebook.com/AAOSannual
www.twitter.com/AAOS2013
Resource Center
McCormick Place, Academy Hall B
Experience a hands-on showcase of Academy publications, e-books, digital media, and interactive multimedia programs that build your clinical skills and challenge your problem-solving aptitude. Stop by to experience the future of surgical skills training – a knee arthroscopy virtual reality simulator. Discover the Academy’s complete line of educational and practice management resources. Browse the Academy’s collection of educational materials or ask AAOS staff for assistance. Regardless of your practice profile, you’ll find something of interest at the AAOS Resource Center.

Instructional Course handout CDs and flash drives are available for purchase in the Resource Center.

Exhibit Hall Resource Center
McCormick Place, Hall A, Booth 1265
For your convenience, when you are in the Exhibit Hall, stop by the AAOS Exhibit Hall Resource Center located in Publishers’ Row.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Resource Center</th>
<th>Exhibit Hall Booth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday</td>
<td>8:00 AM – 6:00 PM</td>
<td>Closed</td>
</tr>
<tr>
<td>Wednesday – Thursday</td>
<td>7:00 AM – 6:00 PM</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>Friday</td>
<td>7:00 AM – 6:00 PM</td>
<td>9:00 AM – 4:00 PM</td>
</tr>
<tr>
<td>Saturday</td>
<td>7:00 AM – 5:30 PM</td>
<td>Closed</td>
</tr>
</tbody>
</table>

The Resource Center Theater
McCormick Place, Academy Hall B
Tuesday – Friday, 8:00 AM – 5:30 PM
View and participate in a variety of live and recorded programming unique to the 2013 Annual Meeting. Take advantage of this free opportunity to observe:

- Presentations by authors of many peer-reviewed videos demonstrated in the Orthopaedic Video Theater
- Explanation and preview of the upcoming ICD-10 transition
- How the AAOS Member Advantage Programs can improve your practice’s efficiency and revenue
- Tips and advice from the ABOS for Maintenance of Certification

The complete Resource Center Theater schedule is listed beginning on page 34.

Restaurant Reservations
McCormick Place, Academy Hall B
Dining experts with contacts to the city’s finest dining are providing this complimentary service.

- Hours of Operation:
  - Tuesday – Friday, 8:00 AM – 6:00 PM
  - Saturday, 8:00 AM – 1:00 PM

Ribbons
If you did not receive your participant/volunteer ribbon(s) in advance, please stop by the Ribbon Counter located in McCormick Place, Academy Hall B. Committee members and Board of Councilors will receive their ribbons from their liaisons.

Social Program
McCormick Place, Academy Hall B
Tour and seminar information is listed on page 32.

Specialty Day
Saturday, March 23, McCormick Place
Specialty Day is a day set aside for scientific programs presented by organizations that are members of the Board of Specialty Societies (BOS). Refer to the listing on page 37.

Taxi Service
Taxicabs are available on a first come, first serve basis from the lower level curb front of all airport terminals. Shared ride service is available. Expect to spend approximately $40 to $50 for a taxicab ride to downtown Chicago from O’Hare and $30 to $40 from Midway (depending on traffic).

Technical Exhibits
McCormick Place, Hall A
- Hours of Operation:
  - Wednesday – Thursday, 8:00 AM – 5:00 PM
  - Friday, 8:00 AM – 4:00 PM

Admission
Admission to the exhibit hall is by badge only. Individuals under the age of 16 are not permitted in the exhibit hall.

Ask an Expert Sessions
Hall A, Booth 465
Here’s an interactive opportunity for you to present a perplexing case to an expert in orthopaedics. Audience participation is encouraged to complement the exchange of ideas. Case review sessions will take place exclusively in Hall A, Booth 465. The schedule of topics and the expert leaders is listed on page 341.

- Hours of Operation:
  - Wednesday – Thursday, 9:30 AM – 4:15 PM
  - Friday, 9:30 AM – 3:15 PM

Beverage Breaks
Hall A, Booths 262, 3475, and 4604
Complimentary beverage stations will be provided in the exhibit hall each afternoon at 3:30 PM Wednesday and Thursday and on Friday morning at 10:00 AM.

Electronic Skills Pavilion – It’s Free!
Hall A, Booth 5236
Presentations that showcase current technology, products, and applications that are developed for the orthopaedic surgeon will take place in the Electronic Skills Pavilion. A schedule of the dates and times of presentations can be found on page 340, in the daily edition of AAOS Now and at Booth 5236.

- Hours of Operation:
  - Wednesday – Thursday, 9:30 AM – 4:15 PM
  - Friday, 9:30 AM – 3:15 PM

Exhibitor Directory Kiosk
Stop at an Exhibitor Directory kiosk located at the exhibit hall entrances to view a listing of all exhibitors, their contact and product information, and create and print your personal My Expo Plan.

Lead System
There’s no need to tote a bulging bag or cram papers in your suitcase when you leave. Simply present your badge to exhibitors whose literature you want to receive. After scanning the bar code, exhibitors will be able to mail materials directly to you after the meeting, enabling you to spend more time in face-to-face discussions with exhibitors.
NEW! Ice Cream Social
Booths 262, 3475, and 4604
Friday, 2:00 - 3:30 PM
Complimentary, make-your-own sundae or other treat. Your ticket to attend is in your on-site registration bag.

NEW! Photo Shoot
Create a memory of the AAOS 2013 Annual Meeting with a complimentary photo taken for you by a professional photographer against a backdrop of the AAOS logo in the exhibit hall on Friday from 10:00 AM to 2:00 PM.

Unopposed Exhibit Time
One hour of unopposed exhibit time will be provided each exhibit day from 12:30 to 1:30 PM.

You Are Here Floor Plan and Exhibitor Listing
To assist you in navigating the exhibit hall, pick up an updated floor plan and exhibitor listing at the You Are Here signs located in the lobbies and in the exhibit hall. These signs and maps are color coded to help you find your way around the exhibit hall.

Webcasting
View over 20 symposia webcasts as they are simulcast live from the Annual Meeting. Choose from a variety of topics addressing joint replacement procedures including shoulder, hip, and sports. Did you miss the live simulcasts? View the webcasts free anytime 24 hours after the start of the symposium during the Annual Meeting. Both the AAOS.org website and the Meeting App “AAOS Mobile Meeting Guide” provide access links for the webcasts for both meeting attendees and virtual participants. On April 1, they become available for purchase and download from the AAOS Website Store.

Wi-Fi
McCormick Place
Wireless Internet access – at no charge – will be available throughout the McCormick Place Lobbies, Meeting Rooms, Academy Hall B, and the Electronic Skills Pavilion.

Academy Executive Staff
Chief Executive Officer .......... Karen L. Hackett, FACHE, CAE
Chief Operating Officer/Chief Financial Officer ................. Richard J. Stewart, CPA, MBA
Chief Education Officer ..................... Constance M. Filling
General Counsel, Corporate Secretary ...... Richard N. Peterson, JD
Medical Director ....................... William R. Martin III, MD
Chief Technology Officer .............. William C. Bruce, MBA

Academy Senior Staff
Director, Convention and Meeting Services ...... Susan A. McSorley
Director, Electronic Media, Evaluation Programs, Course Operations and Practice Management..... Howard Mevis
Director, Facilities Management............... Joel A. Datz
Director, Finance........................................................Tina D. Slager
Director, Human Resources .......... Marita A. Powell, M.Ed., SPHR
Director, Information Services and Member Services & Customer Relations .......... James A. Ogle
Director, International.......................... Lynne Dowling
Director, Office of Government Relations ...... Graham Newson
Director, Public Relations..................... Sandra R. Gordon
Director, Publications......................... Hans J. Koelsch, PhD
Director, Research and Scientific Affairs .............. Deborah S. Cummins, PhD
Director, Society Relations .................. Jennifer Wolff Jones

Convention and Meeting Services Staff
On-site Area of Responsibility
Board of Directors ........................................ Kristy Glass
Education........... Kathie Niesen, CMP, April Holmes, Scottie Rangel
Exhibits.............. Patricia Whitaker, Kathy Fornelli, Jason Raymond
Headquarters Office ..................................... Sue Leicht
Housing and Shuttle................................. Anita Cooper, CMP
Operations.............................. Lynn Mondack, Jeri Busch
Registration ...................... Lynn Haase, Kierstin Noack
Social Program............................... Tara Long

EXPERIENCE
The very best in orthopaedic education, research, and technology

2014 Annual Meeting
March 11 – 15
New Orleans, LA

2015 Annual Meeting
March 24 – 28
Las Vegas, NV

All Academy members will automatically receive an Annual Meeting registration packet in mid-October.
The Social Program is open to all participants registered for the AAOS 2013 Annual Meeting and their families.

**Registration**
Visit us online at www.aaos.org/tours or on-site at McCormick Place, Academy Hall B to register for Social Program tours and seminars.

**Registration Hours:**
Monday .......................... 2:00 PM – 6:00 PM  
Tuesday-Friday ............... 7:00 AM – 6:00 PM  
Saturday .......................... 7:00 AM – 12:00 PM

**Badges and Tickets**
All pre-registered badges and tickets will be available for pick up on-site at the Social Program desk at McCormick Place starting Monday, March 18 at 2:00 PM. Badges and Tickets will not be mailed.

Stop by any time prior to your first tour. (See Social Program Desk hours above). You or your spouse will need to provide an ID and confirmation letter to pick up your badge and tickets.

Social Program registrants (categorized as “Spouse”) will receive a name badge. As a spouse you cannot purchase Instructional Course tickets and, no CME credits or verification of attendance will be issued to anyone registered in the “Spouse” category.

Co-workers and associates accompanying a registered attendee cannot register through the Social Program. They will need to go to on-site Registration.

Family badges will be available to non-medical spouses or immediate family onsite during registration hours. Family Badge counters will be located in Academy Hall B.

**Cancellations and Refunds**
You may cancel any website ticket purchase up until February 8, 2013. Refunds will not be given after this date.

Participant illness, changes in travel, inclement weather, and late arrival to the tour departure area are beyond the Academy’s control and will not be considered a reason for providing a refund.

**Ticket Resale**
Participants wishing to buy sold-out tickets or sell tickets are encouraged to use the Ticket Resale counter on-site at Social Program Registration.

**Attire**
Comfortable walking shoes and layered clothing are recommended for all tours. Tours will not be cancelled due to inclement weather, so please plan accordingly.

**Tours**
All Social Program tours will depart from McCormick Place.
Please plan to board the tour bus 15 minutes prior to the posted departure time on your ticket.

### Tuesday, March 19
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>My Kind of Town</td>
<td>$70</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Merchandise Mart</td>
<td>$90</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>Frank Lloyd Wright Home &amp; Studio</td>
<td>$95</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Jazz, Blues and Beyond</td>
<td>$90</td>
</tr>
<tr>
<td>11:30 AM</td>
<td>Taste of Chicago Tour</td>
<td>$165</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Planning for Life after Orthopaedics</td>
<td>$180</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Chicago Chocolate Tour</td>
<td>$130</td>
</tr>
</tbody>
</table>

### Wednesday, March 20
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>My Kind of Town</td>
<td>$70</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Tiffany Treasures</td>
<td>$80</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Identity Theft</td>
<td>$40</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>Journey Through the Gardens</td>
<td>$150</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>A “Slice” of Chicago</td>
<td>$125</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Canvas &amp; Cocktails</td>
<td>$155</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Wines Around the World</td>
<td>$150</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Chicago Distillery Tour</td>
<td>$90</td>
</tr>
</tbody>
</table>

### Thursday, March 21
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 AM</td>
<td>Frank Lloyd Wright Home &amp; Studio</td>
<td>$95</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Windy City Behind the Scenes</td>
<td>$90</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Poker, Politics and Prohibition</td>
<td>$55</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>Journey Through the Gardens</td>
<td>$150</td>
</tr>
<tr>
<td>11:30 AM</td>
<td>Hands-on Gourmet Cooking</td>
<td>$240</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Canvas &amp; Cocktails</td>
<td>$155</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Jazz, Blues and Beyond</td>
<td>$90</td>
</tr>
</tbody>
</table>

### Friday, March 22
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>Merchandise Mart</td>
<td>$90</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>“See the Light” Blues Brothers</td>
<td>$90</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Taste of Chicago Tour</td>
<td>$165</td>
</tr>
<tr>
<td>12:30 PM</td>
<td>A “Slice” of Chicago</td>
<td>$125</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Wines Around the World</td>
<td>$150</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>High Tea at the Drake</td>
<td>$125</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Chicago Chocolate Tour</td>
<td>$130</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Chicago Distillery Tour</td>
<td>$90</td>
</tr>
</tbody>
</table>

### Saturday, March 23
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>“See the Light” Blues Brothers</td>
<td>$90</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Behind the Ivy</td>
<td>$150</td>
</tr>
</tbody>
</table>
FIND IT at the
AAOS Resource Center
Your Source for Lifelong Orthopaedic Learning

Academy Programs
Publications
Surgical Video
Member Benefits
Web Resources
Practice Management
Resource Center Theater
MultiMedia
CME
Examinations
OrthoPortal
Expert Presentations
eBooks
Coding
ICL Handouts
Patient Education

The AAOS Resource Center
McCormick Place North, Academy Hall B

CONVENIENT HOURS
Tuesday 8:00 AM – 6:00 PM
Wednesday – Friday 7:00 AM – 6:00 PM
Saturday 7:00 AM – 5:30 PM

www.aaos.org/store

SAVE 10% ON ORDERS OF $300 OR MORE

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Saturday 7:00 AM – 5:30 PM

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SAVE 10% ON ORDERS OF $300 OR MORE
Resource Center Theater Schedule

McCormick Place, Academy Hall B

The Resource Center Theater will offer Annual Meeting participants the opportunity to view surgical demonstration videos and meet with authors, who will be available to answer questions regarding their area of interest and provide insights into their own techniques. Principal authors will share their views on why their topic is important to them and to the field of orthopaedics. Additionally, you will have the opportunity to learn about important issues, including Maintenance of Certification, ICD-10, and marketing your practice. AAOS resources—Orthoportal, ebooks, CodeX, Member Advantage Programs, and the Learning Portfolio—will be demonstrated throughout the week.

Tuesday, March 19

11:15 AM  See the Power of the X...Orthopaedic CodeX  
Howard Mevis, AAOS Director, Electronic Media, Evaluation Programs, Course Operations and Practice Management Group

11:45 AM  AAOS Learning Portfolio: Helping You Manage the MOC Process  
James Ogle, AAOS Director, Information Services

2:15 PM  Index Finger Ray Resection – Award Program  
Robert Orfaly, MD

3:15 PM  Treatment of Patellar Cartilage Defects with OATS System  
Rafael Calvo, MD, David Figueroa, MD, Paulina De La Fuente, MD, Alex Vaisman, MD

4:15 PM  Anatomic ACL Reconstruction All Comers  
Mark D. Miller, MD, Joseph Hart, PhD, ATC, Gregory Kurkis, Medical Student

5:15 PM  See the Power of the X...Orthopaedic CodeX  
Howard Mevis, AAOS Director, Electronic Media, Evaluation Programs, Course Operations and Practice Management Group

Wednesday, March 20

8:15 AM  Arthroscopic Technique for Biological Augmentation of AC Joint Instability  
Peter J. Millett, MD, MSc, Frank Martetschlager, MD

9:15 AM  Stoppa Approach for Removal of the Intrapelvic Cup for Acetabular Revision – Award Program  
Francisco Chana, MD, PhD, Manuel Villanueva, MD, PhD, José M. Rojo-Mañante, MD, PhD, María Pérez-Diaz, MD, José Fernandez-Marino, MD, PhD, Javier Vaquero-Martín, MD, PhD

10:15 AM  Surgical Technique For The Removal Of The Infected Primary TKA and 2nd Stage Revision  
Stephen J. Incavo, MD, Azim Karm, MD, Brian Dominques, BA

11:15 AM  See the Power of the X...Orthopaedic CodeX  
Howard Mevis, AAOS Director, Electronic Media, Evaluation Programs, Course Operations and Practice Management Group

11:45 AM  AAOS Learning Portfolio: Helping You Manage the MOC Process  
James Ogle, AAOS Director, Information Services

12:15 PM  Acetabular Retrograde Drilling: A New Arthroscopic Technique for the Treatment of Chondral Lesions in FAI  
Dante Parodi, MD, Javier Besomi, MD, Pablo Mococain-Mac Iver, MD, Carlos Tobar, MD, Juan Jose Valderrama, MD, Jaime Lopez, MD, Joaquin Lara, MD

1:15 PM  Making Sense of MOC  
Shepard R. Hurwitz, MD, ABOS Executive Director

1:45 PM  Saving Members $$$: AAOS Member Advantage Program  
Tom Grogan, MD, Chair, AAOS Practice Management Committee

2:15 PM  Midfoot Anatomy, Pathology and Physical Examination - Award Program  
Matthias Vanhees, MD, Saskia Van Bouwel, MD, François van Glabbeek, PhD, Geoffrey S. Vandeputte, MD

3:15 PM  Correction of Foot Deformities by Triple Arthrodesis  
Francesco Turturro, MD, Antonello Montanaro, MD, Luca Labianca, MD, Vincenzo Di Sanzo, MD, PhD, Cosma Calderaro, MD, Andrea Ferretti, MD

4:15 PM  Minimal Invasive, Navigated Implantation of a Total Knee Replacement  
Jean-Yves Jenny, MD

5:15 PM  AAOS OrthoPortal, E-books, and Patient Education  
Jane Baque, AAOS Senior Manager, Publications Websites

Thursday, March 21

8:15 AM  Evaluation and Management of a Young Athlete with Impingement: A Case-Based Approach  
Anil S. Ranawat, MD, Caroline Park, David deForest Keys, Bruno Kavanagh, Abraham Varghese, David Hook

9:15 AM  Instability After Total Knee Arthroplasty. Limits Of Constraint – Award Program  
Manuel Villanueva, MD, PhD, Francisco Chana, MD, PhD, Javier Pereiro, MD, Antonio Rios-Luna, MD, PhD, José M. Rojo-Mañante, MD, PhD, Felipe Benito Del Carmen, MD, Homid Fahandez-Saddi, MD, Antonio J. Perez-Caballer, MD

10:15 AM  Arthroscopic Treatment of Femoroacetabular Impingement: The Adult Hip 5  
Dean K. Matsuda, MD

11:15 AM  Preparing for ICD-10: Tips and Strategies  
David Cannon, MD, Member, AAOS Practice Management Committee

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<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
</tr>
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<tbody>
<tr>
<td>12:15 PM</td>
<td>Aseptic Both Bone Forearm Nonunion Treated by Plate and Opposite Allograft Strut – Award Program</td>
</tr>
<tr>
<td></td>
<td>Cesare Faldini, MD, Mohammadreza Chehrassan, MD, Matteo Nanni, MD, Maria Teresa Mischone, MD,</td>
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<tr>
<td></td>
<td>Michele D’Amato, MD, Raffaele Borghi, MD, Alberto Di Martino, MD, Alice Bondi, MD,</td>
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<tr>
<td></td>
<td>Costantino Errani, MD, Antonio Mazzotti, MD</td>
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<tr>
<td></td>
<td>Open Reduction in Missed Irreducible Congenital Dislocation Of The Hip – Award Program</td>
</tr>
<tr>
<td></td>
<td>Cesare Faldini, MD, Mohammadreza Chehrassan, MD, Francesco Traina, MD, Matteo Acri, MD,</td>
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<tr>
<td></td>
<td>Camilla Pungetti, MD, Daniele Fabbri, MD, Marcello De Fine, MD, Alberto Di Martino, MD, Alice</td>
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<td></td>
<td>Bondi, MD</td>
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<td></td>
<td>Minimally Invasive Technique for Curettage of Benign Bone Tumors using Endoscopic Technique</td>
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<td></td>
<td>Costantino Errani, MD, Mohammadreza Chehrassan, MD, Angelo Toscano, MD, Matteo Nanni, MD,</td>
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<tr>
<td></td>
<td>Alice Bondi, MD, Marcello De Fine, MD, Salvatore Calderone, MD, Francesco Traina, MD, Jennifer</td>
</tr>
<tr>
<td></td>
<td>Kreshak, MD, Cesare Faldini, MD</td>
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<tr>
<td>1:15 PM</td>
<td>Treatment Of Recurrent Anterior Glenohumeral Instability: J-plasty Procedure</td>
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<tr>
<td></td>
<td>Giacomo Marchi, MD, Celeste Bertone, MD, Dario Petriccioli, MD</td>
</tr>
<tr>
<td>2:15 PM</td>
<td>Patellar Tendon Augmentation with Hamstring Tendon Autograft</td>
</tr>
<tr>
<td></td>
<td>Laith M. Jazaie, MD, Gyu Maoz, MD, Bhavesh B. Joshi, DO, Ankit Bansal, BS, Abiola Atanda, MD,</td>
</tr>
<tr>
<td></td>
<td>Mathew Hamula, BA, BS</td>
</tr>
<tr>
<td>3:15 PM</td>
<td>Making Sense of MOC</td>
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<tr>
<td></td>
<td>Shepard R. Hurwitz, MD, ABOS Executive Director</td>
</tr>
<tr>
<td>4:15 PM</td>
<td>AAOS Learning Portfolio: Helping You Manage the MOC Process</td>
</tr>
<tr>
<td></td>
<td>James Ogle, AAOS Director, Information Services</td>
</tr>
<tr>
<td>5:15 PM</td>
<td>Technique For Removal of Structured Titanium Cementless Total Knee Replacement</td>
</tr>
<tr>
<td></td>
<td>Ira H. Kirschenbaum, MD, Pawel Hanulewicz, MD</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>Selective Exposures in Orthopaedic Surgery: The Knee 2nd Edition</td>
</tr>
<tr>
<td></td>
<td>Henry C. Clarke, MD</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>See the Power of the X...Orthopaedic CodeX</td>
</tr>
<tr>
<td></td>
<td>Howard Mevis, AAOS Director, Electronic Media, Evaluation Programs, Course Operations and</td>
</tr>
<tr>
<td></td>
<td>Practice Management Group</td>
</tr>
<tr>
<td>11:45 AM</td>
<td>Saving Members $$$: AAOS Member Advantage Program</td>
</tr>
<tr>
<td></td>
<td>Tom Grogan, MD, Chair, AAOS Practice Management Committee</td>
</tr>
<tr>
<td>12:15 PM</td>
<td>Biceps Tenodesis: Open Subpectoral and Arthroscopic Technique</td>
</tr>
<tr>
<td></td>
<td>Adam B. Yanke, MD, Peter N. Chalmers, MD, Anthony A. Romeo, MD, Nikhil N. Verma, MD</td>
</tr>
<tr>
<td>1:15 PM</td>
<td>Hip Capsulotomies Should be Routinely Repaired: A Demonstration of Arthroscopic Capsular Plication</td>
</tr>
<tr>
<td></td>
<td>Benjamin Domb, MD, Itamar Botser, MD, Anthony P. Trenga</td>
</tr>
<tr>
<td>2:15 PM</td>
<td>Making Sense of MOC</td>
</tr>
<tr>
<td></td>
<td>Shepard R. Hurwitz, MD, ABOS Executive Director</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>Marketing Your Practice with AAOS Public Relations Materials</td>
</tr>
<tr>
<td></td>
<td>Leon Benson, MD</td>
</tr>
<tr>
<td>3:15 PM</td>
<td>Five Minute Fifteen Point Diagnostic Arthroscopic Knee Exam</td>
</tr>
<tr>
<td></td>
<td>Randy R. Clark, MD, Mark H. Getelman, MD</td>
</tr>
<tr>
<td>4:15 PM</td>
<td>Total Knee Arthroplasty Utilizing Surgical Navigation with an Automated Robotic Cutting Guide</td>
</tr>
<tr>
<td></td>
<td>Louis Keppler, MD, Timothy McGlone, Dr. H.S. (hc)</td>
</tr>
<tr>
<td>5:15 PM</td>
<td>AAOS OrthoPortal, E-books, and Patient Education</td>
</tr>
<tr>
<td></td>
<td>Jane Baque, AAOS Senior Manager, Publications</td>
</tr>
</tbody>
</table>

**Friday March 22**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:15 AM</td>
<td>Safe and Accurate Utilization of Patient Specific Instrumentation in Total Knee Arthroplasty</td>
</tr>
<tr>
<td></td>
<td>Anay R. Patel, MD, Mark A. Yaffe, MD, Raju S. Ghate, MD, S. D. Stulberg, MD</td>
</tr>
<tr>
<td>9:15 AM</td>
<td>Reverse Total Shoulder Arthroplasty Technical Note and Results</td>
</tr>
<tr>
<td></td>
<td>Thomas W. Wright, MD, Gonzalo Samitier Solis, MD, Anne Struk, MED, MBA, ATC</td>
</tr>
<tr>
<td></td>
<td>ACL Anatomic Single Bundle Reconstruction Technical Note and Results</td>
</tr>
<tr>
<td></td>
<td>Michael W. Moser, MD, Gonzalo Samitier Solis, MD, Terese L. Chmielewski, PT, PhD, Trevor Lentz</td>
</tr>
</tbody>
</table>

© 2013 American Academy of Orthopaedic Surgeons
Help us welcome Canada as the Guest Nation for the Chicago meeting. Please stop by the Guest Nation exhibit located in Academy Hall B to learn about the accomplishments of the Canadian orthopaedic community.

Look for special activities that focus on issues facing our colleagues in Canada, including 10 special educational posters, a speech and video by the President of the Canadian Orthopaedic Association during the Opening Ceremony, and the following ICLs with special guest lecturers from Canada:

- ICL 144 - Legg Clave Perthes Disease: The Beginning and the End: Tuesday, 1:30PM - 3:30PM
- ICL 221 - Optimizing Patient Function After Total Hip Replacement: Wednesday 10:30AM - 12:30PM

Inaugurated in 2005, the AAOS Guest Nation program was established to foster greater recognition and awareness of the contributions made to the practice of Orthopaedics from the many nations of the world, and to further enhance the robust international flavor and excitement of the AAOS Annual Meeting. AAOS is honored to welcome Canada as the 2013 Guest Nation.

Visit the AAOS Physician Job Placement Center

If you are a doctor looking for a new practice opportunity or if you are expanding your orthopaedic staff, the Placement Service is designed to help you in your search.

Located in Academy Hall B

Convenient Hours:
Tuesday..............................................8:00 AM – 6:00 PM
Wednesday - Friday............................7:00 AM – 6:00 PM
Saturday.............................................7:00 AM – 5:30 PM

Browse or post openings on the job boards, meet with potential candidates and schedule on-site interviews.

Your search starts here

Your search for outstanding, qualified candidates can start at the AAOS Annual Meeting and continue throughout the entire year. Visit the online Job Placement Service at www.aaos.org/placement
SATURDAY, MARCH 23

Specialty Day is a day set aside for scientific programs presented by organizations that are members of the Board of Specialty Societies (BOS). Each society has its own educational program within the Specialty Day Program. The final programs for each society are available at the individual meeting rooms on Specialty Day.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Location</th>
<th>Time</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Orthopaedic Foot &amp; Ankle Society</td>
<td>McCormick Place, Lakeside, Room E450</td>
<td>7:00 AM – 5:05 PM</td>
<td>9 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>Arthroscopy Association of North America</td>
<td>McCormick Place, Lakeside, Room E354a</td>
<td>7:50 AM – 5:10 PM</td>
<td>5.75 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>American Orthopaedic Society for Sports Medicine</td>
<td>McCormick Place, Lakeside, Room E354b</td>
<td>7:30 AM – 5:10 PM</td>
<td>5.75 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>American Shoulder and Elbow Surgeons</td>
<td>McCormick Place, Lakeside, Room E353</td>
<td>7:25 AM – 5:00 PM</td>
<td>8 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>American Society for Surgery of the Hand/American Association for Hand Surgery</td>
<td>McCormick Place, Room S105</td>
<td>7:30 AM – 5:00 PM</td>
<td>8 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>The Hip Society/American Association of Hip and Knee Surgeons</td>
<td>McCormick Place, Room S100a</td>
<td>7:55 AM – 5:10 PM</td>
<td>7 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>The Knee Society/American Association of Hip and Knee Surgeons</td>
<td>McCormick Place, Room S100b</td>
<td>7:55 AM – 5:15 PM</td>
<td>7 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>Musculoskeletal Tumor Society</td>
<td>McCormick Place, Room S104</td>
<td>8:00 AM – 3:45 PM</td>
<td>7.5 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>Orthopaedic Trauma Association</td>
<td>McCormick Place, Lakeside, Room E451</td>
<td>7:30 AM – 5:05 PM</td>
<td>8 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>Pediatric Orthopaedic Society of North America</td>
<td>McCormick Place, Room S103b</td>
<td>8:00 AM – 4:45 PM</td>
<td>7 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>The Hip Society/American Association of Hip and Knee Surgeons</td>
<td>McCormick Place, Room S100a</td>
<td>7:55 AM – 5:10 PM</td>
<td>7 AMA PRA Category 1 Credits TM</td>
</tr>
<tr>
<td>AAOS Board of Specialty Societies</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• collaboration on issues</td>
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<td></td>
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<tr>
<td>• resolution through communications</td>
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<td></td>
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<tr>
<td>• unity among leaders</td>
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</table>

The Board of Specialty Societies (BOS) brings together the leaders of musculoskeletal specialty societies to address issues of mutual concern and to advise the Board of Directors of the AAOS. The BOS also provides opportunities for shared leadership, shared governance, organizational benchmarking, collaborative program development, and communications among member organizations.
The American Academy of Orthopaedic Surgeons gratefully acknowledges the following companies, organizations and individuals for their financial support of AAOS programs and projects throughout 2012 (as of 01/17/13).

### Diamond Level – $200,000 and up

<table>
<thead>
<tr>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>DePuy Synthes</td>
</tr>
<tr>
<td>Zimmer</td>
</tr>
</tbody>
</table>

### Platinum Level – $100,000-$199,999

<table>
<thead>
<tr>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alliance of Automobile Manufacturers</td>
</tr>
<tr>
<td>Medtronic</td>
</tr>
<tr>
<td>Biomet</td>
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<tr>
<td>Stryker</td>
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</tbody>
</table>

### Gold Level – $50,000-$99,999

<table>
<thead>
<tr>
<th>Company</th>
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<tbody>
<tr>
<td>Arthrex, Inc.</td>
</tr>
<tr>
<td>Baxter Healthcare Corporation</td>
</tr>
<tr>
<td>Lilly USA, LLC</td>
</tr>
<tr>
<td>OrthoPediatrics</td>
</tr>
<tr>
<td>Smith &amp; Nephew Inc.</td>
</tr>
<tr>
<td>Synthes Trauma</td>
</tr>
</tbody>
</table>

### Silver Level – $10,000-$49,999

<table>
<thead>
<tr>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M Health Care</td>
</tr>
<tr>
<td>American Association of Hip and Knee Surgeons</td>
</tr>
<tr>
<td>Arthroscopy Association of North America</td>
</tr>
<tr>
<td>Auxilium Pharmaceuticals, Inc.</td>
</tr>
<tr>
<td>Biomet Spine and Bone Healing Technologies</td>
</tr>
<tr>
<td>Biomet Trauma</td>
</tr>
<tr>
<td>Compulink Business Systems, Inc.</td>
</tr>
<tr>
<td>DePuy Synthes Spine</td>
</tr>
<tr>
<td>DJO Global</td>
</tr>
<tr>
<td>Elsevier</td>
</tr>
<tr>
<td>Foundation for Orthopaedic Trauma</td>
</tr>
<tr>
<td>Illinois Bone &amp; Joint Institute</td>
</tr>
<tr>
<td>Integra</td>
</tr>
<tr>
<td>K2M, Inc.</td>
</tr>
<tr>
<td>KCI</td>
</tr>
<tr>
<td>Midwest Orthopaedics at Rush</td>
</tr>
<tr>
<td>National Institute of Arthritis and Musculoskeletal and Skin Diseases</td>
</tr>
<tr>
<td>NYUHJD</td>
</tr>
<tr>
<td>Orthofix</td>
</tr>
<tr>
<td>Orthopaedic Research Society</td>
</tr>
<tr>
<td>Orthopaedic Trauma Association</td>
</tr>
<tr>
<td>Pediatric Orthopaedic Society of North America</td>
</tr>
<tr>
<td>Pega Medical, Inc.</td>
</tr>
<tr>
<td>RTI Biologics, Inc.</td>
</tr>
<tr>
<td>Scoliosis Research Society</td>
</tr>
<tr>
<td>Shriners Hospitals for Children</td>
</tr>
<tr>
<td>Sociedade Brasileira de Ortopedia e Traumatologia</td>
</tr>
<tr>
<td>Sociedad Española de Cirugía Ortopédica y Traumatología</td>
</tr>
<tr>
<td>Société Internationale de Chirurgie</td>
</tr>
<tr>
<td>Orthopédique et de Traumatologie (SICOT)</td>
</tr>
<tr>
<td>SRSsoft</td>
</tr>
<tr>
<td>Stryker Spine</td>
</tr>
<tr>
<td>United Health Foundation</td>
</tr>
</tbody>
</table>
Bronze Level – $1,000-$9,999

Acumed
Aesculap Implant Systems
Alexandra’s Playground
American Association of Orthopaedic Executives
American Orthopaedic Foot & Ankle Society
American Orthopaedic Society for Sports Medicine
American Shoulder and Elbow Surgeons
American Society for Surgery of the Hand
American Society of Orthopaedic Physician Assistants
American Spinal Injury Association
Amniox Medical
Association of Residency Coordinators in Orthopaedic Surgery
Bonutti Technologies
Endo Pharmaceuticals
Ferring Pharmaceuticals, Inc.
Foundation of Orthopaedics and Complex Spine
Greatbatch Medical
Hamill Family Foundation
HangItUp Chicago, LLC
Dr. Stuart and Lisa Hirsch
Dr. Stephen and Sonny Hurst
Journal of Bone and Joint Surgery (Am)
J. Robert Gladden Orthopaedic Society
Dr. Frank and Lawson Kelly
Limb Lengthening and Reconstruction Society
Mayo Clinic, Rochester, MN
National Association of Orthopaedic Nurses
Newton-Wellesley Hospital
Orchid Orthopedic Solutions
Orthopaedic Nurses Certification Board
Orthopedic Specialists of North America
Paragon Medical
Permanente Medical Group
Purdue Pharma, L. P.
Rush University Medical Center
Ruth Jackson Orthopaedic Society
Stetson Powell Orthopaedics and Sports Medicine
Symmetry Medical

Thanks for your support

The Academy would also like to thank the following companies for their support for its 2012 Skills Courses, international activities and 2013 Annual Meeting Surgical Skills Courses by providing essential equipment and supplies:

Accu-Line Products
Acumed
Arthrex, Inc.
ArthroCare
Arthrosurface
Biomet
Buxton Biomedical
Cayenne Medical, Inc.
ConMed Linvatec
DePuy Synthes
DePuy Synthes Mitek Sports Medicine
DJO Global, Inc.
Exactech
FluoroScan Imaging Systems
Hologic
Innomed
Institute for Global Orthopaedics & Traumatology
Intec Industries
Integra
Kinamed, Inc.
Life Instruments
Medtronic
Mölnlycke Healthcare
Musculoskeletal Transplant Foundation
NuVasive
OrthoPediatics
Orthosonics
Pediatric Orthopaedic Society of North America
RTI Biologics
Sawbones/Pacific Research
Simbionix
Sloan Medical
Small Bone Innovations, Inc.
Smith & Nephew, Inc.
Stelkast
Stryker
Synthes
Synthes Spine
Thanh An - Ha Noi, Co., Ltd.
Tornier
TriMed, Inc.
Wright Medical Technology
Zimmer
Contribute to the advancement of orthopaedic science and practice

Share your research with orthopaedic surgeons from around the world at the 2014 Annual Meeting. Nowhere else will your discoveries reach such a wide-ranging orthopaedic audience.

Submissions open April 1, 2013. Watch for announcements!

Submit full-page abstracts, attach images, and more! Present your research to its best advantage on our user-friendly website.

ATTENTION SUBMITTERS:

Submissions due June 1, 2013

All presenters and co-authors must disclose financial relationships in the AAOS Orthopaedic Disclosure Program. The disclosure must be entered or updated as of April 1, 2013. Abstracts will not be graded without all disclosures.

2014 Annual Meeting
March 11 - 15
New Orleans, LA
Educational Programs
Annual Meeting Education

The 2013 Annual Meeting features a variety of educational sessions including Symposia, Instructional Courses, Surgical Skills Courses, Papers and Posters, Scientific Exhibits and an Orthopaedic Video Theater (formerly MME).

Symposia are two hours in length, meant for cutting edge, controversial, new or innovative topics. Some feature debates with a diverse faculty. It is important that symposia be well balanced and feature a blend of differing techniques, styles or management.

Instructional Courses range from two to five hours in length featuring internationally known faculty. The courses are added, expanded, revised or dropped on the basis of evaluations completed by the previous registrants of the courses. The information presented in Instructional Course Lectures represents accepted principles and techniques as well as new evidence based practices. They often present the pitfalls of a specific procedure and contain pearls that you can take home to your practice.

Surgical Skills Courses are three hours in length. These courses feature lectures followed by intensive saw bone model labs. Faculty and registrant interaction is a highlight of these courses.

The Orthopaedic Review Course is an all day course featuring a review of the current knowledge on the diagnosis and management of clinical orthopaedic problems from a nationally accepted practice perspective. The course outline and faculty are listed on page 52.

Paper Presentations are six minutes grouped in a series of three followed by floor discussion. Our skilled moderators provide attendees with opportunities to ask questions for a more interactive learning experience.

Posters provide a unique opportunity for self study featuring the latest in scientific research. The Poster presenter or co-authors will be at their poster daily from 11:30 AM – 12:30 PM to discuss their research and answer your questions. Special focus posters by the Orthopaedic Research Society, Board of Specialty Societies, Allied Health Posters, Nth Dimensions and Guest Nation. The posters are located in McCormick Place, Academy Hall B. Posters are grouped in the following classifications:

- Adult Hip Reconstruction ........................................ P001-P110
- Adult Knee Reconstruction ...................................... P111-P205
- Foot and Ankle .................................................. P206-P225
- Hand and Wrist .................................................. P226-P240
- Pediatrics .......................................................... P241-P260
- Practice Management .......................................... P261-P285
- Shoulder and Elbow ........................................... P286-P345
- Spine ................................................................. P346-P405
- Sports Medicine and Arthroscopy ................................ P406-P465
- Trauma ............................................................... P466-P525
- Tumor and Metabolic Bone Disease .......................... P526-P545
- Orthopaedic Research Society ................................ P546-P562
- Guest Nation ...................................................... P563-P572
- BOS Posters ........................................................ P573-P575
- Allied Health ...................................................... P576-P579
- Nth Dimensions ..................................................... P580

Central Program Committee Chair will select the overall best poster of the 2013 Annual Meeting.

Scientific Exhibit format is used to graphically illustrate a study or a complex procedure. It differentiates itself from a poster presentation in the amount of material that is presented and uses audiovisual, interactive demonstration, or some other type of enhancement in its presentation. The authors of the exhibits are requested to be present Wednesday through Friday between 11:30 AM and 12:30 PM to discuss their ideas and presentation. Schedule your time to visit them when the author is present and can discuss the exhibit with you. Allow 10-15 minutes for the exhibits you are most interested in so that the author has time to properly discuss his or her presentation.

Scientific Exhibits have been grouped in the following categories:

- Adult Reconstruction Hip ....................................... SE01-SE14
- Adult Reconstruction Knee .................................... SE15-SE31
- Basic Research ................................................ SE32-SE35
- Foot and Ankle ................................................ SE36-SE38
- Hand and Wrist ................................................ SE39-SE40
- Pediatrics ........................................................ SE41-SE44
- Practice Management ......................................... SE45-SE50
- Shoulder and Elbow .......................................... SE51-SE58
- Spine ................................................................. SE59-SE62
- Sports Medicine and Arthroscopy ................................ SE63-SE78
- Trauma ............................................................ SE79-SE86
- Tumor and Metabolic Bone Disease ....................... SE87-SE88

AAOS Committee Scientific Exhibits:
- Biomedical Engineering Committee – SE88
- Ethics Committee - SE50
- Evidence-Based Practice Committee – SE48
- Extremity War Injuries & Disaster Preparedness Project—SE86
- Medical Liability Committee – SE49
- Patient Safety Committee – SE54
- Research and Development Committee – SE07
- Women’s Health Issues Advisory Board – SE74

BOS Scientific Exhibits:
- Hip Society – SE05
- Knee Society – SE18
- Limb Lengthening and Reconstruction Society – SE41
- Musculoskeletal Tumor Society – SE87
- Orthopaedic Trauma Association – SE79
- Pediatric Orthopaedic Society of North America – SE41
- Scoliosis Research Society – SE59

New! iPosters and iScientific Exhibits

iPosters and iScientific Exhibits provide audio for many of the Posters and Scientific Exhibits at the Annual Meeting. The audio will be a narrative of the exhibit recorded by the presenter and offered on playback by Smartphone and tablets as the attendee views the exhibit. A blog will allow viewers to question the authors creating an ongoing dialog. This area will feature a workstations with PCs where attendees can view the iPosters and iScientific Exhibits, hear the audio and also decide whether or not to view the actual exhibit.

Orthopaedic Video Theater presents peer reviewed videos and media programs developed and produced by your colleagues. Here you are able to observe and study the very latest in orthopaedic surgical technique. Discover leading edge devices
as well as new techniques and technologies in a wide range of orthopaedic specialties. Strengthen your knowledge of surgical anatomy, exposures, treatments, and more.

Also, make plans to attend the Resource Center Theater, an intimate setting where you can meet video authors, view programs as part of the live audience, and participate in question and answer sessions.

A complete listing of the Orthopaedic Video Theater programs is listed beginning on page 203.

Award Programs ............................................. Stations 01-04
Adult Reconstruction Hip ............................. Stations 05-07
Adult Reconstruction Knee ............................ Stations 08-10
Foot and Ankle .............................................. Stations 11
Hand and Wrist ........................................... Stations 12
Pediatrics .................................................... Stations 13
Shoulder and Elbow ..................................... Stations 14-19
Sports Medicine and Arthroscopy ................... Stations 20-29
Trauma .................................................... Station 30
Tumors and Metabolic Bone Disease .............. Station 31

In addition, five self-service stations are available for you to view any Orthopaedic Video Theater title online.

Academy Hall B features the Poster Exhibits, the Scientific Exhibits and the Orthopaedic Video Theater in addition to the Resource Center and Job Placement Center. Academy Hall features extended hours so you can visit before other educational events.

Hours of Operation:
Tuesday ............................................. 8:00 AM – 6:00 PM
Wednesday - Friday ............................... 7:00 AM – 6:00 PM
Saturday ............................................ 7:00 AM – 5:30 PM

Best of AAOS Symposium
Friday, March 22 at 1:30 PM, McCormick Place Room S406
Annunziato Amendola, MD and Brian J. Cole, MD, Moderators
The Best of the AAOS will feature a synopsis of the best papers and posters from each of the 11 classifications that represent Annual Meeting education. Members of the Program Committees will present the best 3 to 5 “shouldn’t be missed” studies presented at the 2013 Annual Meeting. Best of AAOS Symposium provides attendees with an opportunity to maximize their Academy experience.

AAOS/ORS Combined Symposia
Two symposia will combine AAOS and ORS topics of interest, both will be presented on Tuesday, March 19 at McCormick Place, Room S105 a,b,c,d. The combined symposia are:
• AAOS/ORS I: Translational Research in Orthopaedics: Structure Bone Allograft from Benchtop to Bedside at 1:30-3:30 PM, moderated by Robert A. Hart, MD
• AAOS/ORSII: Cell Based Strategies for Regenerating Musculoskeletal Tissues at 4:00-6:00 PM, moderated by Stuart B. Goodman, MD and Lynne C. Jones PhD.

General Education Information
An Audience Response System will be featured in several courses and symposia. This system provides the faculty and attendee with a unique opportunity to interact, enhancing the learning experience. Audience Response sessions are noted by \( \in \) in the program book.

Symposia and Instructional Courses noted with the logo of a Board of Orthopaedic Specialty Society are co-branded by that society and AAOS.

Over 5,500 abstracts were submitted for presentation at the 2013 Annual Meeting. Out of those, the Program Committee selected the best for presentation in 830 paper presentations and 580 poster presentations.

Applications for symposia and Instructional Courses were evaluated and rated by the Central Program and Central Instructional Course Committees. Countless hours were spent reviewing and rating these applications resulting in the excellent curriculum featured at the Annual Meeting.

Each Symposium and Instructional Course will have an evaluation form, your critical and constructive assessment of each session is essential for us to maintain the high standards that create the Annual Meeting. Please complete the evaluation in written or smartphone format for each session you attend. The evaluations are reviewed by the committees and are used to determine the curriculum that helps us maintain the high standards expected by those attending the Annual Meeting.

The Central Program Committee and Central Instructional Course Committee are very appreciative of the efforts extended by those who submitted abstracts and applications and congratulates them on the high quality submitted for the 2013 Annual Meeting. They are also grateful for the assistance of the Program and Instructional Course Committees in developing an excellent educational curriculum. Finally we thank the faculty, instructors, moderators, and paper and poster presenters and co-authors for their efforts in presenting an excellent educational program. Their willingness to share their research and knowledge are gratefully acknowledged by all who attend the Annual Meeting.

Instructional Course Ticket Fees
For those who have not registered and purchased their tickets in advance, available tickets may be purchased when registering onsite.

The following fee is applied:
Instructional Course Lecture (2 hours) ...................... $70.00
Instructional Course Lecture (3 hours) ...................... $80.00
U.S. Orthopaedic Resident (2 or 3 hours) .................. $25.00
Surgical Skills Course (3 hours) ............................ $399.00
Surgical Skills Course (8SK) ............................... $299.00
Orthopaedic Review Course ............................... $400.00
Orthopaedic Review Course (U.S. Orthopaedic Residents) ................ $160.00
ICL 187 .......................................................... $180.00

Persons who have registered in advance but wish to exchange a ticket may do so as long as neither course has taken place. Persons exchanging tickets must pay the difference between the advance registration ticket fee and the increased on-site fee.

Presentation of Fraudulent Research
The Program Committee makes every attempt to ensure that the research activities and findings presented in the scientific program are genuine and valid. It should be understood, however, that it is not possible to vet each and every study that is presented during
the Annual Meeting. The abstracts of presentations submitted for grading are rated by qualified and expert graders. In some instances the paper presentation or poster may not reflect its related abstract submitted six months earlier. The Program Committee considers these instances to be errors in the presenters’ judgment when they occur. Presentation of fraudulent research violates the AAOS Standards of Professionalism on Research and Academic Responsibilities. If you feel you have witnessed a knowingly fraudulent presentation, please address your concern to a member of the Program Committee or Academy staff. The Program Committee will review the matter and may determine to bar the submission of future abstracts from the speaker(s) and/or to publish a retraction of the abstract in AAOS Now or other AAOS publications or communications. If there is a sufficient ground, any AAOS member may also file a grievance with the AAOS Professional Compliance Program. Based upon review of the Committee on Professionalism and as applicable the Judiciary Committee, the AAOS Board of Directors may determine to issue a letter of concern, censure, suspend or expel the Fellow or Member who presented the fraudulent research.

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AAOS Videotaping
The Academy is videotaping certain portions of the Annual Meeting. The tapes will be used for educational purposes and/or may be sold alone or in connection with other AAOS products. Please note that by attending the Annual Meeting, your image and/or voice may be captured and included as part of this event.

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Amer J. Mirza, MD, Portland, OR
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Tumor and Metabolic Disease
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Disaster Response Course
Developed by SOMOS
Co-sponsored by AAOS, OTA, and POSNA
Course Director: COL Tad L. Gerlinger, MD
Course Co-Directors: COL (Ret) Theodore W. Parsons, III, MD and Christopher T. Born, MD
Monday, March 18 – Tuesday, March 19
Orthopaedic Learning Center, Rosemont, IL

This hands-on skills course is the central training element for AAOS Fellows to be included in the AAOS Disaster Responder Database. This course covers the application of orthopaedic care techniques critical to disaster-inflicted injuries and treating the wounded in austere environments. Get the important training you need for personal and team preparation to effectively handle the physical, emotional, and care management skills for treating the injured in areas affected by catastrophic events. Day one of lectures is followed by a half-day in the cadaveric skills lab. This course is not part of the AAOS Annual Meeting registration form.

To register for course #6808CHI, please contact AAOS Customer Service at (800)626-6726.

American Joint Replacement Registry
Informational Session
Moderators: David G. Lewallen, MD and William J. Maloney, MD
Wednesday, March 20, 9:00 – 11:00 AM
McCormick Place, Room S405

This informational session is intended for orthopaedic surgeons, hospital executives, and nursing staff to learn from and interact with leaders of the American Joint Replacement Registry (AJRR). The AJRR was founded in 2009 as a national, independent, not for-profit organization. The primary goal of AJRR is to optimize patient outcomes through the collection of Level I data on all primary and revision total hip and knee replacement procedures in the U.S., Level I data includes patient, surgeon and hospital identifiers along with procedural and implant information. Research has shown that Level I registry data have the potential to reduce patient morbidity and mortality; improve patient safety and quality; and provide an early warning system for early implant failure.

Over the course of 2012-2013, significant gains have been made in developing and implementing this national effort. The AJRR is expanding efforts across the country, with over 120 hospitals currently participating and over 34,000 procedures in the database. Existing data proves comparable to other regional and international registries in terms of demographic and procedural frequencies and distributions. Session participants will learn how the AJRR has developed and operates to provide benefits to all involved in arthroplasty care, including orthopaedic surgeons and hospitals. AJRR will also be expanding to collect Level II and Level III data in 2013 to enable capture of co-morbidities and complications for risk adjustment of procedural data along with patient reported outcomes. This informational session is intended for orthopaedic surgeons specializing in joint replacement (but all members are welcome to attend), as well as hospital executives, and nursing/OR staff.

Forum for Young Orthopaedic Surgeons with the American Board of Orthopaedic Surgery
Thursday, March 21, 10:30 AM – 12:30 PM
McCormick Place, Room S101b

This free annual forum provides senior residents and new practitioners a unique opportunity to meet informally with the Executive Director of the American Board of Orthopaedic Surgery (ABOS). He will provide you with insightful information about Board requirements and procedures. This special program is a “must attend” as it will answer your questions about this important step in your career. If you are looking at ABOS Part 1 or Part 2 of the exam in the near future, you should not miss it!

Media Training
From Insights to Sound bites: Your Orthopaedic Expertise and the News Media
#701: Friday, March 22, 8:00 AM – 12:00 PM
#702: Friday, March 22, 1:30 PM – 5:30 PM
McCormick Place, Room N139

Feel more confident, make the most of every media encounter and gain an understanding of how the news media works in this training.

You’ll learn the keys to a successful interview, including how to:
- Create clear and unambiguous key messages and sound bites
- Take control of an interview
- Bridge from an irrelevant question to your message
- Speak in English, not “doctor-ese”
- Use appropriate gestures and body language

This session is offered complimentary on a first-come, first-served basis to active AAOS Fellows, Resident Members, and Emeritus Fellows. Registration is required. Please see the AAOS registration form.

R. Dale Blasier, MD, Bernard A. Pfeifer, MD, Frank R. Voss, MD
Moderator: John P. Heiner, MD
Friday, March 22, 10:30 AM – 12:30 PM
McCormick Place, Room S402b

To provide an introduction of the Medicare Physician Fee Schedule and the RUC survey and review process that support the fee schedule. In addition, it will give members a chance to complete a sample practice survey and to sign up to be a regular contributor to AAOS reimbursement efforts.
The Basics of Coding, #150, is for those who are starting practice shortly or who have only been in practice a few years. The Top 10 Coding Errors, #153, is for those Orthopaedic Surgeons who have been in practice more than two years. Both courses are free of charge.

**Basics of Coding for Starting Your Practice #150**
Tuesday, March 19, 8:00 – 11:00 AM
McCormick Place, Lakeside, Room E354a

You don’t want to miss this fast-paced course introducing the most important coding topics to orthopaedic residents. Margaret Maley from KarenZupko & Associates brings energy and humor to this topic critical to orthopaedic practice management. By the end of the course you will:

- Define a New Patient Visit vs. an Established Patient Visit
- Understand Relative Value Units (RVU’s) are used to calculate your reimbursement or bonus if you are an employed physician
- Know how procedures are discounted by payors and how arthroscopic procedures are discounted differently
- Describe how modifiers protect reimbursement
- Understand what is included in the global surgical package

Join us for this complimentary workshop that will be so important to your career!

**Practice Management Symposium for Orthopaedic Residents #151**
Tuesday, March 19, 12:00 – 5:30 PM (Lunch at 11:30 AM)
McCormick Place, Lakeside, Room E354a

The American Academy of Orthopaedic Surgeons is pleased to present a complimentary half-day symposium on practice management designed especially for orthopaedic residents.

Selected speakers will present practical information on the legal and business aspects for orthopaedics. The program will be especially beneficial for fourth- and fifth-year residents, but all residents are welcome.

Topics covered during the symposium include evaluating practice opportunities, building a successful practice, contract negotiation and risk management and features a discussion on the ABOS and what the future is the topic of how to avoid ethical disasters in the first five years. Best of all, this Symposium is complimentary to all US residents!

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<th>Time</th>
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<tr>
<td>12:00 PM</td>
<td>Welcome</td>
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<td>Adolph J. Yates, Jr, MD, Symposium Chair</td>
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<td>Frederick M. Azar, MD, Second Vice President</td>
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<td>Stuart L. Weinstein, MD, PAC representative</td>
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<td>Evaluating Practice Opportunities</td>
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<td>12:40 PM</td>
<td>Avoiding Ethical Disasters in the First Five Years</td>
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<td>Charles Carroll, IV, MD</td>
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<td>Kenneth C. Thomas, MD</td>
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<td>Mark A. Yaffee, MD</td>
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<td>Negotiating a Contract</td>
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<td>Steve M. Harris, JD</td>
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<td>2:30 PM</td>
<td>Break</td>
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<td>2:45 PM</td>
<td>Risk Management</td>
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<td>Michael J. Rogal, MD, JD</td>
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**Practice Management Symposium for Practicing Orthopaedic Surgeons #152**
Tuesday, March 19, 9:00 AM-5:00 PM
McCormick Place, Room S102

Don’t miss this dynamic, educational event! Course Directors, Craig R. Mahoney, MD and Douglas R. Turgeon, MD: “Dollars and Sense 2013 – Take Control of Your Finances and Your Future” as a deeper dive into the top four topics attendees want to learn more about:

- financial stability
- bundled payments & negotiating strategies
- billing and collections strategies
- marketing and promotion strategies

Regardless of your practice model, all orthopaedic surgeons will be able to take advantage of useful information and effective techniques to be profitable and financially healthy. It’s your bottom line...improve it!

Symposium faculty will present practical tips and provide tools to simplify and clarify the activities of managing your practice. This one-of-a-kind opportunity to take control of your practice’s finances and your future will feature an interactive town hall discussion focusing on topics of critical importance to orthopaedic surgeons.

Register Now! Learn from our nationally recognized experts. Highlights include:

- John Cherf, MD, MPH, MBA explaining the implications of current and proposed legislation, changes in payment mechanisms
- Ian Alexander, MD & Louis McIntyre, MD discussing the trends in physician employment and the benefits and pitfalls of hospital employment versus private practice – learn why you need to consider the second contract while negotiating the first one!
- Michael McCaslin (SomersetCPAs) teaching you how to identify the key warning signs that your practice might be in trouble – and what to do about it.
- William Champion (Orthopaedic Marketing Group) showing you how to develop an effective marketing program to attract and retain patients
- Larry Elisco, CPA (Weltman Bernfield, LLC) discussing how to effectively evaluate your practice on a daily, weekly and monthly basis – know the metrics that help you analyze critical aspects of your practice
- Karen Zupko (Karen Zupko & Associates) helping you understand why the surgeon’s participation in the third-party payment process is critical to the bottom line – and evaluating your systems for ICD – 10 readiness.
The Top 10 Coding Errors Made by Practicing Orthopaedic Surgeons #135
Tuesday, March 19, 1:30 – 4:30 PM
McCormick Place, Room N228
Margaret Maley from KarenZupko & Associates brings logic and laughs to this workshop addressing frequent and costly reporting errors made by orthopaedic surgeons. At the conclusion of this course you will:
• Properly report services for a patient in the Emergency Room
• Document what Medicare requires to justify the medical necessity of a total joint replacement
• Confidentiality report meniscectomy and removal of a loose body
• Know how to document an E&M service and fracture care correctly
• Define the common use of the modifier 59 in knee and shoulder surgery
• Report a consultation on a Medicare patient
This and much more will be packed into this course specifically designed for practicing orthopaedic surgeons.

Community Orthopaedist Workshop #154
Tuesday, March 19, 1:30 – 5:30 PM
McCormick Place, Room N227b
The Community Orthopaedist Workshop is being designed specifically for the orthopaedic surgeon who handles a variety of conditions, whether in the emergency room or in their office. The session will educate the physician on current “best-practices” for commonly encountered orthopaedic conditions, along with sessions devoted to organizational issues associated with a general orthopaedic practice. AAOS offers this session as a complimentary workshop.

Objectives
1. Instruct the community orthopaedist on frequently seen orthopaedic conditions
2. Address organizational and administrative issues related to community orthopaedic practice
3. Inform individual orthopaedists on the basics of Maintenance of Board Certification

1:30 PM Adult Reconstruction Hip – Daniel J. Berry, MD
1:55 PM Cost Effectiveness – John R. Tongue, MD
2:15 PM Adult Reconstruction Knee – Thomas K. Fehring, MD
2:40 PM Break
3:00 PM Trauma – Paul Tornetta, MD
3:25 PM Maintenance of Certification – Shepard R. Hurwitz, MD
3:55 PM Sports/ACL – Annunziato Amendola, MD
4:20 PM AAOS Resources – Thomas J. Grogan, MD
4:45 PM Shoulder and Elbow – Ken Yamaguchi, MD
5:10 PM Question and Answer
Upon adjourning, AAOS staff members will be available to discuss AAOS Resources including build your own website, CME Courses, membership, media training, learning portfolio, orthoportal.

Review Courses
Tuesday, March 19, 8:00 – 11:00 AM
The following three hour review courses are intended to assist those who need general review or are preparing for maintenance of certification. These courses will be followed by a special optional Maintenance of Certification primer from 11:15 AM – 12:30 PM. Anyone who purchased a ticket for one of the Review Courses below are invited to attend the complimentary Maintenance of Certification session.

181 Trauma Review Course
McCormick Place, Room N228
Moderator: Paul Tornetta, III, MD
• Review recent state of the art management of common fractures as well as future directions and evolving treatments.

182 Shoulder and Elbow Review Course
McCormick Place, Room S501
Moderator: Robert M. Orfaly, MD
• The diagnosis and treatment options for common adult shoulder and elbow conditions are reviewed as well as recent advances and changes in standard of care.

183 Spine Review Course
McCormick Place, Lakeside, Room E350
Moderator: Thomas J. Errico, MD
• Updates on cervical degenerative spine surgery; thoracic and lumbar degenerative spine surgery; spinal trauma surgery and adult spinal deformity surgery.

184 Sports Medicine Review Course
McCormick Place, Room S405
Moderator: Bruce S. Miller, MD, MS
• This course is a primer for the upcoming Sports Medicine Subspecialty Certification Examination. This three hour session will highlight sports injuries of the shoulder and knee and medical topics in sports medicine.

185 Hand and Wrist Review Course
McCormick Place, Lakeside, Room E351
Moderator: Martin A. Posner, MD
• Those hand and wrist problems that are generally the focus of certifying examinations will be discussed including pertinent anatomy, pathophysiology, clinical and imaging findings and treatment.

Maintenance of Certification: The Basics
Tuesday, March 19, 11:15 AM – 12:30 PM
McCormick Place, Room S105
Sherpard R. Hurwitz, MD
Joseph A. Bosco, MD, Moderator
Cover strategies important to taking a multiple choice test and provide details on taking a computerized examination. This session will cover information that you need to know for Maintenance of Certification. This session will feature a look at the AAOS Learning Portfolio, designed to assist you in Maintenance of Certification. This session is complimentary for anyone who attended ICL 181-185.
Faculty Development Sessions

These sessions are for anyone who would like to further define or develop their presentation skills and create an environment beneficial to learning. The sessions are interactive and attendees are encouraged to bring their laptop. They are offered at no charge and are on a first come, first served basis.

Faculty Development Course 1: Getting Your Great Ideas Supported - Effective Techniques for Women in Orthopaedics

Wednesday, March 20, 8:00 – 9:00 AM
McCormick Place, Room N227a
Mary I. O’Connor, MD, Jacksonville, FL, Moderator

Understand the information which different types of people want in order to support your proposals; how to achieve buy-in and counter efforts to sink your next great idea. We will also discuss perceptions of women leaders as well as corresponding tactics for you to counter negative bias and improve your effectiveness.

Faculty Development Course 2: Video Production for Orthopaedic Surgeons: Getting the Award, Making the Difference

Wednesday, March 20, 1:30 – 3:30 PM
McCormick Place, Room N227a
Kevin D. Plancher, MD, MS, New York, NY, Moderator
Cesare Faldini, MD, Bologna, Italy
Thomas G. Sampson, MD, San Francisco, CA

Video is one of orthopaedic education’s most widely used instructional tools. This workshop will teach you how to critically evaluate the orthopaedic technique videos you watch, and how to create award-winning orthopaedic videos of your own.

Faculty Development Course 3: Cliff Notes on Clinical Research: What You Need to Get Started

Thursday, March 21, 8:00 – 10:00 AM
McCormick Place, Room N227a
John W. Sperling, MD, MBA, Rochester, MN, Moderator
Leesa M. Galatz, MD, St. Louis, MO
Bruce S. Miller, MD, Ann Arbor, MI

Understand the scientific method and be able to design and complete a clinical research project. Formulate a clinically relevant hypothesis, perform a power analysis, collect and analyze data. Determine when the results are worthy of submission as an abstract.

Faculty Development Course 4: Writing an Abstract that Gets Accepted

Thursday, March 21, 10:30 AM – 11:30 AM
McCormick Place, Room N227a
Craig J. Della Valle, MD, Chicago, IL, Moderator
Mark W. Pagnano, MD, Rochester, MN
Javad Parvizi, MD, FRCS, Philadelphia, PA

Understand the abstract submission and review process in order to increase the likelihood of acceptance. Learn how to write an abstract that is focused, concise and clear so that your message is “heard” by the reviewers.

Faculty Development Course 5: The Art of Using PowerPoint for Effective Presentations

Thursday, March 21, 1:30 – 2:30 PM
McCormick Place, Room N227a
Roy W. Sanders, MD, Tampa, FL, Moderator
Paul Tornetta, III, MD, Boston, MA, Moderator

This hands-on session will focus on utilizing PowerPoint especially for the medical professional. Learn tips and tricks that you can use to enhance your teaching skills when participating in educational sessions for your colleagues and for patient education both individually and community-wide.

Faculty Development Course 6: Perspectives on Mentorship

Thursday, March 21, 4:00 – 6:00 PM
McCormick Place, Room N227a
Robert A. Hart, MD, Portland, OR, Moderator
James H. Beaty, MD, Memphis, TN
Edward N. Hanley, Jr, MD, Charlotte, NC
Vernon T. Tolo, MD, Los Angeles, CA

History, definition, and description of the mentoring process will be presented, emphasizing importance of good mentorship to career and personal satisfaction. Specific examples of successful and less successful approaches to mentoring will be described.

Faculty Development Course 7: Using Social Media in Your Practice

Friday, March 22, 10:30 – 11:30 AM
McCormick Place, Room 227a
Tony Edwards, Omaha, NE, Moderator
Bill Champion, Omaha, NE

Will focus on utilizing social media in your medical practice. Learn tips and tricks that you can use to enhance your marketing through the use of Facebook, Twitter and other forms of social media.

Faculty Development Course 8: The Art of Orthopaedic Lecture

Friday, March 22, 1:30 – 3:30 PM
McCormick Place, Room 227a
James H. Beaty, MD, Memphis, TN, Moderator
James J. McCarthy, MD, Cincinnati, OH

Learn to develop a lecture for an orthopaedic audience. From a 6-minute paper presentation to a 60-minute lecture on a specific research project or clinical subject. This session will give you the tools to prepare and present. PowerPoint preparation and tips included.
Guided Poster Tours

Academy Hall B

Guided poster tours will provide an opportunity for meeting attendees to ask questions and gain insights while earning CME credit. Each tour will be guided by an expert in the field. The expert will question the presenter, point out highlights and give interesting tips about selected posters in each classification. Register for the poster tours at the Poster and Scientific Exhibit Help Desk, Academy Hall B. Date, times and experts are below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Classification</th>
<th>Expert</th>
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</thead>
<tbody>
<tr>
<td><strong>Tuesday, March 19</strong></td>
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<tr>
<td>10:15 AM - 11:15 AM</td>
<td>Shoulder and Elbow</td>
<td>Joseph D. Zuckerman, MD</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Spine</td>
<td>Scott D. Boden, MD</td>
</tr>
<tr>
<td>1:30 PM - 2:30 PM</td>
<td>Foot and Ankle</td>
<td>Steven L. Haddad, MD</td>
</tr>
<tr>
<td>3:00 PM - 4:00 PM</td>
<td>Adult Reconstruction Knee</td>
<td>John J. Callaghan, MD</td>
</tr>
<tr>
<td>4:30 PM - 5:30 PM</td>
<td>Trauma</td>
<td>David C. Templeman, MD</td>
</tr>
<tr>
<td><strong>Wednesday, March 20</strong></td>
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<tr>
<td>8:30 AM - 9:30 AM</td>
<td>Sports Medicine/Arthroscopy</td>
<td>Kenneth E. DeHaven, MD</td>
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<tr>
<td>10:00 AM - 11:00 AM</td>
<td>Adult Reconstruction Hip</td>
<td>Daniel J. Berry, MD</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Pediatrics</td>
<td>Steven L. Frick, MD</td>
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<tr>
<td>1:30 PM - 2:30 PM</td>
<td>Tumor/Metabolic Disease</td>
<td>Franklin H. Sim, MD</td>
</tr>
<tr>
<td>3:00 PM - 4:00 PM</td>
<td>Hand and Wrist</td>
<td>Jesse B. Jupiter, MD</td>
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<tr>
<td><strong>Thursday, March 21</strong></td>
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<tr>
<td>8:30 AM - 9:30 AM</td>
<td>Shoulder and Elbow</td>
<td>Felix H. Savoie III, MD</td>
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<tr>
<td>10:00 AM - 11:00 AM</td>
<td>Practice Management/Rehabilitation</td>
<td>Craig R. Mahoney, MD</td>
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<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Foot and Ankle</td>
<td>Amunziato (Ned) Amendola, MD</td>
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<tr>
<td>1:30 PM - 2:30 PM</td>
<td>Sports Medicine/Arthroscopy</td>
<td>Michael J. Stuart, MD</td>
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<tr>
<td>3:00 PM - 4:00 PM</td>
<td>Trauma</td>
<td>Paul Tornetta III, MD</td>
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<tr>
<td><strong>Friday, March 22</strong></td>
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<tr>
<td>8:30 AM - 9:30 AM</td>
<td>Adult Reconstruction Knee</td>
<td>William J. Maloney, MD</td>
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<tr>
<td>10:00 AM - 11:00 AM</td>
<td>Hand and Wrist</td>
<td>Terry R. Light, MD</td>
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<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Spine</td>
<td>Robert A. Hart, MD</td>
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<tr>
<td>1:30 PM - 2:30 PM</td>
<td>Pediatrics</td>
<td>Charles T. Price, MD</td>
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<tr>
<td>3:00 PM - 4:00 PM</td>
<td>Adult Reconstruction Hip</td>
<td>William J. Hozack, MD</td>
</tr>
</tbody>
</table>

**iPoster and iScientific Exhibits**

iPoster and iScientific Exhibit provides an electronic version of the poster or scientific exhibit as prepared by the presenter. The audio will be a narrative of the poster and scientific exhibit recorded by the presenter and offered on playback by Smartphone and tablets as the attendee views them. The enhancement website features a blog allowing viewers to question the authors creating an ongoing dialog. The iposter and iscientific exhibit area will feature workstations with PCs where attendees can view the exhibits, hear the audio and participate in the blogs.

**Poster Awards Ceremony**

Join us on Friday, March 22 at 7:00 AM for a free continental breakfast and the Poster Awards Ceremony. The winner of the Best Poster in each classification will receive their award and the Central Program Committee Chair will select the overall best poster of the 2013 Annual Meeting.

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Orthopaedic Review Course #490
Friday, March 22
McCormick Place, Lakeside, Room E354a
Course Chairman: David L. Skaggs, MD

- Review of current knowledge on diagnosis and management of clinical problems from a nationally accepted orthopaedic practice perspective
- Major sections of the course are pediatrics, upper and lower extremities, tumors and metabolic bone disease, and spine
- Each section includes discussion of fractures, complications, infections and trauma

Please note, the Orthopaedic Review Course is not intended as a review for the Board Examination, it is a review of orthopaedic basics.

<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
<th>Moderator</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 - 10:00 AM</td>
<td>Lower Extremity</td>
<td>Donald A. Wiss, MD</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Hip and Knee Reconstruction</td>
<td>Daniel A. Oakes, MD</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Trauma</td>
<td>Donald A. Wiss, MD</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Foot and Ankle</td>
<td>Steven L. Haddad, MD</td>
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<tr>
<td>9:30 AM</td>
<td>Sports Knee</td>
<td>Mark D. Miller, MD</td>
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<tr>
<td>10:00 - 10:15 AM</td>
<td>STRETCH BREAK</td>
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<tr>
<td>10:15 - 11:50 AM</td>
<td>Upper Extremity</td>
<td>William N. Levine, MD</td>
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<tr>
<td>10:15 AM</td>
<td>Hand and Wrist</td>
<td>Martin I. Boyer, MD</td>
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<tr>
<td>10:50 AM</td>
<td>Forearm and Elbow</td>
<td>Ken Yamaguchi, MD</td>
</tr>
<tr>
<td>11:20 AM</td>
<td>Shoulder and Humerus</td>
<td>William N. Levine, MD</td>
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<tr>
<td>11:50 AM - 12:30 PM</td>
<td>LUNCH (lunch included)</td>
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<tr>
<td>12:30 - 2:30 PM</td>
<td>Pediatrics</td>
<td>Lori A. Karol, MD</td>
</tr>
<tr>
<td>12:30 PM</td>
<td>Hip</td>
<td>William C. Warner Jr., MD</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Infection, Congenital, Developmental Problems/Miscellaneous</td>
<td>Jeffrey R. Sawyer, MD</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Fractures of the Upper and Lower Extremities</td>
<td>John M. Flynn, MD</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Lower Extremity</td>
<td>Lori A. Karol, MD</td>
</tr>
<tr>
<td>2:30 - 2:45 PM</td>
<td>STRETCH BREAK</td>
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</tr>
<tr>
<td>2:45 - 4:15 PM</td>
<td>Spine</td>
<td>David L. Skaggs, MD</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>Trauma</td>
<td>Jens R. Chapman, MD</td>
</tr>
<tr>
<td>3:15 PM</td>
<td>Degenerative</td>
<td>Todd J. Albert, MD</td>
</tr>
<tr>
<td>3:45 PM</td>
<td>Pediatric</td>
<td>David L. Skaggs, MD</td>
</tr>
<tr>
<td>4:15 - 4:30 PM</td>
<td>STRETCH BREAK</td>
<td></td>
</tr>
<tr>
<td>4:30 – 5:35 PM</td>
<td>Tumors and Metabolic Bone Disease</td>
<td>Albert J. Aboulafia, MD</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>Tumors</td>
<td>Albert J. Aboulafia, MD</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>Metabolic Bone Disease</td>
<td>Joseph M. Lane, MD</td>
</tr>
<tr>
<td>5:35 PM</td>
<td>Adjourn</td>
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</tr>
</tbody>
</table>

Continental breakfast and a box lunch are included in the fee, which is $300 in advance and $400 on-site.

Attention U.S. Orthopaedic Residents! Discounted tickets are available for the Orthopaedic Review Course. Advance tickets are $120 and tickets purchased on-site are $160.
Call For Abstracts

Contribute to the advancement of orthopaedic science and practice

Share your research with orthopaedic surgeons from around the world at the 2014 Annual Meeting. Nowhere else will your discoveries reach such a wide-ranging orthopaedic audience.

Submissions open April 1, 2013. Watch for announcements!

Submit full-page abstracts, attach images, and more! Present your research to its best advantage on our user-friendly website.

ATTENTION SUBMITTERS:

Submit full-page abstracts, attach images, and more! Present your research to its best advantage on our user-friendly website.

ATTENTION SUBMITTERS:

DisCLOsure ruLes

Submissions due June 1, 2013

All presenters and co-authors must disclose financial relationships in the AAOS Orthopaedic Disclosure Program. The disclosure must be entered or updated as of April 1, 2013. Abstracts will not be graded without all disclosures.

2014 Annual Meeting
March 11 - 15
New Orleans, LA
Annual Meeting Symposia Webcasts

Annual Meeting Symposia bring you today’s hottest topics, presented by surgeons who are shaping the future of the orthopaedic specialty. Now, no matter how busy your schedule —you can “attend” more than 20 symposia – anytime and anywhere:

- **During the meeting, webcasts will be streamed live** to your mobile device using the AAOS Mobile Meeting Guide app or to your computer (www.aaos.org/annual). You’ll even be able to email questions to the moderators. Register at www.aaos.org/webcast
- **Free on demand streaming will be available through Sunday, March 24.** Symposia webcasts will be available for on demand streaming from the AAOS website (www.aaos.org/annual) beginning on the day after the live presentation.
- **After the meeting**—beginning in early April—look for the symposia webcasts in the AAOS online store. Purchase the symposia you’re most interested in, then view them at your convenience. Save when you pre-order now at the AAOS Resource Center.

Annual Meeting Symposia provide a rich overview and various viewpoints on specific topics, ranging from accountable care organizations to sports injury management.

Symposia available as webcasts include:

<table>
<thead>
<tr>
<th>Title and Moderator</th>
<th>Classification</th>
<th>Symposium and Live Webcast</th>
<th>On Demand Streaming Available Starting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lower Extremity Nailing: What Can Be Nailed, What Should be Nailed, and Technical Pearls for Success (A)</strong> &lt;br&gt; Moderator: Joshua Langford, MD</td>
<td>Trauma</td>
<td>Tuesday: 8:00 – 10:00 AM Room S406</td>
<td>Wednesday: 10:00 AM</td>
</tr>
<tr>
<td><strong>Worldwide Perspective on Hip Instability after Total Hip Replacement (B)</strong> &lt;br&gt; Moderator: Paul Beaule, MD</td>
<td>Adult Reconstruction Hip</td>
<td>Tuesday: 10:30 AM – 12:30 PM Room S406</td>
<td>Wednesday: 12:30 PM</td>
</tr>
<tr>
<td><strong>Accountable Care Organizations and Bundled Payments: Passing Trends or a New Paradigm? (C)</strong> &lt;br&gt; Moderator: Kevin J. Bozic, MD</td>
<td>Practice Management</td>
<td>Tuesday: 1:30 – 3:30 PM Grand Ballroom</td>
<td>Wednesday: 3:30 PM</td>
</tr>
<tr>
<td><strong>Controversies in Pediatric Sports Medicine (D)</strong> &lt;br&gt; Moderator: John D. Polousky, MD</td>
<td>Pediatrics</td>
<td>Tuesday: 1:30 – 3:30 PM Room S406</td>
<td>Wednesday: 3:30 PM</td>
</tr>
<tr>
<td><strong>Elbow Trauma Gone Wrong: How to Solve Complications (F)</strong> &lt;br&gt; Moderator: Joaquin Sanchez-Sotelo, MD</td>
<td>Shoulder and Elbow</td>
<td>Tuesday: 4:00 – 6:00 PM Grand Ballroom</td>
<td>Wednesday: 6:00 PM</td>
</tr>
<tr>
<td><strong>A Decade of Change in the Treatment of Pediatric &amp; Adult Spinal Deformity: What Progress Has Been Made (G)</strong> &lt;br&gt; Moderator: John Dimar, MD</td>
<td>Spine</td>
<td>Tuesday: 4:00 – 6:00 PM Room S406</td>
<td>Wednesday: 6:00 PM</td>
</tr>
<tr>
<td><strong>Hot Topics in Total Hip and Knee Arthroplasty (I)</strong> &lt;br&gt; Moderator: Jay R. Lieberman, MD</td>
<td>Adult Reconstruction</td>
<td>Wednesday: 8:00 – 10:00 AM Grand Ballroom</td>
<td>Thursday: 10:00 AM</td>
</tr>
</tbody>
</table>
## Available Symposia

**Ranging from Accountable Care Organizations to Sports Injury Management.**

**Annual Meeting Symposia** provide a rich overview and various viewpoints on specific topics.

- **More than 20 symposia — anytime and anywhere:**
  - **Annual Meeting Symposia** bring you today's hottest topics, presented by surgeons who are shaping the future of orthopaedics.
- **Annual Meeting Symposia Webcasts** — online and on-demand streaming will be available beginning on the day after the live presentation.
- **Free on demand streaming** will be available through Sunday, March 24.

### Annual Meeting Symposia Webcasts

#### Progress Has Been Made (G)
- **Pediatric & Adult Spinal Deformity: What A Decade of Change in the Treatment of Spinal Deformity Means**
  - **Moderator:** Joaquin Sanchez-Sotelo, MD
  - **Date and Time:** Wednesday: 10:30 AM – 12:30 PM
  - **Location:** Grand Ballroom

#### Medicine (D)
- **Controversies in Pediatric Sports Medicine**
  - **Moderator:** John D. Polousky, MD
  - **Date and Time:** Wednesday: 10:30 AM – 12:30 PM
  - **Location:** Grand Ballroom

#### How Do You Teach Someone to Have the Right Hip Attitude? (A)
- **Changing the Surgical Education Paradigm: How Do You Teach Someone to Have the Surgical Skills of an Orthopaedic Surgeon?**
  - **Moderator:** John Tongue, MD
  - **Date and Time:** Friday: 4:00 – 6:00 PM
  - **Location:** Grand Ballroom

#### A Case Based Symposium (J)
- **Lessons from The AAOS Compliance Program. How Orthopaedic Surgeons Get Into Trouble.**
  - **Moderator:** Thomas Green, MD
  - **Date and Time:** Thursday: 10:00 AM – 12:00 PM
  - **Location:** Room S406

#### Inside Job: The Nuts and Bolts of Sports Injury Management (L)
- **How Do You Teach Someone to Have the Right Shoulder Attitude?**
  - **Moderator:** J. Chris Coetzee, MD
  - **Date and Time:** Thursday: 10:00 AM – 12:00 PM
  - **Location:** Room S406

#### Measuring Quality in Orthopaedics (N)
- **Essential Surgical Techniques for Total Hip Arthroplasty: A Video-Based Symposium (P)**
  - **Moderator:** Daniel J. Berry, MD
  - **Date and Time:** Thursday: 1:30 – 3:30 PM
  - **Location:** Grand Ballroom

#### How Do You Teach Someone to Have the Right Elbow Attitude? (B)
- **Hip Arthroscopy: To the Cutting Edge… Without Falling Off**
  - **Moderator:** Dean Matsuda, MD
  - **Date and Time:** Friday: 4:00 – 6:00 PM
  - **Location:** Grand Ballroom

### General

<table>
<thead>
<tr>
<th>Title and Moderator</th>
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<tbody>
<tr>
<td><strong>How Orthopaedic Surgeons Get Into Trouble. Lessons from The AAOS Compliance Program. A Case Based Symposium (J)</strong> Moderator: Thomas Green, MD</td>
<td>General</td>
<td>Wednesday: 8:00 – 10:00 AM Room S406</td>
<td>Thursday: 10:00 AM</td>
</tr>
<tr>
<td><strong>Measuring Quality in Orthopaedics (N)</strong> Moderator: Joseph D. Zuckerman, MD</td>
<td>General</td>
<td>Wednesday: 1:30- 3:30 PM Room S406</td>
<td>Thursday: 3:30 PM</td>
</tr>
<tr>
<td><strong>Essential Surgical Techniques for Total Hip Arthroplasty: A Video-Based Symposium (P)</strong> Moderator: Daniel J. Berry, MD</td>
<td>Adult Reconstruction Hip</td>
<td>Thursday: 1:30 – 3:30 PM Grand Ballroom</td>
<td>Friday: 3:30 PM</td>
</tr>
<tr>
<td><strong>Health Care Advocacy: Why and How (Q)</strong> Moderator: John M. Froelich, MD</td>
<td>General</td>
<td>Thursday: 1:30 – 3:30 PM Room S406</td>
<td>Friday: 3:30 PM</td>
</tr>
<tr>
<td><strong>Eight Common Pitfalls In Shoulder Arthroplasty (S)</strong> Moderator: Edward Craig, MD</td>
<td>Shoulder and Elbow</td>
<td>Thursday: 4:00 – 6:00 PM Grand Ballroom</td>
<td>Friday: 6:00 PM</td>
</tr>
<tr>
<td><strong>Debates on the Use of BMP in Spine Surgery (T)</strong> Moderator: Adolph Lombardi, MD</td>
<td>Spine</td>
<td>Thursday: 4:00 – 6:00 PM Room S406</td>
<td>Friday: 6:00 PM</td>
</tr>
<tr>
<td><strong>Optimizing Management of Patients with Metal-on-Metal Hips (U)</strong> Moderator: Jeffrey Wang, MD</td>
<td>Adult Reconstruction Hip</td>
<td>Friday: 8:00 – 10:00 AM Grand Ballroom</td>
<td>Saturday: 10:00 AM</td>
</tr>
<tr>
<td><strong>The Social and Economic Value of Orthopaedic Surgery (V)</strong> Moderator: John Tongue, MD</td>
<td>Practice Management</td>
<td>Friday: 8:00 – 10:00 AM Room S406</td>
<td>Saturday: 10:00 AM</td>
</tr>
<tr>
<td><strong>New Concepts Regarding Athletic Induced Mild Traumatic (Concussion) and Catastrophic Brain Injuries (W)</strong> Moderator: Barry Boden, MD</td>
<td>Sports Medicine / Arthroscopy</td>
<td>Friday: 10:30 AM – 12:30 PM Grand Ballroom</td>
<td>Saturday: 12:30 PM</td>
</tr>
<tr>
<td><strong>Changing the Surgical Education Paradigm: How Do You Teach Someone to Have the Surgical Skills of an Orthopaedic Surgeon? (X)</strong> Moderator: Ranjan Gupta, MD</td>
<td>General</td>
<td>Friday: 10:30 AM – 12:30 PM Room S406</td>
<td>Saturday: 12:30 PM</td>
</tr>
<tr>
<td><strong>Improving Outcomes with Total Knee Arthroplasty (Z)</strong> Moderator: Giles Scuderi, MD</td>
<td>Adult Reconstruction Knee</td>
<td>Friday: 1:30 – 3:30 PM Grand Ballroom</td>
<td>Saturday: 3:30 PM</td>
</tr>
<tr>
<td><strong>Hip Arthroscopy: To the Cutting Edge… Without Falling Off (BB)</strong> Moderator: Dean Matsuda, MD</td>
<td>Adult Reconstruction Hip</td>
<td>Friday: 4:00 – 6:00 PM Grand Ballroom</td>
<td>Saturday: 6:00 PM</td>
</tr>
<tr>
<td><strong>Orthopaedic Trauma Mythbusters (CC)</strong> Moderator: Robert Ostrum, MD</td>
<td>Trauma</td>
<td>Friday: 4:00 – 6:00 PM Room S406</td>
<td>Saturday: 6:00 PM</td>
</tr>
</tbody>
</table>
Tuesday, March 19

SPECIAL SESSIONS – PRACTICE MANAGEMENT FOCUS

8:00 AM — 11:00 AM
Basics of Coding for Starting Your Practice
Moderator: Margaret Maley, BSN, MS, Chicago, IL
You don’t want to miss this fast-paced course introducing the most important coding topics to orthopaedic residents. Margaret Maley from Karen Zupko & Associates brings energy and humor to this topic critical to orthopaedic practice management. By the end of the course you will:

• Define a New Patient Visit vs. an Established Patient Visit—Understand Relative Value Units (RVU’s) are used to calculate your reimbursement or bonus if you are an employed physician
• Know how procedures are discounted by payors and how arthroscopic procedures are discounted differently
• Describe how modifiers protect reimbursement
• Understand what is included in the global surgical package.

Join us for this complimentary workshop that will be so important to your career!

SYMPOSIUM
9:00 AM — 5:00 PM
Room S102
Practice Management Symposium for Practicing Orthopaedic Surgeons (152)
Moderators: Craig R. Mahoney, MD, West Des Moines, IA
Douglas R. Turgeon, MD, Dallas, TX

Don’t miss this dynamic, educational event! Course Directors, Craig Mahoney, MD and Douglas Turgeon, MD developed “Dollars and Sense 2013 – Take Control of Your Finances and Your Future” as a deeper dive into the top four topics attendees want to learn more about; financial stability, bundled payments & negotiating strategies, billing and collections strategies, and marketing and promotion strategies. Regardless of your practice model, all physicians need useful information and effective techniques to be profitable and financially healthy. Our speakers will present practical tips and tools to simplify and clarify the activities of managing your practice. This one-of-a-kind opportunity to take control of your practice’s finances and your future will feature an interactive town hall discussion focusing on topics of critical importance to orthopaedic surgeons.

I. Welcome and Introduction
Craig R. Mahoney, MD, West Des Moines, IA
Douglas R. Turgeon, MD, Dallas, TX

II. Financial Stability of a Practice
Michael McCaslin, CPA, Indianapolis, IN

III. New Provider Payment Models: Preparing for the Future
John Cherf, MD, MPH, MBA, Chicago, IL

IV. Revenue Cycle Review: What Surgeons Need To Know
Karen Zupko, Chicago, IL

V. Practice Style 2013 - Part 1
Louis F. McIntyre, MD, White Plains, NY

VI. Practice Style 2013 - Part 2
Ian J. Alexander, MD, Akron, OH

VII. The Power of Nine
Bill Champion, Omaha, NE

VIII. Audit Your Practice
Lawrence M. Elisco, Buffalo Grove, IL

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### SPECIAL SESSIONS – PRACTICE MANAGEMENT FOCUS

**1:30 — 4:30 PM**

**FREE**

#### 153

**The Top 10 Coding Errors Made by Practicing Orthopaedic Surgeons**

*Moderator: Margaret Maley, BSN, MS, Chicago, IL*

Margaret Maley from KarenZupko & Associates brings logic and laughs to this workshop addressing frequent and costly reporting errors made by orthopaedic surgeons. At the conclusion of this course you will:

- Properly report services for a patient in the Emergency Room-Document what Medicare requires to justify the medical necessity of a total joint replacement
- Confidentially report meniscectomy and removal of a loose body-Know how to document an E&M service and fracture care correctly
- Define the common use of the modifier 59 in knee and shoulder surgery-Report a consultation on a Medicare patient

This and much more will be packed into this course specifically designed for practicing.

### SYMPOSIUM

**8:00 AM — 10:00 AM**

**Room S406**


*Moderator: Joshua Langford, MD, Orlando, FL*

Aimed to bring the practicing orthopedic surgeon up to date on advances in lower extremity nailing. From new approaches to specific tricks, this symposium will cover complex femoral and tibial nailing in a step by step format. There will be surgical videos, didactic lectures, and lively case based discussion to facilitate the understanding of what can be nailed, what should be nailed, as well as technical pearls for success.

<table>
<thead>
<tr>
<th>I. Welcome/Introduction</th>
<th>Joshua Langford, MD, Orlando, FL</th>
</tr>
</thead>
<tbody>
<tr>
<td>II. Multilevel Tibial Fractures</td>
<td>Frank A. Liporace, MD, Englewood Cliffs, NJ</td>
</tr>
<tr>
<td>III. Surgical Technique: Suprapatellar Nailing</td>
<td>Joshua Langford, MD, Orlando, FL</td>
</tr>
<tr>
<td>IV. Interactive Tibial Cases</td>
<td>Faculty</td>
</tr>
<tr>
<td>V. Complex Proximal Femoral Fractures</td>
<td>Hassan R. Mir, MD, Nashville, TN</td>
</tr>
<tr>
<td>VI. Nailing Intraarticular Distal Femoral Fractures</td>
<td>Kenneth J. Koval, MD, Orlando, FL</td>
</tr>
<tr>
<td>VII. Interactive Femoral Cases</td>
<td>Faculty</td>
</tr>
</tbody>
</table>

### INSTRUCTIONAL COURSE LECTURE

**8:00 AM — 10:00 AM**

**101**

**High Performance Hip Replacement: What Is It? Who Is the Right Candidate?**

*Moderator: John J. Callaghan, MD, Iowa City, IA*

A more young active patients are requiring total hip replacement. Addresses the challenges of providing durable implants and results in this patient population.

**102**

**Personalized Approach to the Painful Aseptic Total Knee Arthroplasty**

*Moderator: Khalel J. Saleh, MD, MSc, Springfield, IL*

Participants will become familiar with the modalities used for diagnosing the cause of TKA pain, including examination, laboratory markers, imaging modalities, as well as intra- and extra-articular causes with non-operative and operative management.

**103**

**Management of Complications of Common Foot and Ankle Surgeries**

*Moderator: Mark S. Myerson, MD, Baltimore, MD*

Strategies for managing common complications following foot and ankle surgery. Present an approach to reconstruction and salvage of complications of the forefoot, midfoot, hindfoot and ankle, presented in a didactic and case based format.

The following symbols appear next to the educational sessions and indicate one or more of the following:

- U.S. Food and Drug Administration has not cleared the drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an off label use). For full information, refer to page 17.
- An Audience Response System will be featured in several courses and symposia.
- Symposia that are being Webcast, you can watch it live on your smartphone, laptop or tablet.

The Board of Specialty Societies logo next to an educational session indicates the session is co-branded with AAOS and that society.

An alphabetical faculty financial disclosure list can be found starting on page 292.

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Tuesday, March 19

**104** Managing the Increasing Demand for Total Joint Arthroplasty: An International Perspective
Moderator: Stefano A. Bini, MD, San Francisco, CA
Kevin J. Bozic, MD, MBA, San Francisco, CA
Enrique Guerado, MD, Marbella, Spain
Kazuhiro Hirakawa, MD, PhD, Kamakura, Japan

Focuses on the strategies adopted in Japan, the EU and the US to address this challenge in the face of decreasing per capita resources. The importance lies in understanding how these policies might affect practice once implemented.

**105** Complications of Common Hand Surgery Procedures
Moderator: A Lee Osterman, MD, Villanova, PA
Joshua M. Abzug, MD, Boston, MA
James Chang, MD, Palo Alto, CA
Peter J. Stern, MD, Cincinnati, OH

Address common complications of hand surgeries and how to avoid them. Procedures range from carpal and cubital tunnel release, hand and wrist fractures, joint issues such as PIPJ fracture dislocations, tendon repairs and tendon release procedures. Tips to avoid the pitfalls for their treatment and management.

**106** Advanced Surgical Techniques in the Adolescent Hip
Moderator: Ernest L. Sink, MD, New York, NY
Young J. Kim, MD, Boston, MA
Michael Lieuni, MD, Zurich, Switzerland
Ira Zaltz, MD, Royal Oak, MI

Novel surgical treatments will be discussed by lecture and case presentations for adolescent femoroacetabular impingement, acute and chronic SCFE and Perthes/avascular necrosis.

**107** Shoulder Instability: An International Perspective on Treatment
Moderator: Jon J. P. Warner, MD, Boston, MA
Christian Gerber, MD, Zurich, Switzerland
Eiji Itoi, MD, Sendai, Japan
Laurent Lafosse, MD, Annecy, France

Present the best evidence in support of conservative and operative management of traumatic shoulder instability. Specific consideration will be given to the natural history of traumatic instability and soft tissue Bankart Repair vs boney solutions such as Latarjet and Bone Grafting.

**108** Knee MLI Injuries: A Case-Based Approach
Moderator: Mark D. Miller, MD, Charlottesville, VA
Christopher D. Harner, MD, Pittsburgh, PA
Darren L. Johnson, MD, Lexington, KY
Claude T. Moore, MD, Durham, NC

After introductory lectures, Knee MLI cases will be presented and discussed between the faculty and the attendees.

**109** Treatment of Tibial Plateau Fractures
Moderator: Thomas F. Higgins, MD, Salt Lake City, UT
David Barei, MD, FRCSC, Seattle, WA
Robert V. O’Toole, MD, Baltimore, MD
James P. Stannard, MD, Columbia, MO

Feature a case-based format to discuss expert advice and best evidence on timing, soft tissue handling, ligament injuries and geriatric fractures relevant to treatment of uni- and bi-condylar tibial plateau fractures.

**INSTRUCTIONAL COURSE LECTURE**

8:00 AM — 11:00 AM

**181** Trauma Review Course
Moderator: Paul Tornetta III, MD, Boston, MA
Clifford B. Jones, MD, FACS, Grand Rapids, MI
Robert E. Ostrum, MD, Chapel Hill, NC
Andrew H. Schmidt, MD, Minneapolis, MN
J. Tracy Watson, MD, Saint Louis, MO

This course will review recent state of the art management of common fractures as well as future directions and evolving treatments. A complimentary session on the basics of Maintenance of Certification will follow this review course.

**182** Shoulder and Elbow Review Course
Moderator: Robert M. Orfaly, MD, Portland, OR
Carl Basamania, MD, Shoreline, WA
Lana Kang, MD, New York, NY
John W. Sperling, MD, MBA, Rochester, MN

The diagnosis and treatment options for common adult shoulder and elbow conditions are reviewed as well as recent advances and changes in standard of care. A complimentary session on the basics of Maintenance of Certification will follow this review course.

**183** Spine Review Course
Moderator: Thomas J. Errico, MD, New York, NY
Todd J. Albert, MD, Philadelphia, PA
John A. Bendo, MD, New York, NY
Frank J. Schwab, MD, New York, NY
Alexander Vaccaro, MD, PhD, Gladwyne, PA

Updates on cervical degenerative spine surgery; thoracic and lumbar degenerative spine surgery; spinal trauma surgery and adult spinal deformity surgery. A complimentary session on the basics of Maintenance of Certification will follow this review course.

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Tuesday, March 19

**Sports Medicine Review Course**
*Moderator:* Bruce S. Miller, MD, MS, Ann Arbor, MI
Ashesh Bedi, MD, Ann Arbor, MI
Thomas M. DeBerardino, MD, Farmington, CT
James MacDonald, MD, FAAFP, Dublin, OH

This course is a primer for the upcoming Sports Medicine Subspecialty Certification Examination. This three hour session will highlight sports injuries of the shoulder and knee and medical topics in sports medicine. A complimentary session on the basics of Maintenance of Certification will follow this review course.

**Hand and Wrist Review Course**
*Moderator:* Martin A. Posner, MD, New York, NY
Steven M. Green, MD, New York, NY

Those hand and wrist problems that are generally the focus of certifying examinations will be discussed including pertinent anatomy, pathophysiology, clinical and imaging findings and treatment. A complimentary session on the basics of Maintenance of Certification will follow this review course.

**PAPER PRESENTATIONS**

8:00 AM — 10:00 AM
Room N427

**Adult Reconstruction Knee I: Basic Science**
*Moderator(s):* Brett R. Levine, MD, Chicago, IL
Martyn Porter, MD, Wigan, United Kingdom

**8:00 AM**
**PAPER: 1**

*In-vivo Function of the Medial and Lateral Collateral Ligaments in High Flexion of the Knee*
Wei Qi, MD, Boston, MA
Ali Hoseni, MS, Boston, MA
Harry E. Rubash, MD, Boston, MA
Guoan Li, PhD, Boston, MA

The collateral ligaments do not elongate uniformly along the flexion path. The different roles of various portions should be considered before releasing the collateral ligaments during TKA.

**8:06 AM**
**PAPER: 2**

*Relationship Between Vascular Endothelial Growth Factor and Radiographic Severity in Primary Knee Osteoarthritis*
Sittisak Hansawek, MD, PhD, Bangkok, Thailand
Aree Tanasalee, MD, Bangkok, Thailand
Srihatach G. Ngarmakos, MD, Bangkok, Thailand
Saran Tantavasut, Bangkok, Thailand
Thanathip Tanpoupong, Bangkok, Thailand

VEGF levels in both plasma and synovial fluid were positively correlated with the severity of knee OA. The VEGF polymorphisms could contribute to the susceptibility to knee OA.

8:12 AM
**PAPER: 3**

*Routine Fungal and Acid Fast Bacilli Cultures in Presumed Aseptic Revisions is Unwarranted*
Anthony T. Tokarski, BS, Philadelphia, PA
Joseph T. O’Neil, BA, Wayne, PA
Joseph L. Ferguson, Philadelphia, PA
Benjamin Zmistowski, BS, Philadelphia, PA
Carl A. Deirmengian, MD, Wynnewood, PA
Gregory K. Deirmengian, MD, Broomall, PA
Javad Parviz, MD, FRCS, Philadelphia, PA

For presumed aseptic hip and knee revisions, positive fungal and AFB cultures are quite rare and in the vast majority of cases, appear to be contaminants.

**8:24 AM**
**PAPER: 4**

*Betadine Wash Reduces Implant Related Bacterial Burden in a Rabbit Knee Prostheses Infection Model*
Mohit Gilotra, MD, Baltimore, MD
Thao Nguyen, MD, Baltimore, MD
David E. Jaffe, MD, Baltimore, MD
Robert S. Sterling, MD, Owings Mills, MD

Dilute betadine wash decreases implant related bacterial counts and may be used as a treatment adjunct in acute postoperative arthroplasty infection.

8:30 AM
**PAPER: 5**

*Effect of Vitamin E on Outcomes, Oxidative Stress Levels in Blood, Joint Fluid and Synovial Tissue in Late Stage Knee OA*
Saran Tantavasut, Bangkok, Thailand
Aree Tanasalee, MD, Bangkok, Thailand
Sittisak Hansawek, MD, PhD, Bangkok, Thailand
Yuthana Khanasuk, MD, Bangkok, Thailand
Sarit Hongwilai, Bangkok, Thailand
Srihatach G. Ngarmakos, MD, Bangkok, Thailand
Yongsak Wangroongsub, MD, Bangkok, Thailand

A 2-month application of 400 iu daily dose of vitamin E in late stage OA knee patients provided improved WOMAC score with supportive laboratory data.

8:36 AM
**PAPER: 6**

*Role of Rifampin plus Vancomycin or Tigecycline Against a S. aureus Implant Infection in Mice*
Jared Niska, MD, Los Angeles, CA
Shababzian Jonathan, Los Angeles, CA
Romela Irene Ramos, MS, Los Angeles, CA
Lloyd Miller, MD, PhD, Baltimore, MD

In this mouse model of surgical implant infection, treatment with tigecycline and rifampin was more effective than vancomycin at eliminating infection in the joint tissue and on the implant.
Tuesday, March 19

8:48 AM PAPER: 7
The Impact of Depression Following Total Joint Arthroplasty: A Nationwide Database Study
Wendy Novicoff, PhD, Charlottesville, VA
Michele R. D’Apruzzo, MD, Charlottesville, VA
James A. Browne, MD, Charlottesville, VA
Depression is a serious comorbidity that can impact outcomes after TJA. The rate of diagnosis has increased markedly over the last ten years, and treatment is essential.

8:54 AM PAPER: 8
Constitutional Varus Does Not Affect Joint Line Orientation in the Coronal Plane
Peter Verdonk, MD, PhD, Ghent, Belgium
David Bassens, MD, Ghent, Belgium
Aad Dhoolland, MD, PT, PhD, De Klinge, Belgium
Serper Gursu, MD, Istanbul, Turkey
Johan Bellemans, MD, Langdorp, Belgium
Jan M. Victor, MD, Gent, Belgium
People with neutral coronal alignment have a joint line parallel to the floor. This parallelism is preserved in individuals with constitutional varus alignment but not in people with valgus alignment.

9:00 AM PAPER: 9
Why do TKAs Survive? Soft Tissue Balancing Comparisons of Well Functioning TKA Retrievals
William M. Mihalko, MD, PhD, Germantown, TN
Jason A. Lindsey, Memphis, TN
Devan Conner, BS, Memphis, TN
Tyler R. Palumbo, BS, Memphis, TN
John L. Williams, PhD, Memphis, TN
This is the first study that investigates the soft tissue balancing of well functioning TKAs at necropsy through a retrieval program showing asymmetric laxity in the coronal plane.

9:18 AM PAPER: 11
Subclinical Systemic Inflammation in Obese Total Knee Arthroplasty Patients
Syed Azim, MD, Stony Brook, NY
James J. Nicholson, MD, Setauket, NY
Ruth A. Reinsel, PhD, Stony Brook, NY
Mario Rebecchi, PhD, Stony Brook, NY
Helene Benveniste, MD, PhD, Stony Brook, NY
Prospective study of subclinical inflammatory proteins in obese knee arthroplasty patients.

9:24 AM PAPER: 12
Effectiveness of Aspiration in Knee Joint Effusion Management: A Prospective Randomized Controlled Study
Nikolaos K. Paschos, MD, Davis, CA
Dimitrios Giots, Ioannina, Greece
Emilios Pulos, Ioannina, Greece
Anastasos Georgoulis, Ioannina, Greece
In this randomized study, aspiration compared to non-aspiration for knee effusion resulted in temporary improvement but overall in worse outcome. History of trauma was a decisive factor for treatment.

9:36 AM PAPER: 13
Elevated Blood Glucose and Hemoglobin A1C Associated with Wound Complication Following Total Joint Arthroplasty
Louis S. Stryker, MD, Charlotte, NC
Matthew P. Abdel, MD, New York, NY
Mark E. Morrey, MD, Rochester, MN
Daryl J. Kor, MD, Rochester, MN
Bernard F. Morrey, MD, San Antonio, TX
Mean perioperative blood glucose > 200 mg/dL, maximum blood glucose > 260 mg/dL, or HgA1C > 6.7% have odds ratios of 3.75, 3.0 and 9.0, respectively, for wound complication after joint arthroplasty.

9:42 AM PAPER: 14
Synovial Fluid Differential Cell Count in Wear Debris Synovitis after Total Knee Replacement
Ran Schwarzkopf, MD, Irvine, CA
Meagan E. Tubbo, Atlanta, GA
Richard D. Scott, MD, Boston, MA
Lee Josephs, Wellesley, MA
Evan M. Carlson, MS, Hanover, NH
John H. Currier, MS, Hanover, NH
Douglas Van Citters, PhD, Hanover, NH
The present study identified the value of monocyte cell count as a possible tool to diagnose abnormal wear rates of the tibial polyethylene insert.

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Treating Chondral Defects with Stem Cells Compromised to the Chondrocyte Lineage and Platelet Rich Plasma
Alex Vaisman, MD, Santiago, Chile
David Figueroa, MD, Santiago, Chile
Rafael Calvo, MD, Santiago, Chile
Maximiliano Espinosa, MD, Santiago, Chile

We show that treating chondral defects with a collagen scaffold with stem cells compromised to the chondrocytic lineage and PRP does not generate hyaline cartilage in an animal model.

Discussion - 6 Minutes

INSTRUCTIONAL COURSE LECTURE
11:30 AM — 12:30 PM
MOC
Maintenance of Certification: The Basics
Moderator: Joseph A. Bosco III, MD, New York, NY
Shep Hurwitz, MD, Chapel Hill, NC

Cover strategies important to taking a multiple choice test and provide details on taking a computerized examination. This session will cover information that you need to know for maintenance of certification. This session will feature a look at the AAOS Learning Portfolio, designed to assist you in Maintenance of Certification. This session is complimentary for anyone who attended ICL 181-185.

SYMPOSIUM
10:30 AM — 12:30 PM
Room S406
Worldwide Perspective on Hip Instability after Total Hip Replacement (B)
Moderator: Paul E. Beaule, MD, Ottawa, ON, Canada

The cost and morbidity associated with hip instability after total hip replacement remains significant. Although various implant designs and surgical techniques have been proposed, consensus on which ones are most efficacious is still lacking. This symposium will present an up to date worldwide perspective.

I. Current Incidence and Natural History
   John C. Clohisy, MD, Saint Louis, MO

II. Pathomechanisms of Hip Instability
    Thomas D. Brown, PhD, Iowa City, IA

III. Costs and Technological Considerations in the Management of Hip Instability
     Kevin J. Bozic, MD, MBA, San Francisco, CA

DEBATES

IV. Dislocation Precautions Are Not Necessary
   (For) William J. Hozack, MD, Philadelphia, PA
   (Against) Michael Tanzer, MD, Montreal, QC, Canada

V. Anterior Approach is the Answer
   (For) Michael Leunig, MD, Zurich, Switzerland
   (Against) Fares Haddad, MD, London, United Kingdom

VI. Navigation is the Ultimate Answer
   (For) Robert T. Trousdale, MD, Rochester, MD
   (Against) Andrew J. Shimmin, MD, Windsor, Australia

VII. Modular Necks Can Minimize the Risk of Hip Instability
   (For) Aldo Toni, MD, Bologna, Italy
   (Against) Michael Dunbar, MD, Halifax, NS, Canada

VIII. Large Femoral Head Size is the Solution
    (For) Donald S. Garbuz, MD, Vancouver, BC, Canada
    (Against) Keith R. Berend, MD, New Albany, OH

IX. With Dual Mobility Constrained Liners Are No Longer Needed
   (For) Moussa Hamadouche, PhD, Paris, France
   (Against) John J. Callaghan, MD, Iowa City, IA

Case Discussion
William J. Hozack, MD, Philadelphia, PA

INSTRUCTIONAL COURSE LECTURE
10:30 AM — 12:30 PM
Room S502
Video Techniques in Revision Total Knee Replacement
Moderator: David F. Dalury, MD, Baltimore, MD
William L. Griffin, MD, Charlotte, NC
Arlen D. Hanssen, MD, Rochester, MN
Giles R. Scuderi, MD, New York, NY

Use videos to demonstrate technical tips for revision TKR. Topics will include, surgical approaches, soft tissue management techniques, and bony reconstruction options in the revision setting.
Tuesday, March 19

123  Tendon Transfers about the Foot and Ankle
Moderator: Keith L. Wapner, MD, Philadelphia, PA
Bruce E. Cohen, MD, Charlotte, NC
Thomas H. Lee, MD, Westerville, OH
Cover the options of tendon transfers about the foot and ankle for a range of disorders from chronic tendon injury, tendinosis to the use of tendon transfers for reconstructive and realignment in stroke and other neuromuscular disorders. Principles of tendon transfer and the various techniques will be reviewed with emphasis on surgical videos.

124  PRP, BMP and Stem Cells: What Surgeons Need to Know
Moderator: S. T. Yoon, MD, PhD, Atlanta, GA
Evan L. Flatoe, MD, New York, NY
Joseph M. Lane, MD, New York, NY
J. T. Watson, MD, Saint Louis, MO
Discuss the most important biologics in orthopaedic surgery, including growth factors, cell therapy and pharmacologics to promote bone and soft-tissue healing.

125  Complications of Pediatric Spinal Surgery: Identification, Evaluation, Treatment and Prevention
Moderator: Scott J. Luhsmann, MD, Saint Louis, MO
Lawrence G. Lenke, MD, Saint Louis, MO
David L. Skaggs, MD, Los Angeles, CA
Michael G. Vitale, MD, Brooklyn, NY
Focuses on intra-operative and post-operative problems which arise during the surgical treatment of pediatric spinal deformity. Emphasis on prevention and optimal treatment of complications.

126  Selection, Implementation and Interpretation of Patient Centered Orthopedic Outcomes
Moderator: Richard J. Haukens, MD, Greenville, SC
John E. Kuhn, MD, Nashville, TN
Robert B. Litchfield, MD, London, ON, Canada
Nick G. Mohstadi, MD, Calgary, Canada
Model strategies for tool selection, implementation, and interpretation to optimize musculoskeletal patient care and practice sustainability.

127  The Unstable Elbow: Current Concepts in Diagnosis and Treatment
Moderator: Jay D. Keener, MD, Saint Louis, MO
Christopher S. Ahmad, MD, New York, NY
John-Erik Bell, MD, Hanover, NH
Robert Z. Tashjian, MD, Salt Lake City, UT
Provides a systematic approach to the diagnosis and management of patients with recurrent elbow instability ranging from traumatic onset instability to overhead athletes.

128  Advances in Cervical Deformity Surgery
Moderator: Alok D. Sharan, MD, New York, NY
James Kang, MD, Pittsburgh, PA
Ahmad Nassr, MD, Rochester, MN
K. Daniel Riew, MD, Saint Louis, MO
Proper evaluation of the patient with a coronal and sagittal cervical deformity. Techniques of deformity correction will be discussed including the use of advanced osteotomies.

129  The Assessment and Treatment of Failed Patellar Stabilization
Moderator: Laurie Hiemstra, MD, Banff, Canada
Lars Blond, MD, Greve, Denmark
Peter B. MacDonald, MD, Winnipeg, MB, Canada
William R. Post, MD, Morgantown, West VA
This course is designed to address the challenge of treating the patient with failed patellar stabilization. Participants will learn to identify the underlying mechanisms behind failure of patellar stabilization and discuss clinical solutions for various presentations.

130  Improving Outcomes: Understanding the Psycho-Social Aspects of the Orthopaedic Trauma Patient
Moderator: Paul Leun, MD, Bronx, NY
Michael J. Bosse, MD, Charlotte, NC
Pamela K. Greenhouse, MBA, Pittsburgh, PA
Ellen MacKenzie, PhD, Baltimore, MD
Delivery of exceptional patient and family care experiences leads to better outcomes, safety, quality and efficiencies.

PAPER PRESENTATION

10:30 AM — 12:30 PM
Room N427

Trauma I: Ankle and Pilon
Moderator(s): Amer J. Mirza, MD, Portland, OR
Ivan S. Tarkin, MD, Pittsburgh, PA

10:30 AM  PAPER: 16

Predictive Radiographic Markers for Concomitant Ipsilateral Ankle Injuries in Tibial Shaft Fractures
Patrick C. Schottel, MD, New York, NY
Marschall B. Berkes, MD, New York, NY
Milton T. Little, MD, New York, NY
Lionel E. Lazaro, MD, New York, NY
Nadine Pardee, BS, New York, NY
Joseph Nguyen, MPH, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorich, MD, New York, NY
Ipsilateral ankle injuries including PMFs, ATITFL avulsion fractures and medial malleolar fractures are commonly associated with tibial shaft fractures, specifically distal third spiral type.

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Tuesday, March 19

10:36 AM  PAPER: 17
Ankle Radiographs in the Early Postoperative Period: Do they Matter?
Matthew R. McDonald, BS, Nashville, TN
Jesse Ehrenfeld, MD, MPH, Nashville, TN
Amir A. Jahangir, MD, Nashville, TN
William T. Obremkey, MD, MPH, Nashville, TN
Manish K. Sethi, MD, Nashville, TN

A retrospective chart review of patients with ankle fractures revealed no significant relationship between timing of first postoperative radiographs and complication rates.

10:42 AM  PAPER: 18
Assessment of Ankle Articular Reduction after Surgical Fixation: Sensitivity and Specificity of Plain Radiographs
Matthew R. Garner, MD, New York, NY
Marschall B. Berkes, MD, New York, NY
Milton T. Little, MD, New York, NY
Patrick C. Schottel, MD, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorich, MD, New York, NY

After review of 122 patients with ankle ORIF, interobserver reliability and specificity for XR are high when assessing ankle articular congruency, however, the sensitivity was found to be only 0.23.

10:54 AM  PAPER: 19
Articular Congruity Predicts Short-Term Clinical Outcomes of Operatively Treated SER IV Ankle Fractures
Marschall B. Berkes, MD, New York, NY
Milton T. Little, MD, New York, NY
Lionel E. Lazaro, MD, New York, NY
Nadine Pardee, BS, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorich, MD, New York, NY

In this population of operatively treated SER IV ankle fractures, the presence of postoperative articular incongruity correlated with inferior clinical outcomes.

11:00 AM  PAPER: 20
Clinical Outcomes of Pronation External Rotation Type IV Ankle Fractures
Marschall B. Berkes, MD, New York, NY
Milton T. Little, MD, New York, NY
Matthew R. Garner, MD, New York, NY
Patrick C. Schottel, MD, New York, NY
Nadine Pardee, BS, New York, NY
Lionel E. Lazaro, MD, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorich, MD, New York, NY

PER IV ankle fractures treated with fragment specific fixation and syndesmotic stabilization experienced good clinical outcomes which were comparable to those seen in SER IV ankle fractures.

11:06 AM  PAPER: 21
Immediate Weightbearing After Open Reduction/Internal Fixation of Ankle Fractures
Reza Firoozabadi, MD, Seattle, WA
Emily C. Harnden, MD, Seattle, WA
Julie Agel, Seattle, WA
James C. Krieg, MD, Seattle, WA

Immediate post operative weight bearing as tolerated in a certain subset of patients with stable osteosynthesis of their fractured ankles is a plausible alternative to delayed weight bearing.

11:18 AM  PAPER: 22
Tightrope for Ankle Syndesmosis Injuries
Amarjit Anand, MBBS, BSc, Middlesex. London, United Kingdom
Bobby Anand, FRCS (Ortho), MBBS, North Wembley Middlesex, United Kingdom
Akash Patel, MBBS, London, United Kingdom
Vikas Vedi, MD, Gerrards Cross, United Kingdom

The use of tightrope is an acceptable and attractive alternative to the use of diastasis screws for well-selected cases. Good surgical technique is required.

11:24 AM  PAPER: 23
A Clinical Evaluation of Alternative Fixation Techniques for Medial Malleolus Fractures
Hayley C. Barnes, Pittsburgh, PA
Lisa K. Cannada, MD, Clayton, MO
J. Tracy Watson, MD, Saint Louis, MO

Our purpose is to report the results of patients with medial malleolar fractures treated with headless compression screws in terms of union, need for hardware removal, and pain over the hardware site.

11:30 AM  PAPER: 24
Does the Fibula Need to be Fixed in Complex Pilon Fracture
John Kurylo, MD, Boston, MA
Neil Datta, BA, New City, NY
Kendra N. Iskander, MD, MPH, Boston, MA
Paul Tornetta III, MD, Boston, MA

Although it may be helpful in specific cases to aid in reduction or augment external fixation, fibular fixation is not a necessary step in the reconstruction of pilon fractures.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Tuesday, March 19

11:42 AM  PAPER: 25
Anterolateral versus Anteromedial Surgical Approach for Pilon Fractures: A Clinical and Functional Comparison
Brett D Crist, MD, Columbia, MO
Tyler J. Jenkins, BS, Columbia, MO
Michael S. Khazzam, MD, Southlake, TX
Yvonne M. Murtha, MD, Wichita, KS
Gregory J. Della Rocca, MD, PhD, Columbia, MO

The anterolateral surgical approach used for pilon fractures appears to result in fewer complications when compared to the anteromedial approach despite being used for more complex fractures.

11:48 AM  PAPER: 26
Medium-Term Outcomes of High-Energy Pilon Fractures: Comparison of Internal and External Fixation Methods
Syed Nawaz, MRCS, Surrey, United Kingdom
Nikolai Briffa, MSc, MD, Surrey, United Kingdom
Kevin Newman, Guildford Surrey, United Kingdom
David Elliott, Teddington, United Kingdom
Arshad Khaleel, MD, Chertsey, United Kingdom

The use of the internal or external fixation methods showed no statistical differences in outcome but had the ilizarov group had fewer soft tissue complications but had similar outcomes at medium-term follow up.

11:54 AM  PAPER: 27
Entrapped Posteromedial Structures in Pilon Fractures
Jonathan G. Eastman, MD, Sacramento, CA
Reza Firoozabadi, MD, Woodbury, MN
Stephen K. Benirschke, MD, Seattle, WA
David Barei, MD, FRCS(C), Seattle, WA
Robert P. Dunbar, MD, Seattle, WA

CT images of pilon fractures can demonstrate interposed posteromedial structures and then allow for appropriate preoperative planning for extraction and subsequent reduction and internal fixation.

12:06 PM  PAPER: 28
Is There a Role for Intramedullary Nails in the Treatment of Simple Pilon Fractures?
Matthew S. Marcus, MD, Newark, NJ
Richard S. Yoon, MD, New York, NY
Joshua Langford, MD, Orlando, FL
Erik Kubiak, MD, Salt Lake City, UT
Andrew Morris, BS, Midvale, UT
Kenneth J. Koval, MD, Orlando, FL
George J. Haidukewych, MD, Orlando, FL
Frank A. Liporace, MD, Englewood Cliffs, NJ

Rationale and preliminary results for intramedullary nailing of simple pilon fractures.

12:12 PM  PAPER: 29
Data Driven Implant Design for the OTA/AO Type 43C3 Pilon Fracture
Brian W. Hill, MD, Saint Paul, MN
Paul M. Lafferty, MD, Woodbury, MN
Tuan V. Ly, MD, Saint Paul, MN
Peter A. Cole, MD, Saint Paul, MN

A new custom anterior pilon plate designed to address tibia pilon mapping data, consistently addressed the fracture patterns in OTA/AO type 43C3 tibial pilon fractures.

12:18 PM  PAPER: 30
New Subdivision of the Hawkins Classification for Talar Neck Fractures Predicts Osteonecrosis
Stephen Reichard, MD, Cleveland Heights, OH
Heather A. Vallier, MD, Cleveland, OH
Allysse Boyd, MA, Cleveland, OH
Timothy A. Moore, MD, Shaker Heights, OH

Separating Hawkins II fractures into those with subtalar subluxation (IIA) versus dislocation (IIB) was predictive of AVN after talar neck fracture. AVN never occurred without subtalar dislocation.

SYMPOSIUM
1:30 PM — 3:30 PM
Grand Ballroom
Accountable Care Organizations and Bundled Payments: Passing Trends or a New Paradigm? (C)
Moderator: Kevin J. Bozic, MD, MBA, San Francisco, CA

Evaluate the impact of accountable care organization and bundled payments on orthopaedic practice, and the organizational proficiencies necessary for successful participation.

I. Overview
   Kevin J. Bozic, MD, MBA, San Francisco, CA

II. ACO’s and Bundled Payments: Separating Hype from Reality
    John Cherf, MD, MPH, MBA, Chicago, IL

III. Developing and Implementing Bundled Payments in Orthopaedics
     Steven F. Schutzer, MD, Farmington, CT

IV. Population Health Management: A New Paradigm for Orthopaedics
    Geoffrey Walton, MHA, Concord, MA

V. The Hospital’s Perspective on Orthopaedic Service Lines and Provider Integration
    Lee Sacks, MD, Oak Brook, IL

VI. Discussion, Q & A
    All Faculty

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.
Tuesday, March 19

**SYMPOSIUM**

1:30 PM — 3:30 PM  
Room S406

**Controversies in Pediatric Sports Medicine (D)**  
*Moderator: John D. Polousky, MD, Greenwood Village, CO*

Case-based debate examining treatment options for four common pediatric sports injuries: ACL, patellofemoral instability, clavicle fractures and medial epicondyle fractures. For each topic, 2-3 cases will be presented.

I. Introduction  
   John D. Polousky, MD, Greenwood Village, CO

II. Adolescent Clavicle Fractures  
   Kevin G. Shea, MD, Boise ID and John D. Polousky, MD, Greenwood, CO

III. Medial Epicondyle Fractures  
   Donald S. Bae, MD, Boston, MA and Laurence Wells, MD, Philadelphia, PA

IV. Patello-femoral Instability  
   Jennifer M. Weiss, MD, Los Angeles, CA and Daniel W. Green, MD, New York, NY

V. Skeletally Immature ACL  
   Theodore J. Ganley, MD, Philadelphia, PA and Minider S. Kocher, MD, MPH, Boston, MA

**SYMPOSIUM**

1:30 PM — 3:30 PM  
Room S105

**Translational Research in Orthopaedics: Structural Bone Allograft from Benchtop to Bedside (E)**  
*Moderator: Robert A. Hart, MD, Portland, OR*

Techniques for selection and processing of allograft bone based on basic biological and biomechanical research, as well as the ultimate clinical applications of structural allograft bone in multiple orthopaedic sub-specialties are described

I. Donor Safety and Screening  
   Steven Gitelis, MD, Chicago, IL

II. Clinical Applications of Allograft in Tumor Reconstruction  
   Steven Gitelis, MD, Chicago, IL

III. Clinical Applications of Allograft Bone in Revision Arthroplasty of the Hip  
   Allan E. Gross, MD, FRSCS, Toronto, ON, Canada

IV. Is There a Role for Biomechanical Standards for Allograft Bone Performance?  
   Robert A. Hart, MD, Portland, OR

V. Clinical Applications of Allograft Bone in Spinal Fusion  
   Robert A. Hart, MD, Portland, OR

VI. Tissue Processing Techniques and Effects  
   Ross M. Wilkins, MD, Evergreen, CO

**INSTRUCTIONAL COURSE LECTURE**

1:30 PM — 3:30 PM

141 **Bearing Surfaces and Total Hip Arthroplasty:**  
Clinical Outcomes and Avoidance, Management of Adverse Events  
*Moderator: Jay R. Lieberman, MD, Los Angeles, CA*  
William J. Hozack, MD, Philadelphia, PA  
Steven J. MacDonald, MD, London, ON, Canada  
Jennifer M. Weiss, MD, Los Angeles, CA and Daniel W. Green, MD, New York, NY

Total Hip Arthroplasty is a successful procedure but the bearing surfaces used are still limiting outcomes. Clinical outcomes, strategies to optimally manage these adverse events and selection of the appropriate bearing surface for your patients will be reviewed.

142 **The Perioperative Management in Total Knee Arthroplasty**  
*Moderator: Robert M. Meneghini, MD, Fishers, IN*  
Pete Caccavallo, MD, Fishers, IN  
Pete Caccavallo, MD, Fishers, IN  
Brett R. Levine, MD, Chicago, IL  
Bryan D. Springer, MD, Charlotte, NC

Perioperative care of knee arthroplasty patients focused on evidence and value driven recommendations for medical management, blood conservation, pain management, infection prevention and wound management.

143 **Thromboembolic Disease: State of the Art Diagnosis, Prophylaxis and Treatment**  
*Moderator: Geoffrey H. Westrich, MD, New York, NY*  
Fred D. Cushner, MD, New York, NY  
Jeffrey S. D'ott, MD, Chantilly, VA  
Norman A. Johanson, MD, Philadelphia, PA

Covers thromboembolic disease in THA/TKA patients, focusing on updates to the ACCP and AAOS guidelines, newer genetic and hematologic testing and bleeding risk.

144 **Legg Clave Perthes Disease: The Beginning and the End**  
*Moderator: Harish S. Hosalkar, MD, San Diego, CA*  
Harry K. Kim, MD, Dallas, TX  
Klaus Siebenrock, MD, Bern, Switzerland

Will present approaches to the diagnosis and management of Perthes disease. Organized by the Guest Nation - Canadian Orthopaedic Association.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Tuesday, March 19

145 Revision Shoulder Arthroplasty: Indications, Techniques and Results
Moderator: John W. Sperling, MD, MBA, Rochester, MN
Robert H. Bell, MD, Akron, OH
Gilles Walch, MD, Lyon, France
Joseph D. Zuckerman, MD, New York, NY
Room 5405
Participant will learn key elements to avoid the most common complications in shoulder arthroplasty as well as learn how to manage these complications when they occur.

146 Adult Lumbar Scoliosis: State-of-the-Art Treatment (Operative and Non-Operative)
Moderator: Christopher L. Hamill, MD, Amherst, NY
Sigurd H. Berven, MD, San Francisco, CA
Christopher J. DeWald, MD, Chicago, IL
Steven D. Glassman, MD, Louisville, KY
Room 5502
Cover advanced techniques in adult deformity care. Emphasis placed on surgical management including osteotomies, pelvic fixation and associated complications.

147 The Not So Simple Ankle Fracture: Avoiding Problems and Pitfalls to Improve Patient Outcome
Moderator: Michael J. Gardner, MD, Saint Louis, MO
Thomas F. Higgins, MD, Salt Lake City, UT
Jeremy J. McCormick, MD, Saint Louis, MO
Samir Mehta, MD, Philadelphia, PA
Room 5104
Management of some ankle fractures may be particularly problematic. Topics include the diabetic patient, severe osteoporosis, syndesmotic injuries, posterior malleolus fractures, and techniques to improve outcomes.

PAPER PRESENTATION

1:30 PM — 3:30 PM
Room N427

Adult Reconstruction Hip I: Primary Total Hip Arthroplasty
Moderator(s): J. Wesley Mesko, MD, Lansing, MI
Steven T. Woolson, MD, Palo Alto, CA
1:30 PM
Anatomy of the Hip at the Time of Total Hip Arthroplasty is a Matter of Morphotype and Etiology But Not Gender
Matthieu Ollivier, Marseille, France
Sebastian Parratte, MD, Marseille, France
Jean-Noel A. Argenson, MD, Marseille, France

Anatomy of the hip at the time of surgery is related to the patient morphotype and to the etiology of the arthritis but not to patient gender.

1:36 PM
Decrease in Dislocation After Primary THA with Use of Larger Femoral Heads: An Update on a Previous Series
Kevin I. Perry, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
William Harmsen, MS, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Larger femoral heads are associate with a lower long-term risk of cumulative dislocation and the cumulative risk of first-time dislocation in primary THA appears to be decreasing over time.

1:42 PM
Reduced Dislocation Rates and Excellent Functional Outcomes with Large-Diameter Femoral Heads
Alex A. Stroh, MD, Baltimore, MD
Aaron J. Johnson, MD, Baltimore, MD
Kimona Issa, MD, Santa Clarita, CA
Qais Naziri, MD, Brooklyn, NY
Ronald E. Delanois, MD, Baltimore, MD
Michael A. Mont, MD, Baltimore, MD
We advocate the use of these components in high-risk patients prone to dislocate after primary or complicated revision total hip arthroplasty.

1:54 PM
The Use of the Transverse Acetabular Ligament for Cup Positioning: A Randomized Controlled Trial
Geert Meermans, MD, Berchem, Belgium
Jan-Jaap Kats, MD, Bergen Op Zoom, Netherlands
Willem J. Van Doorn, MD, Bergen Op Zoom, Netherlands
The goal was to investigate the usefulness of the transverse acetabular ligament in cup positioning. Our data demonstrate more accurate cup placement with less variability regarding anteversion.

2:00 PM
A New Method of Registration in Navigated Hip Arthroplasty without the Need to Register the Anterior Pelvic Plane
Edward T. Davis, FRCS, Hagley, United Kingdom
Martin Haimerl, PhD, MSc, Feldkirchen, Germany
Mario Schubert, Feldkirchen, Germany
Melanie Wegner, Feldkirchen, Germany
We describe a new imageless computer navigation registration technique that can be performed in the lateral position and provides fast, precise and accurate acetabular component placement.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.
Tuesday, March 19

2:06 PM  PAPER: 36
The Effects of Acetabular Reaming on Bone Loss and Component Coverage
Sharat K. Kusuma, MD, Columbus, OH
Zachary A. Goodman, BS, Columbus, OH
Use of a cadaveric CT scan and computer based model of acetabular anatomy and reaming demonstrates that significant acetabular bone loss occurs with increased reaming and placement of larger acetabular.

Discussion - 6 Minutes

2:18 PM  PAPER: 37
A Review of Current Fixation Usage and Registry Outcomes in Total Hip Arthroplasty: The Uncemented Paradox
Anders Troelsen, MD, PhD, Koege, Denmark
Erik Malchau, MD, Boston, MA
Nanna Sillese, Boston, MA
Henrik Malchau, MD, Boston, MA
National arthroplasty registries reports lower revision rates using cemented THRs in patients above 75 years. Despite this, usage of uncemented fixation in THR is increasing worldwide.

2:24 PM  PAPER: 38
Conventional versus Short, Anatomic Metaphyseal-Fitting Cementless Stem for Femoral Neck Fracture
Young-Hoo Kim, MD, Seoul, Republic of Korea
Jeong-Hwan Oh, Seoul, Republic of Korea
A short, metaphyseal-fitting anatomic cementless stem and conventional fully porous-coating cementless stem were rigidly fixed in all patients with an acute femoral neck fracture in 170 patients.

2:30 PM  PAPER: 39
Porous Tantalum vs. Titanium Monoblock Acetabular Components: A Long-Term Randomized Controlled Trial
Julien Wegezny, MD, PhD, Lyon, France
Kenton R. Kaufman, MD, Rochester, MN
Arlen D. Hanssen, MD, Rochester, MN
David G. Lewallen, MD, Rochester, MN
We evaluated the long-term outcome of a less rigid monoblock porous tantalum cup compared to a conventional more rigid porous coated titanium shell in a randomized controlled trial.

Discussion - 6 Minutes

2:42 PM  PAPER: 40
Cemented Hip Replacement with a Conventional Polyethylene Bearing is the Gold Standard for Patients Aged >60 Years
Simon Jameson, Middlesbrough, United Kingdom
Paul Baker, MB, ChB, Newcastle Upon Tyne, United Kingdom
James Mason, PhD, Stockton-on-Tees, United Kingdom
Paul J. Gregg, Cleveland, United Kingdom
Martyn Porter, MD, Wigan, United Kingdom
Mike R. Reed, MBBS MD, Northumberland, United Kingdom
After implant optimisation of the market-leading brands across 76492 procedures, and following risk adjustment cemented THR had the lowest revision risk.

2:48 PM  PAPER: 41
Uncemented Total Hip Arthroplasty for Crowe II/III Dysplasia using a High Hip Center without Bone Graft
Danyal Navabi, MD, FRCS (Orth), New York, NY
Morteza Meftab, MD, New York, NY
Denis Nam, MD, New York, NY
Amar S. Ranawat, MD, New York, NY
Chitranjan S. Ranawat, MD, New York, NY
In Crowe II/III dysplasia, a medialized high hip center with an uncemented cup obviates the need for bone graft and provides durable fixation beyond ten years without dislocation or significant wear.

2:54 PM  PAPER: 42
Outcomes of Cable vs. Wire Fixation Five Years After Total Hip Arthroplasty
Anne Lubbeke-Wolff, MD, DSc, Geneva, Switzerland
Charles Berton, Lille, France
Gabor Puskas, MD, Zurich, Switzerland
Laurent-Panayiotis Christofilopoulos, Geneve, Switzerland
Richard E. Stern, MD, Eysins, Switzerland
Pierre J. Hoffmeyer, MD, Geneva, Switzerland
We found a higher incidence of complications, in particular osteolysis, and a trend towards increased infection and foreign-body reaction with the use of cable compared to wire fixation.

Discussion - 6 Minutes

3:06 PM  PAPER: 43
Similar Improvement in Gait Parameters with Direct Anterior and Posterior Approach Total Hip Arthroplasty
Karl Orishimo, MS, New York, NY
Ian Kremenic, MD, New York, NY
Parthiv A. Rathod, MD, Flushing, NY
Ajit J. Deshmukh, MD, New York, NY
Jose A. Rodriguez, MD, New York, NY
THA performed via direct anterior(DAA) and posterior approach(PA) THA offer similar improvement in gait parameters upto 1year follow-up with the exception of lower internal/external ROM after PA THA.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Tuesday, March 19

3:12 PM  PAPER: 44
Trends in Patient Physical Activity Before and After Primary Total Hip Arthroplasty
Anne Lubbeke-Wolff, MD, DSc, Geneva, Switzerland
Dorith Zimmermann, DSc, Conches - Geneva, Switzerland
Constantinos Roussos, MD
Alexis Bonvin, Plan-les-Ouates, Switzerland
Robin E. Peter, MD, Geneva, Switzerland
Pierre J. Hoffmeyer, MD, Geneve, Switzerland

THA substantially and durably improved activity level in men and women of all age categories. In the last decade the proportion of patients with active lifestyle before and after THA increased by 14%.

3:18 PM  PAPER: 45
Variability in Hospital-Level Risk Standardized Complication Rates Following Primary TJA in Medicare Patients
Kevin J. Bozic, MD, MBA, San Francisco, CA
Laura M. Grosso, New Haven, CT
Zhengiu Lin, PhD, New Haven, CT
Lisa G. Suter, MD, New Haven, CT
Michael Rapp, MD, Baltimore, MD
Jay R. Lieberman, MD, Los Angeles, CA
Robert W. Bucholz, MD, Dallas, TX
Daniel J. Berry, MD, Rochester, MN
Elizabeth Drye, MD, New Haven, CT

Risk-stratified complication rates for primary THA and TKA procedures demonstrate marked variation across hospitals that cannot be accounted for by patient factors alone.

Discussion - 6 Minutes

SURGICAL SKILLS COURSE
1:30 PM — 4:30 PM
15K Unicompartmental and Primary Total Knee Arthroplasty: Measured Resection versus Gap Balancing
Moderator: Rafael J. Sierra, MD, Rochester, MN
Michael P. Bolognesi, MD, Durham, NC
William L. Griffin, MD, Charlotte, NC
William G. Hamilton, MD, Alexandria, VA
Raymond H. Kim, MD, Denver, CO

To learn and apply the techniques of measured resection and gap balancing for unicompartmental and total knee arthroplasty. Simulated bone models.

INSTRUCTIONAL COURSE LECTURE
1:30 PM — 4:30 PM
186 Fractures and Dislocations of the Midfoot: Lisfranc and Chopart Injuries
Moderator: Peter A. Cole, MD, Saint Paul, MN
Sarah Anderson, MD, St Paul, MN
Stephen K. Benirschke, MD, Seattle, WA
Clifford B. Jones, MD, FACS, Grand Rapids, MI
Eric G. Memmert, MD, San Francisco, CA

Midfoot fractures are not uncommon and are frequently isolated, spanning from subtle ligamentous injuries to complex fracture combinations of the lisfranc-chopart joint.

WORKSHOP
1:30 PM — 5:30 PM
154 Community Orthopaedic Surgeon
Moderator: Dwight W. Burney III, MD, Albuquerque, NM
Annunziato Amendola, MD, Iowa City, IA
Daniel J. Berry, MD, Rochester, MN
Thomas K. Fehring, MD, Charlotte, NC
Thomas J. Grogan, MD, Los Angeles, CA
Shepard R. Hurwitz, MD, Chapel Hill, NC
John R. Tongue, MD, Tualatin, OR
Paul Tornetta III, MD, Boston, MA
Ken Yamaguchi, MD, Chesterfield, MO

This workshop is for the orthopaedic surgeon handling a variety of orthopaedic conditions. Whether in the ER or in the office setting, this session is designed to educate the community orthopaedist in accepted practices of common conditions.

INSTRUCTIONAL COURSE LECTURE
1:30 PM — 6:00 PM
187 Planning for Life After Orthopaedics
Moderator: Joseph S. Barr Jr, MD, Boston, MA
Cynthia K. Hinds, CLU, Lakewood, CO
Michael McCaslin, CPA, Indianapolis, IN

Include how to deal with life after surgery, how to plan for retirement in your practice (group or solo), insurance needs and estate planning, and strategies for managing your assets. There will be helpful information for fellows and spouses of any age. (NO CME CREDIT)
Tuesday, March 19

**SYMPOSIUM**

4:00 PM — 6:00 PM

Grand Ballroom

*Elbow Trauma Gone Wrong: How To Solve Complications (F)*

Moderator: Joaquin Sanchez-Sotelo, MD, Rochester, MN

A review of treatment options for complications after elbow trauma, including failed radial head implants, persistent elbow instability, distal humerus nonunion and post-traumatic elbow osteoarthritis using arthroplasty and non-arthroplasty options.

I. **Introduction**
   Joaquin Sanchez-Sotelo, MD, Rochester, MN

II. **Olecranon Nonunion: Evaluation and Treatment**
    George S. Athwal, MD, London, ON, Canada

III. **The Failed Radial Head Replacement**
     David C. Ring, MD, Boston, MA

IV. **Persistent Instability I: Coronoid Deficiency**
    Graham J. King, MD, London, ON, Canada

V. **Persistent Instability II: Ligament Reconstruction**
   Emilie V. Cheung, MD, Redwood City, CA

VI. **Question and Answers**

VII. **Internal Fixation for Distal Humerus Nonunion**
     Michael D. McKee, MD, Toronto, ON, Canada

VIII. **Elbow Arthroplasty for Distal Humerus Nonunion**
      Joaquin Sanchez-Sotelo, MD, Rochester, MN

IX. **Posttraumatic Arthritis and Stiffness: Non-Arthroplasty Options**
    Bernard F. Morrey, MD, San Antonio, TX

X. **Posttraumatic Arthritis: Elbow Arthroplasty**
   Matthew L. Ramsey, MD, Philadelphia, PA

XI. **Case Presentations**
    Theodore A. Blaine, MD, New Haven, CT
    Augustus Mazzocca, MD, West Haverford, CT
    Scott P. Steinmann, MD, Rochester, MN

XII. **Question and Answers**

**SYMPOSIUM**

4:00 PM — 6:00 PM

Room S406

*A Decade of Change in the Treatment of Pediatric & Adult Spinal Deformity: What Progress Has Been Made? (G)*

Moderator: John R. Dimar II, MD, Louisville, KY

The treatment of spinal deformities in the pediatric and adult spinal populations has undergone significant changes over the past decade. There have been fundamental advances in the understanding of the underlying genetics, the 3-d structural changes that occur with growth and aging of spine, the importance in maintaining proper sagittal alignment within the spine, and the development of new pediatric & adult deformity classification regimes to aid in effective treatment.

I. **What Non-Fusion Scoliosis Techniques Have Evolved for the Treatment of the growing Spine and Have Stood the Test of Time: Vertebral Body Stapling, SHILLA, and Tethers**
   Charles E. Johnston II, MD, Dallas, TX

II. **Has the Use of Iliolumbar Fixation in the Treatment of Pediatric Spinal Deformity Improve Outcomes & Fusion Rates?**
    John P. Dormans, MD, Philadelphia, PA

III. **What are the Benefits of the Evolution of Segmental Spinal Instrumentation from Predominately Hook Constructs to Pedicle Screw Instrumentation?**
    B. Stephens Richards III MD, Dallas, TX

IV. **Has the Refinement of the Vertebral Column Resection Technique (VCR) Revolutionized the Approach to the Treatment of Severe Spinal Deformities in Children Over the Past Decade?**
    Lawrence G. Lenke, MD, Saint Louis, MO

V. **Question and Answer**

VI. **Has the Incorporation of Evidence Based Medicine Over the Past Decade Changed How We Treat Spinal Disease and Deformity?**
    Sigurd H. Berven, MD, San Francisco, CA

VII. **What are the Current Indications for Anterior Spinal Surgery in Adult Spinal Degenerative Disease, Deformity & Other Pathologies?**
    John R. Dimar II, MD, Louisville, KY

VIII. **Trans Lumbar Interbody Fusion (TLIF) in the Management of Deformity: Has This Technique Improved Posterior Approach Interbody Surgery Over the Past Decade?**
    Todd J. Albert, MD, Philadelphia, PA

IX. **After a Decade of Use, Which of the Posterior Osteotomy Techniques has Proven Effective in Restoring Sagittal Balance at an Acceptable Complication Rate in Adult Deformity?**
    Frank Schwab, MD, New York, NY

X. **Debate and Case Discussion: Is Change Really Progress in the Treatment of Adult Spinal Deformity?**
    Moderator: Mark Dekutoski, MD, Rochester, MN

XI. **Question and Answer**
Tuesday, March 19

**SYMPOSIUM**

4:00 PM — 6:00 PM  
Room S105

**Cell-Based Strategies for Regenerating Musculoskeletal Tissues (H)**

Moderators: Stuart B. Goodman, MD, Redwood City, CA, and Lynne C. Jones, PhD, Baltimore, MD

Cell-based therapies are currently being used to treat musculoskeletal disorders. Explores prior research, current clinical applications, and key advancements that for future applications for cell-based therapies. Organized by the AAOS Biological Implant Committee.

I. Historical context of cell-based therapies regarding musculoskeletal tissue engineering  
   **Joseph M. Lane, MD, New York, NY**

II. Scientific Basis of Cell-based Therapies in Musculoskeletal Tissue Engineering  
   **Thomas A. Einhorn, MD, Boston, MA**

III. Practical Aspects of Cell Therapy. Different Approaches That Have Been developed and what the State-of-the-Art of Cell-based Therapies Are Today  
   **George F. Muschler, MD, Cleveland, OH**

IV. The Future Regarding the Opportunities for New Applications and Further Development of Existing Therapies  
   **Michael Yaszemski, MD PhD, Rochester, MN**

**INSTRUCTIONAL COURSE LECTURE**

4:00 PM — 6:00 PM

161 Innovative Techniques in Revision Total Hip Arthroplasty  
   **Moderator: Paul Lachiewicz, MD, Chapel Hill, NC**  
   Keith R. Berend, MD, New Albany, OH  
   Michael P. Bolognesi, MD, Durham, NC  
   Scott M. Sporer, MD, Wheaton, IL

Introduce new techniques for management of common problems encountered in revision hip surgery. Acetabular component removal and revision with enhanced surface jumbo cups; new recurrent dislocation options; easier ways to perform ETO and fabricate antibiotic cement spacer; and management of the painful metal-metal and ceramic-ceramic hip will be covered in video vignettes and case presentations.

162 Diagnoses and Treatment of Chronic Ankle Pain  
   **Moderator: James J. Sferra, MD, Cleveland, OH**  
   James L. Beskin, MD, Atlanta, GA  
   David W. Boone, MD, Raleigh, NC

State-of-the-art diagnoses and treatment regimens for problems which cause chronic pain in the ankle, in the athletic and non-athletic population.

163 Is “Medical Clearance” Enough? Understanding Medical Issues That Can Affect Your Patients’ Outcomes  
   **Moderator: Garnett A. Murphy, MD, Germantown, TN**  
   Judith F. Baumhauer, MD, MPH, Rochester, NY  
   William M. Mihalko, MD, PhD, Germantown, TN  
   Alastair S E. Younger, MD, Vancouver, BC, Canada

Despite “medical clearance”, orthopaedic surgeons need to be familiar with medical issues that affect orthopaedic outcomes and have strategies for dealing with these.

164 Compliance in 2013: What You Need to Know!  
   **Moderator: Jack M. Bert, MD, Woodbury, MN**  
   Abby Pendleton, Esq, Southfield, MI  
   Ranjan Sachdev, MD, Bethlehem, PA

Adoption of EHRs along with new regulations introduced by HITECH and ARRA (American Recovery and Reinvestment Act) and PPACA (Patient Protection and Affordable Care Act) laws have significantly increased practice exposure to fines and penalties. Increasing payor audits are putting practices at risk for large repayments and costly Corporate Integrity agreements. Detail risks and outline steps practices can take to update their existing/implement new compliance plans. This will not only help to minimize risks but also help to mitigate fines and penalties in case of unfavorable OIG (Office of Inspector General) audits.

165 Venturing into the Overlap Between Pediatric Orthopaedics and Hand Surgery  
   **Moderator: Scott H. Kozin, MD, Philadelphia, PA**  
   Roger Cornwall, MD, Cincinnati, OH  
   Joshua Ratner, MD, Atlanta, GA  
   Dan A. Zlotolow, MD, Philadelphia, PA

Designed to allow the pediatric orthopaedist and adult hand surgeon to become comfortable with a set of pediatric hand surgery procedures that can safely be performed. Lectures, case presentations, and surgical videos will be used to highlight indications, technique and outcomes. The goal is for the participant to expand their practice to the pediatric hand.

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Tuesday, March 19

166 Avoiding and Managing Complications in Cervical Spine Surgery
Moderator: William F. Donaldson III, MD, Pittsburgh, PA
Clinton J. Devlin, MD, Nashville, TN
Sanford E. Emery, MD, MBA, Morgantown, West VA
Ahmad Nassr, MD, Rochester, MN

Management of common complications such as dysphasia and dysphonia and more complex ones such as vertebral artery injuries, adjacent level disease, inadequate decompression, and fusion related complications.

167 Fractures of the Proximal Humerus: Reduce and Pin, Plate or Replace
Moderator: Robert J. Neviaser, MD, Washington, DC
Lynn A. Crosby, MD, Augusta, GA
Andrew Neviaser, MD, Washington, DC
Herbert Resch, MD, Salzburg, Austria

Will discuss in detail means for correct diagnosis, choice of treatment, and rehabilitation to ensure best outcome for fracture treatment.

168 ACL Revision Reconstruction Technical Issues: A Case Based Approach
Moderator: Rick W. Wright, MD, Saint Louis, MO
Thomas M. DeBerardino, MD, Farmington, CT
Kurt P. Spindler, MD, Nashville, TN
Michael J. Stuart, MD, Rochester, MN

Revision ACL reconstructions result in worse outcomes than primary reconstructions. Focus on cases that demonstrate technical issues including preoperative assessment, graft choice, and femoral and tibial tunnel issues including bone grafting.

169 Controversies in Management of Tibia Fractures
Moderator: Nirmal C. Tejwani, MD, New York, NY
David R. Polonetz, MD, Manalapan, NJ
Michael Suk, MD, Danville, PA
Philip R. Wolinsky, MD, Sacramento, CA

Focus on controversies associated with management of tibia fractures including the use of supra-patellar nailing. The merits of choosing the appropriate fixation for tibial metaphyseal fractures, both proximal and distal will be debated. The use of external fixation for definitive management of non-articular tibia fractures will also be discussed.

PAPER PRESENTATION

4:00 PM — 6:00 PM
Room N427

Sports Medicine/Arthroscopy I: ACL
Moderator(s): Freddie H. Fu, MD, Pittsburgh, PA
Darren L. Johnson, MD, Lexington, KY

4:00 PM PAPER: 46
An Association of Lateral Knee Sagittal Anatomic Factors with Non-Contact ACL Injury: Sex or Geometry?
Christopher J. Wahl, MD, La Jolla, CA
Robert W. Westermann, MD, Iowa City, IA
Gregory Y. Blaisdell, MD, Tampa, FL
Amy M. Cizik, MPH, Seattle, WA

Anatomic sex differences in the length/curvature of the lateral tibial plateau may explain the female predisposition to ACL injury.

4:06 PM PAPER: 47
The Effect of Playing Surface on the Incidence of ACL Injuries in NCAA Football
Jason L. Dragoo, MD, Redwood City, CA
Hillary Braun, BA, Redwood City, CA
Jennah Durham, BA, New York, NY
Michael Chen, MD, Cincinnati, OH
Alex H. Harris, PhD, MS

NCAA football players experience a greater number of ACL injuries when playing on artificial turf surfaces, particularly on artificial surfaces with fill.

4:12 PM PAPER: 48
Recovery of Postural Stability after ACL Reconstruction
Andrew J. Blackman, MD, Saint Louis, MO
Amanda Haas, MA, Saint Louis, MO
John Motley, PT, Saint Louis, MO
Matthew V. Smith, MD, Town and Country, MO
Matthew J. Matava, MD, Chesterfield, MO
Rick W. Wright, MD, Saint Louis, MO
Robert H. Brophy, MD, Chesterfield, MO

Postural stability continues to improve over the first 9 months after ACL reconstruction. Return to sport may not be optimal even at 6 months after ACL reconstruction.

Discussion - 6 Minutes
4:24 PM  PAPER: 49
Endoscopic Anterior Cruciate Ligament Reconstruction in Children using Living Donor Hamstring Tendon Allograft
Martin Goddard, FRCS (Ortho), MBBS, Sheffield, United Kingdom
Nicholas Bowman, MD, East Sussex, United Kingdom
Lucy J. Salmon, PhD, Sydney, Australia
Alison Waller, BAppSci, Sydney, Australia
Justin P. Roe, MD, Sydney, Australia
Leo A. Pinczewski, FRACS, Wollstonecraft, Australia
Endoscopic Transphyseal ACL reconstruction in children using living donor HT tendon allograft achieves excellent clinical and subjective outcomes with high levels of return to desired activities.

4:30 PM  PAPER: 50
Anterior Cruciate Ligament (ACL) Reconstruction in Obese Patients
Michael J. Chambers, MD, Huntington, West VA
Tigran Garabekyan, MD, Huntington, West VA
Stephanie F. Zimmek, MS, Fairfax, VA
John J. Jasko, MD, Barboursville, West VA
Charles Giangarra, FRCS, Huntington, West VA
Obese patient's ACL dependent knees make them more susceptible to injury, predispose them to multiple episodes of instability, indicating the bias of non-operative treatment to be incorrect.

4:36 PM  PAPER: 51
The Adverse Effect of Femoral Nerve Blockade on Quadriceps Strength after ACL Reconstruction
Grigoriy Arutyunyan, MD, Rochester, MN
Aaron J. Krych, MD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
Diane L. Dubm, MD, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
In this comparative study, a continuous femoral nerve block had an adverse effect on quadriceps strength at 6 months following patellar tendon autograft ACL reconstruction compared to a control group.

Discussion - 6 Minutes

4:48 PM  PAPER: 52
Incidence of Post-operative ACL Infections, Graft Choice Makes a Difference
Gregory B. Maletis, MD, Baldwin Park, CA
Maria C. Inacio, MS, San Diego, CA
Jamie L. Desmond, San Diego, CA
Sarah Reynolds, PT
Tadashi T. Funahashi, MD, Irvine, CA
The incidence of surgical site infection after ACL reconstruction was 0.48% (deep 0.32%, superficial 0.16%). Hamstring tendon grafts had an 8.1 times higher risk of deep infection compared to BPTB.

4:54 PM  PAPER: 53
Immediate Anterior Cruciate Ligament Reconstruction Can Save Meniscus without Any Complications
Jong-Keun Seon, MD, Hwasungun, Republic of Korea
Eun K. Song, MD, Hwasun-Gun, South Korea
Ji-Hyeon Yim, Jeonnam, Republic of Korea
Jae-Young Moon, MD, Hwasun-Gun, South Korea
Kyujin Cho, MD, Gwangju, South Korea
Immediate ACL reconstruction had excellent clinical results and stability as good as delayed reconstruction without the problem of knee motion, muscle power and postural control.

5:00 PM  PAPER: 54
The Anterior Cruciate Ligament Graft Positioning Effects in Situ Force
Paulo H. Araujo, MD, Brasilia, Brazil
Mauricio P. Pinto, São Paulo, Brazil
Thiago R. Procta, Sao Paulo, Brazil
Shigeo Asai, Pittsburgh, PA
Kellie K. Middleton, MPH, Pittsburgh, PA
Monica Linde-Rosen, Pittsburgh, PA
Patrick J. Smolinski, Pittsburgh, PA
Freddie H. Fu, MD, Pittsburgh, PA
Anatomic ACL reconstructions show lower graft inclination angle and higher in situ forces than non-anatomic ones, which may ease early failure. Specific rehab protocol is needed to avoid this risk.

5:12 PM  PAPER: 55
Trans-tibial ACL Femoral Tunnel Preparation Increases the Odds of Repeat Ipsilateral Knee Surgery
Andrew R. Duffee, MD, Louisville, KY
Robert A. Magnussen, MD, Columbus, OH
Angela D. Pedroza, MPH, Columbus, OH
Christopher C. Kaeding, MD, Columbus, OH
In this prospective cohort, patients who underwent trans-tibial ACL reconstruction had 2.83 times the odds of repeat ipsilateral knee surgery within 6 years of reconstruction.

5:18 PM  PAPER: 56
Anterior Tibial Tunnel Placement in Anterior Cruciate Ligament Reconstruction Doesn’t Cause Roof Impingement
Kazuhika Hatayama, MD
Masanori Terasuchi, MD, Maebashi-shi, Japan
Kenichi Saito, Maebashi, Japan
Hiroshi Higuchi, MD, Maebashi-Shi, Japan
Masashi Kimura, MD, Maebashi-shi, Gunma, Japan
Anterior tibial tunnel placement in anatomic anterior cruciate ligament reconstruction leads to better anterior stability than posterior placement does, without loss of extension and graft failure.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.
5:24 PM  PAPER: 57
A Prospective Randomized Study Comparing Double- and Single-bundle Techniques for ACL Reconstruction
Mattias Ahlden, MD, Molndal, Sweden
Ninni Sernert, RPT, Trollhattan, Sweden
Jon Karlsson, MD, Gothenburg, Sweden
Juri Kartus, MD, Trollhattan, Sweden

In this prospective randomized study, the subjective and objective outcomes revealed no significant differences between the double-bundle and single-bundle techniques at two years after ACL reconstruction.

Discussion - 6 Minutes

5:36 PM  PAPER: 58
Increased Posterior Tibial Slope is Associated with Repeat ACL Injury
Justin P. Roe, MD, Sydney, Australia
Etienne Leclerc, MD, Bromont, Canada
Lucy J. Salmon, PhD, Sydney, Australia
Alison Waller, BAppSci, Sydney, Australia
Leo A. Pinczewski, FRACS, Wollstonecraft, Australia

An increased posterior tibial slope (PTS) is associated with an increased incidence of further ACL injury after ACL reconstruction.

5:42 PM  PAPER: 59
Effect of Tissue Processing on Outcome of Primary Anterior Cruciate Ligament Reconstruction using Allograft
Sam S. Park, MD, Toronto, ON, Canada
Tim Dwyer, MBBS, Toronto, ON, Canada
Francesco Congiusta, BS, Woodbridge, ON, Canada
John Theodoropoulos, MD, FRCSC, North York, ON, Canada

A systematic review of outcomes for primary anterior cruciate ligament reconstruction with allograft suggests superior outcomes for non-irradiated allograft, and freeze-drying preservation.

5:48 PM  PAPER: 60
Does Anterior Cruciate Ligament Reconstruction Alter Natural History?: A Systematic Review of Long-term Outcomes
Peter N. Chalmers, MD, Chicago, IL
Nathan A. Mall, MD, Chesterfield, MO
Seth Sherman, MD, Columbia, MO
George A. Paletta Jr, MD, Chesterfield, MO
Bernard R. Bach Jr, MD, River Forest, IL

In a systematic review, at a mean of 13.9 years post-injury, ACL-R results in reduced knee instability and improved functional outcomes when compared non-operative treatment.

Discussion - 6 Minutes
**EDUCATIONAL PROGRAMS**

**Wednesday, March 20**

**SURGICAL SKILLS COURSE**
7:00 AM — 10:00 AM

- **2SK**
  **Posterior Correction Techniques in Pediatric Spinal Deformities**
  **Moderator:** Viral V. Jain, MD, MBBS, Cincinnati, OH
  Laurell C. Blakemore, MD, Washington, DC
  Jose A. Herrera Soto, MD, Orlando, FL
  Suhin A. Shah, MD, Wilmington, DE
  Peter F. Sturm, MD, Cincinnati, OH

  This course covers surgical technique on bone models of spinal deformity correction by posterior approach along with indications, post-op management, pearls & pitfalls of Ponte osteotomy, pedicle subtraction osteotomy and vertebral column resection. Simulated bone models only.

- **3SK**
  **Shoulder Instability**
  **Moderator:** Patrick J. McMahon, MD, Pittsburgh, PA
  Hussein A. Elkousy, MD, Houston, TX
  Mark D. Lazarus, MD, Philadelphia, PA
  Andrew S. Rokito, MD, New York, NY
  Jon K. Sekiya, MD, Ann Arbor, MI

  Surgical skills course focuses on the E and M and the latest techniques in arthroscopic and open surgery of shoulder instability. Learn management of patients from the athlete to the manual laborer. Simulated bone models only.

**INSTRUCTIONAL COURSE LECTURE**
8:00 AM — 9:00 AM

- **FD1**
  **Getting Your Great Ideas Supported - Effective Techniques for Women in Orthopaedics**
  **Moderator:** Mary I. O’Connor, MD, Jacksonville, FL

  This session will help you understand the information which different types of people want in order to support your proposals; how to achieve buy-in and counter efforts to sink your next great idea. We will also discuss perceptions of women leaders as well as corresponding tactics for you to counter negative bias and improve your effectiveness.

**SYMPOSIUM**
8:00 AM — 10:00 AM
Grand Ballroom

- **Hot Topics in Total Hip and Knee Arthroplasty (I)**
  **Moderator:** Jay R. Lieberman, MD, Los Angeles, CA

  The goal of this symposium is to review hot topics in TJA related to bearing surface issues in THA, uni TKA, and patient specific instrumentation for TKA. The latest data on blood conservation, pain management and evaluation of infection for TJA will be presented.

  **I.** Update on Metal on Metal Bearing Issues
  **Hip Resurfacing:** I still Do it but with Caution
  **Moderator:** Thomas P. Vail, MD, San Francisco, CA
  **Evaluation of the Symptomatic and Asymptomatic Metal on Metal Hip**
  **Steven J. MacDonald, MD, FRCSC, London, ON, Canada**
  **Pseudotumors and other Adverse Tissue Reactions: Operative Management**
  **Moderator:** Craig J. Della Valle, MD, Chicago, IL

  **II.** Ceramic on Ceramic Hips - Highly Cross-linked Polyethylene Has Made Them Obsolete
  **Moderator:** William J. Maloney, MD, Redwood City, CA
  **(Affirmative)**
  **(Negative)**

  **III.** Case Discussion
  **Moderator:** Jay R. Lieberman, MD, Los Angeles, CA

  **IV.** Perioperative Issues and Total Joint Replacement
  **Blood Conservation and Total Joint Replacement**
  **Moderator:** Bryan D. Springer, MD, Charlotte, NC
  **Pain Management in 2013**
  **Evaluating Periprosthetic Infection: The Optimal Work-Up**
  **Moderator:** Javad Parvizi, MD, FRCS, Philadelphia, PA

  **V.** Case Discussion
  **Moderator:** Jay R. Lieberman, MD, Los Angeles, CA

  **VI.** Patient Specific Instrumentation – Not Ready for Prime Time
  **(Affirmative)**
  **(Negative)**

  **VII.** A Uni (UKA) is the Best Option for the 60 Year Old with Medial Compartment Arthritis
  **(Affirmative)**
  **(Negative)**

  **VIII.** The Knee is Stiff at 4 Weeks. What Do You Do Now?
  **Moderator:** Vincent D. Pellegrini, MD, Baltimore, MD

  **IX.** Case Discussion
  **Moderator:** Jay R. Lieberman, MD, Los Angeles, CA

  **X.** Audience Questions

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Wednesday, March 20

**SYMPOSIUM**
8:00 AM — 10:00 AM  
Room S406

How Orthopedic Surgeons Get Into Trouble. Lessons from The AAOS Compliance Program. A Case Based Symposium (J)

Moderator: Thomas M. Green, MD, Seattle, WA

Drawing on cases from the Committee on Professionalism, the Judiciary Committee, and the Board, this symposium may help orthopedists avoid violations and understand the grievance process. Organized by the AAOS Compliance Committee.

I. Introduction and Background: AAOS Standards of Professionalism  
Edward V. Craig, MD, New York, NY

II. The Nitty Gritty: The Work of the Committee on Professionalism  
Murray J. Goodman, MD, Salem, MA

III. “I Didn’t Do It” The Appeal Process and the Licensure Review by the Judiciary Committee  
Richard D. Schmidt, MD, Edina, MN

IV. Drugs, Alcohol and the Impaired Physician. Are We Doing Enough?  
Gary D. Carr, MD, FAAFP, Purvis, MS

V. PCP Experience: Summary of Cases, Costs & Litigation  
Joseph D. Zuckerman, MD, New York, NY

VI. Questions and Answers  
All Panleists

**SYMPOSIUM**
8:00 AM — 10:00 AM  
Room S105

Distal Radius Fractures: When Things Don’t Work the Way You Thought (K)

Moderator: Scott W. Wolfe, MD, New York, NY

New devices have facilitated operative treatment of distal radius, but reports of tendon injury, loss of fixation, and re-operation have burgeoned. This symposium addresses the recognition and treatment of complications.

I. Introduction  
Scott W. Wolfe, MD, New York, NY

II. Determinants of instability: How To Optimize Non-Operative Treatment  
Philip E. Blazar, MD, Boston, MA

**INSTRUCTIONAL COURSE LECTURE**
8:00 AM — 10:00 AM  
Room N228

201 Femoroacetabular Impingement: Pathophysiological Concepts, Treatment and Outcomes

Moderator: John C. Clohisy, MD, Saint Louis, MO  
Paul E. Beaule, MD, Ottawa, ON, Canada  
J. W. T. Byrd, MD, Nashville, TN  
Christopher L. Peters, MD, Salt Lake City, UT

Comprehensive presentation of FAI pathophysiology, contemporary trends in surgical treatment and indications for different techniques (videos) including clinical outcomes.

202 How to Perform a Primary Total Knee Arthroplasty: Video Vignettes

Moderator: Raymond H. Kim, MD, Denver, CO  
Walter B. Beaver, MD, Charlotte, NC  
Guo-Chin Lee, MD, Philadelphia, PA  
Giles R. Scuderi, MD, New York, NY

Techniques required to perform a successful TKA will be detailed using video vignettes including pre-operative planning, prosthesis selection, surgical exposures, ligamentous balancing, fixation, and patellar resurfacing.
Wednesday, March 20

203 Achilles Tendon Ruptures: An International Evidence Based Approach to Treatment and Rehabilitation
Moderator: Brian G. Donley, MD, Cleveland, OH
James Calder, MD, London, United Kingdom
Jon Karlsson, MD, Gothenburg, Sweden
C. N. Van Dijk, MD, Abcoude, Netherlands

International perspective on current controversies concerning optimal treatment and rehabilitation of achilles tendon ruptures and the efficacy of new techniques and technologies.

204  Sex, Women and Bones: A Musculoskeletal Health Update
Moderator: Amy L. Ladd, MD, Palo Alto, CA
Lisa K. Cannada, MD, Clayton, MO
Aenor J. Sawyer, MD, Oakland, CA
Jennifer M. Wolf, MD, Farmington, CT

In the context of children, women and men at risk, this osteoporosis course will emphasize bone metabolism, interaction with pharmaceuticals, imaging techniques and surgical treatment.

205 Tendinopathy of the Upper Extremity: Evaluation, Treatment and Evidence Based Care
Moderator: Julie E. Adams, MD, Minneapolis, MN
Jeffrey A. Greenberg, MD, Indianapolis, IN
Donald H. Lee, Nashville, TN
David C. Ring, MD, Boston, MA

Diagnosis, evaluation, and treatment of various tendinopathies of the upper extremity, including those about the shoulder, elbow, wrist and hand, will be discussed. Understanding of pathophysiology, treatment options, and the biomechanical and biological evidence supporting these treatment options will be explored. Case discussion and audience participation will be encouraged.

206 The Kids You See on Call: Pearls for Managing Urgent Pediatric Orthopaedics
Moderator: John M. Flynn, MD, Philadelphia, PA
James H. Beaty, MD, Memphis, TN
Martin J. Herman, MD, Philadelphia, PA
David L. Skaggs, MD, Los Angeles, CA

Address many of the pediatric orthopaedics urgencies and emergencies that might cause anxiety for the general orthopaedist covering his or her local emergency room. Highlight standard of care for managing dangerous infection, pediatric femur fractures, SCFE (including technique) and the pulseless supracondylar. Enhanced case discussions are used to teach principles of treating a wide variety of acute pediatric orthopaedic issues, and demonstrating decision-making for controversial pediatric fracture surgical indications.

207 Difficult Shoulder Problems and their Management with Reverse Shoulder Replacement
Moderator: Joseph P. Iannotti, MD, PhD, Cleveland, OH
Anders L. Ekelund, MD, Stockholm, Sweden
Ludwig Seebauer, MD, Forstinning, Germany
Jon J. Warner, MD, Boston, MA

Reverse shoulder arthroplasty is helpful in treatment of difficult and disastrous shoulder pathologies. Cover a thorough understanding of the pathomorphology, pathomechanics and operative techniques to optimize success.

208 Recording and Reporting of Adverse Outcomes in Spine Surgery: Are We at the Top of Our Game?
Moderator: Robert A. Hart, MD, Portland, OR
Paul A. Anderson, MD, Madison, WI
Eugene Carragee, MD, Redwood City, CA
Sohail K. Mirza, MD, MPH, Lebanon, NH

This course will describe the current status of recording and reporting of adverse events during spine surgery as well as initiatives to improve standardization of adverse event reporting and barriers to implementation of such initiatives.

209 Troublesome Stress Fractures
Moderator: Christopher C. Kaeding, MD, Columbus, OH
Richard D. Parker, MD, Cleveland, OH
Rick W. Wright, MD, Saint Louis, MO

Understand the location and clinical presentation of stress fractures that can be challenging treatment situations as well as their appropriate evaluation and work-up; and to understand the surgical and non-surgical treatment options for each of these specific troublesome stress fractures; and to understand the pathophysiology and classification of stress fractures as a basis for our treatment decisions.

210 Proximal Fractures of the Femur
Moderator: Robert F. Ostrum, MD, Chapel Hill, NC
Jeffrey Anglen, MD, FACS, Indianapolis, IN
Henry M. Broekhuyse, MD, Vancouver, BC, Canada
Kenneth A. Egol, MD, New York, NY

Comprehensive review outlining the current indications and treatment for femoral neck, intertrochanteric and subtrochanteric fractures. Case presentations with faculty and audience input will enhance the lecture.

211 Soft Tissue Lumps and Bumps: Tips to Stay Out of Trouble
Moderator: Joel Mayerson, MD, Columbus, OH
Valerae O. Lewis, MD, Houston, TX
Carol D. Morris, MD, MS, New York, NY
Thomas J. Scharschmidt, MD, Powell, OH

Will illustrate tips to “stay out of trouble” when managing soft tissue lumps and bumps.
Wednesday, March 20

212 Fracture and Dislocations of the Elbow: A Return to the Basics
Lakeside, Room E352
Moderator: Ken Faber, MD, London, ON, Canada
April D. Armstrong, MD, Hershey, PA
Daphne M. Beingessner, MD, Seattle, WA
Graham J. King, MD, London, ON, Canada

Provide a comprehensive review of the decision making processes, surgical indications, operative techniques and controversies in the management of fracture and dislocations of the elbow.

8:00 AM — 10:00 AM
Room N427

Adult Reconstruction Hip II: Metal-on-Metal Total Hip Arthroplasty
Moderator(s): Adolph V. Lombardi Jr., MD, New Albany, OH
John B. Meding, MD, Mooresville, IN

8:00 AM
PAPER: 61
Outcome of Metal on Metal Articulations in Primary Total Hip Arthroplasty
Stephen Graves, MD, Adelaide, Australia
Richard De Steiger, MD, Richmond, Australia
David Davidson, MD, University Of Adelaide, Australia
Kara Cashman, BSc (HONS), Adelaide, Australia
Yen-Liang Liu, Adelaide, Australia
Elizabeth C. Griffith, BA, Adelaide, Australia
Philip Ryan, FAFPHM, Adelaide, Australia

This national Registry study was unable to identify any prostheses with MoM bearings which used a head size ≥36mm that had a revision rate that was better when compared to other THA's.

8:06 AM
PAPER: 62
♦ R.I.P.O. Experience on 7,500 Metal-on-Metal Total Hip Arthroplasty at 12 Years Follow Up
Barbara Bordini, MD, Bologna, Italy
Susan Stea, BS, Bologna, Italy
Stefano Falconi, PhD, Bologna, Italy
Federico Pilla, MD, Bologna, Italy
Alessandra Sudatene, MD, Bologna, Italy
Aldo Tomi, MD, Bologna, Italy

Metal-on-metal THA, inferior performance.

8:12 AM
PAPER: 63
Minimum Three-Year Follow Up of 359 ASR XL Metal-on-Metal Total Hip Arthroplasties
Chris J. Dangles, MD, Champaign, IL
Laura Brinkley, RN, NP, Champaign, IL
Rachel-Anne Magsalin, MD, Urbana, IL
Kevin Osborne, BS, CCRP, Urbana, IL

The ASR XL implant system was used in 359 hips at the Carle Foundation Hospital between January 2006 and February 2009. Minimum three year follow up shows a revision rate of 19%.

8:24 AM
PAPER: 64
Results After Stem Retention in Metal on Metal Hip Revisions
Raghu Raman, MRCS, Swanland, United Kingdom
Howard Widdall, Swanland, United Kingdom
Geoffrey V. Johnson, FRCS, Hull, United Kingdom
Keith Jackson, Hull, United Kingdom
Shah Jehan, Hull, United Kingdom
Karthik S. Sivasankaran, MBBS, MRCS, Sheffield, United Kingdom

Trunion wear certainly contributes to the debris disease in Metal on Metal hip replacements. The lengths of the trunion and head size significantly contribute to this wear. Short tapers perform poorly and neck sleeves do not seem to affect the wear pattern.

8:30 AM
PAPER: 65
Are Plasma and Whole Blood Cobalt and Chromium Levels Interchangeable in the Monitoring of Metal on Metal Hips?
Joanne Rogers, Cardiff, United Kingdom
Ibrahim Malek, MD, Cardiff, United Kingdom
Amanda King, BSc(Hons), MBBCh, Cardiff, United Kingdom
Alun John, MD, Cardiff, United Kingdom

There is significant difference in mean plasma and whole blood concentration of Cobalt and Chromium. The ratio of metal ions in these blood fractions is also concentration dependent and not constant.

8:36 AM
PAPER: 66
♦ Surveillance of Metal-on-Metal Hip Arthroplasties: Is Blood Metal Ion Measurement Useful?
Shiraz Sabah, MD, London, United Kingdom
Jorma Pajamaki, MD, PhD, Tampere, Finland
Timo J. Puolakka, MD, PhD, Tampere, Finland
Barry Sampson, MD, London, United Kingdom
Johann Henckel, MD, London, United Kingdom
John Skinner, FRCS, London, United Kingdom

Blood metal ions had good discriminant ability to separate metal-on-metal hip arthroplasties according to function, but were an inadequate screening test.

8:48 AM
PAPER: 67
Chronological Follow-up of Metal Ions as an Important Predictor of (Mal-) Functioning Resurfacing Hip Arthroplasty
Jose M. Smolders, MD, Lent, Netherlands
Annemiek Hol, MSc, Arnhem, Netherlands
Job L. van Susante, MD, PhD, Arnhem, Netherlands

Metal ion trend is important in evaluating implant functioning. Well-functioning implants there is a low chance of increasing ions after 2 years, and if present the absolute elevation should be <1µg/L.
Wednesday, March 20

8:54 AM  PAPER: 68
Synovial Fluid Aspirations in Failed Metal-on-Metal (MoM) Total Hip Arthroplasty (THA)
Cody Wyles, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN

Synovial fluid white blood cell (WBC) counts are variable and often misleading when diagnosing an infection in failed MoM THA, whereas neutrophil percentages are a highly accurate marker.

9:00 AM  PAPER: 69
The Economic Impact for Routine Post-Operative Surveillance of Metal-on-Metal Hip Arthroplasty
David W. Anderson, MD, MS, Kansas City, KS
Ahmer K. Gbori, MD, Cambridge, MA
Hany Bedair, MD, Newton, MA
Henrik Maltzau, MD, Boston, MA
Andrew A. Freiberg, MD, Boston, MA

The cost of long-term surveillance with the recommended intervals for metal on metal bearing surfaces is significantly higher compared to highly crosslinked polyethylene bearing surfaces.

9:12 AM  PAPER: 70
Unexplained Pain in Failed Metal-on-Metal Hip Arthroplasty: A Retrieval, Histological and Imaging Analysis
Danyal Nawabi, MD, FRCS (Orth), New York, NY
Nader A. Nassif, MD, New York, NY
Stephanie L. Gold, BA, New York, NY
Kirsten Stoner, M.S., New York, NY
Marcella Elpers, BS, New York, NY
Timothy M. Wright, PhD, New York, NY
Edwin P. Su, MD, New York, NY
Hollis Potter, MD, New York, NY
Douglas E. Padgett, MD, New York, NY

Unexplained pain is a common mode of failure in MOM hips and is usually due to ALVAL. MRI parameters may be better than surrogates of wear in the surveillance of patients with unexplained pain.

9:18 AM  PAPER: 71
Large Stripe Wear-damage Forms on all Large-diameter Metal on Metal when Hip Joint Motion Reverses Direction
Ian C. Clarke, PhD, Colton, CA
Edward J. McPherson, MD, Los Angeles, CA
Thomas K. Donaldson, MD, Colton, CA
Christopher L. Peters, MD, Salt Lake City, UT

Adverse wear was identified in 60 MOM retrievals and included stripe-wear damage (96% femoral heads) and rim-breakout wear (94% cups). Adverse ‘impingement’ wear is created at extremes of hip motion.

9:24 AM  PAPER: 72
Risk Factors for Pseudotumor Formation in 1,036 Consecutive Hips Operated on with ASR Components
Aleksi Reito, MD, Tampere, Finland
Jorma Pajamäki, MD, PhD, Tampere, Finland
Timo J. Puolakka, MD, PhD, Tampere, Finland
Olli Laimiala, Medical Student, Tampere, Finland
Antti Eskelinen, MD, PhD, Tampere, Finland

We report the risk factors for pseudotumort formation in 1036 consecutive ASR hip replacements.

9:36 AM  PAPER: 73
Short-Term Natural History of Pseudotumor in Asymptomatic Patients After Metal-on-Metal Hip Arthroplasty
Suleiman Almousa, MD, FRCSC, Vancouver, BC, Canada
Nelson V. Greidamus, MD, MPH, Vancouver, BC, Canada
Bassam A. Masri, MD, FRSCC, Vancouver, BC, Canada
Clive P. Duncan, MD, MSc, Vancouver, BC, Canada
Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada

Patients previously diagnosed with pseudotumor in a metal-on-metal hip, were followed and re-assessed using ultrasound, to determine the progression or regression of their pseudotumor(s).

9:42 AM  PAPER: 74
Prevalence of Pseudotumors Associated with Metal-on-Metal Total Hip Arthroplasty and Metal Ion Study
Masahiro Hasegawa, MD, Mie, Japan
Kakunoshin Yoshida, MD, Tsu City, Japan
Hiroki Wakabayashi, Mie Prefecture, Japan
Miyamoto Noriiku, Tsu City, Japan
Akhiro Sudo, Prof., Tsu City, Mie, Japan

Magnetic resonance imaging screening showed that pseudotumors following metal-on-metal total hip arthroplasty were found in 10 hips (9%). Pseudotumors could be associated with increased metal wear.

9:48 AM  PAPER: 75
Metal-on-Metal Bearings and Malignant Disease
Andrew Cobb, MD, Surrey, United Kingdom
Henrik Moller, BA, MSc, London, United Kingdom

The incidence of cancer in patients recorded in the UK National Joint registry compared to that of the population as a whole.

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Wednesday, March 20

PAPER PRESENTATION

8:00 AM — 10:00 AM
Room N426

Pediatrics I: Hip-Lower Extremity
Moderator(s): Donna M. Pacicca, MD, Kansas City, MO
Jeffrey R. Sawyer, MD, Germantown, TN

8:00 AM
Increased Self-reported Pain and Gait Dysfunction at 20 Years Post Hip Fusion as an Adolescent
David A. Podeszwa, MD, Dallas, TX
Kirsten Tulchin-Francis, PhD, Dallas, TX
Adriana De La Rocha, MS, Dallas, TX
Wilsbaw Stevens Jr, BS, Dallas, TX
Deraan Collins, BS, Dallas, TX
Lori A. Karol, MD, Dallas, TX
Daniel J. Sucato, MD, Dallas, TX

At a mean of 20 yrs follow-up, a decreased quality of life with increased pain and gait dysfunction are common in adult pts treated with a HF in adolescence.

8:06 AM
Modern Total Hip Arthroplasty in Teenagers: An Alternative to Hip Arthrodesis
Nirav K. Patel, BMedSc, MBChB, Middlesex, United Kingdom
Thomas W. Luff, MBBS, Bucks, United Kingdom
Paul M. Whittingham-Jones, MRCS, Ottawa, ON, Canada
Christopher Gooding, MD, Middlesex, United Kingdom
Ares Hashemi-Nejad, FRCS, Middlesex, United Kingdom

Debilitating arthritis in teenage patients is a complex problem with limited surgical options. Hip arthrodesis is unpopular amongst patients and modern total hip arthroplasty (THA) may be a promising alternative.

8:12 AM
Demographics of Adolescent/Adult Acetabular Dysplasia Compared to Infantile Developmental Dysplasia of the Hip
Cara Beth Lee, MD, Seattle, WA
Ana Mata-Fink, MD, Lebanon, NH
Michael B. Mills, MD, Boston, MA
Young Jo Kim, MD, PhD, Boston, MA

The demographics of patients with adolescent/adult-diagnosed dysplasia differ from patients with infantile DDH based on questionnaires from 311 patients undergoing periacetabular osteotomy.

Discussion - 6 Minutes

8:24 AM
CT and X-Ray Examination of the Immature Acetabulum is Appropriate Only After Closure of the Triradiate Cartilage
Peter D. Fabricant, MD, New York, NY
Brandon P. Hirsch, MD, Miami, FL
Ian Holmes, BS, New York, NY
Bryan T. Kelly, MD, New York, NY
Dean G. Lorich, MD, New York, NY
David L. Helfet, MD, New York, NY
Eric A. Bogner, MD, New York, NY
Daniel W. Green, MD, New York, NY

Acetabular development completes just prior to closure of the triradiate cartilage, at which time standard radiographic imaging modalities (CT, XR, fluoroscopy) are appropriate.

8:30 AM
Radiation Exposure in the Management of Children with Developmental Dysplasia of the Hip
Todd P. Balog, MD, Lacey, WA
Chad A. Hills, DO, Tacoma, WA
Bryan J. Tompkins, MD, Spokane, WA
Glen O. Baird, MD, Spokane, WA
Paul M. Caskey, MD, Spokane, WA

Introduction: Management of Developmental Dysplasia of the Hip (DDH) is associated with significant radiation exposure which is significantly reduced with low-dose CT scans.

8:36 AM
Assessment of Femoral Head Perfusion Following Anterior Surgical Hip Dislocation Using Contrast-Enhanced MRI
Lionel E. Lazaro, MD, New York, NY
David Wellman, MD, New York, NY
Nadine Pardee, BS, New York, NY
Peter K. Sculco, MD, New York, NY
Jonathan Dyke, PhD, New York, NY
Milton T. Little, MD, New York, NY
Craig Klinger, BS, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorich, MD, New York, NY

Quantitative MRI data confirms preservation of blood supply to the femoral head and head neck junction following an anterior surgical hip dislocation using a ‘Trochanteric Flip’ Osteotomy.

Discussion - 6 Minutes

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Wednesday, March 20

8:48 AM  PAPER: 82
Rate of Correction After Asymmetrical Physeal Suppression in Valgus Deformity
Kyoung Min Lee, MD, Sungnam, Republic of Korea
Chin Y. Chung, MD, PhD, Seoul, Republic of Korea
Ki Hyuk Sung, MD, Kyungki, Republic of Korea
Seung Yeol Lee, MD, Seongnam, Republic of Korea
In H. Choi, MD, Seoul, Republic of Korea
Tae-Joon Cho, Seoul, Republic of Korea
Won Joon Yoo, MD, Seoul, Republic of Korea
Moon Seok Park, MD, Sungnam, Republic of Korea

When we treat valgus deformity in growing children, we should take into consideration the fact that the rate of correction at the distal femur is lower in older children.

9:00 AM  PAPER: 84
The Relationship of GMFCS Level and Hip Subluxation on the Progression of Scoliosis in Children with Cerebral Palsy
Sumeet Garg, MD, Denver, CO
Glenn H. Engelman, BA, Denver, CO
Hiroyuki Yoshihara, MD, PhD, Aurora, CO
Bryan McNair, MS, Aurora, CO
Frank M. Chang, MD, Aurora, CO

Scoliosis progression is more severe in GMFCS 5 patients versus those with less severe CP. There does not appear to be any correlation between scoliosis and severity or laterality of hip subluxation.

9:18 AM  PAPER: 86
Poor Applicability of Radiographic Signs for Femoroacetabular Impingement in Pediatric Populations
Vincent M. Moretti, MD, Chicago, IL
Leslie E. Schwindel, MD, Chicago, IL
Prasad V. Gourineni, MD, Oak Brook, IL

Due to the complexity and timing of normal osseous acetabular development, common radiological signs of adult femoroacetabular impingement are inappropriate for use in the pediatric population.

9:24 AM  PAPER: 87
Surgical Dislocation and Periacetabular Osteotomy for Treatment of Complex Perthes-like Deformities
John C. Clohisy, MD, Saint Louis, MO
Perry L. Schoenecker, MD, Saint Louis, MO
Gail Passos, Saint Louis, MO
Geneva Baca, Saint Louis, MO
Thomas R. Lewis, MD, Oklahoma City, OK

Combined surgical hip dislocation and PAO provides comprehensive deformity correction and excellent clinical results for severe “Perthes-like” hip deformities.

9:36 AM  PAPER: 88
Anatomical Dissection and CT Imaging of the Medial Patellofemoral Ligament in Skeletally Immature Cadaver Knees
Kevin G. Shea, MD, Boise, ID
John D. Polousky, MD, Greenwood Village, CO
John C. Jacobs Jr, Boise, ID
Theodore J. Ganley, MD, Philadelphia, PA
Stephen K. Aoki, MD, Salt Lake City, UT
Shital Parikh, MD, Cincinnati, OH

This study identified the origin and insertion of the MPFL and determined its relationship to the distal femoral physis through CT imaging in skeletally immature cadaver knees.

9:42 AM  PAPER: 89
First Time Patellofemoral Dislocation in Pediatric and Adolescent Patients
Laura Lewallen, MD, Rochester, MN
Amy L. McIntosh, MD, Rochester, MN
Diane L. Dahn, MD, Rochester, MN

Conservative treatment for first time patellofemoral dislocation yielded a 62% success rate overall. However, skeletally immature patients with trochlear dysplasia had only a 31% success rate.
Wednesday, March 20

9:48 AM PAPER: 90
Biomechanical Evaluation of Physeal Sparing Fixation Methods in Tibial Eminence Fractures
Christian N. Anderson, MD, Redwood City, CA
Kirk A. McCullough, MD, Charlotte, NC
Uppuganti Sasidhar, MS, Nashville, TN
Yanna Song, PhD, Nashville, TN
Kevin R. O’Neill, MD, Saint Louis, MO
Allen F. Anderson, MD, Nashville, TN
Warren Dunn, MD, MPH, Nashville, TN
Jeffry Nyman, PhD, MS, Nashville, TN

Under cyclic and load-to-failure conditions, physeal sparing fixation of tibial eminence fractures with screw or PDS suture provides inferior fixation compared to FiberWire or suture anchor.

Discussion - 6 Minutes

8:00 AM — 10:00 AM
Room S102

Practice Management/Rehabilitation I: Quality Improvement
Moderator(s): Catherine Hawthorne, Gallup, NM
Patrick J. Horan, MD, Tampa, FL

8:00 AM PAPER: 91
The Standard One Gram Dose of Vancomycin is not adequate Prophylaxis for MRSA
Anthony A. Catanzano, Seaford, NY
Germaine Cuff, RN, New York, NY
Michael Phillips, MD, New York, NY
Lorraine Hatztler, BA, New York, NY
Sapna A. Mehta, MD, New York, NY
Andrew D. Rosenberg, MD, New York, NY
Joseph A. Bosco III, MD, New York, NY

In settings, such as hospitals, where the risk for resistant bacteria, especially MRSA, is high, it is becoming increasingly important to accurately dose patients who require vancomycin.

8:06 AM PAPER: 92
Prevention of Surgical Site Infections: Effectiveness of Nasal Povidone-Iodine and Nasal Mupirocin
Joseph A. Bosco III, MD, New York, NY
Germaine Cuff, RN, New York, NY
Sapna A. Mehta, MD, New York, NY
Andrew D. Rosenberg, MD, New York, NY
Michael Phillips, MD, New York, NY

Minimize S. aureus concentration on the patient’s skin at time of surgical incision.

8:12 AM PAPER: 93
Staphylococcus Decolonization in Total Joint Arthroplasty is Effective
Antonia Chen, MD, Pittsburgh, PA
Alma Heyl, CCRC
Peter Z. Xu, BA, Pittsburgh, PA
Nalini Rao, MD, Pittsburgh, PA
Brian A. Klatt, MD, Pittsburgh, PA

Current decolonization protocols using intranasal mupirocin and chlorhexidine body washes are effective for reducing MRSA and MSSA colonization in total joint arthroplasty patients.

Discussion - 6 Minutes

8:24 AM PAPER: 94
No Surgical Site Infection Reduction with 2% Chlorhexidine Gluconate Wipes in Total Joint Arthroplasty
Nicholas Farber, BS, Pittsburgh, PA
Antonia Chen, MD, Pittsburgh, PA
Jody L. Feigel, RN, Pittsburgh, PA
Alvaro Sánchez Ortiz, Pittsburgh, PA
Brian A. Klatt, MD, Pittsburgh, PA

Preoperative use of 2% chlorhexidine gluconate-impregnated wipes did not result in a significant decrease in SSI rate in patients undergoing TJA compared to controls in this retrospective cohort study.

8:30 AM PAPER: 95
Total Joint Replacement Surgery: Does Day of Surgery Matter?
Raghuveer Muppavarapu, MD, Boston, MA
Eric L. Smith, MD, Boston, MA

Patients who had surgery on Thursday have significantly longer length of stay compared to patients with operations on Friday or Monday. Patients with an ASA of 3 or higher had a 0.37 day longer stay.

8:36 AM PAPER: 96
Building Consensus: Best Practice Guideline for High Risk Pediatric Spine Surgical Site Infection
Michael G. Vitale, MD, Brooklyn, NY
Matthew D. D. Riedel, BA, New York, NY
Michael P. Glotzbuecker, MD, Waban, MA
Hiroko Matsushima, MA, New York, NY
David P. Roye Jr, MD, New York, NY
Lisa Saiman, MPH, MD, New York, NY

Systematic literature review and nominal group technique led to consensus from 20 pediatric spine surgeons on a “Best Practice Guideline” to prevent high risk pediatric spine surgical site infection.

Discussion - 6 Minutes

An alphabetical faculty financial disclosure list can be found starting on page 292.

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**Wednesday, March 20**

**8:48 AM**
**PAPER: 97**
**Hospital Acquired Conditions After Orthopedic Surgery Do Not Affect Patient Satisfaction Scores**
Michael S. Day, MD, New York, NY
Lorraine Hutzler, BA, New York, NY
Raj Karia, MPH, New York, NY
Kella Vangsness, BA, New York, NY
Nina Setia, MS, New York, NY
Marta Cieslak, MPH, Wading River, NY
Joseph A. Bosco III, MD, New York, NY

Development of an HAC did not affect satisfaction scores in a population of orthopaedic surgery patients at a private, university-affiliated specialty center.

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**9:18 AM**
**PAPER: 101**
**In-Office Supervised versus Outpatient Therapy for Arthroscopic Shoulder Surgery Rehabilitation**
Stephen C. Weber, MD, Sacramento, CA
Donald V. Torrey, PT, Sacramento, CA
Edward Nickerson, Sacramento, CA
Richard B. Riemer, DO, Sacramento, CA

In Office Supervised Home Therapy provides superior outcomes.

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**9:24 AM**
**PAPER: 102**
**Correlation Between Limp and Cup Height in Total Hip Arthroplasty**
Masaaki Matsubara, MD, Tokyo, Japan
Akimasa Kimura, MD, Tokyo, Japan
Atsuko Sato, MD, Tokyo, Japan
Hiroyuki Ogawa, Tokyo, Japan

In THA to DDH patient, if femoral head center is located less than 25 mm of lateral displacement and lower than 32 mm of height from tear drop, postoperative limp disappears significantly short period.

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**9:36 AM**
**PAPER: 103**
**Magnetic Resonance Imaging of the Hip: Poor Cost Utility for Adult Patients with Hip Pain**
James A. Keeney, MD, Saint Louis, MO
Nathan A. Mall, MD, Chesterfield, MO
Muyibat A. Adelani, MD, Saint Louis, MO
Ryan Nunley, MD, Saint Louis, MO

Among patients over the age of 40, hip MRI rarely defines a surgical condition when plain radiographs and medical history do not suggest a specific diagnosis is present.

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**9:42 AM**
**PAPER: 104**
**IVC Filters are Safe and More Cost-Effective than Bridging Heparin for PE Management after Total Joint Arthroplasty**
Ibrahim Raphael, MD, Philadelphia, PA
James C. McKenzie, BS, Philadelphia, PA
Benjamin Zmistowski, BS, Philadelphia, PA
Daniel Brown, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA
Matthew Austin, MD, Philadelphia, PA

IVCF use for PE treatment is safe and more cost-effective than heparin in TJA patients, mostly due to reduced length of in-patient hospital stay.
Wednesday, March 20

9:48 AM  PAPER: 105
The Risk of Hepatitis C Virus Exposure in Orthopaedic Surgery: Is Universal Screening Needed?
Edward M. Delsole, New York, NY
John J. Mercari, MD, MA, New York, NY
Anna Stachel, MPH, New York, NY
Michael Phillips, MD, New York, NY
Joseph D. Zuckerman, MD, New York, NY

Hepatitis C has re-emerged as a serious occupational hazard for orthopaedic surgeons. Here we advocate that all patients be screened prior to surgery, and we propose an ethical procedure for doing so.

Discussion - 6 Minutes

INSTRUCTIONAL COURSE LECTURE

8:00 AM — 11:00 AM

281  Lakeside, Room E351
Surgical Management of Cervical Spondylotic Myelopathy
Moderator: Sanford E. Emery, MD, MBA, Morgantown, West VA
James Kang, MD, Pittsburgh, PA
Michael D. Smith, MD, Edina, MN
Jeffrey C. Wang, MD, Sherman Oaks, CA

Describe the surgical treatment of cervical myelopathy. Anterior and posterior methods emphasizing choice of approach regarding patient selection and complications will be covered.

282  Lakeside, Room E350
Challenging Problems in Shoulder Instability: How To Get It Right the First Time and What To Do If You Don’t
Moderator: Matthew T. Provencher, MD, San Diego, CA
Jeffrey S. Abrams, MD, Princeton, NJ
Pascal Bouleau, MD, Nice, France
Richard K. N. Ryu, MD, Santa Barbara, CA
John M. Tokish, MD, Kailua, HI

Understanding of the common pathology, associated conditions, and radiographic and examination findings of glenohumeral instability. Evaluation and treatment of the failed instability procedures offers additional challenges to optimize return to function.

SYMPOSIUM

10:30 AM — 12:30 PM
Grand Ballroom

Inside Job: The Nuts and Bolts of Sports Injury Management (L)
Moderator: J. Chris Coetzee, MD, Golden Valley, MN

Focus on injuries and management of not only injuries in elite and college athletes, but also weekend warriors and the aging athlete. Covers a wide range of injuries, complexity of injury and management options.

I. Introduction
J. Chris Coetzee, MD, Golden Valley, MN

II. Ankle Fracture Management in Competitive Athletes
Robert B. Anderson, MD, Charlotte, NC

III. "Weekend Warrior" Injuries and Management
Steven L. Haddad, MD, Glenview, IL

IV. Foot and Ankle Problems in Dancers
J. Chris Coetzee, MD, Golden Valley, MN

IV. Audience Questions and Answers/Case Discussion
Moderator: J. Chris Coetzee, MD, Golden Valley, MN

INSTRUCTIONAL COURSE LECTURE

10:30 AM — 12:30 PM

221  S103b
Optimizing Patient Function After Total Hip Replacement
Moderator: Paul E. Beaule, MD, Ottawa, ON, Canada
Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada
Steven J. MacDonald, MD, London, ON, Canada
Pascal-Andre Vendittoli, MD, Montreal, QC, Canada

Provide an in depth look at what current total hip replacement patients obtain in terms of function and what are the current limitations. Evidence for multimodal pain management as well as effective strategies to minimize the risk of transfusion discussed. Surgical techniques to minimize the risk of early complications will be reviewed as well as relevant clinical cases. Organized by the Guest Nation - Canadian Orthopaedic Association.

222  S103a
Complex Case Controversies in Primary and Revision Total Knee Arthroplasty
Moderator: Bryan D. Springer, MD, Charlotte, NC
Thomas K. Fehring, MD, Charlotte, NC
William J. Long, MD, New York, NY
Robert M. Meneghini, MD, Fishers, IN

Focus on controversial issues in primary, complex primary and revision total knee arthroplasty with experts in the field.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Wednesday, March 20

223  Pes Planovalgus: From Adolescent to Adulthood
Moderator: Jenny Frances, MD, New York, NY
David S. Feldman, MD, New York, NY
Vincent S. Mosca, MD, Seattle, WA
Lew C. Schon, MD, Baltimore, MD

Review all aspects of treatment of painful pes planovalgus feet, from idiopathic pathology in children, through neuromuscular deformity to adult pathology using a case based approach. Review current concepts with regards to surgical indications, operative techniques and pearls and pitfalls in each treatment group.

224  Is This Article Going to Change My Practice? A Critical Evaluation of Literature
Moderator: Amer J. Mirza, MD, Portland, OR
Richard Myers, MD, Portland, OR

Methods to identify, critically evaluate, and then integrate literature into clinical practice. Topics include levels of evidence, identifying articles, dissecting components of a paper, and implementing changes in your practice.

225  Opportunities for American Orthopaedists in the Developing World
Moderator: Ralph R. Coughlin, MD, San Francisco, CA
Richard A. Gosselin, MD, El Granada, CA
David A. Spiegel, MD, Philadelphia, PA
Peter G. Trafton, MD, Providence, RI

Globally, musculoskeletal disorders are the most common cause of severe long-term pain and disability. This program hopes to introduce, advocate and inspire global volunteerism.

226  Wide Awake Hand and Wrist Surgery: A New Horizon in Outpatient Surgery
Moderator: Jesse B. Jupiter, MD, Boston, MA
Peter C. Amadio, MD, Rochester, MN
Charles Eaton, MD, Jupiter, FL
Don Lalone, MD, St John, Canada

Demonstrate techniques of applying local anesthesia with minimal pain and effectiveness for a variety of hand and wrist procedures. These will include flexor tendon repair as well as flexor tenolysis; carpal tunnel surgery; percutaneous and open fasciotomy and fasciectomy for Dupuytren’s disorders; fractures in the hand; arthroplasties; and wrist surgery including arthroscopy and ganglion excision. Patient satisfaction documented; clinical outcomes reported with best evidence regarding safety and function, and surgeon experiences with pitfalls and pearls.

227  Adult Consequences of Pediatric Orthopedic Conditions
Moderator: Martin J. Herman, MD, Philadelphia, PA
Todd J. Albert, MD, Philadelphia, PA
Mininder S. Kocher, MD, MPH, Boston, MA
Joshua Ratner, MD, Atlanta, GA

Provides management strategies for common pediatric orthopedic diseases that have important sequelae in adulthood including scoliosis, spondylolisthesis, knee pathology and upper extremity conditions.

228  Assembling the Orthopaedic Team
Moderator: Harpal S. Khanna, MD, Cockeysville, MD
C. L. Barnes, MD, Little Rock, AR
Timothy S. Johnson, MD, Lansdowne, VA
Tricia Marriott PA-C, Alexandria, VA

Various allied health professionals can improve the services delivered by an orthopaedic practice. These include: MAs, NPs, PAs, and athletic trainers. Understanding the potential roles of these team members can maximize utilization and efficiency.

229  Elbow Arthroplasty: Lessons Learned from the Past and Directions for the Future
Moderator: Bernard F. Morrey, MD, San Antonio, TX
George S. Athwal, MD, London, ON, Canada
Thomas W. Throckmorton, MD, Germantown, TN

Current state, lessons learned and the evolving concepts of elbow arthroplasty will be discussed. Opportunities for partial replacement and hybrid type of implants have opened a new dimension to addressing a broader spectrum of elbow pathology.

230  Arthroscopic Rotator Cuff Repair: Indication and Technique
Moderator: Richard L. Angulo, MD, Woodinville, WA
Larry D. Field, MD, Jackson, MS
Anthony A. Romeo, MD, Chicago, IL
Jon J. P. Warner, MD, Boston, MA

Course with 50% lectures including “Mistakes I’ve Made” and 50% patient-based controversies followed by audience questions.

231  Avoiding and Managing Complications in Routine Lumbar Spine Surgery
Moderator: Louis G. Denis, MD, Newton, MA
Wellington K. Hsu, MD, Chicago, IL
Joseph R. O’Brien, MD, Washington, DC
Peter G. Whang, MD, New Haven, CT

The focus is on the identification, management and avoidance of complications related to common conditions treated with lumbar spine surgery.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Wednesday, March 20

232 Patellofemoral Joint: From Instability to Osteoarthrosis
Moderator: Elizabeth A. Arendt, MD, Minneapolis, MN
Diane L. Dahm, MD, Rochester, MN
David Dejour, MD, Lyon, France
Donald C. Fithian, MD, El Cajon, CA

Discuss treatment options for patellofemoral instability and arthritis. Span operative and non-operative management schemes, with emphasis on technical aspects of surgical management.

233 Talus and Calcaneus Fractures: Current Treatment
Moderator: Michael S. Sirkin, MD, Newark, NJ
David Barei, MD, FRCS(C), Seattle, WA
Wayne S. Berberian, MD, Paramus, NJ
Donald C. Fithian, MD, El Cajon, CA

Focus on the current surgical treatment options for fractures of the talus and calcaneus.

234 Tips and Tricks for Problem Fractures
Moderator: Steven J. Morgan, MD, Denver, CO
Peter L. Albahsain, MD, Reno, NV
Daniel S. Honwitz, MD, Danville, PA
Paul Tornetta III, MD, Boston, MA

Trauma experts detail technical tips for common challenges in community orthopaedic fracture care, including intramedullary nailing, locked plate applications, tibial plateau and hip fractures.

235 Malignant and Benign Bone Tumors That You Are Likely to See!
Moderator: Valerae O. Lewis, MD, Houston, TX
Carol D. Morris, MD, MS, New York, NY
Theodore W. Parsons, MD, FACS, Detroit, MI

This course will comprehensively review the common bone tumor, both benign and malignant. The course will conclude with case based presentation and discussion.

PAPER PRESENTATION

10:30 AM — 12:30 PM
Room S105

Adult Reconstruction Knee II: Non-Arthroplasty Approach
Moderator(s): David F. Dalury, MD, Towson, MD
James A. Shaw, MD, Cabin John, MD

10:30 AM
Results of Navigational Open Wedge High Tibial Osteotomy Compared with Conventional Cable Technique
Eun K. Song, MD, Hwasun-Gun, Republic of Korea
Jong-Keun Seon, MD, Hwasungun, Republic of Korea
Ji-Hyeon Yim, Jeonnam, Republic of Korea
Jae-Young Moon, MD, Hwasun-Gun, Republic of Korea
Taek R. Yoon, MD, PhD, Jeonnam, Republic of Korea
Kyung Soon Park, MD, Jeonnam, Republic of Korea

Navigation for HTO significantly improved the accuracy of postoperative leg axis, and decreased the variability of correction with fewer outliers, and without any complications.

10:36 AM
PAPER: 107
Triple Positioning of Tibia Tuberosity Osteotomy for Patellofemoral Disorders
Ching-Jen Wang, MD, Kaohsiung, Taiwan
To Wong, Kaohsiung, Taiwan
Jib-Yang Ko, MD, Niao Sung City, Taiwan

The current study showed that triple positioning of tibia tuberosity osteotomy is effective and provide satisfactory long-term results in patients with patellofemoral disorders.

10:42 AM
PAPER: 108
Comparison with Minimum 30 Years Follow Up between HTO, UKA and TKA Performed in Patients Younger than 50 Years
Philippe Hernigou, PhD, Creteil France, France
Charles Henri Floezyat-Lachaniette, MD, Creteil, France
Alexandre Poignard, MD, Creteil, France

When TKA is performed first in a young patient, loosening is the first cause of revision surgery, while infection the greatest risk to success. Beginning by an HTO first remains the safest way to reach 30 years follow up with only one arthroplasty.

10:54 AM
PAPER: 109
Ten-Year Outcome of High Tibial Osteotomy: A Prospective Study of 100 Patients
Leo A. Pinczewski, FRACS, Wollstonecraft, Australia
John A. Scanelli III, MD, Norfolk, VA
Lucy J. Salmon, PhD, Sydney, Australia
Alison Waller, BAppSci, Sydney, Australia
Justin P. Roe, MD, Sydney, Australia

High levels of patient satisfaction and good subjective outcomes are maintained 10 years after high tibial osteotomy. Poorer outcomes are seen as BMI increases.

11:00 AM
PAPER: 110
The Risk of Total Knee Arthroplasty After Knee Arthroscopy in Patients Under 65
Catherine J. Fedorka, MD, Philadelphia, PA
Brandon M. Tauberg, BS, Pittsburgh, PA
Doug Cerynik, Downingtown, PA
Norman A. Johanson, MD, Philadelphia, PA

The low rate of knee arthroplasty at 1 and 5 years after knee arthroscopy may demonstrate the benefit of arthroscopy in younger patients in relieving symptoms of OA and delaying arthroplasty.
Wednesday, March 20

11:06 AM  PAPER: 111
Long-Term Results of Drilling Chondroplasty in Patellofemoral Arthritis
Yi-Yen Chiang, MD, Taipei, Taiwan
Ching C. Jiang, MD, Taipei, Taiwan
Wo-Jan Tseng, MD, New Taipei City, Taiwan
Yeong-Jang Chen, MD, New Taipei City, Taiwan
Chung-Yu Hsieh, MD, Taipei City, Taiwan
Zheng-Ren Dong, MD, Taipei City, Taiwan
Wei Chen Huang, MD, New Taipei City, Taiwan
Cheng-Wei Wang, MD, Taipei, Taiwan
Yun-Liang Chang, MD, Taipei City, Taiwan
Multiple drilling chondroplasty is a reliable method in treating stage II patellofemoral arthritis for good long term results (average 14.2 years).

11:18 AM  PAPER: 112
Longitudinal Symptom Variation over One Year in the Failing Medial Compartment of the Knee
Luke Jones, MRCS, Oxford, UK, United Kingdom
Kristina Knezevic, MSc, Oxford, United Kingdom
William Jackson, FRCS, Oxford, United Kingdom
David J. Beard, PhD, MSc, Oxford, United Kingdom
We suggest that rigid long plate has superior stability for early weight bearing than the short spacer plate.

11:48 AM  PAPER: 116
Comparative Study of Medial Opening Wedge High Tibial Osteotomy Using Two Different Implants
Woon-hwa Jung, MD, Gyeongsangnam-do, Republic of Korea
Chung-woo Chun, MD, Gyeongsangnam-do, Republic of Korea
Jae Hun Ha, PA, Changwon, Republic of Korea
Kwang J. Oh, MD, Seoul, Republic of Korea
Jae-Heon Jeong, MD, Changwon-Si, Republic of Korea
This Registry based study of 3,195 HTO’s revealed that the overall survivorship of HTO was 89% at 5 years and 73% at 10 years with conversion to total knee replacement as the end point.

11:54 AM  PAPER: 117
Effects of Corticosteroid Injection on Systemic Glucose Levels in Diabetic and Non-diabetic Patients
Mark Stouffer, MD, Dayton, OH
Uthona R. Green, RN, Centerville, OH
Brian Burke, MD, Dayton, OH
Anil Krishnamurthy, MD, Dayton, OH
Ronald J. Markert, PhD, Dayton, OH
Cortisone injections can be an effective treatment for arthritis but cause a significant increase in hyperglycemia in diabetic patients compared to non-diabetic patients.
Wednesday, March 20

12:12 PM  PAPER: 119  Knee Magnetic Resonance Imaging in Adult Patients: Cost Utility is Dependent on Clinician Experience  
James A. Keeney, MD, Saint Louis, MO  
Maryhat A. Adelani, MD, Saint Louis, MO  
Ryan Nunley, MD, Saint Louis, MO  
Nathan A. Mall, MD, Chesterfield, MO  
Knee MRI may be cost effective for assessing adult patients with knee pain or a clinical diagnosis, but cost utility is influenced by the experience of the practitioner ordering the study.

12:18 PM  PAPER: 120  Conflict of Interest in the Assessment of Hyaluronic Acid Injections for Osteoarthritis of the Knee  
Jonathan Printz, MD, Ann Arbor, MI  
John Lee, MD, MS, Ann Arbor, MI  
Michael Knesek, MD, Ann Arbor, MI  
Andrew G. Urtizberea, MD, Ann Arbor, MI  
A systematic review of studies on hyaluronic acid injections for knee osteoarthritis demonstrates the qualitative conclusions are associated with a financial conflict of interest of the authors.

12:30 PM — 2:30 PM  Room N427  
Shoulder and Elbow I: Rotator Cuff 1  
Moderator(s): Joshua Dines, MD, Great Neck, NY  
Stephen C. Weber, MD, Sacramento, CA  
Mark Wright, MD, Auckland, New Zealand  

10:30 AM — 12:30 PM  Room N427  
Shoulder and Elbow I: Rotator Cuff 1  
Moderator(s): Joshua Dines, MD, Great Neck, NY  
Stephen C. Weber, MD, Sacramento, CA  
Mark Wright, MD, Auckland, New Zealand  

10:30 AM  PAPER: 121  Trends in Arthroscopic Versus Open Rotator Cuff Repair  
Jaicharan Iyengar, MD, New York, NY  
Samagh Sanjum, MD, San Diego, CA  
William W. Schauer, San Francisco, CA  
Gaurav Singh, MD, MPH, Fremont, CA  
Frank Valone III, MD, San Francisco, CA  
Feeley T. Brian, MD, San Francisco, CA  
We have demonstrated a significant increase in the rate of arthroscopic rotator cuff repair, a disproportionate rise in associated procedure codes and a shift away from inpatient procedures since 2001.

10:36 AM  PAPER: 122  Factors Predicting Rotator Cuff Re-tear: An Analysis of 1,000 Consecutive Rotator Cuff Repairs  
Brian T. Le, MS, Kogarah, Australia  
Xiao Wu, BSc MBBS, Sydney, Australia  
Patrick H. Lam, Sydney, Australia  
George A. Murrell, MD, Kogarah, Australia  
Rotator cuff tear size, tear thickness, patient age and operative time were the best predictors of re-tear six months after arthroscopic rotator cuff repair in this retrospective cohort study.

10:42 AM  PAPER: 123  Accelerated Rehabilitation After Rotator Cuff Repair: Does Double Row Repair Lower the Risk for Re-tear?  
Franceschi Francesco, MD, Rome, Italy  
Rocco Papalia, MD, PhD, Rome, Italy  
Sebastiano Vasta, MD  
Zampogna Biagio, MD, Rome, Italy  
Angelo Del Buono, MD, Rome, Italy  
Alessio Palumbo, MD, Roma, Italy  
Nicola Maffulli, London, United Kingdom  
Vincenzo Denaro, MD, Rome, Italy  
Double row repair lead to a stronger tendon-to-bone construct, resulting in a significant lower re-tear rate, allowing for accelerated rehabilitation protocol in high risk patients for stiffness.

10:54 AM  PAPER: 124  Arthroscopic Partial Repairs for Irreparable Rotator Cuff Tears: Deterioration of the Results at Serial Follow Up  
Min Soo Shon, MD, Seoul, Republic of Korea  
Jae-Chul Yoo, MD, Seoul, Republic of Korea  
Kyoung-Hwan Koh, MD, Seoul, Republic of Korea  
Tae Kang Lim, MD, Gunpo, Republic of Korea  
Seungwon Lee, MD, Seoul, Republic of Korea  
Young Eun Park, Seoul, Republic of Korea  
Arthroscopic partial repair in large-to-massive RCTs can produce relatively good outcome at minimal 2-years follow-up. However, its results showed gradually deterioration with time.

11:00 AM  PAPER: 125  The Clinical Assessment of Teres Minor in Massive Rotator Cuff Tears  
Philippe Collin, St Gregoire, France  
Thomas D. Treseder, FRACS, Melbourne, Australia  
Gilles Walsh, MD, Lyon, France  
Introduction The clinical assessment of Teres Minor is integral to the management of massive cuff tears. However, clinical tests designed to assess it have not been validated in this setting.

11:06 AM  PAPER: 126  Severity of Fatty Infiltration in Reparable and Irreparable Massive Rotator Cuff Tears  
Teruhisa Mihata, MD, PhD, Takatsuki, Osaka, Japan  
Chisato Watanabe, MD, PhD, Osaka, Japan  
Kunimoto Fukunishi, MD, Osaka, Japan  
Mutsumi Ohue, MD, Takatsuki, Japan  
Tomoyuki Tsujimura, MD, Takatsuki, Japan  
For Goutallier’s Stage 3 or 4 supraspinatus tear, any alternative treatment is recommended. In case of Stage 3 or 4 subscapularis or infraspinatus, supraspinatus tear may be irreparable.
Wednesday, March 20

11:18 AM  PAPER: 127
Correlation Between Dynamic Coracohumeral Distance Using Ultrasonography and Subscapularis Tears
Joo Han Oh, MD, Seongnam, Republic of Korea
Byung Wook Song, Seongnam-si, Republic of Korea
Jung-Ah Choi, MD, PhD, Seongnam-si, Republic of Korea
Sae Hoon Kim, MD, Seoul, Republic of Korea
Jong Pil Yoon, MD, Daegu, Republic of Korea
Seok Won Chung, MD, Gyeonggi-do, Republic of Korea
Yeon Ho Kim, Seongnam-si, Republic of Korea
Jung-Ah Choi, MD, PhD, Seongnam-si, Republic of Korea
Yeun Ho Kim, Seongnam-si, Republic of Korea
Namyun Chung, Seongnam-si, Republic of Korea

We investigated the correlation between dynamic coracohumeral distance (CHD) using USG and subscapularis (SSC) tears and could not confirm the causal relationship between dynamic CHD and SSC tears.

11:24 AM  PAPER: 128
Prospective Randomized Comparative Study of 191 Subscapularis Tear: Arthroscopic Repair vs. Debridement
Sang-boon Ihee, Seoul, Republic of Korea

Based on our results, it is strongly recommended to repair subscapularis in large-to-massive rotator cuff tears, borderline-2 lesions and complete subscapularis tear.

11:30 AM  PAPER: 129
Arthroscopic Rotator Cuff Repair: Knotless Versus Knot-tying Suture Bridge Technique
Yong-Girl Rhee, MD, Seoul, Republic of Korea
Nam-Su Cho, MD, Seoul, Republic of Korea
Chongsuck Parke, MD, Sungnam, Republic of Korea
Jae Hyun Yoo, MD, Seoul, Republic of Korea

Knotless suture-bridge group showed significantly lower retear rate than knot-tying suture bridge group and knotless suture-bridge technique is a new complementary technique for rotator cuff repair.

11:42 AM  PAPER: 130
Comparison of Those Who Underwent and Refused Surgery for Patients Diagnosed as Full-thickness Rotator Cuff Tear
Min Soo Shon, MD, Seoul, Republic of Korea
Kyoung-Hwan Koh, MD, Seoul, Republic of Korea
Tae Kang Lim, MD, Gunpo, Republic of Korea
Jae-Hyeon Park, Seoul, Republic of Korea
Jae-Chul Yoo, MD, Seoul, Republic of Korea

Overall 23.5% of patients who showed full-thickness RC tear refused to have surgery and they seem to have had less pain and disabilities initially than those who underwent surgery.

11:48 AM  PAPER: 131
Clinical Outcome and Prognostic Factors of Revision Arthroscopic Rotator Cuff Tear Repair
Emilio Calvo, MD, Madrid, Spain
Diana Morcillo, Madrid, Spain
Antonio Maria Foruria de Diego, MD, PhD, Madrid, Spain
Maria Valencia, Madrid, Spain

Revision arthoscopic rotator cuff repair results in reliable subjective satisfaction and improvement in shoulder function in selected cases.

11:54 AM  PAPER: 132
Which is Better Between In Situ Repair Versus Completion Repair for Partial-thickness Rotator Cuff Tear?
Yang-Soo Kim, MD, Seoul, Republic of Korea

Both in situ repair and completion repair of partial thickness rotator cuff showed good results in ROM and clinical assessment postoperatively.

12:06 PM  PAPER: 133
Patient Satisfaction-Driven Reimbursement: Setting Patients’ Expectations for Motion After Rotator Cuff Repair
Joshua Harris, MD, Chicago, IL
Grant L. Jones, MD, Columbus, OH
Robert B. Butler, MD, Columbus, OH
Amy L. Ravindra, MD, Columbus, OH
Julie Y. Bishop, MD, Columbus, OH

Significant tear size-dependent differences in range-of-motion following rotator cuff repair were observed: Large tears were stiffer than small at all points up to 1 year after repair.

12:12 PM  PAPER: 134
Analysis of Ultrasound Operator Experience on Accuracy to Detect Supraspinatus Tears
Edward Yuan, MD, Newport Coast, CA
Jeff E. Sodl, MD, Newport Beach, CA
Emil Dionysian, MD, Anaheim, CA

The recommended amount of operator experience necessary to evaluate the supraspinatus tendon before clinical application is 100 ultrasounds.

12:18 PM  PAPER: 135
Appropriate Time to Judge Ultrasound-Guided Lidocaine Test Response for Subacromial Bursitis
Tomohisa Hashiuchi, MD, PhD, Nara City, Japan
Goro Sakiura, MD, Nara City, Japan
Yoshinori Takakura, MD, Nara, Japan
Yasuhito Tanaka, MD, Kashiwara, Nara, Japan

Ultrasound-guided injection into the SAB was performed and 1% lidocaine alone was infused. The maximum amelioration rate was the highest (89.7%) 10 minutes after the injection.
Wednesday, March 20

10:30 AM — 12:30 PM
Room N426

Hand and Wrist I: Hand and Tendon
Moderator(s): Joseph E. Imbriglia, MD, Wexford, PA
Fraser J. Leversedge, MD, Durham, NC

10:30 AM PAPER: 136
* Retrospective Review of the Author’s First 140 Dupuytren’s Patients Treated with Collagenase
James R. Verheyden, MD, Bend, OR

Improved nonoperative Dupuytren’s contracture release results with collagenase can be achieved with use of the entire 0.9 mg bottle of enzyme, using a slow intracord and multicord injection technique.

10:36 AM PAPER: 137
Limited Fasciotomy for Early Dupuytren’s Contracture
Colyn J. Watkins, MD, Atlanta, GA
Michael S. Sridhar, MD, Boston, MA
Jimmy H. Daruwalla, BS, Atlanta, GA
Gary R. McGillivray, MD, Atlanta, GA

This retrospective case series presents the limited fasciotomy, a novel surgical technique for the safe and effective management of early Dupuytren’s contracture.

10:42 AM PAPER: 138
Collagenase Injection for Severe PIPJ Induced Dupuytren’s Contracture Augmented by a Therapy Protocol
Terri Skirven, King of Prussia, PA
Abdo Bachoura, MD, Philadelphia, PA
Sidney M. Jacoby, MD, Philadelphia, PA
Randall W. Calp, MD, King Of Prussia, PA
A. Lee Osterman, MD, Villanova, PA

In the short-term, severe PIPJ contractures benefit from specific post injection splinting and stretching modalities.

11:00 AM PAPER: 140
Mesenchymal Stem Cell and Bioactive Substrate on Suture Confers Early Strength to Rat Achilles Tendon Repairs
Jeffrey Yao, MD, Redwood Shores, CA
Colin Woon, MD, Palo Alto, CA
Anthony Behn, MS, Stanford, CA
Don Y. Park, MD, Foster City, CA
Varun R. Gajendran, MD, Redwood City, CA
Robert Lane Smith, PhD, Stanford, CA

Sutures seeded with stem cells and bioactive substrate enhance early tendon repair strength at 7 to 10 days. There was no significant effect at later stages.

11:06 AM PAPER: 141
Distal Interphalangeal Joint Arthrodesis with Small Headless, Variable Pitch Screws
Christopher Cox, MD, Walnut Creek, CA
Brandon E. Earp, MD, Boston, MA
Philip E. Blazar, MD, Boston, MA

Prior implants for DIP arthrodesis often exceeded the size of the neck of the distal phalanx. We summarize our experience using smaller, variable pitch compression screws to achieve DIP arthrodesis.

11:18 AM PAPER: 142
Arthrodesis Versus Prosthetic Arthroplasty for Osteoarthritis of the Index Finger Pip Joint
Mark A. Vitale, MD, Brooklyn, NY
Steven L. Moran, MD, Rochester, MN
Sanjeev Kakar, MD, Rochester, MN

This study evaluates the outcomes of joint fusion versus prosthetic arthroplasty for osteoarthritis or post-traumatic arthritis of the index finger proximal interphalangeal (PIP) joint.

11:24 AM PAPER: 143
Swan Neck and Buttonhole Deformities in Rheumatoid Arthritis: Clinical Course During a Five-Year Follow Up
Ryo Oda, MD, Kyoto, Japan
Daisaku Tokunaga, MD, Kyoto, Japan
Hiroyoshi Fujisawa, MD, Kyoto, Japan
Shogo Toyama, Kobe, Japan
Ken Imai, MD
Toshikazu Kudo, MD, Kyoto, Japan

In the RA patients, typical swan neck and buttonhole deformities are developed and cause impairment of the hand. We assessed functional deficiency and successive changes regarding these deformities.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Wednesday, March 20

11:30 AM  PAPER: 144
Reconstruction of Swan-neck Deformities after Proximal Interphalangeal Arthroplasty
John M. Froelich, MD, Denver, CO
Marco Rizzo, MD, Rochester, MN

Twelve patients treated with a flexor digitorum superficialis hemitendinosis for a swan-neck deformity after proximal phalangeal joint arthroplasty maintained 39 degrees of flexion at 30 months follow-up.

11:42 AM  PAPER: 145
Anatomic Modular Thumb Basal Joint Hemiarthroplasty Relieves Pain and Improves Function
James W. Pritchett, MD, Seattle, WA
Louis S. Habryl, DO, Gaylord, MI

Basal joint hemiarthroplasty with an anatomically curved, plasma-sprayed, stemmed prosthesis with a modular cobalt-chromium head achieves better results than previous implant types and designs.

11:48 AM  PAPER: 146
Basal Joint Osteoarthritis: Outcomes with Suture Button versus Abductor Pollicis Longus Suspensionplasty
Brian D. White, MD, Tampa, FL
Kristopher Avant, DO, Oklahoma City, OK
Michael C. Doarn, MD, Tampa, FL
Alfred V. Hess, MD, Temple Terrace, FL
Jeffrey D. Stone, MD, Tampa, FL
Michael J. Garcia, MD, Tampa, FL

Suspensionplasty with a suture-button device provides an effective alternative to APL suspensionplasty when treating thumb basal joint osteoarthritis.

11:54 AM  PAPER: 147
Retrospective Review Comparing Post-Operative Protocols for Carpometacarpal Interpositional Arthroplasty
Filippo C. Chillemi, MD, Mobile, AL
Daniel Smith, BS, Mobile, AL
Frederick N. Meyer, MD, Mobile, AL

A retrospective review comparing prolonged immobilization versus limited immobilization with early controlled movements in the post-operative care of CMC interpositional arthroplasty of the thumb.

12:06 PM  PAPER: 148
A Prospective Randomized Study Comparing One versus Two Injections for Stenosing Tenosynovitis
John Peters, BS, Clarks Summit, PA
Charles E. Lemnberry, MD, Chester Springs, PA
Emran Sheikh, MD, Rutherford, NJ
William M. Sayde, MD, Philadelphia, PA
James E. Dowdell III, BA, BS, Philadelphia, PA

Undergoing a staged, two-injection corticosteroid treatment for trigger digits was not shown to be superior to a single-injection treatment.

12:12 PM  PAPER: 149
Plating of Metacarpal Fractures with Locked or Nonlocked Screws: How Many Cortices of Fixation are Really Needed?
Cameron Barr, MD, Stanford, CA
Anthony Behn, MS, Stanford, CA
Yi-Chao Huang, MD, Palo Alto, CA
Jeffrey Yao, MD, Redwood Shores, CA

No significant difference was found in bending or torsion testing between simulated comminuted metacarpal fractures plated with either six bicortical nonlocking screws or four bicortical locking screw.

12:18 PM  PAPER: 150
3D-Computed Tomography Analyses of Intramedullary Headless Screw Fixation of Metacarpal Neck Fractures
Paul Willem Louis W. Ten Berg, Amsterdam, Netherlands
Chaitanya S. Mudgal, MD, Boston, MA
Matthew I. Leibman, MD, Newton, MA
Mark R. Belsky, MD, Newton, MA
David Ruchelsman, MD, Newton, MA

Simulation of retrograde insertion of headless screws in 3D models demonstrates the small extent of surface area violation; articular starting point is supported for these extra-articular fractures.

10:30 AM — 12:30 PM
Room S102
Spine I: Cervical
Moderator(s): Ronald A. Lehman, MD, Potomac, MD
Jory Richman, MD, Pittsburgh, PA

10:30 AM  PAPER: 151
Cost Effectiveness of Single-Level Anterior Cervical Discectomy and Fusion Five Years After Surgery
Leah Y. Carreon, MD, Louisville, KY
Paul A. Anderson, MD, Madison, WI
Vincent C. Traynelis, MD, Chicago, IL
Praveen V. Mummumani, San Francisco, CA
Steven D. Glassman, MD, Louisville, KY

Five year cumulative cost and SF-6D data in 241 patients showed that single-level instrumented ACDF is both effective and durable, with a Cost per QALY gained of $23,460 at five years after surgery.
Wednesday, March 20

10:36 AM PAPER: 152
Minimum Clinically Important Difference Assesses Health State After Repeat Cervical Spine Surgery
Lauren Mioton, BS, Nashville, TN
Kevin R. O’Neill, MD, Saint Louis, MO
Katharine M. Burns, Nashville, TN
Brian T. Wright, BA, Nashville, TN
Robert J. Wilson II, MD, Nashville, TN
Kristin Archer, PhD, Nashville, TN
Matthew McGirt, MD, Nashville, TN
Clinton J. Devin, MD, Nashville, TN

A change difference method with health transition index anchor led to the most accurate minimum clinically important difference calculations for those with cervical fusion for adjacent segment disease.

10:42 AM PAPER: 153
Benjamin E. Stein, MD, Baltimore, MD
Hamid Hassanzadeh, MD, Baltimore, MD
Andre Jakoi, MD, Philadelphia, PA
Amir Jain, MD, Baltimore, MD
Addisu Mesfin, MD, Rochester, NY
Mesfin A. Lemma, MD, Baltimore, MD
David B. Cohen, MD, Cockeysville, MD
Khaled M. Kebabi, MD, Baltimore, MD

Despite the increasing number of cervical fusions being performed, the relative rate of C1-C2 and posterior fusion procedures in patients with RA has been significantly less than in Non-RA patients.

10:54 AM PAPER: 154
Occipital Neuralgia After C1-2 Fusion with/without C2 Root Resection
Jin-Sup Yeom, MD, Sungnam, Republic of Korea
Jacob M. Buchowski, MD, MS, Saint Louis, MO
Ho-Joong Kim, Sungnam, Republic of Korea
Bong-Soon Chang, MD, Seoul, Republic of Korea
Choon-Ki Lee, Seoul, Republic of Korea
K. Daniel Riew, MD, Saint Louis, MO

The prevalence and intensity of postoperative neuralgia was significantly higher with C2 nerve root transection than with its preservation. We recommend against routine C2 nerve root transection.

11:00 AM PAPER: 155
Tractography of the Human Cervical Spine Nerve Roots
Matthew Kang
Brian W. Hill, MD, Saint Paul, MN

This is the first clear depiction of tractography at the cervical spinal nerve root level which may provide more objective data in the clinical assessment of a patient with cervical radiculopathy.

11:06 AM PAPER: 156
Epidemiological Trends in Cervical Spine Surgery between 2002-2009
Miguel Pelton, BS, Chicago, IL
Kern Singh, MD, Chicago, IL

Our study demonstrates that cervical spine surgeries have increased in incidence within the 8 year time duration between 2002 to 2009 with ACFs increasing and laminoplasties decreasing.

11:18 AM PAPER: 157
Cervical Posterior Foraminotomy’s Effect on Segmental Range of Motion in the Setting of Total Disc Arthroplasty
Adam Bevevino, MD, Washington, DC
Ronald A. Lehman, MD, Potomac, MD
Daniel Kang, MD, Bethesda, MD
Duya Ambati, A, Fairfax, VA
Rachel E. Gaume, BS
David E. Gwinn, MD, Crownsville, MD
Anton E. Dimitriev, Fort Belvoir, VA

Our results indicate that segmental stability is not significantly decreased by the presence, number, or level of posterior foraminotomies in the setting of cervical disc replacement.

11:24 AM PAPER: 158
Wear Debris Formation Around Cervical Disc Prosthesis After a Minimum of 18 Months In Vivo
Korush Kabir, MD, Bonn, Germany
Moritz Deml, MD, Bonn, Germany
Hojjat Ahmadzadehfar, MD, Bonn, Germany
Robert Pflugmacher, MD, Bonn, Germany

Tissue surrounded revised cervical prosthesis show foreign body inflammatory reaction to wear debris after a minimum of 18 months in vivo. Revision surgery is promising in such patients after a standardized diagnostic algorithm.

11:30 AM PAPER: 159
Clinical and Radiographic Analysis of an Artificial Cervical Disc: Five-Year Results
J. Kenneth Burkus, MD, Columbus, GA
Vincent C. Traynelis, MD, Chicago, IL
Praveen V. Mummaneni, San Francisco, CA
Regis W. Haid Jr, MD, Atlanta, GA

To determine its safety and efficacy, we examined the outcomes of patients enrolled in a prospective, randomized, multicenter trial of an artificial cervical disc device at 5 years of follow up.

An alphabetical faculty financial disclosure list can be found starting on page 292.

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Wednesday, March 20

11:42 AM PAPER: 160
Rate of Adjacent Segment Disease in Cervical Disc Arthroplasty Versus Fusion: An Analysis of Prospective Studies
Kushagra Verma, MD, Philadelphia, PA  
Sapan D. Gandhi, BS, Philadelphia, PA  
Alexander Vaccaro, MD, PhD, Gladwyne, PA  
Alan S. Hilibrand, MD, Philadelphia, PA  
Todd J. Albert, MD, Philadelphia, PA  
Kristen E. Radcliff, MD, Egg Harbor, NJ

Data from six prospective studies was used to report an overall rate of ASD for ACDF vs. TDR at 2-5 years follow-up. There was no detectable difference in the rate of ASD between these groups.

11:48 AM PAPER: 161
Re-operations in Cervical Total Disc Replacement vs. Anterior Cervical Fusion: Mean 48 Month Follow Up
Scott L. Blumenthal, MD, Plano, TX  
Richard D. Guyer, MD, Plano, TX  
Jack E. Zigler, MD, Plano, TX  
Donna D. Ohnmeiss, MD, Plano, TX

Among 135 patients enrolled in prospective, randomized trials at a single site, compared with anterior cervical fusion, total disc replacement had a significantly lower re-operation rate.

11:54 AM PAPER: 162
Radiographic Predictors of Cervical Spondylotic Myelopathy Severity and Outcome
Fadi Taher, MD, New York, NY  
Federico P. Girardi, MD, New York, NY  
Gbolabo O. Sokumbi, MD, Bethlehem, PA  
Alexander P. Hughes, MD, New York, NY  
Matthias Pummerger, MD, Berlin, Germany  
Andrew A. Sama, MD, New York, NY  
Joseph Nguyen, MPH, New York, NY  
Darren R. Lebl, MD, New York, NY

Study of radiographic predictors of disease severity and outcome of surgically treated cervical spondylotic myelopathy patients.

12:06 PM PAPER: 163
Quantification of Neuronal Injury in Cervical Myelopathy Using Diffusion Tensor Imaging (DTI)
S. Rajasekaran, PhD, Coimbatore, India  
Vishnu Prasath, Coimbatore, India  
AC Swarnalakshmi, Coimbatore, India  
Rishi M. Kamra, MRCS, Coimbatore, India  
Janardhan Verramsetty, PhD, Coimbatore, India

Changes in DTI data metrics at compressed levels of cervical myelopathic patients in comparison to controls and their relation to neurological status of patients.

12:12 PM PAPER: 164
Anterior Corpectomy versus Multiple Level Discectomy in Cervical Spondylotic Myelopathy
Ahmad Fouad A. Allam, MSc, MRCS, Minia, Egypt  
Talaat Taher A. El Hadidi, MD, Cairo, Egypt  
Yasser H. El Miligi, MD, FRCS, Cairo, Egypt  
Wael Koptan, MD, Cairo, Egypt  
Mohammad M. El-Sharkawi, MD, Assuit, Egypt

In a prospective randomized study of 40 CSM patients, both multilevel ACDF using PEEK interbody cages and ACCF using autograft filled TMC and plating have satisfactory clinical & radiological outcome.

12:18 PM PAPER: 165
Clinical Validation of a Novel, Anatomically Based Classification of Cervical Stenosis
Kristen E. Radcliff, MD, Egg Harbor, NJ  
Christopher Kepler, MD, Philadelphia, PA  
Gursukhman Sidhu, MBBS, Philadelphia, PA  
Todd J. Albert, MD, Philadelphia, PA  
Alan S. Hilibrand, MD, Philadelphia, PA  
Jeffrey A. Rihn, MD, Media, PA  
Alexander Vaccaro, MD, PhD, Gladwyne, PA

Current descriptive terminology for cervical stenosis is “mild, moderate, or severe” and does not carry any clinical or anatomical correlation. We created an anatomically based, clinically validated classification of central cervical stenosis.

Discussion - 6 Minutes

SYMPOSIUM
1:30 PM — 3:30 PM
Room S406

Measuring Quality in Orthopaedics (N)
Moderator: Joseph D. Zuckerman, MD, New York, NY

The purpose of this symposium is to detail the provisions of the Patient Protection and Affordable Care Act (PPACA) that require gathering and submission of quality data and the financial impact of this data. The measures are different from those traditionally gathered as outcomes and represent CMS approach to measuring quality. Physicians, Hospital CEOs and Legislative counsel also have their own perspectives on what constitutes quality and these will be described by the respective stakeholders. Describe planning steps needed and actions practices should consider to prevent cuts in reimbursements and possibly qualify for incentive payments. Compliance risks associated with and methods to gather this data will be discussed.

I. Introduction
   Joseph D. Zuckerman, MD, New York, NY

II. Quality Initiatives Mandated by Healthcare Reform
   Ranjan Sachdev, MD, MBA, Bethlehem, PA

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Wednesday, March 20

III. Measuring MD – Measuring Outcomes and Quality in an Academic Setting
   Joseph A. Bosco III, MD, New York, NY

IV. Hospital CEO Role in Quality Initiatives in Orthopaedics
   Louis A. Shapiro, New York, NY

V. Compliance Risks of Quality Initiatives
   Brian D. Annulis, Chicago, IL

VI. Questions and Answers

SYMPOSIUM
1:30 PM — 3:30 PM
Room S105

Surgery for Early Onset Spinal Deformity: What is the Science? (O)
Moderator: Richard H. Gross, MD, Charleston, SC
Management of early onset spinal deformity has evolved over the past decade to the point where a variety of options are available for a given deformity. Critical factors in decision making include systemic osteoporosis, lung growth, and rib growth.

I. Growth Of The Immature Spine
   James O. Sanders, MD, Rochester, NY

II. Growth of the Immature Lung
   Robert M. Campbell, MD, Philadelphia, PA

III. Anatomy of the Immature Rib
   Richard M. Schwend, MD, Kansas City, MO

IV. Growth Modulation
   Peter O. Newton, MD, San Diego, CA

V. Osteoporosis in Children with Early Onset Spinal Deformity
   Chad T. Price, MD, Orlando, FL

VI. Basic Science of the Shilla Procedure
   Richard E. McCarthy, MD, Little Rock, AR

VII. Antikyphotic Strength of Current Fixation Methods
   Richard H. Gross, MD, Charleston, SC

INSTRUCTIONAL COURSE LECTURE
1:30 PM — 3:30 PM

241 Primary Total Hip Arthroplasty: The Basics
Moderator: Thomas S. Thornhill, MD, Boston, MA
Jay K. Lieberman, MD, Los Angeles, CA
Mark W. Pagnano, MD, Rochester, MN
Harry E. Rubash, MD, Boston, MA
Lecture and case presentation format beginning with pre-operative evaluation and peri-operative management. Various surgical approaches will be discussed. Implant choice, bearing surface, fixation and component implantation, prevention of dislocation and leg length equality.

242 Periprosthetic Infection: The Algorithmic Approach and the Emerging Evidence
Moderator: Javad Parvizi, MD, FRCS, Philadelphia, PA
Keith R. Berend, MD, New Albany, OH
Craig J. Della Valle, MD, Chicago, IL
Bryan D. Springer, MD, Charlotte, NC
Management of periprosthetic joint infection will be discussed and all hot topics related to management of PJI. The course will be divided to three sections: prevention, diagnosis and surgical treatment of PJI.

243 The Subtle to Severe Cavus Foot
Moderator: Brian C. Toolan, MD, Flossmoor, IL
John G. Anderson, MD, Grand Rapids, MI
Donald R. Bohay, MD, Grand Rapids, MI
Norman S. Turner III, MD, Rochester, MN
From subtle to severe, the cavus deformity is an underappreciated factor in the evaluation and management of foot and ankle complaints.

244 Disorders of the Distal Radioulnar Joint
Moderator: Brian D. Adams, MD, Iowa City, IA
Michael Hausman, MD, New York, NY
David S. Ruch, MD, Durham, NC
Open surgical and arthroscopic techniques for the treatment of triangular fibrocartilage complex (TFCC) injuries, acute and reconstructive procedures for instabilities and fractures involving the DRUJ and the management of arthritis of the DRUJ including the use of implants will be covered. Basic and complex cases, will be presented highlighting key aspects of treatment outcomes.
Wednesday, March 20

245 Complications of Common Pediatric Fractures: Prevention and Management
Moderator: Martin J. Herman, MD, Philadelphia, PA
Joshua M. Abzug, MD, Timonium, MD
Scott H. Kozin, MD, Philadelphia, PA
Shannon D. Safier, MD, Gladwyne, PA

Complications of common pediatric fractures will be presented in a case-based manner. Discussion regarding pearls and pitfalls of avoiding complications as well as managing them.

246 Difficult Conversations in Orthopaedics
Moderator: Andrew M. Wong, MD, Tallahassee, FL
David A. Halsey, MD, South Burlington, VT
Michael Marks, MD, MBA, Norwalk, CT
Donna P. Phillips, MD, New York, NY

Techniques and tools for difficult patient interactions: bad news, unexpected outcomes, medical error, anger and difficult patients, drug seeking and non-adherence due to financial concerns.

247 Shoulder Prosthetic Arthroplasty Options in 2013: What To Do and When To Do It
Moderator: J. M. Wiatr, MD, Beverly Hills, MI
Geert Decleer, MD, Deurne, Belgium
Thomas B. Edwards, MD, Houston, TX
Ralph Hertel, MD, Bern, Switzerland
Anand M. Murthi, MD, Baltimore, MD
Edwin E. Spencer Jr, MD, Knoxville, TN
John W. Uribe, MD, Coral Gables, FL
Peter L. Verrillo, Wood Ridge, NJ

Describe the indications and technical considerations for the latest cutting-edge prosthetic designs, including stemless TSA, in use in Europe and being investigated in the US. Treatment algorithms, technical pearls, and pitfalls will be covered by an experienced international faculty. Interesting and controversial cases will be presented.

248 PRP to the Reverse Prosthesis: Controversies in Treating Rotator Cuff Pathology
Moderator: Edward V. Craig, MD, New York, NY
Pascal Boileau, MD, Nice, France
Leesa M. Galatz, MD, Saint Louis, MO
John W. Sperling, MD, MBA, Rochester, MN

Indications and use of biologics, patches, open vs arthroscopic repair, tissue transfers and reverse arthroplasty to treat rotator cuff pathology.

249 The Current State of Minimally Invasive Spine Surgery
Moderator: Alexander C. Ching, MD, Portland, OR
Mark B. Dekutoski, MD, Rochester, MN
Eugene Y. Koh, MD, PhD, Baltimore, MD
Gregory M. Mundis, MD, San Diego, CA

Focus on the practical challenges of adopting MIS. Didactic talks will include: teaching MIS, MIS in “traditional” deformity practice and avoiding complications.

250 Sports Hip Injuries: Assessment and Management
Moderator: Bryan T. Kelly, MD, New York, NY
Asheesh Bedi, MD, Ann Arbor, MI
Christopher Larson, MD, Edina, MN
Ira Zaltz, MD, Royal Oak, MI

Reviews the assessment and management of sports related hip injuries including impingement, labral and cartilage injuries, pubalgia, snapping hip syndromes, stress fractures and muscle injuries.

251 The Traumatic Amputee: Surgical Challenges and Advances in Prosthetics
Moderator: Lisa K. Cannada, MD, Clayton, MO
Dana C. Covey, MD, MSc, San Diego, CA
Paul J. Dougherty, MD, Bloomfield Township, MI
Rahul Vaidya, MD, Tecumseh, Canada

Combines lessons learned from care of the civilian and combat amputee for up to date information on treatment, complications, rehabilitation and prosthetic advances.

252 Geriatric Trauma: The Role of Immediate Arthroplasty
Moderator: Andrew H. Schmidt, MD, Minneapolis, MN
Jonathan P. Braman, MD, Minneapolis, MN
Paul J. Duwelius, MD, Portland, OR
Michael D. McKee, MD, San Marino, CA

Discuss, in a case-based format, current indications and techniques for acute arthroplasty to treat articular fractures of the shoulder, elbow, hip and knee in the geriatric patient.

253 Infection Prevention and Control: An Emerging Paradigm
Moderator: Richard P. Evans, MD, Kansas City, MO
Jason H. Calboun, MD, Columbus, OH
John L. Esterhai Jr, MD, Philadelphia, PA
Michael J. Patzakis, MD, San Marino, CA

Preoperative risk factor modification, antibiotic prophylaxis, and perioperative strategies that diminish the risk and rate of surgical infection will be covered. Case presentations are included.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

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Wednesday, March 20

FD2 Video Production for Orthopaedic Surgeons: Getting the Award, Making the Difference
Moderator: Kevin D. Plancher, MD, MS, New York, NY
Cesare Faldini, MD, Bologna, Italy
Video is one of orthopaedic education's most widely used instructional tools. This workshop will teach you how to critically evaluate the orthopaedic technique videos you watch, and how to create award-winning orthopaedic videos of your own.

1:30 PM — 3:30 PM
Room N427
Adult Reconstruction Hip III: Revision Total Hip Arthroplasty
Moderator(s): William A. Jiranek, MD, Richmond, VA
William B. Macaulay, MD, New York, NY

1:30 PM PAPER: 166
Epidemiology of Periprosthetic Femur Fractures in 5,500 Revision Total Hip Arthroplasties
Matthew P. Abdel, MD, New York, NY
David G. Lewallen, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
In 5,500 revision THAs, the intraoperative and postoperative femoral fracture rates were 12.5% and 5.3%, respectively.

1:36 PM PAPER: 167
Clinical Outcome and Proximal Femur Changes Using an Extensively Porous-coated Stem in Periprosthetic Fractures
Eduardo García-Rey, MD, Madrid, Spain
Eduardo García-Cimbrelo, MD, Madrid, Spain
Ana Cruz-Pardos, Madrid, Spain
The extensively porous-coated stem can solve Vancouver B2 and B3 periprosthetic fractures without post-operative bone loss.

1:42 PM PAPER: 168
Total Hip Arthroplasty Conversion After Previous Transstrochanter Rotational Osteotomy
Taek R. Yoon, MD, PhD, Jeonnam, Republic of Korea
Jong-Keun Seon, MD, Hwasungun, Republic of Korea
Eun K. Song, MD, Hwasun-Gun, Republic of Korea
Kyun Soon Park, MD, Jeonnam, Republic of Korea
Jae-Wook Byun, MD, Gwangju, Republic of Korea
Conversion THA after transstrochanteric osteotomy showed similar clinical and radiological results except internal rotation limitation.

2:00 PM — 3:00 PM
Room N427
Revision Total Hip Arthroplasty in Patients 55 Years and Younger
Muyibat A. Adelani, MD, Saint Louis, MO
Robert L. Barrack, MD, Saint Louis, MO
William J. Maloney, MD, Redwood City, CA
Karla Crook, BS, Granite City, IL
John C. Clohisy, MD, Saint Louis, MO
At mid-term follow-up, young patients ≤55 years undergoing revision THA have modest clinical improvement and higher complication and failure rates than primary THA in a matched patient cohort.

2:06 PM PAPER: 171
Short Fully Coated Stem Use in Revision Hip Arthroplasty
Matthew Tetreault, BA, Pittsburgh, PA
Sanjai K. Shukla, MD, Reno, NV
Scott M. Sporer, MD, Wheaton, IL
Craig J. Della Valle, MD, Chicago, IL
The majority of femoral revisions can be performed with the use of a primary length diaphyseal engaging fully porous coated stem.

2:18 PM — 3:18 PM
Room N427
Long-term Outcome of Revision Total Hip Arthroplasty in Juvenile Idiopathic Arthritis at 5-19 Years
Katherine Hueang, MS, Redwood City, CA
Susanna Imrie, PT, Stanford, CA
Stuart B. Goodman, MD, Redwood City, CA
Revision THA in JIA is challenging due to the patients’ small proportions and compromised bone stock. The intra-operative and late complication rates are relatively high.

2:24 PM PAPER: 173
Survivorship of Revision Hip Arthroplasty in Patients with Sickle Cell Disease
Philippe Hernigou, PhD, Creteil France, France
Alexandre Poignard, MD, Creteil, France
Revision hip arthroplasty in SCD involves a higher complications rate and incidence of failure (with iterative revision) than revision arthroplasty in osteonecrosis related to other conditions.
The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

**Wednesday, March 20**

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<tr>
<th>Time</th>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>2:30 PM</td>
<td>174</td>
<td><strong>Increased Revision Rates Following Total Hip Arthroplasty in Patients Who Smoke</strong></td>
<td>Bhaveen Kapadia, MD, Baltimore, MD Kimona Issa, MD, Santa Clarita, CA Aaron J. Johnson, MD, Baltimore, MD Qais Naziri, MD, Brooklyn, NY Robert Pivec, MD, Baltimore, MD Peter M. Bonutti, MD, Effingham, IL Michael A. Mont, MD, Baltimore, MD</td>
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<td>The purpose of this study was to compare the clinical outcomes of total hip arthroplasty in patients who are, or were smokers, to outcomes in non-smoker hip arthroplasty patients.</td>
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<td>2:42 PM</td>
<td>175</td>
<td><strong>Femoral Component Revision Using a 2nd Generation Modular Femoral Implant</strong></td>
<td>Puneet Bhatia, MD, Louisville, KY Arthur L. Malkani, MD, Louisville, KY Steven L. Barnett, MD, Villa Park, CA Tim P. Lovell, MD, Spokane, WA William J. Hozack, MD, Philadelphia, PA</td>
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<td>Femoral component revision can be a challenging problem due to the difficulty in restoring bone loss, offset, and leg length and achieving immediate implant stability.</td>
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<td>2:48 PM</td>
<td>176</td>
<td><strong>Financial Analysis of Revision Hip Arthroplasty and the Shortfall in Reimbursement Paid to Hospitals</strong></td>
<td>Ahmad K. Malik, MD, Beaconsfield, United Kingdom Prakash Jayakumar, MBBS, MSc, London, United Kingdom Safi Ul-Islam, FRCS (Ortho), London, United Kingdom Fares S. Haddad, FRCS, London, United Kingdom</td>
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<td>We found a loss of £860 ($1,360) on average per case when performing revision hip arthroplasty. This shortfall may compromise smaller units from being able to provide this specialist service.</td>
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<td>3:06 PM</td>
<td>178</td>
<td><strong>Referral Patterns for Revision Total Hip Arthroplasty and Effect on Short Term Complications</strong></td>
<td>Stephen Lyman, PhD, New York, NY Kevin J. Bozic, MD, MBA, San Francisco, CA Robert G. Marx, MD, New York, NY Timothy M. Wright, PhD, New York, NY Ting-Jung Pan, MPH, New York, NY Huong Do, MA, New York, NY Douglas E. Padgett, MD, New York, NY</td>
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<td>Referral patterns for revision total hip arthroplasty have implications for patient care delivery and may increase complication rates.</td>
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<td>3:12 PM</td>
<td>179</td>
<td><strong>Aetiology of Hip Revision Cases Performed within the U.K.: Results from the National Joint Registry</strong></td>
<td>Ben Bolland, FRCS, MBBS, MD, Hampshire, United Kingdom Sarah Whitehouse, PhD, Brisbane, Australia John J. Timperley, MD, Exeter, United Kingdom</td>
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<td>This study provides important baseline revision rates by indication for each prosthetic group from which future comparisons can be made.</td>
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<td>Mechanisms of failure and CSR results of revision THA and TKA from a community-based registry of 28,859 arthroplasties performed over a 20 year period are reported.</td>
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Wednesday, March 20

PAPER PRESENTATION

1:30 PM — 3:30 PM
Room N426

Sports Medicine/Arthroscopy II: Articular Cartilage
Moderator(s): James C. Dreese, MD, Monkton, MD
Stephen R. Soffer, MD, Wyomissing, PA

1:30 PM

Magnetic Resonance Imaging and Clinical Evaluation of Chondral Lesions Treated with Allografts Juvenile Cells
Cecilia Pascual Garrido, MD, Denver, CO
Stephanie L. L. Gold, BA, New York, NY
Jaclyn Snukeris, BA, Chapel Hill, NC
Alissa J. Burge, MD, New York, NY
Joseph Nguyen, MPH, New York, NY
Hollis Potter, MD, New York, NY
Russell F. Warren, MD, New York, NY
Riley J. Williams, MD, New York, NY
Scott A. Rodeo, MD, New York, NY

Allogeneic juvenile cells appear to be an effective treatment for chondral lesions, with clinical significant improvement. Quantitative T2 mapping demonstrated immature repair tissue.

1:36 PM

Enhanced MRI T2* Mapping Shows Articular Cartilage Matrix Changes After Anterior Cruciate Ligament Tear
Constance R. Chu, MD, Pittsburgh, PA
Ashley Williams, MS, Pittsburgh, PA
Robin West, MD, Presto, PA
Freddie H. Fu, MD, Pittsburgh, PA
Yongxian Qian, PhD, Pittsburgh, PA

ACLT increases osteoarthritis risk. Ultrashort echo time enhanced T2* MRI mapping shows subsurface matrix changes within normal appearing cartilage in patients with ACLT suggesting occult injury.

1:42 PM

Can Intra-Articular Growth Hormone Improve Repair Tissue Quality After Marrow Stimulation Techniques?
Eric Strauss, MD, New York, NY
Bhavesh B. Joshi, DO, New York, NY
Robert J. Daher, MD, West Harrison, NY
Allan R. Dunn, MD, North Miami, FL
Laith M. Jazrawi, MD, New York, NY

Intra-articular growth hormone led to significant improvement in the gross and histologic appearance of repair tissue following surgical microfracture in the treatment of focal chondral lesions.

1:54 PM

Prediction of Prognosis in Conservative Treatment for Juvenile Osteochondritis Dissecans of the Femoral Condyle
Hiroshi Nakayama, MD, Nishinomiya, Japan
Shinichi Yoshiya, MD, Nishinomiya, Hyogo, Japan

In conservatively treated juvenile OCD, factors such as size and stage of the lesion, presence of discoid meniscus, age, and intensity of training significantly affect the prognosis.

2:00 PM

Microfracture Treatment of Grade IV Knee Cartilage Lesions: Results at 15-year Follow Up in a Group of Athletes
Alberto Gobbi, MD, Milano, Italy
Georgios Karnatzikos, Milano, Italy

Microfracture can be a good option to treat small chondral defects in active individuals but competitive athletes should be advised that the improvement seen would decline with time.

2:06 PM

Protection of Blood Clot in Cartilaginous Microenvironment after Microfracture Enhances Cartilage Repairability
Byoung H. Min, MD, Suwon, Republic of Korea
Jun Young Chung, MD, Suwon, Republic of Korea
Kyung Ho Yoon, MD, Seoul, Republic of Korea
Tae Hun Kim, MD, Suwon, Republic of Korea

Compared to conventional microfracture, ECM biomembrane cover after microfracture resulted in superior outcome in the degree of cartilage repair and peripheral integration at two years of follow-up.

Discussion - 6 Minutes

2:18 PM

Arthroscopic Delivery of Cancellous Tibial Autograft for Unstable Osteochondral Lesions in the Adolescent Knee
Christopher Espinoza-Ervin, MD, Dallas, TX
Henry B. Ellis Jr, MD, Dallas, TX
Philip L. Wilson, MD, Plano, TX

Arthroscopic delivery of proximal tibial cancellous autograft can safely and effectively be administered to unstable osteochondral lesions of the adolescent knee.

2:24 PM

The Use of Platelet-Rich Plasma in Degenerative Lesions of the Knee: Results at Two-year Follow Up
Alberto Gobbi, MD, Milano, Italy
Georgios Karnatzikos, Milano, Italy

PRP intrarticular injections is effective in symptomatic arthritic knees and can act as a preventive agent of OA, by diminishing pain and improving symptoms and quality of life.
Wednesday, March 20

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<th>Time</th>
<th>Paper</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>2:30 PM</td>
<td>PAPER: 189</td>
<td>Gene Therapy for Sustained Release of Bioactive Factors to</td>
<td>Nicole A. Friel, MD, Pittsburgh, PA</td>
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<td>Prevent Post-Traumatic Osteoarthritis</td>
<td>Hannah H. Lee, BS, Pittsburgh, PA</td>
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<td>Michael O’Malley, MD, Pittsburgh, PA</td>
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<td>Karin A. Payne, PhD, Aurora, CO</td>
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<td>Xiao Xiao, PhD, Chapel Hill, NC</td>
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<td>Constance R. Chi, MD, Pittsburgh, PA</td>
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<td>Localized gene therapy for sustained intra-articular release of</td>
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<td>bioactive factors has potential for osteoarthritis prevention in</td>
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<td>anterior cruciate ligament injured joints.</td>
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<td>Discussion</td>
<td>6 Minutes</td>
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<td>2:42 PM</td>
<td>PAPER: 190</td>
<td>Articular Cartilage Regeneration with Autologous Peripheral</td>
<td>Khay-Yong Saw, MD, Kuala Lumpur, Malaysia</td>
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<td>Blood Stem Cells: A Randomized Controlled Trial</td>
<td>Adam W. Anz, MD, Gulf Breeze, FL</td>
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<td>Caroline S. Lee, PhD, Kuala Lumpur, Malaysia</td>
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<td>Shahnin Merican, Damansara Heights KL, Malaysia</td>
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<td>S. Ahmad Rooki, MD, FRCS, Petaling Jaya, Malaysia</td>
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<td>Paisal Hussin, MS, Serdang, Malaysia</td>
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<td>Reza CS C. Ng, MD, Petaling Jaya, Malaysia</td>
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<td>Kuansegaran Ragavanaidu, MD, Shah Alam, Malaysia</td>
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<td>The addition of autologous peripheral blood progenitor cells to</td>
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<td>narrow stimulation produces cartilage that histologically</td>
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<td>approaches normal hyaline cartilage better than narrow</td>
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<td>stimulation alone.</td>
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<td>2:48 PM</td>
<td>PAPER: 191</td>
<td>Return to an Athletic Lifestyle Following Osteochondral</td>
<td>James S. Shaha, MD, Tripler AMC, HI</td>
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<td>Allograft Transplantation of the Knee</td>
<td>Jay B. Cook, MD, Leesburg, FL</td>
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<td>Douglas J. Roweles, MD, Aria, HI</td>
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<td>Craig R. Bottini, MD, Honolulu, HI</td>
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<td>Steve Shaha, Draper, UT</td>
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<td>Lt.Col John M. Tokish, MD, Kailua, HI</td>
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<td>Osteochondral allograft transplantation was ineffective at</td>
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<td>returning an active duty population to duty or sport participation.</td>
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<td>2:54 PM</td>
<td>PAPER: 192</td>
<td>Revision Osteochondral Allografts: Do They Work?</td>
<td>Melissa T. Horton, BS, La Jolla, CA</td>
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<td>Pamela A. Pulido, RN, BSN, La Jolla, CA</td>
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<td>Julie C. McCauley, MPH, La Jolla, CA</td>
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<td>William Bugbee, MD, La Jolla, CA</td>
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<td>Secondary (revision) osteochondral allografting (OCA) of the</td>
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<td>knee is a viable treatment option for patients with a failed</td>
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<td>primary OCA who are still considered acceptable candidates for</td>
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<td>cartilage restoration.</td>
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<td>6 Minutes</td>
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<td>3:06 PM</td>
<td>PAPER: 193</td>
<td>A Novel Biomimetic Osteochondral Scaffold for the Treatment of</td>
<td>Elizaveta Kon, MD, Italy, Italy</td>
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<td>Osteochondritis Dissecans</td>
<td>Giuseppe Filardo, MD, Bologna, Italy</td>
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<td>Alessandro Di Martino, MD, Bologna, Italy</td>
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<td>Berardo Di Matteo, Med Student</td>
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<td>Francesco Perdisa, MD, Bologna, Italy</td>
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<td>Maria Letizia Merli, Bologna, Italy</td>
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<td>Luca Andriolo, MD, Bologna, Italy</td>
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<td>Francesco Tentoni, Riccione, Italy</td>
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<td>This study reports the interesting clinical efficacy at short</td>
<td>Maurilio Marcacci, MD, Bologna, Italy</td>
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<td>term of a novel biomimetic osteochondral scaffold in treating</td>
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<td>osteochondritis dissecans of the knee.</td>
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<td>3:12 PM</td>
<td>PAPER: 194</td>
<td>Matrix Assisted Autologous Chondrocyte Transplantation: Mid-</td>
<td>Elizaveta Kon, MD, Italy, Italy</td>
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<td>term Results and Prognostic Factors</td>
<td>Giuseppe Filardo, MD, Bologna, Italy</td>
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<td>Francesco Iacono, MD, Bologna, Italy</td>
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<td>Francesco Perdisa, MD, Bologna, Italy</td>
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<td>Mid term matrix assisted chondrocyte transplantation determines</td>
<td>Maurilio Marcacci, MD, Bologna, Italy</td>
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<td>interesting outcome especially in young active men affected by</td>
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<td>traumatic lesions.</td>
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<td>3:18 PM</td>
<td>PAPER: 195</td>
<td>An Autologous Chondrocyte Tissue Implant (ACTI) for the</td>
<td>Dennis C. Crawford, MD, Portland, OR</td>
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<td>Treatment of Chondral Defects in the Femur: Mid-term Results</td>
<td>Thomas M. DeBerardino, MD, Farmington, CT</td>
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<td>Claude T. Moorman III, MD, Durham, NC</td>
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<td>Dean C. Taylor, COL, MD, Durham, NC</td>
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<td>ChunBong B. Ma, MD, San Francisco, CA</td>
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<td>James C. Chesnutt, MD, Portland, OR</td>
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<td>We evaluated the mid-term results, safety and efficacy of a</td>
<td>Riley J. Williams, MD, New York, NY</td>
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<td>third-generation autologous chondrocyte tissue implant (ACTI) from</td>
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<td>preliminary multi-center, prospective randomized controlled</td>
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<td>trials.</td>
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Wednesday, March 20

3:24 PM  PAPER: 829
Novel Strategies to Enhance Microfracture Surgery: SDF and Sphingosine Scaffolds in Cartilaginous Defects
Noah Chinitz, MD, New York, NY
Anthony A. Catanzano, Seaford, NY
Neil V. Shah, BS, Brooklyn, NY
Pasquale Razzano, MS, Manhasset, NY
Zev Klapbolz, Woodmere, NY
Nadeen Chahine, PhD, Manhasset, NY
Nicholas A. Sgaglione, MD, Great Neck, NY
Daniel A. Grande, PhD, Manhasset, NY

SDF and sphingosine are confirmed to chemoattract mesenchymal stem cells, and scaffolds coated with SDF and sphingosine display hyaline cartilage regenerates after a microfracture model in rat knees.

Discussion - 6 Minutes

PAPER PRESENTATION

1:30 PM — 3:30 PM
Room S102

Trauma II: Geriatric Fractures
Moderator(s): Paul E. Levin, MD, Bronx, NY
Gilbert R. Ortega, MD, Scottsdale, AZ

1:30 PM  PAPER: 196
Geriatric Fractures About the Hip: Divergent Patterns in the Proximal Femur, Pelvis and Acetabulum
Matthew P. Sullivan, MD, Philadelphia, PA
Keith D. Baldwin, MD, Sicklerville, NJ
Derek J. Donegan, MD, Philadelphia, PA
Samir Mehta, MD, Philadelphia, PA
Jaimo Ahn, MD, PhD, Philadelphia, PA

The rates of geriatric acetabular, pelvic and subtrochanteric femur fractures are increasing and fragility hip fractures decreasing in the face of widespread bisphosphonate use.

1:36 PM  PAPER: 197
A Modified Frailty Index: Correlation to One and Two-year Mortality in Geriatric Femoral Neck Fractures
Kushal V. Patel, MD, Temple, TX
Adam Shar, MD, Temple, TX
Zachary H. Hubert, BS, Riviera, TX
Timothy R. Randell, MD, Temple, TX
Kindyle L. Brennan, PhD, Temple, TX
Daniel Jupiter, PhD, Temple, TX
Michael L. Brennan, MD, Temple, TX
Robert A. Probe, MD, Temple, TX
Matthew L. Davis, MD, FACS, Temple, TX

A modified frailty index from the Canadian Study of Health and Aging Frailty Index may play a role in assessing one- and two-year mortality in geriatric femoral neck fractures.

1:42 PM  PAPER: 198
Are Dedicated Geriatric Hip Fracture Centers Justified Economically?
R Clement Carter, BSE, Philadelphia, PA
Jaimo Ahn, MD, PhD, Philadelphia, PA
Samir Mehta, MD, Philadelphia, PA
Joseph Bernstein, MD, Haverford, PA

Hip fracture care is profitable at high volumes, but small centers typically lose money on this care. Thus, most facilities would benefit from the regionalization of such care at dedicated centers.

Discussion - 6 Minutes

1:54 PM  PAPER: 199
Does Continuing Clopidogrel Lead to Significant Complications in Patients Undergoing Hip Fracture Surgery?
Suresh Srinivasan, MBBS,MD, Leicester, United Kingdom
Kwang Chear Lee, MSc, MBBS, Leicester, United Kingdom
Radhakant Pandey, MS, Leicester, United Kingdom

Continuation of Clopidogrel during hip fracture surgery does not lead to significant complications.

2:00 PM  PAPER: 200
Does a Geriatrics Service Improve Outcomes for Nonagenarians with Operatively Treated Hip Fractures?
Abbey Gore, MD, Arlington, VA
James N. DeBritz, MD, Washington, DC
Robert D. Golden, MD, Bethesda, MD

A team-oriented approach including a Geriatrics service can result in decreased length of stay for nonagenarians treated for hip fractures with a trend towards decreased post-operative complications.

Discussion - 6 Minutes

2:18 PM  PAPER: 202
Mortality and Morbidity of Femur Fractures in High Energy Elderly Trauma Patients
Kushal V. Patel, MD, Temple, TX
Kwon Park, MD, Little Rock, AR
Daniel Jupiter, PhD, Temple, TX
Matthew L. Davis, MD, FACS, Temple, TX
Michael L. Brennan, MD, Temple, TX

High energy femur fractures may impact mortality and morbidity in trauma patients aged 60 and greater.

An alphabetical faculty financial disclosure list can be found starting on page 292.

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100  Educational Programs

Wednesday, March 20

2:24 PM  PAPER: 203
Is Operative Fixation of Orthopaedic Injuries in the Elderly Multitrauma Patient a Death Sentence?
Adham Abdelfattah, MD, Saint Louis, MO
Michael Del Core, BA, Saint Louis, MO
Lisa K. Cannada, MD, Clayton, MO
J. Tracy Watson, MD, Saint Louis, MO
Polytrauma geriatric patients with associated orthopaedic injuries are studied to define outcomes, complications and if requiring operative fixation improves mortality.

2:30 PM  PAPER: 204
One-Year Mortality after Isolated Pelvic Fractures with Posterior Ring Involvement in Elderly Patients
Jesse E. Bible, MD, MHS, Nashville, TN
Jennifer M. Bauer, MD, Nashville, TN
Adam Wegner, MD, Sacramento, CA
Rishin Kadakia, Nashville, TN
Justin E. Richards, MD, Nashville, TN
Hassan R. Mir, MD, Nashville, TN
The 1-year mortality rate for elderly patients with isolated pelvic injuries with posterior ring involvement was found to be 12.9%.

2:42 PM  PAPER: 205
Outcome of Hemiarthroplasty in Stable (AO/OTA 31B1) Femoral Neck Fractures
Kaan Irgit, MD, Ankara, Turkey
Andrew L. Cornelius, MD, Danville, PA
Thomas R. Bowen, MD, Danville, PA
Daniel S. Horwitz, MD, Danville, PA
The outcomes of hemiarthroplasty in stable (AO/OTA 31B1) femoral neck fractures patients treated with hemiarthroplasty were compared with patients treated with osteosynthesis using cannulated screws.

2:48 PM  PAPER: 206
Fate of Hip Stems after Operative Fixation of Periprosthetic Femoral Shaft Fractures
Mark J. Jo, MD, Montrose, CA
Jacob Didesch, MD, Newark, NJ
David J. Merriman, MD, Springfield, MO
Christopher McAndrew, MD, Saint Louis, MO
Michael J. Gardner, MD, Saint Louis, MO
William M. Ricci, MD, Saint Louis, MO
The objective of this study was to evaluate the long-term outcomes of patients that sustained a fracture about a hip arthroplasty stem and were treated with ORIF. The focus was on revision rates of the femoral stem.

2:54 PM  PAPER: 207
Patient and Implant Survival Following 4,323 Hip Replacements for Acute Femoral Neck Fracture
Simon Jameson, Middlesbrough, United Kingdom
John Kyle, West Lothian, United Kingdom
Paul Baker, MB, ChB, Newcastle Upon Tyne, United Kingdom
James Mason, PhD, Stockton-on-Tees, United Kingdom
David Deehan, MD, FRCS, England, United Kingdom
Ian McMurtry, FRCS, Barnard Castle, United Kingdom
Mike R. Reed, MBBS, MD, Northumberland, United Kingdom
Analysis of 4323 THR’s for fractured hip has shown a higher risk of revision when cementless implants are used.

3:06 PM  PAPER: 208
Staged Open Fracture Care of Geriatric Open Ankle Fractures Leads to Higher Risk of Amputation
Verena M. Schreiber, MD, Pittsburgh, PA
Matthew Tetreault, BA, Pittsburgh, PA
Ivan S. Tarkin, MD, Pittsburgh, PA
Peter Siska, MD, Pittsburgh, PA
Staged care with interval negative pressure dressing usage and secondary coverage procedure is associated with unacceptably high limb loss rate.

3:12 PM  PAPER: 209
Locked Versus Unlocked Long Cephalomedullary Intramedullary Nails in Stable Intertrochanteric Fractures
Patrick Kane, MD, Providence, RI
Bryan G. Vopat, MD, Providence, RI
David Paller, MD, Providence, RI
Sarath C. Koruprolu, MS, Providence, RI
Christopher T. Born, MD, Providence, RI
In a stable intertrochanteric fracture, unlocked cephalomedullary intramedullary nails display statistically significant higher yield torque while maintaining comparable peak torque as locked samples.

3:18 PM  PAPER: 210
Dynamic Hip Screws Versus Intramedullary Nails for Extracapsular Hip Fractures in 2012: Systematic Review of RCTs
Akash Patel, MBBS, London, United Kingdom
Amarjit Anand, MBBS, BSc, London, United Kingdom
Bobby Anand, BMedSc, MBChB, Middlesex, United Kingdom
Nirav K. Patel, BMedSc, MBChB, Middlesex, United Kingdom
This systematic review of recent RCTs comparing DHS and nailing for extracapsular hip fractures does not demonstrate superiority of either implant.
Wednesday, March 20

**SURGICAL SKILLS COURSE**

1:30 PM — 4:30 PM

4SK

- **Advanced Surgical Techniques for Sagittal Plane Spinal Deformity**
  - Moderator: Darrel S. Brodke, MD, Salt Lake City, UT
  - Todd J. Albert, MD, Philadelphia, PA
  - Carlo Bellabarba, MD, Seattle, WA
  - Theodore J. Choma, MD, Columbia, MO
  - Michael D. Daubs, MD, Santa Monica, CA

Learn thoracolumbar osteotomy and spine and pelvic fixation techniques, for the treatment of sagittal plane deformity, through didactic lectures, lab exercises and case discussions. Simulated bone models only.

5SK

- **Rotator Cuff: Surgical Skills**
  - Moderator: Peter J. Millett, MD, MSc, Vail, CO
  - Richard L. Angelo, MD, Woodinville, WA
  - Sepp Braun, MD, Munich, Germany
  - Scott A. Rodeo, MD, New York, NY
  - Anthony A. Romeo, MD, Chicago, IL

Current concepts in (arthroscopic) surgical repair of rotator cuff tears ranging from small to massive cuff tears: concepts background and hands-on lab session on simulated bone models.

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**3-HOUR INSTRUCTIONAL COURSE**

1:30 PM — 4:30 PM

283

- **An Orthopaedist’s Introduction to the AMA Guides to Permanent Physical Impairment By Examples Using the 4th, 5th and 6th Edition**
  - Moderator: J. M. Melborn, Wichita, KS

The need for accurate impairment and disability evaluations continues to increase. Designed to select the most common musculoskeletal diagnoses and review how to evaluate and rate using the 4th, 5th and 6th editions of the Guides. This course will improve your efficiency and the quality of your evaluations.

284

- **The Land of Ligaments: Navigating Sprains, Strains and Ruptures About the Foot and Ankle**
  - Moderator: Steven L. Haddad, MD, Glenview, IL
  - Robert B. Anderson, MD, Charlotte, NC
  - Thomas O. Clanton, MD, Vail, CO
  - J. Chris Coetzee, MD, Golden Valley, MN
  - Mark Glazebrook, Halifax, NS, Canada

Delve into the simple and complex injuries to the syndesmosis, lateral collateral ligaments, deltoid ligament, and Lisfranc ligament. Master diagnostic and management strategies to achieve optimal reconstruction and appropriate return-to-play through didactic and case based approach.

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**INSTRUCTIONAL COURSE LECTURE**

4:00 PM — 6:00 PM

261

- **Preventing Leg Length Inequality and Instability after THA**
  - Moderator: Rafael J. Sierra, MD, Rochester, MN
  - Matthew Austin, MD, Philadelphia, PA
  - Carlos J. Lavermia, MD, Coral Gables, FL
  - Aaron G. Rosenberg, FACS, MD, Chicago, IL

The course will discuss the practical approach (preoperative preparation, surgical treatment) to preventing leg length inequality and instability after primary THA with some emphasis on the management of instability after THA.

262

- **Let’s Do a Revision Total Knee Arthroplasty**
  - Moderator: Craig J. Della Valle, MD, Chicago, IL
  - C. L. Barnes, MD, Little Rock, AR
  - David J. Jacofsky, MD, Phoenix, AZ
  - Mark W. Pagnano, MD, Rochester, MN

Provide a practical approach to revision total knee arthroplasty including evaluation of the painful total knee replacement, exposure and surgical techniques.

263

- **The Fab Five of the Foot and Ankle**
  - Moderator: David R. Richardson, MD, Memphis, TN
  - Mark J. Berkowitz, MD, Cleveland, OH
  - Eric M. Bluman, MD, Chestnut Hill, MA
  - Lew C. Schon, MD, Baltimore, MD

Demonstration of five common foot and ankle procedures for proximal 5th metatarsal fractures, hallux rigidus, lateral ankle instability, subtle Lisfranc injury, and bunions, emphasizing surgical techniques.

264

- **Running Your Practice Like a Business**
  - Moderator: Naven Duggal, MD, Boston, MA
  - Ross W. Simon, BA, Boston, MA

Manufacturing methodologies help organizations continually eliminate waste and increase value while 30% of the total cost of health care is wasted. Learn how to use these principles to improve quality and patient satisfaction in your orthopaedic practice.

265

- **Getting Ready for ICD-10 and Meaningful Use Stage 2**
  - Moderator: Jack M. Bert, MD, Woodbury, MN
  - William R. Beach, MD, Richmond, VA
  - Louis F. McIntyre, MD, White Plains, NY
  - Ranjan Sachdev, MD, Bethlehem, PA

Will examine the financial and operational impact ICD-10 and meaningful use stage 2 regulations will have on orthopaedic practices. The organization of ICD-10, cross walk from ICD-9 to ICD-10 and steps needed for successful conversion will be discussed. Significant changes proposed in Meaningful use 2 regulations and compliance risks posed by these regulations will also be discussed.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Wednesday, March 20

266 Operative Treatment of Fractures and Dislocations of the Hand: Contemporary Perspectives
Moderator: Andrew Jawa, MD, Cambridge, MA
Randip Singh R. Bindra, MD, Maywood, IL
David C. Ring, MD, Boston, MA
Alexander Yong Shik Shin, MD, Rochester, MN

Case-based course examining indications, contemporary surgical fixation techniques, and rehabilitation for evidence-based treatment of hand fractures and dislocations.

267 Surgical Aspects of Spinal Growth Modulation in Scoliosis Correction
Moderator: Viral V. Jain, MD, MBBS, Cincinnati, OH
Patrick J. Cahill, MD, Philadelphia, PA
Peter F. Sturm, MD, Cincinnati, OH
Eric Wall, MD, Cincinnati, OH
Peter O. Newton, MD, San Diego, CA

Surgical aspects of spinal growth modulation: Indications, surgical techniques, post-operative management, pearls and pitfalls, and salvage techniques of nitinol staples, titanium staple-screw and anterior spinal tether.

268 Reverse Shoulder Arthroplasty: Beyond the Basics
Moderator: Gordon J. Grob, MD, Asheville, NC
Mark A. Frankle, MD, Temple Terrace, FL
Joseph P. Iannotti, MD, PhD, Cleveland, OH
Michael A. Wirth, MD, San Antonio, TX

Reverse shoulder arthroplasty indications, techniques and results for disorders including fractures, failed hemi/total shoulder arthroplasty and prosthetic instability. Includes a review of pertinent biomechanics and biology.

269 The Active Patient with GH Arthritis: How Do We Prevent It and How Do We Treat It
Moderator: Marc Safran, MD, Redwood City, CA
Wayne Z. Burkhead Jr, MD, Dallas, TX
Emilie V. Cheung, MD, Redwood City, CA
Anthony Miniaci, MD, FRCSC, Garfield Hts, OH

Includes case based discussion and presentations on non-arthroplasty options for the management of glenohumeral osteoarthritis in the active patient.

270 Advanced Techniques in Cervical Spine Surgery
Moderator: Nitin N. Bhatta, MD, Orange, CA
Gary Ghiselli, MD, Greenwood Village, CO
Bobby Tay, MD, San Francisco, CA
Warren D. Yu, MD, Washington, DC

Discuss indications and techniques for anterior and posterior cervical spinal surgery with an emphasis on recent advancements and options. Includes interactive audience participation and discussion.

271 Hip Arthroscopy: Fundamental Techniques and Foundational Skills
Moderator: Dean K. Matsuda, MD, Los Angeles, CA
Victor M. Ilizaliturri Sanchez Jr, MD, Mexico City, Mexico
Marc J. Phillippon, MD, Vail, CO
Thomas G. Sampson, MD, San Francisco, CA

Introduction to the expanding indications and techniques for hip arthroscopy while providing a firm foundation for further surgical skills development.

272 Current Plating Techniques and Definitive Treatment Options for Fractures of the Tibial Plafond and Treatment of the Late and Failed Pilon
Moderator: Anthony S. Rhorer, MD, Scottsdale, AZ
Michael T. Archdeacon, MD, Cincinnati, OH
Cory A. Collinge, MD, Fort Worth, TX
Gilbert R. Ortega, MD, Scottsdale, AZ

Describe the staged treatment of tibial pilon fractures. Emphasis will be on modern plating techniques including standard and alternative operative approaches. Open treatment in combination with definitive external fixation and salvage of the late presentation and treatment failures.

273 Non-union Evaluation and Treatment
Moderator: Clifford B. Jones, MD, FACS, Grand Rapids, MI
Michael J. Gardner, MD, Saint Louis, MO
Joseph R. Hsu, MD, San Antonio, TX
Alan L. Jones, MD, Dallas, TX

The attendee should be able to appropriately work up, evaluate, treat with nail/plate/external fixation and utilize adjunctive grafting of non-unions.

274 Bone and Soft Tissue Tumors for the General Orthopedic Surgeon: How to Diagnose, Manage and Avoid Errors
Moderator: G. Douglas Letson, MD, Tampa, FL
David Cheong, MD, Tampa, FL
John P. Dormans, MD, Philadelphia, PA
H. T. Temple, MD, Miami, FL

Intended for the general orthopedic surgeon to help work up, diagnose and manage musculoskeletal lesions, avoid errors, and to refer when appropriate.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Wednesday, March 20

**PAPER PRESENTATION**

**4:00 PM — 6:00 PM**
**Room S105**

**Sports Medicine/Arthroscopy III: Shoulder (Instability/AC Joint)**
Moderator(s): Michael S. George, MD, Houston, TX
Kevin D. Plancher, MD, New York, NY

**4:00 PM**
**PAPER: 211**
**Simple Method of Glenoid Bone Loss Calculation Using Ipsilateral MRI**
Brett D. Owens, MD, West Point, NY
Travis C. Burns, MD, San Antonio, TX
Scot Campbell, Lackland AFB, TX
Steven J. Scoboda, MD, West Point, NY
Kenneth L. Cameron, PhD, West Point, NY

This study found a correlation between glenoid height and width among the shoulder MRI of healthy subjects. The following formula can be used to estimate expected width from known height: \( W = \frac{1}{3} H + 15 \text{mm} \).

**4:06 PM**
**PAPER: 212**
**Recurrent Anterior Glenohumeral Instability with Bone Loss: Soft Tissue vs. Bone Block Transfer**
Anand Panchal, DO, Chapel Hill, NC
Daryl C. Osbahr, MD, Baltimore, MD
Brent G. Parks, MSc, Baltimore, MD
Wiemi Douoguih, MD, Washington, DC

A tensioned, conjoined tendon transfer to the anterior glenoid with bone loss exhibited decreased anterior glenohumeral translation compared to a bone block transfer in a cadaveric biomechanical model.

**4:12 PM**
**PAPER: 213**
**The Role of the Subscapularis Muscle in Recurrence After Primary Open Bankart-nerve Repair**
Axel Gamulin, MD, Plan-les-Ouates, Switzerland
Romain Dayer, MD, Geneva, Switzerland
Anne Lubbeke-Wolf, MD, Dsc, Geneva, Switzerland
Hermes Miozzari, MD, Geneva, Switzerland
Pierre J. Hoffmeyer, MD, Geneva, Switzerland

Histopathologic changes within the subscapularis muscle could be identified as a predictor of recurrence after primary open labral repair/capsulorrhaphy for posttraumatic anterior shoulder instability.

**4:24 PM**
**PAPER: 214**
**Arthroscopic Remplissage for Humeral Defect in Anterior Shoulder Instability: Is It Needed?**
Yong-Girl Rhee, MD, Seoul, Republic of Korea
Nam-Su Cho, MD, Seoul, Republic of Korea
Chongsuck Parke, MD, Sungnam, Republic of Korea
Jae Hyun Yoo, MD, Seoul, Republic of Korea

In arthroscopic repair for anterior instability with engaging Hill-Sach’s lesion, repair of infraspinatus footprint by Remplissage procedure limits external rotation but reduces redislocation rate.

**4:30 PM**
**PAPER: 215**
**What is the Contribution of the Conjoint Tendon to Shoulder Stability Following a Latarjet Procedure?**
Lauren Crocco, MD, New York, NY
Michelle H. McGarry, MD, Long Beach, CA
Nick Jain, Irvine, CA
Thay Q. Lee, PhD, Long Beach, CA
Tony Waniach, MD, Englewed Clfs, NJ

The “sling effect” from the conjoint tendon following Latarjet reconstruction provides 27% to 39% of the stabilizing effect following Latarjet reconstruction.

**4:36 PM**
**PAPER: 216**
**The Latarjet Coracoid Transfer for Anterior Instability: Results in 66 Cases**
Clayton H. Riley, MD, Little Rock, AR
Jose A. Romero, MS, San Juan, TX
John R. Burleson, MS, Houston, TX
Daniel O’Connor, PhD, Houston, TX
Hussein A. Elkousy, MD, Houston, TX
Gary M. Gartsman, MD, Houston, TX
Thomas B. Edwards, MD, Houston, TX

The Latarjet procedure for recurrent anterior instability consistently provides good results in functional outcomes.

**4:48 PM**
**PAPER: 217**
**Injury of the Suprascapular Nerve During Latarjet Procedure: An Anatomic Study**
Alexandre Laedermann, MD, Meyrin, Switzerland
Patrick J. Denard, MD, Medford, OR
Stephen S. Burkhard, MD, San Antonio, TX

The proximity of the suprascapular nerve to the posterior glenoid rim puts this nerve at risk during insertion of the screws used for the Latarjet procedure.

**4:54 PM**
**PAPER: 218**
**The Anatomy of the Long Head of the Biceps Tendon and Implications on Tenodesis**
Waqas M. Hssain, MD, Davenport, IA
Deepak Reddy, MD, Chicago, IL
Alfred Atanda, MD, Philadelphia, PA
Morgan H. Jones, MD, Cleveland Heights, OH
Michael A. Terry, MD, Chicago, IL

Although we observed variation in the measurements of the biceps tendon, we were able to successfully quantify the longitudinal anatomy of the structure in respect to surgically relevant landmarks.

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6:00 PM  PAPER: 219  
**Hidden Lesions of the Long Head of the Biceps Tendon: A Cadaveric Analysis and Case Series**  
Samuel A. Taylor, MD, New York, NY  
Mahmoud M. Khair, MD, New York, NY  
Lawrence Gulotta, MD, New York, NY  
Christopher J. Dy, MD, New York, NY  
Nikolas Baret, New York, NY  
Ashley M. Newman, BS, Syracuse, NY  
Andrew D. Pearle, MD, Rye, NY  
Stephen J. O’Brien, MD, PLLC, New York, NY  
Diagnostic arthroscopy fails to visualize a significant portion of the long head of the biceps tendon allowing clinically significant lesions to go unrecognized in a subset of patients.

Discussion - 6 Minutes

5:12 PM  PAPER: 220  
**Surgical Treatment of Isolated Type II SLAP Lesions: Repair versus Biceps Tenodesis**  
Eugene Ek, MBBS, PhD, New York, NY  
Lewis L. Shi, MD, Chicago, IL  
Jeffrey D. Tompson, BA, Boston, MA  
Michael T. Freehill, MD, Winston-Salem, NC  
Jon J. Warner, MD, Boston, MA  
We demonstrate that both biceps tenodesis and superior labral repair can provide good to excellent results if performed in appropriately selected patients with isolated Type II SLAP lesions.

5:18 PM  PAPER: 221  
**SLAP Lesions in Adolescent Athletes: Do They Really Exist?**  
Benton E. Heyworth, MD, Boston, MA  
Yi-Meng Yen, MD, Boston, MA  
Kesley D. Tyson, MS, Boston, MA  
Donald S. Bae, MD, Boston, MA  
Mninder S. Kocher, MD, MPH, Boston, MA  
Dennis E. Kramer, MD, Boston, MA  
SLAP tears are rare in adolescents and are most commonly associated with glenohumeral instability pathology. When seen in isolation, subtle instability patterns may be present.

5:24 PM  PAPER: 222  
**Injury to the Suprascapular Nerve in SLAP Repair: A Rotator Interval Portal is Not Safer than an Anterosuperior Portal**  
Ryan T. Morgan, MD, Baltimore, MD  
When perforation of the glenoid occurred, 1 o’clock and 2 o’clock posterior suture anchors placed through the rotator interval portal were statistically significantly closer to the suprascapular nerve.

Discussion - 6 Minutes

5:30 PM  PAPER: 223  
**Complications after Contemporary Acromioclavicular Joint Reconstructive Procedures**  
Frank Martetschlager, MD, Vail, CO  
Marilee P. Horan, MPH, Vail, CO  
Peter J. Millett, MD, MSc, Vail, CO  
Acromioclavicular joint reconstructions with allograft show a higher survivorship rate at 1 year compared to suture button repair.

5:42 PM  PAPER: 224  
**Biomechanical Evaluation of Clavicle Fracture Risk after Coracoclavicular Reconstruction Using Clavicle Tunnels**  
Guillaume D. Dumont, MD, Dallas, TX  
Robert D. Russell, MD, Dallas, TX  
William Pierce, Dallas, TX  
William R. Hotchkiss, MD, Dallas, TX  
Justin R. Knight, MD, Dallas, TX  
A biomechanical study showing increased risk of clavicle fracture in coracoclavicular ligament reconstruction constructs that utilize tunnels in the distal clavicle.

5:48 PM  PAPER: 225  
**A Novel Biomechanical Study of Weaver-Dunn vs. Suture Throughout the Graft Techniques ACJ Fixation**  
Nadine L. Williams Jr, MD, Brooklyn, NY  
Westley Hayes, MS, Brooklyn, NY  
Burko Igor, Staten Island, NY  
Akil P. Simon, Brooklyn, NY  
Subrara Saha, PhD, Brooklyn, NY  
ACJ separations reconstructed with tendon grafts augmented with UHMWPE incorporated throughout have more tensile strength and extension to failure than standard technique.

5:54 PM  PAPER: 832  
**Operative versus Non-operative Treatment of Acute Dislocations of the Acromio-clavicular Joint**  
Michael D. McKee, MD, Toronto, ON, Canada  
Stephane Pelet, MD, PhD, Québec, QC, Canada  
Jean Lamontagne, MD, Saint-ferreol-les-Neiges, QC, Canada  
Luc Bedard, MD, Québec, QC, Canada  
Emil H. Schemitsch, MD, Toronto, ON, Canada  
Jeremy Hall, MD, FRCS (ORTH), Toronto, ON, Canada  
Milena Vicente, RN, Toronto, ON, Canada  
Operative versus Non-operative Treatment of Acute Dislocations of the Acromio-clavicular Joint: Results of a Multi-centre Randomized, Prospective Clinical Trial.

Discussion - 6 Minutes
Wednesday, March 20

PAPER PRESENTATION

4:00 PM — 6:00 PM
Room N427

Adult Reconstruction Knee III: Unicompartmental Knee Arthroplasty
Moderator(s): Fred D. Cushner, MD, New York, NY
Alfred J. Tria Jr, MD, Princeton, NJ

4:00 PM  PAPER: 226
Revision Unicompartmental Knee Arthroplasty to Total Knee Arthroplasty: Not Always a Slam Dunk
Cale Kassel, MD, Rochester, MN
Nathan Wetters, MD, Chicago, IL
Craig J. Della Valle, MD, Chicago, IL
Michael E. Berend, MD, Mooresville, IN
Keith R. Berend, MD, New Albany, OH
Rafael J. Sierra, MD, Rochester, MN

Re-revision rate after revision TKA from UKA was 4.7% at just over 4 years. The survivorship of a revised UKA to TKA is less than primary TKA and should be considered comparable to revision TKA.

4:06 PM  PAPER: 227
Patient Specific Instrumentation in Unicompartmental Arthroplasty: A Prospective Randomized Study
Sebastian Parratte, MD, Marseille, France
Jean-Noel A. Argenson, MD, Marseille, France

Patient specific instrumentation in UKA can be as accurate as manual instrumentation for frontal and sagittal alignment and better for rotation with potential limit for the depth of the tibial cut.

4:12 PM  PAPER: 228
Oxford Unicompartmental Knee Fails at High Rate in a High-Volume Practice
William C. Schroer, MD, Saint Louis, MO
Paul Diesfeld, PA-C, Saint Louis, MO
Angela LeMarr, RN, Saint Louis, MO
Rachel R. Ingassia, RN, O’Fallon, MO
Diane Morton, MS, Saint Louis, MO
Mary E. Reedy, RN, Saint Louis, MO

A high-volume knee arthroplasty practice had 12% failure in 83 Oxford unicompartmental knees from 2005-2008 with no radiographic evidence of loosening.

4:24 PM  PAPER: 229
Revision of UKA: Is There a Difference Compared to Primary TKA and Revision TKA?
Sebastian Parratte, MD, Marseille, France
Alexandre Lunebourg, MD, Marseille, France
Jean-Noel A. Argenson, MD, Marseille, France

Unicompartmental knee arthroplasty is a bone preservative technique but surgeons can not advocate that results of revision will be as good as a primary total knee arthroplasty.

4:30 PM  PAPER: 230
Tibiofemoral Contact Mechanics Following Unicompartmental Knee Arthroplasty
Thomas J. Heyse, MD, Marburg, Germany
Scott M. Tucker, MS, BS, New York, NY
Yogesh Rajak, BA, New York, NY
Jun Kim, Danville, PA
Joseph D. Lipman, MS, New York, NY
Carl W. Imhauser, PhD, New York, NY
Geoffrey H. Westrich, MD, New York, NY

The contact area was significantly reduced and the contact stress significantly increased on the medial compartment with medial UKA.

4:36 PM  PAPER: 231
Improved Fixation in Cementless Unicompartmental Knee Arthroplasty: A Randomized Controlled Trial
Alexander D. Liddle, MBBS, Oxon, United Kingdom
Hemant G. Pandit, FRCS, Oxford, United Kingdom
Cathy Jenkins, MA
Benjamin J. Kendrick, MBBS, FRCS (Ortho)
Barbara Marks, Oxford, United Kingdom
Andrew J. Price, FRCS, Oxford, United Kingdom
Harinderjit Gill, PhD, Oxford/Oxon, United Kingdom
Christopher A. Dodd, FRCS, Oxford, United Kingdom
David W. Murray, MD, Oxford, United Kingdom

A Randomized Controlled Trial of 63 knees comparing cemented to cementless UKA, demonstrating improved fixation and equivalent or improved functional outcome with the cementless prosthesis.

Discussion — 6 Minutes

4:48 PM  PAPER: 232
Minimum 10-year Follow Up of Repicci Unicompartmental Knee Arthroplasty
Lawrence Kohan, MD, Sydney, Australia
Clarice Field, PhD, Bondi Junction, Australia
Dennis Kerr, MB, Randwick, Australia

At minimum 10 years, average 12.5 years, Kaplan-Meier survivorship was 91.6%.

4:54 PM  PAPER: 233
Simultaneous Versus Staged Bilateral Unicompartmental Knee Arthroplasty
Jerry Chen, MBBS, Singapore, Singapore
Ngai-Nung Lo, MD, Singapore, Singapore
Jiang Lei, MBBS, Singapore, Singapore
Hwee Chi Chong, Singapore, Singapore
Darren Tay, MBBS, FRCS (Ortho), Singapore, Singapore
Pak Lin Chin, FRCS (Ortho), Singapore, Singapore
Shi-Li Chia, MBBS, Singapore, Singapore
Seng-Jin Yeo, FRCS, Singapore, Singapore

While simultaneous bilateral UKA has the advantages of a shorter inpatient stay and lower hospitalization bills, there is a higher incidence of cardiopulmonary complications.
Wednesday, March 20

5:00 PM PAPER: 234
Long-term Outcome of Unicompartmental Knee Replacement in a District General Hospital
Mathias Nagy, MD, Macclesfield, United Kingdom
Graham Keys, MBBS, FRCS (Ortho), Macclesfield, United Kingdom

Our results demonstrate excellent long term results in the first decade but high revision rate due to lateral compartment osteoarthritis in the second decade.

Discussion - 6 Minutes

5:12 PM PAPER: 235
Unicompartmental Knee Arthroplasty After High Tibial Osteotomy: Clinical and Radiographic Outcomes
Nathan Jacobson, MD, Taylor, MI
Gustavo Valenzuela, MD, Taylor, MI
Richard Valenzuela, MD, Plymouth, MI
Theodore D. Koreckij, MD, Dearborn, MI
Robert A. Tetge, MD, Dearborn, MI

Previous high tibial osteotomy does not adversely affect subsequent unicompartmental knee arthroplasty outcomes: function (Oxford Knee Score & Knee Society Scores), limb alignment, or patellar height.

5:18 PM PAPER: 236
The Effect of Deformity Correction on Knee Kinematics in Both Medial and Lateral Unicompartmental Knees
Yang-Chieh Fu, PhD, Athens, GA
Kathy J. Simpson, PhD, Athens, GA
Takahiko Kiyama, MD, Fukuoka, Japan
Scott A. Banks, PhD, Gainesville, FL
Tracy Kinsey, MPH, Athens, GA
Ormonde M. Mahoney, MD, Athens, GA

Medial and lateral knee reconstructions with varying degrees of soft tissue releases demonstrated similar kinematics during a step-up maneuver.

Discussion - 6 Minutes

5:24 PM PAPER: 237
Comparative Study of UKA Performed Using Navigation System and Conventional Technique after Five-year Follow Up
Jong-Keun Seon, MD, Hwasungun, Republic of Korea
Eun K. Song, MD, Hwasung-Gun, Republic of Korea
Ji-Hyeon Yim, Jeonnam, Republic of Korea
Jae-Young Moon, MD, Hwasun-Gun, Republic of Korea
Kyung Soon Park, MD, Jeonnam, Republic of Korea
Taek R. Yoon, MD, PhD, Jeonnam, Republic of Korea

Although the navigation system in UKA can improve alignment accuracy of the lower extremity, there were no significant differences in functional outcomes and survival rate after 5 year-follow-up.

Discussion - 6 Minutes

5:36 PM PAPER: 238
Does Robotic Surgical Assistance Improve the Accuracy of Implant Placement in Unicompartmental Knee Arthroplasty?
Mark J. Blyth, FRCS, Stirlingshire, United Kingdom
Julie Smith, PhD, Glasgow, United Kingdom
Bryn Jones, MD, Glasgow, United Kingdom
Angus D. MacLean III, FRCS (Ortho), Scotland, United Kingdom
Lain Anthony, Glasgow, United Kingdom
Philip Rowe, Glasgow, United Kingdom

CT based analysis demonstrates that Robotic Assisted Unicompartmental Knee Arthroplasty greatly enhances the accuracy of implant placement that can be achieved during surgery.

5:42 PM PAPER: 239
Unicondylar Arthroplasty in Anterior Cruciate Ligament Deficient Knees
Gerard A. Engh, MD, Alexandria, VA
Debbie Ammeen, Alexandria, VA

Despite deficiency of the ACL, unicompartmental arthroplasty can be used to manage arthritis involving a single compartment of the knee.

5:48 PM PAPER: 240
The Survival of Medial and Lateral Unicompartmental Knee Replacements at Five Years is Equivalent
Paul Baker, MB, ChB, Newcastle Upon Tyne, United Kingdom
Simon Jameson, Middlesbrough, United Kingdom
David Deehan, MD FRCS, England, United Kingdom
Paul J. Gregg, Cleveland, United Kingdom
Martin Porter, MD, Wigan, United Kingdom
Keith K. Tucker, FRCS, Norwich, United Kingdom

The mid-term survival of medial and lateral unicompartmental replacements are equivalent, supporting the on-going use of pooled data by registries when analyzing this implant type.

Discussion - 6 Minutes

4:00 PM — 6:00 PM
Room N426
Spine II: Lumbar
Moderator(s): Charles J. Banta II, MD, Dallas, TX
Joseph D. Smucker, MD, Iowa City, IA

4:00 PM
Clinical Complications Following rhBMP2 Use in a Minimally Invasive Transforaminal Lumbar Interbody Fusion
Miguel Pelton, BS, Chicago, IL
Tom D. Cha, MD, Boston, MA
Safdar N. Khan, MD, Columbus, OH
Kern Singh, MD, Chicago, IL

A retrospective review of all patients undergoing an MIS TLIF (single surgeon) at our institution revealed a 1.7% bone overgrowth rate with significant additional surgeon/ hospital costs.

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Wednesday, March 20

4:06 PM  PAPER: 242

rhBMP-2 in Posterior Lumbar Interbody Fusion: A Prospective Randomized Controlled Trial
Jan Sys, MD, Puurs, Belgium
Jef Michielsen, MD, Hoogstraten, Belgium

The high incidence of osteolysis and ectopic bone formation raises concerns with regard to the dosage of the rhBMP-2 and the binding of the product to the carrier.

4:12 PM  PAPER: 243

The Thoracolumbar Fusion Risk Score: Predicting Postoperative Morbidity and Mortality
Jacqueline Munch, MD, Portland, OR
Natalie L. Zusman, BS, Portland, OR
Elizabeth Lieberman, BS, Lake Oswego, OR
Ryland Stucke, BS, Portland, OR
Sawyer G. Smith, BS, Happy Valley, OR
Courtney D. Bell, BS, Portland, OR
Travis Philipp, BA, Portland, OR
Alexander C. Ching, MD, Portland, OR
Jung U. Yoo, MD, Portland, OR

We have created a scoring system based on surgical variables that predicts the rate of major medical complications following elective thoracic/lumbar arthrodesis.

4:24 PM  PAPER: 244

The Fusion Risk Score: Preoperative Risk Evaluation in Thoracic and Lumbar Fusion Surgery
Nathan L. Hartin, MD, Crows Nest, Australia
Amir A. Mehbod, MD, Minneapolis, MN
Siddharth B. Joglekar, MD, Fresno, CA
Ensor E. Transfeldt, MD, Minneapolis, MN

The Fusion Risk Score is introduced to objectively assess baseline risk of spine fusion surgery preoperatively.

4:30 PM  PAPER: 245

Postoperative Pain Control Using Epidural Catheter in Patients Undergoing Posterior Lumbar Interbody Fusion
Si Young Park, MD, PhD, Seoul, Republic of Korea
Jong-Hoon Park, MD, PhD, Seoul, Republic of Korea
Woongkyo Jeong, Seoul, Republic of Korea
Dae-Hee Lee, MD, Seoul, Republic of Korea
Tae K. Kim, MD, Seoul, Republic of Korea
Si Young Park, MD, PhD, Seoul, Republic of Korea
Seung B. Han, MD, Seoul, Republic of Korea

Postoperative pain control using epidural catheter seems to be a higher effective method after posterior lumbar interbody fusion.

4:36 PM  PAPER: 246

Inconsistencies Between Abstracts and Manuscripts in Published Papers about Lumbar Spine Surgery
Jeffrey A. Lehmen, MD, Columbia, MO
Rachel M. Deering, MPH, BS, Boston, MA
Andrew K. Simpson, MD, Boston, MA
Charles S. Carrier, Bedford, NH
Christopher M. Bono, MD, Boston, MA

Inconsistencies between an abstract and manuscript can mislead readers’ interpretation of findings and conclusions. This study compares RCT abstracts and manuscripts in recent lumbar spine literature.

Discussion - 6 Minutes

4:48 PM  PAPER: 247

Adjacent and Subadjacent Segment Disease Following Instrumented Lumbar Fusion: A Predilection for Proximal Levels
Paul Celestre, MD, Louisville, KY
Scott Montgomery, MD, Venice, CA
Bayan Aghdasi, BA, Clovis, CA
Hirokazu Inoue, MD, Shimotsuke, Japan
Michael D. Daubs, MD, Santa Monica, CA
Jeffrey C. Wang, MD, Sherman Oaks, CA

In a retrospective review of patients undergoing lumbar fusion, adjacent segment disease developed most commonly at the more proximal at risk levels.

4:54 PM  PAPER: 248

DISK: A Novel Classification System of Lumbar Spine Adjacent Segment Degeneration
Ryan R. Jaggers, MD, Indianapolis, IN
Paul E. Kraemer, MD, Indianapolis, IN

A novel classification system for adjacent segment degeneration in the lumbar spine that comprehensively evaluates disc degeneration, instability, stenosis, and kyphosis was found to be reproducible.

Discussion - 6 Minutes

5:00 PM  PAPER: 249

Superior Articulating Facet Violation: Percutaneous versus Open Techniques
Sean Jones-Quaidoo, MD, Dallas, TX
Mladen Djurasovic, MD, Louisville, KY
Roger K. Owens II, MD, Louisville, KY
Leah Y. Carreon, MD, Louisville, KY

The use of a percutaneous method to insert pedicle screws resulted in a higher incidence facet joint violation compared to an open approach, even if only proximal screws are considered.

Discussion - 6 Minutes

An alphabetical faculty financial disclosure list can be found starting on page 292.
The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

**Wednesday, March 20**

**5:12 PM**
**PAPER: 250**
The Effects of Lumbosacral Fusion on Sacroiliac Joint Biomechanics
Dinah Baria, PhD, Miami Beach, FL
Ronald W. Lindsey, MD, Galveston, TX
Robert P. Norton, MD, New York, NY
David N. Kaimrajh, Miami, FL
Edward L. Milne, Miami Beach, FL
Loren L. Latta, PhD, Plantation, FL

Movements at the sacroiliac joint measured in human cadavers with flexion/extension, torsion and axial compression loading on the lumbar spine were altered by progressive fusion of L4-5 and then L5-S1.

**5:18 PM**
**PAPER: 251**
Degenerative Spondylolisthesis: The Effect of Facet Joint Morphology on Instability
Micah K. Sinclair, MD, Salt Lake City, UT
Alexander J. Ghanayem, MD, Maywood, IL
Bartosz Wojewnik, MD, Maywood, IL
Robert Havey, Hines, IL
Andy Lee, BS, Hines, IL
Leonard Voronov, PhD, Hines, IL
Gerard Carandang, Hines, IL
Avinash G. Patwardhan, PhD, Maywood, IL

This study evaluated the relationship of degenerative spondylolisthesis to increased sagittal facet angle concluding that increased facet angulation does not correlate with anterolisthesis.

**5:24 PM**
**PAPER: 252**
Lumbar Facet Joint Motion in Patients with Degenerative Spondylolisthesis
Qi Yao, MD, Boston, MA
Shaobai Wang, PhD, Boston, MA
Jae-Hyuk Shin, MD, Boston, MA

We evaluated biomechanical effect of degenerative lumbar spondylolisthesis. The range of rotation of the facet joint decreased compared to the healthy subjects and DDD patients in DLS (L4-L5) level.

**Discussion - 6 Minutes**

**5:36 PM**
**PAPER: 253**
Lumbar Facet Joint Subchondral Bone Density Distribution in Asymptomatic and Low Back Pain Subjects
Chien-Chou Pan, MD, Taichung, Taiwan
Peter Simon, MS, Chicago, IL
Alejandro Espinoza, PhD, Chicago, IL
Ryota Takatori, MD, PhD, Kyoto, Japan
Howard S. An, MD, Chicago, IL
Gunmar B. Andersson, MD, Chicago, IL
Nozomu Inoue, MD, Chicago, IL

In vivo measurements of lumbar facet joint subchondral bone density by means of CT-OAM showed significantly higher SBD in the facet joints center zone and in subjects with low back pain.

**5:42 PM**
**PAPER: 254**
Modified Marmot Operation Versus Spinous Process Transverse Cutting Laminectomy for Lumbar Spinal Stenosis
Mamoru Kawakami, MD, Wakayama, Japan
Shin-ichi Nakao, MD, Wakayama, Japan
Daisuke Fukui, MD, Wakayama, Japan

Clinical outcomes in patients with degenerative lumbar spinal stenosis treated with modified Marmot operation were superior to those with spinous process transverse cutting laminectomy.

**5:48 PM**
**PAPER: 255**
Spinal Stenosis with Lumbar Deformity: Surgical Failures with an ISP Laminectomy, or Laminectomy and Fusion
Prokopis Annis, MD, Salt Lake City, UT
Michael D. Daube, MD, Santa Monica, CA
Brandon Lawrence, MD, Salt Lake City, UT
Justin Hohl, MD, Sandy, UT
Jayme Hratzek, MD, Portland, OR
Darrel S. Brodke, MD, Salt Lake City, UT

Failures with recurrent stenosis requiring revision surgery were significantly more common in patients treated with an Interspinous Process Spacer device for spinal stenosis and lumbar deformity.

**5:54 PM**
**PAPER: 827**
Demineralized Bone Matrix Putty Performs Equivalent to Iliac Bone Graft in Experimental Spine Arthrodesis
Paul Kiely, MD, New York, NY
Antonio T. Breccevich, New York, NY
Fadi Taber, MD, New York, NY
Frank P. Cammisa Jr, MD, New York, NY
Celeste Abjornson, PhD, New York, NY

The DBM putty proved equivalent to ABG in the posterolateral intertransverse rabbit model, and deserves consideration as an alternative to iliac crest autograft.

**Discussion - 6 Minutes**
Wednesday, March 20

PAPER PRESENTATION

4:00 PM — 6:00 PM
Room S102

Foot and Ankle I: In The Beginning: Basic Science, Trauma, and Diabetes
Moderator(s): Sandra E. Klein, MD, Saint Louis, MO
Brian C. Toolan, MD, Chicago, IL

4:00 PM

Where Can Orthopaedic Hardware Safely Be Placed for Syndesmosis Fixation: An Anatomic Study
Franklin D. Shuler, MD, Huntington, WV
Daniel Woods, MD, Huntington, WV
Zach J. Tankersley, DPM, Huntington, WV
Justin Jones, MD, Huntington, WV
Clint McDaniel, Huntington, WV
Jacob Hamm, Huntington, WV
James Dewar, PhD, Huntington, WV

This study has clearly defined the TFCCZ and syndesmosis recess and statically validated that anatomical specimens can be used as a proxy for cadaveric dissection for these measurements.

4:06 PM

MRI Evaluation of Calcaneal Osteotomy’s Effect on Tarsal Tunnel and Proximity of Nerve Structures
Jason T. Bariteau, MD, Providence, RI
Benjamin G. Bruce, MD, Providence, RI
Matthew F. Sandusky, MD, Providence, RI
Peter Evangelista, MD, Providence, RI
Christopher W. DiGiovanni, MD, Providence, RI

Lateralizing calcaneal osteotomy significantly decreases tarsal tunnel volume that is not seen with medialization. Anterior osteotomy places nerve structures in closer proximity to osteotomy cut.

4:12 PM

Validation of the Foot and Ankle Outcome Score for Adult Acquired Flatfoot Deformity
Haydee C. Brown, MD, New York, NY
Pallavi Nair, BS, Washington, DC
Lan Chen, MD, Chicago, IL
Elizabeth A. Young, Stony Brook, NY
Huong Do, MA, New York, NY
Stephen Lyman, PhD, New York, NY
Jonathan T. Deland, MD, New York, NY
Scott Ellis, MD, New York, NY

The Foot and Ankle Outcome Score (FAOS) is a subjective survey used frequently in foot and ankle literature. The aim of our study is to validate the FAOS for assessing outcomes with Adult Acquired FI

4:24 PM

Potential Cytokine and Metabolite Biomarkers of Post-Traumatic Ankle Arthritis Synovial Fluid
Samuel B. Adams Jr, MD, Durham, NC
Dana L. Nettles, PhD, Durham, NC
Lynne C. Jones, PhD, Baltimore, MD
Gregory P. Guyton, MD, Baltimore, MD
Stuart D. Miller, MD, Baltimore, MD
Lea C. Schon, MD, Baltimore, MD

This study identified inflammatory cytokines and metabolites present in the synovial fluid of post-traumatic ankle arthritis.

4:30 PM

Core Decompression for the Treatment of Atraumatic Osteonecrosis of the Distal Tibia and Talus
Qais Naziri, MD, Brooklyn, NY
Kimona Issa, MD, Santa Clarita, CA
Tarak S. Shah, Bristow, VA
Bradley M. Lamm, DPM, Luthsle Timonimonium, MD
Aaron J. Johnson, MD, Baltimore, MD
Lynne C. Jones, PhD, Baltimore, MD
Michael A. Mont, MD, Baltimore, MD

The purpose of this study was to describe the clinical manifestations of ON involving the distal tibia and ankle, identify risk factors, and to evaluate the efficacy of percutaneous drilling.

4:36 PM

Physiological Achilles Tendon Length and its Relation to Tibia Length
Claudio Rosso, MD, MSc, Binningen, Switzerland
Caroline Polzer, Dornach, Switzerland
Lukas Weissskopf, MD, Pratteln, Switzerland
Philipp Schuetz, Boston, MA
Ueli Studler, Basel, Switzerland
Victor Valderrabano, MD, Basel, Switzerland

Achilles Tendon Length.

4:48 PM

Outcomes of the Bridle Procedure for the Treatment of Traumatic Foot Drop
E. Scott Paxton, MD, Philadelphia, PA
Julienne Lippe, MD, Saint Louis, MO
Kay L. Bolmert, MS, Saint Louis, MO
David R. Sinacore, PT, PhD, Saint Louis, MO
Mary Hastings, ATC, DPT, Saint Louis, MO
Jeremy J. McCormick, MD, Saint Louis, MO
Sandra E. Klein, MD, Saint Louis, MO
Jeffrey E. Johnson, MD, Saint Louis, MO

Bridle procedure results in a high level of function in patients with traumatic foot drop. Post-op no patient required an AFO for walking. The majority of patients were satisfied with their result.
### Wednesday, March 20

**4:54 PM**

**PAPER: 263**  
**Contribution of the Medial Malleolus to Tibiotalar Joint Contact Characteristics**  
Craig R. Lareau, MD, Providence, RI  
David Paller, MS, Providence, RI  
Sarah C. Koruprolu, MS, Providence, RI  
Jason T. Bariteau, MD, Providence, RI  
Christopher W. DiGiovanni, MD, Providence, RI  

Treatment of isolated medial malleolus fractures is controversial. This study demonstrates the importance of the medial malleolus in maintaining the normal contact characteristics of the ankle.

**5:00 PM**

**PAPER: 264**  
**In Vivo Osseous Incorporation of Fresh Osteochondral Allografts Treated with Bisphosphonates**  
Drew D. Moore, MD, Royal Oak, MI  
Kevin Baker, PhD, Royal Oak, MI  
Tristan Maerz, MS, Royal Oak, MI  
Zachary Vaupel, MD, Royal Oak, MI  
Paul T. Fortin, MD, Royal Oak, MI  

Addition of nitrogenated bisphosphonates to fresh osteochondral allograft storage media enhances in vivo osseous incorporation of grafts.

**Discussion - 6 Minutes**

**5:12 PM**

**PAPER: 265**  
**An Analysis of Pulmonary Embolism Following Ankle Fractures Treated Without an Operation Using a National Database**  
Simon Jameson, Middlesbrough, United Kingdom  
Rankin S. Kenneth, MB, ChB, Newcastle Upon Tyne, United Kingdom  
Philip James, PhD, Alcester, Warwickshire, United Kingdom  
Scott Muller, MBBS, MD, Northumberland, United Kingdom  
Mike R. Reed, MBBS, MD, Northumberland, United Kingdom  
Amar Rangan, FRCS, Middlesbrough, United Kingdom  

In 14,777 patients with ankle fracture treated without an operation 90-day PE rate was 0.22%. Risk was 10x higher in patients with co-morbidities (2.1%). Fracture is not an indication for prophylaxis.

**5:18 PM**

**PAPER: 266**  
**Efficacy of a Limited Approach to Intra-Articular Calcaneus Fractures**  
Milton T. Little, MD, New York, NY  
Marshall B. Berkes, MD, New York, NY  
Patrick C. Schottel, MD, New York, NY  
Lionel E. Lazarro, MD, New York, NY  
Lauren E. Lamont, MD, New York, NY  
Nadine Pardee, BS, New York, NY  
David L. Helfet, MD, New York, NY  
Dean G. Lorich, MD, New York, NY  

Retrospective evaluation of a dual incision limited approach to intra-articular calcaneus fractures.

**5:34 PM**

**PAPER: 267**  
**Complications after Popliteal Block for Foot and Ankle Surgery**  
Kuldeep Gadkari, MBBS, MS, Grand Rapids, MI  
Donald R. Bohay, MD, Grand Rapids, MI  
John G. Anderson, MD, Grand Rapids, MI  
John D. Maskill, MD, Grand Rapids, MI  
Michelle A. Padley, Grand Rapids, MI  
Lindsey A. Behrend, BS, Grand Rapids, MI  
William Braaksma, MD, Grand Rapids, MI  

A retrospective chart review of complications in 220 patients who underwent foot and ankle procedures with a popliteal block for post-operative pain management.

**Discussion - 6 Minutes**

**5:36 PM**

**PAPER: 268**  
**Comparative Cost of Limb Salvage vs. Amputation in Diabetics with Charcot Foot**  
Michael S. Pinzur, MD, Maywood, IL  
Joseph A. Gil, MD, Providence, RI  
Adam P. Schiff, MD, Maywood, IL  

The cost of care of was compared between 76 diabetics who underwent surgical correction for Charcot foot as compared with transtibial amputation. The overall cost of care was similar.

**5:42 PM**

**PAPER: 269**  
**Recurrence in the Treatment of Charcot Foot Arthropathy**  
Martin Berli, MD, Zürich, Switzerland  
Georg Osterhoff, MD, Zürich, Switzerland  
Thomas Boeni, MD, Zürich, Switzerland  

This large series of Charcot arthropathy patients focuses on the recurrence of the disease after an extensive treatment with off-loading until complete disappearance of the symptoms was established.

**5:48 PM**

**PAPER: 270**  
**Five Years Post Compression Arthrodesis in Infected Diabetic Charcot Ankle Joint**  
Ahmad S. Alam, Prof, Banha, Egypt  

Combined joint debridement and compression arthrodesis is a successful method of limb salvage in infected diabetic Charcot ankle joints; obtaining a total satisfactory stable ankle in 85% of patients.

**Discussion - 6 Minutes**

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.*

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Thursday, March 21

**SURGICAL SKILLS COURSE**
7:00 AM — 10:00 AM

6SK
Osteotomy and Arthrodesis of the Forefoot and Hindfoot
Moderator: Simon Lee, MD, Chicago, IL
Kenneth Hunt, MD, Redwood City, CA
Todd A. Irwin, MD, Mount Clemens, MI
Jeremy J. McCormick, MD, Saint Louis, MO
Phuit Phistikul, MD, Iowa City, IA

Common surgical techniques for correction of hallux valgus and hindfoot arthrodesis will be presented with didactic lectures and hands-on procedures on simulated bone models.

7SK
Rotator Cuff: Surgical Skills
Moderator: Peter D. McCann, MD, New York, NY
Stephen S. Burkhart, MD, San Antonio, TX
E L. Cain Jr, MD, Birmingham, AL
Sumant G. Krishnan, MD, Dallas, TX
Mark D. Lazarus, MD, Philadelphia, PA

Tear pattern recognition and mobilization techniques, surgical management of partial and massive tears, and tear fixation options are reviewed in both didactic presentations and case presentations by recognized experts. Participants apply these techniques in a saw bones lab, with the goal of improving surgical techniques to better patient outcomes and satisfaction. Simulated bone models only.

**INSTRUCTIONAL COURSE LECTURE**
8:00 AM — 10:00 AM

301
Complex Revision Total Hip Arthroplasty: An Advanced Course
Moderator: Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada
William J. Hozack, MD, Philadelphia, PA
Bassam A. Masri, MD, FRCSC, Vancouver, BC, Canada
Robert T. Trousdale, MD, Rochester, MN

Cover the severest challenges in revision THA: B3 fractures, infected bone loss, severe pelvic and femoral bone loss and recurrent instability.

302
Surgical Management of Articular Cartilage Defects of the Knee
Moderator: Brian J. Cole, MD, MBA, Chicago, IL
William Bugbee, MD, La Jolla, CA
Christian Lattermann, MD, Richmond, KY
Tom Minas, MD, Chestnut Hill, MA

Overview of the indications and results of the current and near-term treatment options as alternatives for patients presenting with chondral defects, meniscal deficiency and malalignment. Case-based decision making encouraging audience participation.

303
Infection in Arthroplasty: The Basic Science of Bacterial Biofilms in Its Pathogenesis, Diagnosis, Treatment and Prevention
Moderator: William V. Arnold, MD, Jenkintown, PA
Mark Shirtliff, PhD, Baltimore, MD
Paul Stoodley, PhD, Southampton, United Kingdom

The role of bacterial biofilms in periprosthetic infection will be discussed with particular attention toward current clinical treatment and future decisions.

304
Anatomy of a Medical Liability Lawsuit: Practical Issues in Malpractice Avoidance
Moderator: Thomas B. Fleeter, MD, Reston, VA
Theodore J. Clarke, MD, Denver, CO
Elliott H. Leitman, MD, New York, NY
Joseph L. Messa Jr., Esq., Philadelphia, PA
Byron Mitchell, JD, Henderson, NV

A medical negligence defense attorney and orthopaedic experts in medical liability will present techniques and tips to use during medical negligence lawsuits and plaintiff's depositions.

305
Differentiating Cervical Spine and Shoulder Pathology: Common Disorders and Key Points of Evaluation and Treatment
Moderator: Thomas W. Throckmorton, MD, Germantown, TN
Paul E. Kraemer, MD, Indianapolis, IN
John E. Kuhn, MD, Nashville, TN
Rick C. Sasso, MD, Carmel, IN

Focus on the overlap of cervical spine and shoulder pathology and the diagnostic methods to differentiate between them.

306
The Art and Science of Reviewing Manuscripts for Orthopaedic Journals
Moderator: Jeffrey S. Fischgrund, MD, Southfield, MI
Christopher M. Bono, MD, Boston, MA
Alan S. Hilibrand, MD, Philadelphia, PA
William N. Levine, MD, New York, NY

Journal editors will help reviewers and authors learn how to craft more effective manuscripts by emphasizing specific assessment criteria for clinical, research and review articles.

307
Hand and Wrist Trauma: A Case Based Approach to Simple Cases with Underlying Complex Considerations
Moderator: Charles A. Goldfarb, MD, Saint Louis, MO
Martin I. Boyer, MD, Saint Louis, MO
Ryan P. Calfee, MD, Saint Louis, MO
Fraser J. Leversedge, MD, Durham, NC

Case-based course on trauma to the hand and wrist focusing on the underlying complexities of apparently simple injuries.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Thursday, March 21

308
Techniques for Correction of Lower Extremity Deformities in Children: A Case-Based Approach
Moderator: J. E. Gordon, MD, Saint Louis, MO
John G. Birch, MD, Dallas, TX
James J. McCarron, MD, Cincinnati, OH
Peter M. Stevens, MD, Salt Lake City, UT
Case-based instructional course that emphasizes the indications, contraindications and complications of simple and complex pediatric lower extremity deformity correction techniques with faculty panel interaction.

309
Strategies to Enhance Value and Improve Patient Experience Through Patient Centered Care
Moderator: Kevin J. Bozic, MD, MBA, San Francisco, CA
Dwight W. Burney III, MD, Albuquerque, NM
James B. Rickert, MD, Bloomington, IN
Karen Zupko, Chicago, IL
Enhance the value of your practice and improve your patient experience ratings by considering strategies to improve patient experience through patient centered care.

310
Diagnosis and Treatment of the Biceps-Labral Complex: The State of the Art 2013
Moderator: Stephen J. O’Brien, MD, New York, NY
Pascal Boileau, MD, Nice, France
Neal S. ElAttrache, MD, Los Angeles, CA
Gary M. Gartsman, MD, Houston, TX
Review of existing scientific knowledge needed to understand the anatomical, functional, and clinical information surrounding the Biceps-Labrum Complex; including diagnostic examination and tools.

311
MRI of the Spine: Essentials for the Orthopaedic Surgeon
Moderator: A. J. Khanna, MD, Bethesda, MD
John A. Carrino, MD, Baltimore, MD
Khaled M. Kebaish, MD, Baltimore, MD
Review the essential and advanced concepts in spine MRI and provide attendees with a systematic approach to the evaluation of these studies.

312
Advances In Anterior Cruciate Surgery: Current Concepts and Evolving Approaches
Moderator: Nicholas A. Sgaglione, MD, New Hyde Park, NY
Freddie H. Fu, MD, Pittsburgh, PA
Peter R. Kurzweil, MD, Long Beach, CA
Walter R. Shelton, MD, Jackson, MS
Review the current approach to ACL surgery in active individuals. Appropriate decision making in primary, complex and revision cases using practical guidelines and state-of-the-art technology will be addressed with case based discussion.

313
Management of Pelvic Fractures
Moderator: Milton L. Rout Jr, MD, Seattle, WA
Mark C. Reilly, MD, Newark, NJ
Michael D. Stover, MD, Chicago, IL
Raymond D. Wright Jr, MD, Lexington, KY
Current standards of pelvic ring injury evaluation, acute management, decision making, surgical techniques, and complication avoidance are presented in depth.

314
Thoracolumbar Fracture: Evaluation and Management from ER to Rehab
Moderator: Carlo Bellabarba, MD, Seattle, WA
Darrel S. Brodke, MD, Salt Lake City, UT
Kirkham B. Wood, MD, Boston, MA
Controversies as to the optimal approach to evaluation and management of thoracolumbar fractures from the ER to post-operative care discussed.

FD3
Cliff Notes on Clinical Research: What You Need to Get Started
Moderator: John W. Sperring, MD, MBA, Rochester, MN
Leesa M. Galatz, MD, Saint Louis, MO
Bruce S. Miller, MD, MS, Assoc Prof, Ann Arbor, MI
Karen Zupko, Chicago, IL
Understand the scientific method and be able to design and complete a clinical research project. Formulate a clinically relevant hypothesis, perform a power analysis, collect and analyze data. Determine when the results are worth of submission as an abstract. This course is offered at no charge.

PAPER PRESENTATION

8:00 AM — 10:00 AM
Room S105
Adult Reconstruction Hip IV: Revision THA/Tapers
Moderator(s): Scott Sporer, MD, Wheaton, IL
Kirkham B. Wood, MD, Salt Lake City, UT
Alvan Van Zyl, MD, Bloemfontein, New Zealand

8:00 AM
PAPER: 271
Radiographically Silent Loosening of the Acetabular Component in Total Hip Arthroplasty
Anay R. Patel, MD, Chicago, IL
Geoffrey Marecek, MD, Chicago, IL
Lalit Puri, MD, Glenview, IL
Radiographically silent loosening of the acetabular component was seen in 9 of 67 patients in our study. Adequate fixation of the acetabular component has not been clearly defined radiographically.

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Thursday, March 21

8:06 AM  PAPER: 272
3-D Computed Tomography as an Assessment of Periacetabular Osteolysis in Revision Total Hip Arthroplasty
Kyoung H. Moon, MD, Incheon, Republic of Korea
Man Hee Won, MD, Republic of Korea
Mung Ju Park, Incheon, Republic of Korea
Kang S. Joon Soon, MD, Incheon, Republic of Korea
3D CT is considered a useful method for assessing and measuring the periacetabular osteolysis. However, plain radiographic polyethylene wear measurement is not useful.

8:12 AM  PAPER: 273
First-time Cup Revision - The Swedish Experience
Maziar Mohaddes, MD, Molndal, Sweden
Goran Garellick, MD, PhD, Goteborg, Sweden
Johan N. Karrholm, MD, Molndal, Sweden
Analysis of 19342 first time cup revisions from the Swedish Hip Arthroplasty shows reduced risk of re-revision, due to aseptic loosening, when uncemented fixation is used.

8:24 AM  PAPER: 274
TRAP 5b as Marker for Diagnosis of Osteolysis and Aseptic Loosening after Total Joint Replacement
Stefan Landgraebner, MD, Essen, Germany
Sebastian Warwas, Essen, Germany
Marcel Haersath, MD, Essen, Germany
Axel Marx, Sommerfeld, Germany
Henning Quitmann, MD, Essen, Germany
Marcus Jager, MD, PhD, Essen, Germany
Measurement of serum TRAP 5b may be a clinically relevant assay for monitoring patients after arthroplasty.

8:30 AM  PAPER: 275
Combined Trabecular Metal Cup and Augment for Acetabular Revision: A Five-Year Follow-Up Study
Mansour Abolghasemian, MD, Toronto, ON, Canada
Suksan Tangsataporn, MD, Toronto, ON, Canada
Amir Sternheim, Toronto, ON, Canada
Paul R. Kueyk, MD, FRCS, Toronto, ON, Canada
David Backstein, MD, Toronto, ON, Canada
Oleg Safir, MD, Toronto, ON, Canada
Allan E. Gross, MD, FRCS, Toronto, ON, Canada
Using trabecular metal cup supported by an augment for reconstructing deficient acetabuli was investigated at five year follow up. Good clinical and radiological results were obtained.

8:36 AM  PAPER: 276
Pelvic Discontinuity; Comparing Midterm Results of Cup-cage Reconstruction to Conventional Cages
Mansour Abolghasemian, MD, Toronto, ON, Canada
Suksan Tangsataporn, MD, Toronto, ON, Canada
Hesham Abdelbary, MD, Toronto, ON, Canada
David Backstein, MD, Toronto, ON, Canada
Oleg Safir, MD, Toronto, ON, Canada
Allan E. Gross, MD, FRCS, Toronto, ON, Canada
In a comparative retrospective study, we found that a cup-cage reconstruction is superior to a conventional cage in treating pelvic discontinuity during a hip revision arthroplasty in mid-term follow.

8:48 AM  PAPER: 277
Correlation of Aspiration Results with the Etiology of Aseptic Failure in Total Hip Arthroplasty
Peter N. Chalmers, MD, Chicago, IL
Kevin E. Hudak, MS, BS, MD, New Berlin, VA
Scott M. Sporer, MD, Wheaton, IL
Brett R. Levine, MD, Chicago, IL
Aspiration results and etiology of failure were correlated in patients undergoing revision THA, revealing lymphocyte count >9% and segmented cell count <70% to be 93% sensitive for aseptic loosening.

8:54 AM  PAPER: 278
Mortality after Septic and Aseptic Revision Total Hip Arthroplasty: A Matched-Cohort Study
Horim Choi, MD, Boston, MA
Benjamin Beecher, MD, Des Moines, IA
Henrik Malchau, MD, Boston, MA
Hany Bedair, MD, Newton, MA
Septic revision showed higher mortality than aseptic revision, but did not predict increased mortality. Older age and higher Charlson index were identified as risk factors associated with mortality.

9:00 AM  PAPER: 279
Utility of Trephine Reamers in Revision Hip Arthroplasty
Vamsi Kuncherla, MD, Bethlehem, PA
Daniel J. Del Gaico, MD, Chapel Hill, NC
Scott M. Sporer, MD, Wheaton, IL
Wayne G. Paprosky, MD, Winfield, IL
The majority of patients that required the use of a powered trephine to remove a well fixed femoral component had a successful result without complication.
Thursday, March 21

**9:12 AM**  
PAPER: 280  
**Fretting and Corrosion in an Exchangeable Neck Modular Hip System - A Cause for Concern**  
Dennis Molloy, FRCS (Ortho), MPH, Belfast, Northern Ireland, United Kingdom

Surgeons using modular hip systems with a titanium stem and cobalt-chrome neck should be vigilant with radiological and serum ion level follow-up of patients. Early failures may be encountered.

**9:18 AM**  
PAPER: 281  
**The Taper Junction Contributes One Third of the Total Volumetric Material Loss in Large Diameter Metal-on-Metal Hips**  
Alister Hart, FRCS, London, United Kingdom  
Ashley Matthies, BSc, London, United Kingdom  
Paul J. Bills, PhD, MSc, Huddersfield, United Kingdom  
Paulus R. Macnab, PhD, Huddersfield, United Kingdom  
Gordon W. Blunn, MD, Middlesex, United Kingdom  
Liam Blunt, PhD, Huddersfield, United Kingdom  
John Skinner, FRCS, London, United Kingdom

The taper junction is an important source of implant-derived metal debris but in the majority of cases contributes significantly less to the overall volumetric material loss than the bearing surfaces.

**9:24 AM**  
PAPER: 282  
**Taper Damage on Modular Components of Retrieved Metal-on-Metal Total Hip Arthroplasty Devices**  
Genymphas Higgs, Philadelphia, PA  
José Hanevik, MS, Philadelphia, PA  
Daniel MacDonald, Philadelphia, PA  
Gregg R. Klein, MD, Paramus, NJ  
Javad Parvizi, MD, FRCS, Philadelphia, PA  
Michael A. Mont, MD, Baltimore, MD  
Matthew J. Kraay, MD, Cleveland, OH  
Clare M. Rimnac, PhD, Philadelphia, PA  
Steven M. Kurtz, PhD, Philadelphia, PA

The fretting and corrosion damage that has raised concern at the head-stem interface, is also prevalent at the many additional modular components in contemporary MOM THA's.

**9:42 AM**  
PAPER: 284  
**Adverse Local Tissue Reactions Arising from Corrosion at the Neck-Body Junction in a Modular Neck Stem**  
Herbert J. Cooper, MD, New York, NY  
Robert M. Urban, Chicago, IL  
Richard L. Wisson, MD, Chicago, IL  
Robert M. Meneghini, MD, Fishers, IN  
Joshua J. Jacobs, MD, Chicago, IL

Adverse local tissue reactions can occur as a result of cobalt-alloy debris generated by fretting and crevice corrosion at the modular neck-body junction in a dual-tapered stem design.

**9:48 AM**  
PAPER: 285  
**Surgical Indications for Re-revision in Total Hip Replacement (THR) Patients Younger than Age Fifty**  
Krishna R. Tripuraneni, MD, Albuquerque, NM  
Michael J. Archibeck, MD, Albuquerque, NM  
Joshua T. Carothers, MD, Albuquerque, NM  
Richard E. White Jr, MD, Albuquerque, NM

Re-revision THA in age <50 patients is due to polyethylene wear in this cohort and was the major indication for initial revision as well.

**Discussion - 6 Minutes**

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**PAPER PRESENTATION**

**8:00 AM — 10:00 AM**  
Room N427  
Sports Medicine/Arthroscopy IV: Patella/Meniscus  
Moderator(s): Peter G. Gerbino II, MD, Monterey, CA  
Scott E. Powell, MD, Burbank, CA

**8:00 AM**  
PAPER: 286  
**Risk Factors for Recurrent Instability Following Acute Patellofemoral Dislocation**  
Laura Lewallen, MD, Rochester, MN  
Amy L. McIntosh, MD, Rochester, MN  
Diane L. Dahn, MD, Rochester, MN

In this large retrospective review of acute patellar dislocations, young patients with trochlear dysplasia were at highest risk for recurrent instability.

**Discussion - 6 Minutes**

**8:06 AM**  
PAPER: 287  
**Comparison of Four Patellar Height Measurement Methods for the Diagnosis of Recurrent Patellar Dislocation (RDP)**  
Shinya Ishizuka, MD, Nagoya City, Japan  
Tadabiro Sakai, Nagoya, Japan  
Hideki Hiraiwa, MD, PhD, Nagoya, Japan  
Takashi Hamada, Nagoya City, Japan  
Mitsushi Nakashima, Nagoya, Japan  
Yoroi Ono, MD, Greenville, NC  
Satoshi Yamashita, MD, Nagoya City, Japan  
Naoki Ishiguro, MD, Nagoya, Japan

In this case-control study, we assessed whether four commonly used patellar height index act as predictor of RDP. Our results showed that IS and mIS index could be the optimal predictors of RDP.
Thursday, March 21

8:12 AM

**Does Kinesio Taping Affect Patellofemoral Contact Pressures?**
Miguel Ramirez, MD, Baltimore, MD
Brent G. Parks, MSc, Baltimore, MD

In a cadaveric model, kinesio taping was able to reduce patellofemoral contact pressures by 8.4%, suggesting there may be a benefit for Kinesio taping in patients with patellofemoral syndrome.

**Discussion - 6 Minutes**

8:24 AM

**Trochlear Dysplasia Associated with Less Progression of Osteoarthritis Following Patellofemoral Arthroplasty**
Michael Kalisvaart, MD, Rochester, MN
Seth Slettedahl, MS, Rochester, MN
Diane L. Dahm, MD, Rochester, MN

Patients with preoperative trochlear dysplasia experienced less progression of tibiofemoral degenerative joint disease than patients without trochlear dysplasia at a mean follow-up of 3.5 years.

8:30 AM

**The Effect of ACL Graft Selection on in vivo 3D Patellar Kinematics During Robotic Tibial Rotation Using Dynamic CT**
Shaun Stinton, PhD, Atlanta, GA
Cale Jacobs, PhD, Lexington, KY
Tommy J. Cunningham, MS, Atlanta, GA
Thomas Branch, MD, Atlanta, GA

Harvesting BTB ACL autografts alters patellofemoral kinematics to a greater degree than hamstring autografts. Patellar tendon shortening can cause the patella to be dragged by the tibial tubercle.

8:36 AM

**Twelve Knees of Patellar Stress Fracture in Athletes: Influence of Patellar Height**
Tatsuhiro Toratani, MD, Kanazawa, Japan
Junsuke Nakase, MD, Kanazawa, Japan
Masahiro Kosaka, MD, Kanazawa, Japan
Yoshinori Ohashi, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Katsuhiko Kitaoka, MD, Kanazawa, Japan

Evaluated 12 knees with transverse patellar stress fractures. The average fracture line level was 27.2±5.8% and higher patellar height contributes to stress fractures of the patella.

**Discussion - 6 Minutes**

8:48 AM

**Repair of Lateral Meniscus Posterior Horn Detachment Lesions: A Biomechanical Evaluation**
Carl Schillhammer, MD, Syracuse, NY
Frederick Werner, M Eng, Syracuse, NY
John Cannizzaro, MD, Cazenovia, NY
Matthew G. Scuderi, MD, East Syracuse, NY

A biomechanical study showing reduced tibial plateau contact pressures after repairing posterior horn detachment lesions of the lateral meniscus to bone via a tibial tunnel.

**Biomechanical Consequences of a Complete Radial Tear Adjacent to the Medial Meniscus Posterior Root Attachment Site**
Jeffrey R. Padalecki, MD, Austin, TX
Kyle Jansson, Vail, CO
Sean Smith, MSc, Vail, CO
Casey Pierce, MD, Paterson, NJ
Grant Dornan, MSc, Vail, CO
Coen A. Wijdicks, PhD, Vail, CO
Robert F. LaPrade, MD, PhD, Vail, CO

Repair of poster horn radial tears with an in-situ pullout technique restored joint mechanics to the intact state in spite of shortening the functional circumferential length of the medial meniscus.

8:54 AM

**Factors Associated with Meniscus Root Tears**
Lauren M. Matheny, Vail, CO
Andrew C. Ockuly, Vail, CO
Robert E. LaPrade, MD, PhD, Vail, CO
J. Richard Steadman, MD, Vail, CO
Karen K. Briggs, MPH, Vail, CO

The findings of this study show that patients with meniscal root tears had tears of the ACL, MCL, or FCL than concomitant tears of the PCL.

**Discussion - 6 Minutes**

9:00 AM

**Effects of Partial Meniscectomy on Tibiofemoral Kinematics and Cartilage Biochemistry: An MRI Study**
Lee Morse, MD, San Francisco, CA
Samuel J. Wu, BS, San Francisco, CA
Brian T. Feeley, MD, San Francisco, CA
Richard Souza, ATC, PhD, PT, San Francisco, CA

Using MRI we show that arthroscopic partial meniscectomy effects changes in cartilage biochemistry in as early as 6 months with loss of proteoglycan and disruption of the collagen network.

9:12 AM

**Does High Knee Flexion Cause Separation of Meniscal Repairs?**
David L. Lin, MD, Sugar Land, TX
Sarah S. Ruh, BS, Houston, TX
Hugh L. Jones, Houston, TX
Azim Karim, MD, Houston, TX
Philip C. Noble, PhD, Houston, TX
David M. Lintner, MD, Houston, TX
Patrick C. McCulloch, MD, Houston, TX

Rehab protocols limit ROM following meniscal repairs due to concerns of tear separation. We evaluated the effects of high flexion on cadaveric knees having meniscal tears using RSA techniques.

**Discussion - 6 Minutes**
Thursday, March 21

9:24 AM  PAPER: 297
Prospective Assessment of MRI vs. Ultrasound for Diagnosis of Meniscal Pathology
Cristi R. Cook, DVM, MS, Columbia, MO
James P. Stannard, MD, Columbia, MO
Gavin M. Vaughn, MD, Columbia, MO
Nichole Wilson, RN, Columbia, MO
Brandon L. Roller, MD, Naples, FL
Aaron M. Stoker, MS, PhD, Columbia, MO
Prakash S. Jayabalan, MD, Pittsburgh, PA
Keiichi Kuroki, DVM, PhD, Columbia, MO
James L. Cook, DVM, PhD, Columbia, MO
Ultrasonography is a useful tool for diagnosis of meniscal pathology with potential advantages over MRI.

9:36 AM  PAPER: 298
Arthroscopic Meniscal Allograft Transplantation with a Single Tibial Tunnel and Without Bone Plugs
Maurizio Marcaccio, MD, Bologna, Italy
Giolio Maria Marcheggiati Maccioli, MD, Bologna, Italy
Alberto Grassi, MD, Bologna, Italy
Tommaso Bonanzinga, MD, Bologna, Italy
Marco Nitti, MD, Bologna, Italy
Maurizio Busacca, MD, Bologna, Italy
Antonio Scarale, MD, Bologna, Italy
Francesco Iacono, MD, Bologna, Italy
Stefano Zaffagnini, MD, Bologna, Italy
Arthroscopic meniscal allograft transplantation with a single tibial tunnel and without bone plugs significantly reduced pain and improved knee function in 92% of pts at min. 4-year follow-up.

9:42 AM  PAPER: 299
Is Osteotomy Necessary for Primary Varus Knees Treated for Medial Meniscal Allograft Transplantation?
Su-Chan Lee, MD, Seoul, Republic of Korea
Duck-Hyun Choi, MD, Seoul, Republic of Korea
Byoung-Yoon Hwang, MD, Republic of Korea
Byoung-Yoon Hwang, MD, Republic of Korea
This study was to examine whether outcomes differed in patients having MMT with differing degrees of preoperative knee alignment.

9:48 AM  PAPER: 300
Return to High-Level Sport Following Meniscal Allograft Transplantation
Peter N. Chalmers, MD, Chicago, IL
Vasili Karas, MD, Durham, NC
Seth Sherman, MD, Columbia, MO
Brian J. Cole, MD, MBA, Chicago, IL
A description of the results of meniscal allograft transplantation in young athletes, specifically with respect to return to their pre-injury level of play.

8:00 AM — 10:00 AM
Room N426
Shoulder and Elbow II: Rotator Cuff II
Moderator(s): David L. Glaser, MD, Philadelphia, PA
Keith Kenter, MD, Cincinnati, OH
8:00 AM  PAPER: 301
Rehabilitation Following Arthroscopic Rotator Cuff Repair: A Prospective, Randomized Trial
Jay D. Keener, MD, Saint Louis, MO
Leesa M. Galatz, MD, Saint Louis, MO
Ken Yamaguchi, MD, Chesterfield, MO
This prospective randomized trial found no benefit to clinical outcome or healing for two distinct types of rehabilitation following arthroscopic repair of small and medium sized rotator cuff tears.

8:06 AM  PAPER: 302
Is the Delayed Operation Effective for the Patient with Rotator Cuff Tear Concomitant Stiffness?
Yang-Soo Kim, MD, Seoul, Republic of Korea
Immediate arthroscopic rotator cuff repair with capsular release yielded significantly better functional outcome than delayed operation in the rotator cuff tear concomitant stiffness.

8:12 AM  PAPER: 303
The Effect of Longer Immobilization After Rotator Cuff Repair: Randomized Clinical Trial
Min Soo Shon, MD, Seoul, Republic of Korea
Kyoung-Hwan Koh, MD, Seoul, Republic of Korea
Tae Kang Lim, MD, Gumpo, Republic of Korea
Seungwon Lee, MD, Seoul, Republic of Korea
Jae-Chul Yoo, MD, Seoul, Republic of Korea
there were no difference between 4W and 8W of immobilization in healing on MRI, range-of-motion, and clinical outcome since 6 months after arthroscopic rotator cuff repair.

8:24 AM  PAPER: 304
The Effect of Vitamin D Deficiency on Rotator Cuff Healing in a Rat Model
Michael E. Angeline, MD, Williams Bay, WI
Shen-Ying R. Ma, MD, New York, NY
Cecilia Pascual Garrido, MD, Denver, CO
Clifford Vogt, MD, New York, NY
Xiang-Hua Deng, MD, New York, NY
Russell F. Warren, MD, New York, NY
Scott A. Rodeo, MD, New York, NY
The findings from this study suggest that low vitamin D levels may negatively affect early healing at the rotator cuff repair site in a rat model.
Thursday, March 21

8:30 AM  
**PAPER: 305**

*The Contribution of Oxidative Stress on Degeneration of Rotator Cuff Enthesis*

Daichi Morikawa, MD, Bunkyo-Ku, Japan  
Yoshiaki Itoigawa, MD, Rochester, MN  
Hidetoshi Nojiri, Tokyo, Japan  
Hirotaka Sano, MD, PhD, Sendai, Japan  
Eiji Itoi, MD, Sendai, Japan  
Yoshifumi Saijo, MD, PhD, Sendai, Japan  
Takayuki Kawasaki, MD, PhD, Tokyo, Japan  
Kazuo Kaneko, MD, Tokyo, Japan  
Takahiko Shimizu, PhD, Chiba, Japan

An antioxidant enzyme, Sod1, deficiency induced degeneration and reduction of mechanical properties in rotator cuff, suggesting that oxidative stress may cause rotator cuff tear due to degeneration.

8:36 AM  
**PAPER: 306**

*Isolation and Characterization of Human Mesenchymal Stem Cells from Shoulder Tissues*

Hajime Utsunomiya, MD, Kitakyushu, Japan  
Soshi Uchida, MD, PhD, Kitakyushu, Japan  
Ichiro Sekiya, MD, PhD, Tokyo, Japan  
Akinori Sakai, MD, PhD, Kitakyushu, Japan  
Ichiro Shinoda, Kitakyushu, Japan  
Toshibu Shimizu, PhD, Chiba, Japan

Human shoulder mesenchymal tissues obtained from subacromial bursa have mesenchymal stem cell properties in terms of expandability and differentiation potential among patients with rotator cuff tear.

8:48 AM  
**PAPER: 307**

*A Quality Assessment of the Rotator Cuff Randomized Controlled Trials Utilizing the Consort Criteria*

Frank McCormick, MD, Chicago, IL  
Gregory L. Cvetanovich, MD, Chicago, IL  
Jaehon M. Kim, MD, Baltimore, MD  
Anthony A. Romeo, MD, Chicago, IL  
Matthew T. Provencher, MD, San Diego, CA

Future randomized studies of rotator cuff disorders should consider full use of CONSORT Criteria in order to provide meaningful and clinically impactful patient care decision making.

8:54 AM  
**PAPER: 308**

*Changes of Muscular Atrophy and Fatty Infiltration Immediately After Rotator Cuff Repair: Time-Zero MRI Study*

Tae Kang Lim, MD, Gunpo, Republic of Korea  
Kyoung-Hwan Koh, MD, Seoul, Republic of Korea  
Min Soo Shon, MD, Seoul, Republic of Korea  
Young Eun Park, Seoul, Republic of Korea  
Seung Won Lee, MD, Seoul, Republic of Korea  
Jae-Chul You, MD, Seoul, Republic of Korea  
Tae Kang Lim, MD, Gunpo, Republic of Korea

Our study demonstrated that higher degrees of the MA and FI could improve immediately after successful tendon repair.

9:00 AM  
**PAPER: 309**

*Patient Age and Activity Affect Satisfaction and Shoulder Function in Failed Rotator Cuff Repairs*

Hyun Min Kim, MD, Hershey, PA  
Jon-Michael E. Caldwell, BS, New York, NY  
John Buza  
Leslie A. Fink, MD, New York, NY  
Christopher S. Ahmad, MD, New York, NY  
Louis U. Bigliani, MD, New York, NY  
William N. Levine, MD, New York, NY

Younger patients with higher physical demands are less satisfied and experience poorer shoulder function than older patients when their rotator cuff repair fails.

9:12 AM  
**PAPER: 310**

*Atorvastatin Increases the Biomechanical Strength of the Repaired Rotator Cuff by the Cyclooxygenase-2 Mechanism*

Ofir Chechik, MD, Ramat Hasharon, Israel  
Oleg Dolkart, PhD, Tel Aviv, Israel  
Fadi Y. Alhajajra Sr, Tel Aviv, Israel  
Roy Gigi, MD, Tel - Aviv, Israel  
Gavriel Mozes, MD, Tel Aviv, Israel  
Eran Maman, MD, Tel Aviv, Israel

Beneficial effect of atorvastatin on repaired RC was mediated by a COX-2–dependent mechanism. This evidence may also provide potential insight into the reported negative effects of COX-2 inhibitors on tendon healing.

9:18 AM  
**PAPER: 311**

*Human Dermal Allograft for Reconstruction of Massive Rotator Cuff Tears: Functional and MRI Results of 109 Patients*

Randy R. Clark, MD, Saint George, UT  
Joseph P. Burns, MD, Los Angeles, CA  
Stephen J. Snyder, MD, Van Nuys, CA  
Brian Dierckman, MD, Westfield, IN

Human Dermal Allograft For Reconstruction of Irreparable Massive Rotator Cuff Tears: Functional and Magnetic Resonance Imaging Results of 109 Patients.

9:24 AM  
**PAPER: 312**

*Effects of Platelet-Rich Plasma and Indomethacin on the Strength of Rotator Cuff Repair*

Molly C. Meadows, New York, NY  
Christopher Ferry, BS, New York, NY  
David M. Levy, MD, New York, NY  
Thomas R. Gardner, MCE, New York, NY  
Takeshi Teratani, MD, PhD, Tsushima, Japan  
Christopher S. Ahmad, MD, New York, NY

Our biomechanical data suggest that intra-operative PRP may strengthen rotator cuff repair in rats and that NSAIDs do not negatively impact the efficacy of PRP.
Thursday, March 21

9:36 AM  PAPER: 313
Effect of Rotator Cuff Tears on Genomic, Histologic and Biomechanic Properties of the Long Head of the Biceps Tendon
James E. Moravek Jr, MD, Palos Hills, IL
Brett P. Wiater, MD, Birmingham, MI
Michael Kurzziel, MS, Royal Oak, MI
Tristan Maerz, MS, Royal Oak, MI
Kevin Baker, PhD, Royal Oak, MI
J M. Wiater, MD, Beverly Hills, MI

Rotator cuff tears may alter structural and mechanical properties of the long head of the biceps tendon.

9:42 AM  PAPER: 314
Where Does the Apoptosis Begin in the Supraspinatus Tendon?
Yang-Soo Kim, MD, Seoul, Republic of Korea

Torn supraspinatus tendon showed the significantly increased apoptotic activity compared to normal rotator cuff tendon. However, apoptosis occurs regardless of location in the torn supraspinatus tendon.

9:48 AM  PAPER: 315
Peripheral Cytokine Markers in a Novel Rat Periprosthetic Shoulder Infection Model
Scott Nodzo, MD, Buffalo, NY
Paul R. Knight III, MD, PhD, Buffalo, NY
Thomas A. Russo, MD, Buffalo, NY
Bruce Davidson, PhD, Buffalo, NY
Ruth A. Olson III, Buffalo, NY
Jadwiga D. Helinski, Buffalo, NY
Ravi Alluri, MD, Williamsville, NY
Thomas Duquin, MD, Buffalo, NY

We developed a novel rodent model for prosthetic shoulder infection which can be used to evaluate peripheral blood cytokine levels as possible diagnostic markers.

8:00 AM  PAPER: 316
The Dosage of Articular C-reactive Protein (CRP): A New Marker of the Osteo-articular Infection?
Bressy Guillaume, Reims, France
Jean-Baptiste Oudart, Reims, France
Leroux Bertrand, Coulonces Cohon, France
Saidou Diallo, Reims, France
Xavier Obl, MD, Reims, France
Maquart X. François-Xavier, MD, PhD, Reims, France
Karim Madi, MD, Reims, France
Ramont Laurent, Reims, France
Emile Deboux, MD, Gap, France

The interest of the intra-articular CRP like a new infection marker.

8:12 AM  PAPER: 318
In Hip and Knee Arthroplasty, Rivaroxaban Causes More Wound Leakage than Low Molecular Weight Heparin
Raghuram Thonse, MBBS, MS, Heswall, United Kingdom
Darren Ebree, MBBS, Norwich, Norfolk, United Kingdom
Nicola Blucher, BA, MBBS, Chester, United Kingdom
Adam J. Farrier, MB, ChB, Gold Coast, Australia
Jane C. Seeley, MBBS, Liverpool, United Kingdom

Rivaroxaban (compared to LMWH) leads to increased wound discharge with a trend towards increased wound related complications when used for VTE prophylaxis following primary hip and knee arthroplasty.

8:24 AM  PAPER: 319
* Real-World Study of Dabigatran Eutexilate for Thromboprophylaxis in Over 5,000 Hip or Knee Replacement Patients
Simon Frostick, MD, Liverpool, United Kingdom
Nadia Rosencher, MD, Paris, France
Martin Feuring, MD, Ingelheim, Germany
Satu Salmio, RN, Helsinki, Finland
Eva Kleine, MSc, Helsinki, Finland
Martina Brueckmann, MD, Ingelheim, Germany
Andreas Clemens, MD, Ingelheim, Germany
Charles Marc Samama, MD, PhD, Paris, France

Dabigatran etexilate administered to patients undergoing total hip or total knee replacement following recommendations of the European label was safe and well tolerated in a routine clinical setting.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Thursday, March 21

8:30 AM  PAPER: 320
Heparin Induced Thrombocytopenia Following Lower Limb Arthroplasty
Jonathan D. Craik, BSc, MBChB, Surrey, United Kingdom
Andrew Cobb, MD, Surrey, United Kingdom

This study demonstrates that platelet count monitoring for heparin induced thrombocytopenia is not justified following lower limb arthroplasty.

8:36 AM  PAPER: 321
Physical Therapy Mandates by Medicare Administrative Contractors: Effective or Wasteful?
Thomas K. Febrin, MD, Charlotte, NC
Susan M. Odum, Charlotte, NC
Keith Febrin, MD, Richmond, VA
David A. Halsey, MD, South Burlington, VT

Physical therapy mandates by Medicare Contractors are ineffective and costly.

8:48 AM  PAPER: 322
Using Near Miss Analysis to Prevent Wrong-Site Surgery
Joseph A. Bosco III, MD, New York, NY
Lorraine Hutzler, BA, New York, NY
Richard S. Yoon, MD, New York, NY
Michael J. Alia, MD, New York, NY

A program designed to educate physicians to the importance of decreasing near misses for wrong site surgery is effective.

8:54 AM  PAPER: 323
Objective Structured Clinical Exams (OSCE) Aid Communication Skills Training in Orthopaedic Residency
Donna P. Phillips, MD, New York, NY
Kenneth A. Egol, MD, New York, NY
Sondra Zabar, MD, New York, NY
Raj Karsa, MPH, New York, NY
Joseph D. Zuckerman, MD, New York, NY

We tested the feasibility of OSCE administration in a large orthopaedic training program and sought areas for resident and programmatic improvement in teaching and evaluating communication skills.

9:00 AM  PAPER: 324
Decreasing Total Joint Implant Costs and Physician Specific Cost Variation Through Negotiation
Joseph A. Bosco III, MD, New York, NY
Lorraine Hutzler, BA, New York, NY
James D. Slover, MD, New York, NY
Joseph D. Zuckerman, MD, New York, NY

An institutional wide initiative to decrease total joint implant pricing is effective in reducing the total costs of implants and also physician specific cost variation.

9:12 AM  PAPER: 325
Patterns of Costs and Spending Among Orthopaedic Surgeons Across the United States: A National Survey
Vasanth Sathiakumar, Nashville, TN
Amir A. Jabangir, MD, Nashville, TN
William T. Obremskey, MD, MPH, Nashville, TN
Hassan R. Mir, MD, Nashville, TN
Manish K. Sethi, MD, Nashville, TN

This survey study of 2000 Orthopaedists demonstrates that across the US approximately $8.2 billion yearly is spent on imaging, labs, referrals, and admissions.

9:18 AM  PAPER: 326
Outcomes of Hip Fracture Surgery in Stroke Patients
Yong-chan Ha, Prof, Seoul, Republic of Korea
Jae-Hwi Nho, Dongnam-Gu, Republic of Korea
Young-Kyun Lee, MD, Seongnam-Si, Republic of Korea
Kyung H. Koo, MD, Seoul, Republic of Korea
You-Sung Suh, Seoul, Republic of Korea

In hip fracture surgery, patients with stroke have high risk concerning complications, and stroke was found to be associated with high mortality rate.

9:24 AM  PAPER: 327
Trends in Orthopaedics: An Analysis of Medicare Claims, 2000-2010
Daniel Belatti, Iowa City, IA
Phinit Phisitkul, MD, Iowa City, IA

An in-depth analysis of Medicare Part B claims from 2000-2010 reveals modest growth in orthopaedic payments with significant exceptions.

9:36 AM  PAPER: 328
Disparity in Total Joint Arthroplasty Patient Factors and Post-Operative Outcomes Based on Insurance Payer Type
Christopher T. Martin, MD, Iowa City, IA
John J. Callaghan, MD, Iowa City, IA
Steve S. Liu, MD, Iowa City, IA
Yubo Gao, PhD, Iowa City, IA
Richard C. Johnston, MD, Iowa City, IA

Both pre and post-operative outcomes differ between insurance payer types in total joint arthroplasty and investigation into these differences would be useful in informing health policy decisions.
Thursday, March 21

9:42 AM  PAPER: 329
Disparity in Access to Care and Pre-Operative Patient Characteristics Between Insurance Type in Joint Arthroplasty
Christopher T. Martin, MD, Iowa City, IA
John J. Callaghan, MD, Iowa City, IA
Steve S. Liu, MD, Iowa City, IA
Yubo Gao, PhD, Iowa City, IA
Richard C. Johnston, MD, Iowa City, IA
Disparities in pre-operative patient characteristics exist between insurance payer types in total joint arthroplasty, and further research is needed to better inform health policy decisions.

9:48 AM  PAPER: 330
Door Openings Cause Contamination of the Operating Room Setup
Eric B. Smith, MD, Merion Station, PA
Ibrahim Raphael, MD, Philadelphia, PA
Mitchell Maltenfort, PhD, Philadelphia, PA
Kyle J. Dolan, Havertown, PA
Sittisak Honsavek, MD, PhD, Bangkok, Thailand
Elizabeth Younkins, RN, Philadelphia, PA
Javad Parvizi, MD, FRCs, Philadelphia, PA
Restricting the number of door openings and performing surgeries under the LAF may decrease infection risks following TJA.

9:54 AM  PAPER PRESENTATION

8:00 AM — 10:00 AM
Room S103
Tumor/ Metabolic Disease I: Developments in Orthopaedic Oncology
Moderator(s): Carol D. Morris, MD, New York, NY
R. Lor Randall, MD, Salt Lake City, UT

8:00 AM  PAPER: 331
Successful Prosthetic Rehabilitation Following Hip Disarticulation or Hemi-Pelvectomy
Michael Kralovec, MD, Rochester, MN
Karen L. Andrews, MD, Rochester, MN
Matthew Houdet, MD, Rochester, MN
Courtney E. Sherman, MD, Ponte Vedra, FL
Thomas C. Shive, MD, Rochester, MN
Peter S. Rose, MD, Rochester, MN
Franklin H. Sun, MD, Rochester, MN
Prosthetic Rehabilitation following hip disarticulation or hemi-pelvectomy is a viable option. Successful patients had long survival. Obesity and old age do not exclude patients from success.

8:06 AM  PAPER: 332
The Financial Burden of Re-excising Incompletely Excised Sarcomas - A Cost Analysis
Vignesh Alamanda, BS, Nashville, TN
Kristin Archer, PhD, Nashville, TN
Shannon Mathis, Nashville, TN
Jennifer L. Halpern, MD, Nashville, TN
Herbert S. Schwartz, MD, Nashville, TN
Ginger E. Holt, MD, Nashville, TN
The financial costs of re-excision of soft tissue sarcomas (STS) are staggeringly high and if correctly diagnosed and resected properly, it would save on average $48,208 per patient.

8:12 AM  PAPER: 333
Transcutaneous Application of CO2 Induced Mitochondrial Apoptosis in Human Malignant Tumors
Yasuo Onishi, MD, Hyogo, Japan
Teruya Kawamoto, MD, PhD, Kobe, Japan
Takeshi Ueha, Hyogo, Japan
Hitomi Hara, Kobe, Japan
Mitsunori Toda, MD, Kobe, Hyogo, Japan
Risa Harada, MD, Hyogo, Japan
Masaya Minoda, MD
Masahiro Kurosaka, MD, Kobe, Japan
Toshihiro Akisue, MD, Kobe, Japan
Transcutaneous application of CO2 induced mitochondrial apoptosis and inhibited tumor growth in human tumor xenografts. Our CO2 therapy may be a novel therapeutic tool for human malignancies.

8:24 AM  PAPER: 334
Efficacy of Newly Developed Platinum Complexes Against Osteosarcoma
Kentaro Igarashi, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan
Hideji Nishida, MD, Kanazawa City, Japan
Hiroaki Kimura, MD, PhD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Shingo Shimozaki, MD, Kanazawa, Japan
Takashi Kato, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
We developed two novel platinum complexes. Both complexes showed strong anti-osteosarcoma activity in vitro and in vivo.

8:30 AM  PAPER: 335
Cancer is Not Increased after Cell Therapies with Bone Marrow Concentrated Mesenchymal Stem Cells
Philippe Hernigou, PhD, Creteil France
Alexandre Poignant, MD, Creteil, France
Charles Henri Flouzat-Lachaniette, MD, Creteil, France
We found no increased cancer risk in patients after application of regenerative cell based therapies with bone marrow concentrated mesenchymal stem cells up to 21 years of follow-up.

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Thursday, March 21

8:36 AM  PAPER: 336  
Proximal Tibia Tumor Megaprostheses: Implant Survival and Function in 225 Cases from a Single Institution  
Pietro Ruggieri, Bologna, Italy  
Elisa Pala, MD, Bologna, Italy  
Andreas Mavrogenis, MD, Athens, Greece  
Teresa Calabro, Bologna, Italy  
G. Douglas Letson, MD, Tampa, FL  

An analysis of 225 megaprostheses of proximal tibia for bone tumors showed a 78% implant survival at 10 years and good functional results. Rotating hinge knees had significantly better results.

8:48 AM  PAPER: 337  
Quality of Life Among Sarcoma Patients: Limb Amputation Versus Limb Salvage Procedures  
Travis C. Heare, MD, Aurora, CO  
Patrick Carry, Aurora, CO  
Amy Monreal, BA, Aurora, CO  
Shelley D’Orfano, NP, RN, MS, Aurora, CO  
Ryan Mooney, PA-C, Denver, CO  
Mary Ann Hensley, RN, Aurora, CO  
Megan B. Nelson, MD, Louisville, KY  

Following primary tumor resection, SF-36 mental health component scores are significantly higher among subjects that underwent an amputation compared with a limb salvage procedure.

8:54 AM  PAPER: 338  
Approach to Treatment of Langerhans Cell Histiocytosis: Is Biopsy Alone Enough?  
Jessica C. Rivera, MD, Fort Sam Houston, TX  
Amy Monreal, BA, Aurora, CO  
Shelley D’Orfano, NP, RN, Aurora, CO  
Ryan Mooney, PA-C, Denver, CO  
Mary Ann Hensley, RN, Aurora, CO  
Travis C. Heare, MD, Aurora, CO  

While the treatment of LCH is debated, biopsy alone for unifocal disease can be both diagnostic and therapeutic allowing for predictable and rapid resolution of pain symptoms.

9:00 AM  PAPER: 339  
Surgery of Pelvic Chondrosarcomas: A Review of 235 Cases from a Single Institution  
Pietro Ruggieri, Bologna, Italy  
Andrea Angelini, MD, Bologna, Italy  
Gabriele Drago, MD, Bologna, Italy  
Carlo Romagnoli, MD, Bologna, Italy  
Marco Manfrini, MD, Bologna, Italy  

Aggressive surgery of pelvic chondrosarcoma results in long-term survival. Tumor grade and stage correlate with survival. Local recurrences are influenced by site, histologic grade and surgical margins.

9:12 AM  PAPER: 340  
Failure Rates of Internal Fixation of Femur Fractures after Soft Tissue Sarcoma Resection and Radiation  
Amir Sternheim, Toronto, ON, Canada  
Jasjit Locharb, MBBS, Toronto, ON, Canada  
Patrick W. O’Donnell, MD, Lexington, KY  
William C. Eward, MD, Durham, NC  
Anthony M. Griffin, MSc, Toronto, ON, Canada  
Jay Wunder, MD, Toronto, ON, Canada  
Peter Ferguson, MD, Toronto, ON, Canada  

Internal fixation of pathologic fractures of the femur after radiation for sarcoma has an extremely high complication rate. These fractures are often fixed in community hospitals.

9:18 AM  PAPER: 341  
Activation of Peroxisome Proliferator-activated Receptor Gamma is a Novel Therapy for Giant Cell Tumor of Bone  
Akihiko Takeuchi, MD, Kanazawa, Japan  
Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan  
Toshiharu Shirai, MD, Kanazawa, Japan  
Katsuhiko Hayashi, MD, Nagoya, Japan  
Hideo Nishida, MD, Kanazawa City, Japan  
Yoshikazu Tanizawa, PhD, Kanazawa, Japan  
Hiroaki Kimura, MD, PhD, Kanazawa, Japan  
Yasuhiro Yamamoto, MD, Kanazawa, Japan  

Activation of PPARγ was found to induce apoptosis or adipocytic differentiation in GCTB cells, suggesting its therapeutic effect on GCTB.

9:24 AM  PAPER: 342  
Complications and Survival after Surgery of Skeletal Metastases in 301 Patients with Breast Cancer  
Ruediger Weiss, Stockholm, Sweden  
Rikard C. Wedin, MD, PhD, Stockholm, Sweden  

The reoperation rate was 14% and the 1-year patient survival was 45% after surgery of skeletal metastases in 301 patients with breast cancer.

9:36 AM  PAPER: 343  
Acridine Orange Therapy as a New Less-invasive Limb Salvage Surgery for Rhabdomyosarcomas and Synovial Sarcomas  
Takao Matsubara, MD, Tsu City, Mie, Japan  
Katsuyuki Kusuzaki, MD, Kyoto, Japan  
Akihiko Matsumine, MD, PhD, Tsu City, Mie, Japan  
Kunihiro Asanuma, MD, Tsu, Japan  
Tomoki Nakamura, MD, PhD, Tsu-City, Mie, Japan  
Akihiro Sudo, Prof., Tsu City, Mie, Japan  

Acridine Orange Therapy supported by photodynamic and radiodynamic therapy, to 7 rhabdomyosarcomas and 10 synovial sarcomas improved limb function by preserving normal tissues without local recurrence.
122  Educational Programs

Thursday, March 21

9:42 AM  PAPER: 344
Skeletal and Extraskeletal Mesenchymal Chondrosarcoma: A Review of 37 Cases
Satoshi Kawaguchi, MD, Houston, TX
Israel Weiss, MD, Raanana, Israel
Patrick P. Lin, MD, Houston, TX
Winston Hub, MD, Houston, TX
Bryan S. Moon, MD, Houston, TX
Robert L. Satcher Jr, MD, Houston, TX
Valere O. Lewis, MD, Houston, TX

Thirty-seven cases of mesenchymal chondrosarcoma were analyzed. Five- and 10-year overall survival was 51% and 37%, respectively. Treatment without radiotherapy was significantly associated with poor recurrence free survival.

9:48 AM  PAPER: 345
The Prognosis of Patients with Primary Osteosarcoma Who Have Undergone Unplanned Therapy
Po-Kuei WU, MD, Taichung, Taiwan
Cheng-Fong Chen, MD, Taipei, Taiwan
Chien-Lin Liu, MD, Taipei, Taiwan
Tain H. Chen, MD, Taipei City, Taiwan
Wei-Ming Chen, MD, Taipei, Taiwan

Unplanned treatment for high-grade OS can result in failure of local control and earlier systemic metastases.

INSTRUCTIONAL COURSE LECTURE
8:00 AM — 11:00 AM
381  Problems and Procedures in Pediatric Trauma: Case Based Learning
Moderator: Ken J. Noonan, MD, Madison, WI
Donald S. Bae, MD, Boston, MA
Michelle S. Castr, MD, Ann Arbor, MI
John M. Flynn, MD, Philadelphia, PA
Steven L. Frick, MD, Orlando, FL

Case presentations of pediatric trauma and complications will guide audience response and discussion. Technical methodology will be provided as tools for treatment of challenging trauma.

382  Limited Incision and Less Invasive Surgical Approaches for Total Hip Arthroplasty
Moderator: Adolph V. Lombardi Jr, MD, New Albany, OH
Keith R. Berend, MD, New Albany, OH
Richard A. Berger, MD, Chicago, IL
Stephen B. Murphy, MD, Boston, MA
Christopher L. Peters, MD, Salt Lake City, UT

The spectrum of less invasive and limited incision approaches for THA are reviewed with video vignettes, discussion of pros and cons, case examples and clinical outcomes.

INSTRUCTIONAL COURSE LECTURE
10:30 AM — 11:30 AM
FD4  Writing an Abstract that Gets Accepted
Moderator: Craig J. Della Valle, MD, Chicago, IL
Mark W. Pagnano, MD, Rochester, MN
Javad Parvizi, MD, FRCS, Philadelphia, PA

Understand the abstract submission and review process in order to increase the likelihood of acceptance. Learn how to write an abstract that is focused, concise and clear so that your message is “heard” by the reviewers. This course is offered at no charge.

INSTRUCTIONAL COURSE LECTURE
10:30 AM — 12:30 PM
321  Periprosthetic Fractures Around the Hip and Knee: Contemporary Techniques of Internal Fixation and Revision
Moderator: George J. Haidukewych, MD, Orlando, FL
Kenneth J. Koval, MD, Orlando, FL
Richard F. Kyle, MD, Minneapolis, MN
Frank A. Liporace, MD, Englewood Cliffs, NJ

Contemporary indications and techniques of internal fixation and revision for periprosthetic fractures around total hip and total knee arthroplasty will be presented.

322  Ensuring a Winner: The A,B,C’s of Primary Total Knee Arthroplasty
Moderator: Steven J. MacDonald, MD, London, ON, Canada
Michael E. Berend, MD, Mooresville, IN
John J. Callaghan, MD, Iowa City, IA
Jay R. Lieberman, MD, Los Angeles, CA

Presentations will include information on patient selection, achieving reproducible limb alignment, balancing the varus and valgus knee, appropriate component sizing and positioning and best cementing techniques. Interesting cases of primary TKA will be presented.

323  The Synovial Joint: Structure, Function, Injury and Repair, Osteoarthritis
Moderator: Alan J. Grodzinsky, PhD, Cambridge, MA
Joseph A. Buckwalter, MD, Iowa City, IA
Henry J. Mankin, MD, Brookline, MA

Concise review of current understanding of the biology and biomechanics of articular cartilage. Provide a basis for current understanding of osteoarthritis and cartilage repair. Provide the basis for understanding current clinical approaches to providing biologic resurfacing of articular cartilage and restoration of synovial joint function.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Thursday, March 21

324 Room E352 Lakeside 
Foot and Ankle Fusions: You Can’t Always Replace Us 
Moderator: Eric M. Bluman, MD, Chestnut Hill, MA 
Christopher P. Chiolo, MD, Boston, MA 
J. Chris Coetzee, MD, Golden Valley, MN 
Jeffrey E. Johnson, MD, Saint Louis, MO 

Cover foot and ankle fusions, including indications, surgical techniques, current controversies, as well as pearls and pitfalls will be reviewed.

325 Room S106b 
Acute Elbow Trauma: A Logical Evidence-Based Approach to Complex Elbow Injuries 
Moderator: Michael D. McKee, MD, Toronto, ON, Canada 
Ken Faber, MD, London, ON, Canada 
Mark A. Migbell, MD, Tampa, FL 
Aaron Naeth, MD, Toronto, ON, Canada 

Use high-level evidence based prospective and randomized studies to provide attendee’s with a well supported clinical approach to fractures of the distal humerus, fracture of the elbow and complex elbow dislocations.

326 Room S402a 
Extremity Amputations: Principles, Techniques, and Recent Advances 
Moderator: Carol D. Morris, MD, MS, New York, NY 
Edward A. Atibanasan, MD, New York, NY 
Valerae O. Lewis, MD, Houston, TX 
Benjamin K. Potter, MD, Bethesda, MD 

Review general principles of performing successful upper and lower extremity amputations. Pre-operative considerations and surgical technique emphasized. Cases will be utilized to illustrate key points and highlight recent advances in prosthetic design.

327 Room S502 
Contemporary Management of Dupuytren’s Contracture 
Moderator: Marco Rizzo, MD, Rochester, MN 
Prosper Benham, MD, Los Angeles, CA 
Lawrence C. Hurst, MD, Stony Brook, NY 
Peter J. Stern, MD, Cincinnati, OH 

Comprehensive review of the pathophysiology and management of Dupuytren’s contracture with treatment focus on surgical intervention, needle aponeurotomy and collagenase.

328 Room S401d 
Cerebral Palsy: Clinical Decision Making and Current Orthopaedic Surgical Management 
Moderator: Jon K. Davids, MD, Sacramento, CA 
Henry G. Chambers, MD, San Diego, CA 
Robert M. Kay, MD, Los Angeles, CA 
Unni G. Narayanan, MBBS, MSc, FRCS, Toronto, ON, Canada 

Comprehensive overview of the management of children with cerebral palsy, emphasizing pathophysiology, natural history, and biomechanics; and treatment through the integration of orthopaedic surgery, tone management, and objective outcomes assessment.

329 Room S402b 
Contemporary Medico-Legal Issues in Orthopaedic Surgery 
Moderator: Michael Suk, MD, Danville, PA 
Michael T. Archdeacon, MD, Cincinnati, OH 
B S. Bal, MD, Columbia, MO 

Registrants will gain essential information in important medico-legal topics including EMTALA, call compensation, disruptive physicians, contemporary medical staff issues, the essentials of liability and tips on how to survive a deposition.

330 Room S503 
Strategic Positioning and Marketing 
Moderator: Eric N. Berkowitz, PhD, Amherst MA 

Session will focus on developing market responsive strategies to attract patients, referrals and managed care subscribers. Understanding how to develop market responsive strategic plans along with recognizing what physicians, patients, and other customers are buying from your organization is essential in an evolving health care market. As health care moves from a fee-for-service to managed care market, the strategies involving promotion, pricing, and distribution of services must also be refined and will be reviewed. Identify market needs, understand how physicians and patients make choices among organizations, determine your marketplace differential. Learn strategies for market research, pricing and advertising. Develop methods for controlling patient flow and enhancing bargaining strategy.

331 Room N227b 
Shoulder Arthroplasty: The State of the Art 
Moderator: David M. Dines, MD, Great Neck, NY 
Wayne Z. Burkhead Jr. MD, Dallas, TX 
Edward V. Craig, MD, New York, NY 
Gregory P. Nicholson, MD, Chicago, IL 

Present a contemporary overview of shoulder arthroplasty with specific emphasis on pathologic anatomy, indications, techniques and complications.

332 Room S405 
Modern Techniques in the Treatment of Patients with Metastatic Spine Disease 
Moderator: Jacob M. Biehowski, MD, MS, Saint Louis, MO 
Ziya L. Gokaslan, Baltimore, MD 
Josh Yamada, MD, New York, NY 

Focus on which patients with spinal metastatic disease may benefit from surgery vs. radiation therapy. In addition advanced spine surgical techniques will be presented.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Thursday, March 21

333 Biceps Tendon: Problems and Surgical Techniques
Moderator: Robert A. Pedowitz, MD, PhD, Santa Monica, CA
Larry D. Field, MD, Jackson, MS
Benjamin Shaffer, MD, Washington, DC
Nikhil N. Verma, MD, Chicago, IL

Cover biceps tendon disorders (including SLAP lesions, degeneration, instability), focusing upon arthroscopic and open surgical methods for treatment of these common disorders.

334 Challenges in the Management of Fractures in Adolescents: A Case Based Approach
Moderator: Susan A. Scherl, MD, Omaha, NE
R. D. Blasier, MD, Little Rock, AR
Bernard D. Horn, MD, Philadelphia, PA
Kelly L. Vanderhave, MD, Ann Arbor, MI

Case-based presentations on adolescent fracture patterns, including information regarding technique pears, complications associated with treatment of the fracture in adolescents and management of those complications.

335 Advances in Treatment and Understanding of Musculoskeletal Infections
Moderator: David W. Lowenberg, MD, Redwood City, CA
L. S. Levin, MD, Philadelphia, PA
J. Tracy Watson, MD, Saint Louis, MO

Understanding of emerging technologies in better diagnosis and management of musculoskeletal infections. Strategies for the comprehensive care of the bone and soft tissue in limb infections will be emphasized.

PAPER PRESENTATION

10:30 AM — 12:30 PM
Room S105

Adult Reconstruction Knee IV: Total Knee Arthroplasty
Moderator(s): Jeffrey A. Geller, MD, New York, NY
Giles R. Scuderi, MD, New York, NY

10:30 AM PAPER: 346
Differences in Short-Term Complications Between Spinal and General Anesthesia for Primary Total Knee Arthroplasty
Andrew J. Pugely, MD, Iowa City, IA
Christopher T. Martin, MD, Iowa City, IA
Yubo Gao, PhD, Iowa City, IA
Sergio A. Mendoza-Lattes, MD, Iowa City, IA
John J. Gallagher, MD, Iowa City, IA

Spinal anesthesia for primary Total Knee Arthroplasty is associated with decreased short term complications, especially in patients with multiple comorbidities.

10:36 AM PAPER: 347
Public Awareness of Medicare Surgeon Reimbursement for THA and TKA
Mary I. O’Connor, MD, Jacksonville, FL
Joel A. Tucker, MD, Gulfport, MS
Carolyn Scott, Ponte Vedra Beach, FL
Colleen S. Thomas, MS, Jacksonville, FL

Public perception of Medicare reimbursement to surgeons for THA and TKA showed that of nearly 700 respondents the estimated surgical fee was $5000 and 62% felt the actual fee was lower than expected.

10:42 AM PAPER: 348
Continuous Passive Motion After Total Knee Arthroplasty: A Randomized Controlled Trial Comparing Three Protocols
Clifford K. Boese, MD, Council Bluffs, IA
Sheila Lawton, NP, RN, MS, Council Bluffs, IA
Marcia Weis, Council Bluffs, IA
Tamra Phillips, DPT, Council Bluffs, IA
Theresa J. Gallo, PA-C, Council Bluffs, IA
Carla Plantikow, MSc., Council Bluffs, IA

After comparing three different protocols for continuous passive motion use after total knee arthroplasty, we did not discover any significant differences in post-operative recovery indicators.

Discussion - 6 Minutes

10:54 AM PAPER: 349
The Effect of Obesity on Direct Medical Costs in Total Knee Arthroplasty
Hilal Maradit-Kremers, MD, MSc, Rochester, MN
Sue L. Visscher, PhD, Rochester, MN
Walter K. Kremers, PhD, Rochester, MN
James Naessens, MPH, Rochester, MN
David G. Lewallen, MD, Rochester, MN

Obesity and costs in TKA.

11:00 AM PAPER: 350
A Randomized, Prospective Study Evaluating the Effect of Patellar Eversion on Outcomes in Total Knee Arthroplasty
Derek R. Jenkins, MD, Rochester, MN
Jose A. Rodriguez, MD, New York, NY
Amar S. Ranawat, MD, New York, NY
Michael M. Alexiades, MD, Manhattan, NY
Ajit J. Deshmukh, MD, New York, NY
Takumi Fukunaga, DPT, ATC, New York, NY
Michelle L. Greiz, New York, NY
Parthiv A. Rathod, MD, Flushing, NY
Malachy P. McHugh, PhD, New York, NY

Short and long term outcomes of total knee arthroplasty patients surgically exposed with patellar eversion were statistically similar to those patients exposed by laterally retracting the patella.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Thursday, March 21

11:06 AM  PAPER: 351
Primary Knee Arthroplasty Outcomes in Females Before and After Availability of the Gender-Specific Component
Alexander P. Sah, MD, Fremont, CA
John T. Dearborn, MD, Fremont, CA
While gender-specific components overhang less, and is reflected radiographically, outcomes are not improved based on objective measurements.

Discussion - 6 Minutes

11:16 AM  PAPER: 352
Do We Need Computer-Assisted Navigation to Improve the Survival of Total Knee Arthroplasty? Results at 10.8 Years
Young-Hoo Kim, MD, Seoul, Republic of Korea
Jangwon Park, MD, Seoul, Republic of Korea
After 10.8 years follow-up of 520 patients (1,040 knees), computer-assisted TKA did not improve the clinical function, alignment and survivorship of the components compared with conventional TKA.

11:24 AM  PAPER: 353
All-Polyethylene Tibial Component Lowers Risk of Revision: Analysis of 27,657 Primary Total Knee Arthroplasties
Vivek Mohan, MD, Newport Beach, CA
Maria C. Inacio, MS, San Diego, CA
Robert S. Namba, MD, Corona Del Mar, CA
Dhiren S. Sheth, MD, Irvine, CA
Liz Paxton, MA, San Diego, CA
Fixed bearing monoblock all-polyethylene tibial components had a 49% lower risk of revision for all-causes and a 41% lower risk of aseptic revision when compared to modular tibial constructs.

11:30 AM  PAPER: 354
Long-Term Survival of Different Tibia Implant Designs in Primary Total Knee Arthroplasty
Hilal Maradit-Kremers, MD, MSc, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
Cathy D. Schleck, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Miguel E. Cabanela, MD, Rochester, MN
Arlen D. Hanssen, MD, Rochester, MN
Mark W. Pagnano, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
David G. Lewallen, MD, Rochester, MN
Implant comparisons in TKA.

Discussion - 6 Minutes

11:42 AM  PAPER: 355
Influence of Femoral Block on Quadriceps Strength Recovery (QSR) After Total Knee Replacement
Stephane Pelet, MD, PhD, Quebec, QC, Canada
Michele Angers, MD, Quebec, QC, Canada
Etienne Bélisle, MD, Quebec, QC, Canada
Jessica Vachon, MD, Quebec, QC, Canada
Femoral block has a negative influence on quadriceps strength recovery at short and mid-term follow-up and should not yet be recommended for analgesia after TKR.

11:48 AM  PAPER: 356
Ten to 20-year Results of Cemented Primary Total Knee Replacement Using a Contemporary Prosthesis
Mathias Nagy, MD, Macclesfield, United Kingdom
Graham Keys, MBBS, FRCS (Ortho), Macclesfield, United Kingdom
Our results demonstrate excellent long term results using this contemporary implant with high patient satisfaction and low complication and revision rate.

11:54 AM  PAPER: 357
A Randomized Clinical Trial of 260 TKA: Porous-Metal Tibial Components were Reliable and Durable at Five Years
Luis Pulido, MD, Rochester, MN
Matthew P. Abdel, MD, New York, NY
David G. Lewallen, MD, Rochester, MN
Joaquin Sanchez-Sotelo, MD, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Arlen D. Hanssen, MD, Rochester, MN
Mark W. Pagnano, MD, Rochester, MN
At 5 years in this randomized clinical trial involving 260 TKA, highly porous metal tibial components provided reliable and durable fixation.

12:00 PM  PAPER: 358
Patient Specific Guides Do Not Improve Accuracy in Total Knee Arthroplasty
Jan Dujardin, Deerlijk, Belgium
Hilde Vandenmeulder, MD, Pellenberg-Lubbeek, Belgium
Nele Arnout, MD, Edegem, Belgium
Thomas Luyckx, MD, Bertem, Belgium
Stijn Ghijselings, MD, Leuven, Belgium
Steven A. Claes, MD, Pellenberg, Belgium
Johan Bellemans, MD, Langorob, Belgium
Jan M. Victor, MD, GENT, Belgium
Patient Specific Guides do not improve accuracy in TKA.

12:06 PM  PAPER: 359
Long Term (35 Years) Outcome Analysis of the Young Total Knee Patient: Minimum 20 Years
W. Norman Scott, MD, New York, NY
Chris D. Bryce, MD, Gilbert, AZ
William J. Long, MD, New York, NY
Rodney W. Benner, MD, Zionsville, IN
Christopher S. Hollenbeak, PhD, Hershey, PA
Giles R. Scuderi, MD, New York, NY
Fred D. Cashner, MD, New York, NY
Cemented posterior stabilized TKA is an effective treatment option with durable results for end-stage OA in younger patients. This study should provide comparison for more modern operative techniques.
Balanced Flexion/Extension Gaps are Not of Equal Size
Ormonde M. Mahoney, MD, Athens, GA
Tracy Kinsey, MPH, Athens, GA

Artificial widening of the flexion gap occurs during gap balancing that should be corrected for proper TKA size selection.

12:18 PM  
PAPER: 360

Fixation Strength of the Different Tendon Length within Tibial Tunnel in Anterior Cruciate Ligament Reconstruction
Hoe S. Kyung, MD, Daegu, South Korea
Dong-Lyu L. Yang, MD, Daegu, South Korea
Sang-Ho Cheon, Daegu, South Korea
Hyun-Joo Lee, MD, Daegu, South Korea

The initial fixation of soft-tissue graft with 2 graft had similar graft slippage to with 4 graft and had a high strength for accelerated rehabilitation after ACL reconstruction.

10:54 AM  
PAPER: 364

Anterior Cruciate Ligament Regeneration Using Mesenchymal Stem Cells and Collagen Type I Scaffold in a Rabbit Model
David Fiqueroa, MD, Santiago, Chile
Maximiliano Espinosa, MD, Santiago, Chile
Rafael Calvo, MD, Santiago, Chile
Alex Vaisman, MD, Santiago, Chile
Maximiliano Scheu, MD, Santiago, Chile
Juan José Valderrama, MD, Santiago, Chile
Marcelo P. Gallegos, MD, Santiago, Chile
Paulette Conget, PhD, Santiago, Chile

Our hypothesis was that MSC seeded in a collagen scaffold can regenerate ACL in a rabbit model. A 33% of ACL regeneration was observed using MSC seeded in collagen scaffold.

10:30 AM — 12:30 PM
Room N427
Sports Medicine/Arthroscopy V: ACL, PCL, Multiligament
Moderator(s): Robert G. Marx, MD, New York, NY
Nicholas A. Sgaglione, New Hyde Park, NY

10:30 AM  
PAPER: 361

Analysis of 16,192 Anterior Cruciate Ligament Reconstructions from a Community-Based Registry
Gregory B. Maletis, MD, Baldwin Park, CA
Maria C. Nacio, MS, San Diego, CA
Jamie L. Desmond, San Diego, CA
Tadashi T. Funahashi, MD, Irvine, CA

Anterior cruciate ligament registries benchmark the demographics, graft choices and complications with ACL reconstructions.

10:36 AM  
PAPER: 362

Anatomic Single Graft ACL Reconstruction Restores Knee Kinematics Under Novel Pivot Shift Simulation
Samuel P. Harms, MD, Duluth, MN
Andrew W. Jetter, BS, Cincinnati, OH
Frank R. Noyes, MD, Cincinnati, OH
Edward S. Grood, PhD, Sarasota, FL

This is the first report of a knee joint robotic simulator reproducing the true clinical pivot shift motions to examine ACL function and ACL graft behaviors. The anatomic ACL graft restored translations and rotations to a normal state.

10:42 AM  
PAPER: 363

Anteromedial vs. Transtibial Portal in ACL Reconstruction: Clinical and Radiographic Relevance
Rocco Papalia, MD, PhD, Rome, Italy
Francesco Franceschi, MD, Rome, Italy
Giacomo Rizzello, MD, Rome, Italy
Angelo Del Buono, MD, Rome, Italy
Sebastiano Vasta, MD
Biagio Zampogna, MD, Rome, Italy
Nicola Maffulli, London, United Kingdom
Vincenzo Denaro, MD, Rome, Italy

Anteromedial portal ACL reconstruction better restores the native anatomical footprint, a results in a higher return to sport activity rate.

10:54 AM  
PAPER: 364

Fixation Strength of the Different Tendon Length within Tibial Tunnel in Anterior Cruciate Ligament Reconstruction
Hoe S. Kyung, MD, Daegu, South Korea
Dong-Lyu L. Yang, MD, Daegu, South Korea
Sang-Ho Cheon, Daegu, South Korea
Hyun-Joo Lee, MD, Daegu, South Korea

The initial fixation of soft-tissue graft with 2 graft had similar graft slippage to with 4 graft and had a high strength for accelerated rehabilitation after ACL reconstruction.

11:00 AM  
PAPER: 365

Anterior Cruciate Ligament Regeneration Using Mesenchymal Stem Cells and Collagen Type I Scaffold in a Rabbit Model
David Fiqueroa, MD, Santiago, Chile
Maximiliano Espinosa, MD, Santiago, Chile
Rafael Calvo, MD, Santiago, Chile
Alex Vaisman, MD, Santiago, Chile
Maximiliano Scheu, MD, Santiago, Chile
Juan José Valderrama, MD, Santiago, Chile
Paulette Conget, PhD, Santiago, Chile

Our hypothesis was that MSC seeded in a collagen scaffold can regenerate ACL in a rabbit model. A 33% of ACL regeneration was observed using MSC seeded in collagen scaffold.

11:06 AM  
PAPER: 366

Clinical Results of Quadriceps Tendon Anterior Cruciate Ligament Reconstruction after Minimum Two Years Follow Up
Sang E. Park, MD, PhD, Goyangsi, South Korea
Sang Won Mun, Goyangsi, South Korea
Min Kyu Kim, Goyangsi, South Korea
Do Hyun Yeo, MD, Goyangsi, South Korea

Quadriceps ACL has a benefit for rotational instability than that of quadruple hamstring ACL reconstruction.

11:18 AM  
PAPER: 367

Anatomic Femoral Tunnel Drilling in PCL Reconstruction: Inside-Out versus Outside-In Drilling
Thomas Keller, MD, Charlottesville, VA
Marc Tompkins, MD, Minneapolis, MN
Matthew Mileski, MD, Farmington, CT
Stephen F. Brockmeier, MD, Charlottesville, VA
Joe Hart, PhD, ATC, Charlottesville, VA
Winston Esatt, Charlottesville, VA
Mark D. Miller, MD, Charlottesville, VA

OI and IO techniques achieved equal accuracy in placing the femoral tunnel within the native PCL footprint. IO drilling produced tunnel orientations likely to result in less graft angulation.
Thursday, March 21

11:24 AM  PAPER: 368
**Magnetic Resonance Imaging Analysis of Tunnel Location for Fibular Collateral Ligament Reconstruction**
Kyle C. Bohm, MD, Minneapolis, MN
Robby S. Sikka, MD, Minneapolis, MN
Bret D. Yanke, MD, Bloomington, MN
Joel L. Boyd, MD, Minneapolis, MN
Marc Tompkins, MD, Minneapolis, MN

Current strategies used to reconstruct the FCL do not result in anatomic tunnel position and reconstruction.

11:30 AM  PAPER: 369
**Clinical and Radiologic Outcomes of PCL Reconstruction Using Transtibial and Tibial Inlay Techniques**
Eun K. Song, MD, Hwasun-Gun, South Korea
Jong-Keun Seon, MD, Hwasungun, Republic of Korea
Ji-Hyeon Yim, Jeonnam, Republic of Korea
Jae-Young Moon, MD, Hwasun-Gun, South Korea

The transtibial tunnel and tibial inlay technique showed relatively good functional and stability results without any significant differences.

**Discussion - 6 Minutes**

11:42 AM  PAPER: 370
**Radiographic Landmarks for Tunnel Positioning in Posterior Cruciate Ligament Reconstructions**
Adam Johannsen, BS, Falcon Heights, MN
Colin J. Anderson, MD, Aurora, CO
Coen A. Wijdicks, PhD, Vail, CO
Lars Engebretsen, MD, Oslo, Norway
Robert F. LaPrade, MD, PhD, Vail, CO

This study established a set of clinically relevant radiographic guidelines for anatomic reconstruction of the PCL.

11:48 AM  PAPER: 371
**Minimum 10-year Follow-up of Acute, Isolated Posterior Cruciate Ligament Injury Treated Nonoperatively**
K. Donald Shelbourne, MD, Indianapolis, IN
Melanie K. Clark, Shelbyville, IN
Tinker Gray, MA, ELS, Indianapolis, IN

-20 year results of nonoperatively treated isolated PCL injuries showed medial compartment narrowing was not evident and results were not different based on grades of laxity.

11:54 AM  PAPER: 372
**Return to Play in Athletes after Non-operative Management of Acute Isolated Posterior Cruciate Ligament Injuries**
Harry Laing, London, United Kingdom
Sandesh Gulbane, MBBS, London, United Kingdom
Fares S. Haddad, FRCS, London, United Kingdom

Medium term review suggests that non-operative management of acute isolated PCL injuries is associated with very good clinical outcomes and return to sport.

**Discussion - 6 Minutes**

12:06 PM  PAPER: 373
**The Effect of the Platelet Rich Plasma on the Medial Collateral Ligament Repair in a Rat Model**
Oleg Dolkart, PhD, Tel Aviv, Israel
Eyal Amar, MD, Tel Aviv, Israel
Morsi Khashan, Jaffa Tel Aviv, Israel
Guy Morag, MD, Ramat Gan, Israel
Moshe Salati, MD, Tel Aviv, Israel
Nimrod Snir, MD, New York, NY

The addition of PRP was not sufficient to accelerate healing of the injured MCL repair. The use of PRP to supplement repair of the MCL is ineffective in this animal model.

12:12 PM  PAPER: 374
**The Knee Multi-Ligament Quality of Life (ML-QOL) Questionnaire - Development and Testing**
Jaskarndip Chahal, MD, Mississauga, ON, Canada
Daniel Whelan, MD, Toronto, ON, Canada
Peter B. MacDonald, MD, Winnipeg, MB, Canada
Bruce A. Levy, MD, Rochester, MN
Peter M. Smith, PhD, Toronto, ON, Canada
Susan Jaglal, PhD, Toronto, ON, Canada
Aileen M. Davis, PhD, Toronto, ON, Canada

This study describes the development and testing of measurement properties of a novel disease-specific outcome instrument for patients with multi-ligament knee injuries.

12:18 PM  PAPER: 375
**Proximal Tibiofibular Joint Instability in the Setting of a Multiligamentous Knee Injury**
Michael Merrick, MD, Grand Rapids, MI
Jeffrey M. Bradley, MD, Carmel, IN
Michael R. Jabara, MD, Grand Rapids, MI

We reviewed 72 consecutively treated multiligamentous knee injuries and found 6 patients had proximal tibiofibular joint disruption. Recognizing this injury is crucial in fibula-based reconstructions.

**Discussion - 6 Minutes**

An alphabetical faculty financial disclosure list can be found starting on page 292.
Thursday, March 21

PAPER PRESENTATION

10:30 AM — 12:30 PM
Room N426

**Trauma III: Pelvis and Acetabulum**

Moderator(s): Edward Perez, MD, Memphis, TN
Frederic B. Wilson, MD, Phoenix, AZ

10:30 AM

**PAPER: 376**

One-Year Mortality after Isolated Acetabular Fractures in Elderly Patients

Jesse E. Bible, MD, MHS, Nashville, TN
Adam Wegner, MD, Sacramento, CA
Jennifer M. Bauer, MD, Nashville, TN
Rushin Kadakia, Nashville, TN
Justin E. Richards, MD, Nashville, TN
Hassan R. Mir, MD, Nashville, TN

The mortality rates for elderly patients with isolated acetabular fractures were found to be lower than those reported previously for hip fractures and acetabular fractures with concurrent injuries.

10:36 AM

**PAPER: 377**

Acetabular Fractures in the Elderly: 20-year Survivorship and Predictive Factors

Moritz Tannast, Bern, Switzerland
Joseph M. Schuab, MD, Milwaukee, WI
Joel M. Matta, MD, Santa Monica, CA

The 20-year survivorship of the hip after fixation of displaced acetabular fractures was 60% for a patient population > 60 years of age. Negative predictive factors differed from a younger patient.

10:42 AM

**PAPER: 378**

Severe Pelvic Ring Disruption and Mortality: Does the Type of Early Management Matter?

Dirk-Jan Hofstee, MD, Melbourne, Australia
Belinda Gabbe, PhD, Melbourne, Australia
Max P. Esser, MD, Malvern, Australia
Andrew T. Bucknill, FRCS, Parkville, Australia
Richard De Steiger, MD, Richmond, Australia
Matthias K. Russ, MD, Ashburton, Australia
Chris R. Handley, Melbourne, Australia

This cohort study compared two trauma centre protocols of early intervention for the haemodynamically unstable pelvic fracture patient, and found comparable risk-adjusted mortality.

10:54 AM

**PAPER: 379**

Anatomic Determinants of Sacral Dysmorphism and Implications for Safe Iliosacral Screw Placement

Scott Kaiser, MD, San Francisco, CA
Joseph Liu, MD, New York, NY
Michael J. Gardner, MD, Saint Louis, MO
Milton L. Routt Jr, MD, Seattle, WA
Saam Morshed, MD, San Francisco, CA

Principal component analysis of 100 pelvis CT scans demonstrated a link between coronal and axial angulation of the first sacral segment and the ability to safely place a trans sacral screw.

11:00 AM

**PAPER: 380**

Is Closed Reduction and Percutaneous Fixation of Type 3 Posterior Ring Injuries as Accurate as ORIF?

Adam D. Lindsay, MD, Boston, MA
Paul Tornetta III, MD, Boston, MA
Anna Diwan, MD, Houston, TX
David C. Templeman, MD, Minneapolis, MN

We compared CRPP vs. ORIF of type 3 posterior ring injuries with the hypothesis that CRPP would be equivalent to ORIF in quality of reduction.

11:06 AM

**PAPER: 381**

Transiliac-Transsacral Screw Fixation in Type C Pelvic Ring Injuries Decreases Early Post-Operative Failure

Gregory Y. Blaisdell, MD, Tampa, FL
James C. Krieg, MD, Seattle, WA
Milton L. Routt Jr, MD, Seattle, WA

This study demonstrated a decrease in fixation failure in Type C pelvic ring injuries stabilized with transiliac-transsacral screw fixation as compared to standard iliosacral style screws.

Discussion - 6 Minutes

11:18 AM

**PAPER: 382**

The Role of Computed Tomography for Post-op Neuro Evaluation of Percutaneous Sacroiliac Screw Fixation

Richelle C. Takemoto, MD, Pittsburgh, PA
Dima Raskolnikov, BS, New York, NY
Toni M. McLaurin, MD, New York, NY
Nirmal C. Tejwani, MD, New York, NY

Percutaneous SI screws may have formalin penetration of up to 2.1mm before causing neuro deficit and do not need removal.

11:24 AM

**PAPER: 383**

Pelvic Computed Tomography Obtained Prior to Hip Reduction Increased Time to Reduction, Cost and Radiation Exposure

Brigham K. An, MD, Irving, TX
Marissa Daniels, BA, Dallas, TX
Rahul Banerjee, MD, FACS, Dallas, TX

Pelvic CT obtained prior to hip reduction in patient with acetabular fracture dislocations increased the time to reduction, cost, and radiation exposure.

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Thursday, March 21

11:30 AM  PAPER: 384  
Quantification of Bony Pelvic Exposure through the Modified Stoppa Approach  
Jesse E. Bible, MD, MHS, Nashville, TN  
Ankeet Choxi, BS, Nashville, TN  
Rishin Kadakia, Nashville, TN  
Jason M. Evans, MD, Franklin, TN  
Hassan R. Mir, MD, Nashville, TN  
The modified Stoppa approach allows for safe exposure of the majority (79%) of the inner true bony pelvis including the entire pelvic brim and 80% of the quadrilateral surface.

Discussion - 6 Minutes

11:42 AM  PAPER: 385  
Pelvic Infection After Trauma: Prevalence, Pathogenicity and Outcomes  
Vincenzo Ciriello, Roma, Italy  
Suribabu Gudipati, MBBS, MRCs, Wakefield, United Kingdom  
Petros Z. Stavrou, N. Erythrea, Athens, Greece  
Nikolaos K. Kanakaris, MD, Leeds, United Kingdom  
Stylianos Theocharakis, Voula, Athens, Greece  
Peter Giannoudis, MD, FRCS, Leeds, United Kingdom  
Pelvic Infection After Trauma: Prevalence, Pathogenicity and Outcomes.

11:48 AM  PAPER: 386  
Infection Rate and Treatment of Transpelvic Gunshot Wounds  
Brigham K. Au, MD, Irving, TX  
John C. Chao, MD, Dallas, TX  
Sheena R. Black, MD, Dallas, TX  
Adam J. Starr, MD, Dallas, TX  
Prophylactic irrigation and debridement of pelvic fractures associated with a gunshot wound and bowel/bladder injury is not necessary to prevent osteomyelitis.

11:54 AM  PAPER: 387  
Minimal Invasive Para-rectal Approach for Reduction of Anterior Displaced Acetabular Fractures  
Osama Farouk, MBBS, MSc, Assiut, Egypt  
Ayman Kamal, Assiut, Egypt  
Mahmoud Y. Badran, Assiut, Egypt  
Wael El-Adly, Assiut, Egypt  
Kamal A. El-Gafary, Assiut, Egypt  
We report the use of a mini-open pararectal anterior approach to manipulate and reduce anteriorly displaced transverse acetabular fractures with percutaneous lag screw fixation in 8 patients.

Discussion - 6 Minutes

12:06 PM  PAPER: 388  
Injury Severity Score is Predictive of Heterotopic Ossification Incidence and Severity in Fracture of the Acetabulum  
Earnest C. Casstevens, Cincinnati, OH  
Michael T. Archdeacon, MD, Cincinnati, OH  
Ryan Finnann, MD, Cincinnati, OH  
Brett W. McCoy, MD, Cleveland, OH  
This prospective, case-matched study of acetabular fracture patients demonstrates increased incidence and severity of heterotopic ossification in patients with an ISS score greater than 30.

12:12 PM  PAPER: 389  
Incidence and Risk Factors of Symptomatic Peripartum Diastasis of Pubic Symphysis  
Yong-chan Ha, Prof, Seoul, Republic of Korea  
Tae-young Kim, PhD, Anyang, Republic of Korea  
Jeong Joon J. Yoo, MD, Seoul, Republic of Korea  
Young-Kyun Lee, MD, Seongnam-Si, Republic of Korea  
Ji-Hoon Baek, Sangnam-Si, Republic of Korea  
Byung-Ho Yoon, Seoul, Republic of Korea  
Kyung-Hoi H. Koo, MD, Seoul, Republic of Korea  
Symphyses pubis diastasis is more frequent than generally acknowledged. Pregnant women with multiple gestations should be informed about the potential risk of pubic symphysis diastasis.

12:18 PM  PAPER: 390  
Examination Under Anesthesia for Posterior Wall Acetabular Fracture: A Survey of the OTA Membership  
John Riehl, MD, Orlando, FL  
Kenneth J. Koval, MD, Orlando, FL  
George J. Haidukewych, MD, Orlando, FL  
The purpose of this survey was to learn more about the criteria and methods of performing EUA for “intermediate” sized PW fractures and to find what criteria surgeons use to determine hip instability.

Discussion - 6 Minutes

PAPER PRESENTATION

10:30 AM — 12:30 PM  
Room S102  
Spine III: Deformity  
Moderator(s): Norman B. Chutkan, MD, Augusta, GA  
Burt Yaszay, MD, San Diego, CA

10:30 AM  PAPER: 391  
Screening Magnetic Resonance Imaging in Adolescent Idiopathic Scoliosis Patients Should be Standard of Care  
Richard E. McCarthy, MD, Little Rock, AR  
Edgar St. Amour, MD, MSc, Little Rock, AR  
Jason M. Rogers, MD, Little Rock, AR  
Preoperative screening MRI’s of the entire spine were reviewed for neuro-axis (N-A) abnormality in 248 consecutive AIS pts. 15% had an MRI diagnosed N-A abnormality with 34% (5% of all pts) requiring neurosurgical intervention.

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Thursday, March 21

10:36 AM  PAPER: 392
Motion of the Unfused Lumbar Segments Remains Increased Up to Six Years After Fusion for AIS
Michelle Marks, NMD, Tucson, AZ
Tracey Bastrom, MA, San Diego, CA
Maty Petcharaporn, BS, San Diego, CA
Sukun A. Shah, MD, Wilmington, DE
Amer Samdani, MD, Philadelphia, PA
Baron Lonner, MD, New York, NY
Firoz Miyanji, MD, Vancouver, BC, Canada
Peter O. Newton, MD, San Diego, CA

Inter-vertebral motion of the unfused distal segments was measured at varying post-operative time-points (up to 6 years) in 165 patients with Adolescent Idiopathic Scoliosis (AIS) who underwent poster.

10:42 AM  PAPER: 393
Better Understanding Postoperative Changes in Adolescent Idiopathic Scoliosis Using 3D Reconstructions
Krishna R. Cidambi, MD, San Diego, CA
Shoji Seki, MD, Toyama, Japan
Carrie Bartley, MA, San Diego, CA
Maty Petcharaporn, BS, San Diego, CA
Tracey Bastrom, MA, San Diego, CA
Burt Yaszay, MD, San Diego, CA
Peter O. Newton, MD, San Diego, CA

3D reconstructions of 2D radiographs permit improved analysis of deformity and correction in AIS.

10:54 AM  PAPER: 394
Halo-Gravity Traction in Skeletal Dysplasia Patients with Severe Kyphoscoliosis: Outcomes and Complications
Sina Pourtaheri, MD, Paterson, NJ
Sukun A. Shah, MD, Wilmington, DE
William G. Mackenzie, MD, Wilmington, DE
Laurens Holmes, PhD, DrPH, Wilmington, DE

Among children with skeletal dysplasia and severe kyphoscoliosis, halo-gravity traction is safe and improves coronal balance, apical translation, thoracic height, and kyphosis.

11:00 AM  PAPER: 395
Natural History of Scoliosis in Osteogenesis Imperfecta
Alireza Anissipour, DO, Chicago, IL
Kim W. Hammerberg, MD, Chicago, IL
Theodore Kostiuk, DO, Chicago, IL
Peter A. Smith, MD, Chicago, IL

Higher rates of progression are observed in types III and IV osteogenesis imperfecta compared to type I. Bisphosphonate therapy should be used early on to modulate curve progression in type III OI.

11:06 AM  PAPER: 396
Adult Lumbar Degenerative Scoliosis Less than 40°: Outcomes with Minimum Two-Year Follow Up
Justin J. Park, MD, Elkridge, MD
Leah Y. Carreon, MD, Louisville, KY
Steven D. Glassman, MD, Louisville, KY

Our results show patients with adult lumbar degenerative scoliosis curves less than 40 degrees presenting with back and leg pain benefit from decompression and fusion.

11:18 AM  PAPER: 397
Proximal Junctional Kyphosis in Adult Deformity Surgery: Identification of Mechanisms and Risk Factors
Keishi Maruo, MD, Nishinomiya, Japan
Sumant Samuel, MBBS, MS, Vellore, India
William W. Schaefer, San Francisco, CA
Serena S. Hu, MD, San Francisco, CA
Praween Y. Mannamani, San Francisco, CA
Vedat Devoren, MD, San Francisco, CA
Sigurd H. Berven, MD, San Francisco, CA

Fracture at the UIV was the most common mechanism of PJK. Predictive factors for PJK include increase of lumbar lordosis more than 30 degrees, mismatch of pelvic incidence and lumbar lordosis.

11:24 AM  PAPER: 398
52 Alar-Iliac Screws for Sacro-pelvic Fixation in Adult Deformity: A Prospective Study with Minimum 5-year Follow Up
Khaled M. Kebaish, MD, Baltimore, MD
Mostafa H. El Dafrawy, MD, Baltimore, MD
Hamid Hassanzadeh, MD, Baltimore, MD
Paul D. Sponseller, MD, Baltimore, MD
Floreana A. Naef, Baltimore, MD

A prospective long term study to evaluate clinical and radiographic outcome of S2 Alar-Iliac (S2AI) technique for sacropelvic fixation in adult deformity following long posterior fusion to the sacrum.

11:30 AM  PAPER: 399
RhbMP-2 is Superior to Iliac Crest Bone Graft for Long Construct Sacro-pelvic Fusions in Adult Spinal Deformity
Han Jo Kim, MD, Saint Louis, MO
Jacob M. Buchowski, MD, MS, Saint Louis, MO
Lukas P. Zebala, MD, Saint Louis, MO
Linda A. Koester
Stuart H. Hershman, MD, Miami, FL
Addisu Mesfin, MD, Rochester, NY
Keith H. Bridgewell, MD, Saint Louis, MO
Jeremy L. Fogelson, MD, Rochester, MN

is superior to ICBG in fusion rates. The efficacy is dose dependent with doses greater than 5mg/level have the highest rates for fusion.
Thursday, March 21

11:42 AM 
**PAPER: 400**

Longitudinal Radiographic Assessment of Maintenance of Sagittal Plane Correction after 3-Column Spinal Osteotomy

Mostafa H. El Dafrawy, MD, Baltimore, MD
Virginie Lafage, PhD, New York, NY
Richard A. Hostin, MD, Plano, TX
Christopher Ames, MD, San Francisco, CA
Justin S. Smith, MD, Charlottesville, VA
Vedat Deviren, MD, San Francisco, CA
Frank J. Schwab, MD, New York, NY
Khaled M. Kebaish, MD, Baltimore, MD

42 adults with sagittal plane deformity treated with 3 column spinal osteotomy were reviewed to assess maintenance of sagittal alignment correction. Those patients achieving ideal global alignment at 6w mostly maintain this at 1 yr post-op.

11:48 AM 
**PAPER: 401**

Pelvic Compared to Sacrum Only Fixation in Lumbar Pedicle Subtraction Osteotomy Multicenter Radiographic Analysis

Mostafa H. El Dafrawy, MD, Baltimore, MD
Khaled M. Kebaish, MD, Baltimore, MD
Eric O. Klimeberg, MD, Sacramento, CA
Virginie Lafage, PhD, New York, NY
Frank J. Schwab, MD, New York, NY
Richard A. Hostin, MD, Plano, TX
Obeneba Boachie-Adjei, MD, New York, NY
Christopher Ames, MD, San Francisco, CA

We compare ASD patients who underwent lumbar PSO with instrumentation extended to the ilium to those patients fused to the Sacrum. Iliac fixation is associated with more favorable radiographic correct.

11:54 AM 
**PAPER: 402**

The Impact of the Change of Pelvic Obliquity After Total Hip Arthroplasty on the Coronal Alignment of the Spine

Yuichiro Abe, MD, PhD, Eniwa, Hokkaido, Japan
Satomi Abe, MD, Eniwa, Hokkaido, Japan
Takeshi Masuda, MD, Sapporo, Japan
Takashi Kanno, MD, Hokkaido, Japan
Shigenobu Sato, MD, Hokkaido, Japan
Hiroyuki Yassuda, MD, Eniwa, Japan
Takahiko Hyakumachi, MD, Hokkaido, Japan
Yasushi Yanagibashi, MD, Eniwa, Japan

The Impact of the Change of Pelvic Obliquity After THA on the Coronal Alignment of the Spine.

**Discussion - 6 Minutes**

12:06 PM 
**PAPER: 403**

Clinical Improvement Through Surgery for Adult Spinal Deformity (ASD): Who is Likely to Benefit Most?

Bertrand Moal, MS, New York, NY
Frank J. Schwab, MD, New York, NY
Christopher Ames, MD, San Francisco, CA
Justin S. Smith, MD, Charlottesville, VA
Jamie S. Terran, BS, New York, NY
Robert A. Hart, MD, Portland, OR
Christopher I. Shaffrey, MD, Charlottesville, VA
Virginie Lafage, PhD, New York, NY

For 154 ASD patients, the clinical improvement at 1 year was evaluated. 29% of patients did not experience improvement. Patients with severe disability were more likely to perceive improvement.

12:12 PM 
**PAPER: 404**

Health Impact Comparison of Different Disease States and Population Norms to Adult Spinal Deformity

Kaiming G. Fu, MD, PhD, Charlottesvle, VA
Robert S. Bess, MD, Castle Rock, CO
Frank J. Schwab, MD, New York, NY
Christopher I. Shaffrey, MD, Charlottesville, VA
Virginie Lafage, PhD, New York, NY
Douglas C. Burton, MD, KS City, KS
Robert A. Hart, MD, Portland, OR
Praveen V. Mummaneni, San Francisco, CA

All Adult Spinal Deformity (ASD) age generational groups had SF-36 PCS below US population generational means. ASD had similar PCS MID impact upon US population as cancer, diabetes and heart disease.

12:18 PM 
**PAPER: 405**

Factors Predicting Cost-Effectiveness of Adult Spinal Deformity Surgery at Two Years Follow Up

Charla R. Fischer, MD, New York, NY
Baron Lonner, MD, New York, NY
Jamie S. Terran, BS, New York, NY
Brian J. McHugh, MD, Stamford, CT
Steven D. Glassman, MD, Louisville, KY
Keith H. Bridwell, MD, Saint Louis, MO
Frank J. Schwab, MD, New York, NY
Virginie Lafage, PhD, New York, NY

Cost-effectiveness analysis was performed on 499 patients who underwent surgery for adult spinal deformity to identify factors predictive of cost/QALY less than $100,000/QALY at 2 years follow-up.

**Discussion - 6 Minutes**
Thursday, March 21

PAPER PRESENTATION

10:30 AM — 12:30 PM
Room S103

Pediatrics II: Trauma-Infection-Miscellaneous
Moderator(s): Kerwyn Jones, MD, Akron, OH
Peter D. Pizzutillo, MD, Philadelphia, PA

10:30 AM

Monteggia Fractures in Children: A Multi-Center Examination of Treatment Strategy and Outcomes
David Ramski, Washington, DC
William P. Hernrikus, BA, Boston, MA
Donald S. Bae, MD, Boston, MA
Keith D. Baldwin, MD, Sicklerville, NJ
Neeraj M. Patel, MD, MPH, MBS, New York, NY
Peter M. Waters, MD, Boston, MA
John M. Flynn, MD, Philadelphia, PA

Treatment based on an ulnar stability strategy yielded superior results for acute Monteggia fractures. Recurrent instability is more common with transverse and oblique fractures without surgical care.

10:36 AM

Long-Term Functional Result of Neurological Complications of Paediatric Supracondylar Fractures
Maria Valencia, MD, Madrid, Spain
Luis Moraleda, MD, Madrid, Spain

Although long-term functional results of neurological injuries after a supracondylar fracture were excellent, almost half of the patients referred paresthesias, mostly in the ulnar nerve territory.

10:42 AM

Medial Ulnar Collateral Ligament Origin in the Skeletally Immature Elbow: An Anatomical Study
Nicholas Larsen, MD, Memphis, TN
Alice Moisan, BSN, RN, Memphis, TN
Jeffrey R. Sawyer, MD, Germantown, TN
William C. Warner Jr, MD, Germantown, TN
James H. Beatty, MD, Memphis, TN
Derek M. Kelly, MD, Memphis, TN

The anterior bundle of the medial ulnar collateral ligament (MUCL) is the main stabilizer of the elbow in flexion. Treatment of displaced medial epicondylofractures in the skeletally immature remains.

11:00 AM

Pain During Office Removal of K Wires in Children
Scott M. Sorenson, MD, Hershey, PA
William P. Hernrikus, BA, Boston, MA
William L. Hernrikus Jr, MD, Hershey, PA

The results of this study suggest that the removal of K wires in the office is safe and acceptable.

11:06 AM

National Access to Care for Children with Fractures
Christopher A. Iobst, MD, Key Biscayne, FL
Dillon Arango, BA, Doral, FL
Dale Segal, BS, Hallandale Beach, FL

The access to care for children with fractures is becoming more difficult across the country regardless of insurance status.

11:18 AM

Pathomorphologic Findings of Wrist Arthroscopy in Children and Adolescents with Chronic Wrist Pain
Sebastian Farr, MD, Vienna, Austria
Franz Grill, Prof, Vienna, Austria
Werner Girsch, MD, Vienna, Austria

Wrist arthroscopy in children and adolescents with chronic wrist pain revealed TFCC lesions in a high percentage. However, the majority of these lesions have not been correctly identified by MRI.

11:24 AM

Predictors of Microsurgical Reconstruction in Brachial Plexus Birth Palsy
Apurva Shah, MD, MBA, Iowa City, IA
Donald S. Bae, MD, Boston, MA
Leslie A. Kalish, ScD, Boston, MA
Peter M. Waters, MD, Boston, MA

Prospective multicenter investigation of infants with brachial plexus birth palsy evaluating which demographic, perinatal and examination characteristics predict need for microsurgical reconstruction.

11:30 AM

Outcomes and Failure Factors in Surgical Treatment for Osteochondritis Dissecans of the Capitellum
Masahiro Kosaka, MD, Kanazawa, Japan
Junsuke Nakase, MD, Kanazawa, Japan
Tatsuhiko Toratani, MD, Kanazawa, Japan
Yoshinori Ohashi, MD, Kanazawa, Japan
Katsuhiko Kitaoka, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

As a result of 33 operations for osteochondritis dissecans of the capitellum, it was considered to be important to reconstruct the lateral wall of the capitellum for achieving good results.

11:00 AM

PAPER: 410

PAPER: 411

PAPER: 412

PAPER: 413

PAPER: 414

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EDUCATIONAL PROGRAMS

Thursday, March 21

11:42 AM PAPER: 415
Predicting Methicillin Resistant Staphylococcus Aureus Septic Arthritis in Children
Shiva P. Daram, BS, Houston, TX
John R. Dawson, MD, Chattanooga, TN
Scott B. Rosenfeld, MD, Houston, TX

We present a clinical prediction algorithm to determine which cases of pediatric septic arthritis are likely due to MRSA, in order to help guide initial antibiotic coverage.

11:48 AM PAPER: 416
Effectiveness of MRSA Nasal Screening in Pediatric Orthopaedic Surgery
Kyong S. Min, MD, Lakewood, WA
Paul M. Caskey, MD, Spokane, WA
Bryan J. Tompkins, MD, Spokane, WA
Ronda Cordill, RN, CIC, MPH, Spokane, WA
Glen O. Baird, MD, Spokane, WA

In the pediatric orthopaedic patient population, universal screening for MRSA does not decrease the rate of surgical site infection.

11:54 AM PAPER: 417
Can an Algorithm Really Predict Methicillin Resistant Staphylococcus Aureus Osteomyelitis in Children?
Scott B. Rosenfeld, MD, Houston, TX
Stuart M. Michnick, BS, Houston, TX

We used a patient population in a region where MRSA is prevalent to test a previously described algorithm and develop a new algorithm for predicting MRSA osteomyelitis in children.

12:06 PM PAPER: 418
Prediction of Surgical Intervention in Children with Osteomyelitis Based on Clinical and Laboratory Parameters
Dominick Tuason, MD, E Brunswick, NJ
Lawson A. Copley, MD, Dallas, TX
Taylor T. Gheen, BA, Dallas, TX
David Q. Sun, BS, Plano, TX
Rong Huang, Dallas, TX

Swollen extremity, CRP > 9.9 mg/dL, and respiratory rate > 27 predict the need for surgery to treat osteomyelitis. Initial CRP > 19.8 and persistent fever on antibiotics predict multiple surgeries.

12:12 PM PAPER: 419
Incidence of Venous Thromboembolism (VTE) in the Elective Pediatric Orthopaedic Patient
Nancy H. Miller, MD, Aurora, CO
Mark Hotchkiss, BA, Aurora, CO
Bryan McNair, MS, Aurora, CO
Georgette Siparsky, PhD, Aurora, CO
Gaia Georgopoulos, MD, Aurora, CO

Analyses of a multi-hospital administrative database showed the risk of VTE in elective pediatric orthopaedic surgery is 0.065%. Risk increases with age, and with miscellaneous and atypical diagnoses.

12:18 PM PAPER: 420
Venous Thromboembolisim in Children: A Survey of Pediatric Orthopaedic Society of North America (POSNA) Members
Sanjeev Sabharwal, MD, Chatham, NJ
Marian Passannante, PhD, Newark, NJ

More than half of active POSNA members reported having at least one case of VTE amongst pediatric patients in their practice.

12:24 PM PAPER: 831
Childhood Fracture Begets Childhood Fracture: A Population-based Study of Longitudinal Fracture Patterns
Benjamin Escott, MBBS, Toronto, ON, Canada
Bheeshma Ravu, MD, Toronto, ON, Canada
Dorcas Beaton, OT, Toronto, ON, Canada
Teresa To, Toronto, ON, Canada
Andrew Howard, MD, Toronto, ON, Canada

Children who experience one fracture are more likely to experience another new fracture during childhood and into young adulthood.

Discussion - 6 Minutes

SYMPOSIUM
1:30 PM — 3:30 PM
Grand Ballroom
+ Essential Surgical Techniques for Total Hip Arthroplasty: A Video-Based Symposium (P)
Moderator: Daniel J. Berry, MD, Rochester, MN

Comprehensive discussion of acetabular and femoral reconstructive techniques focusing on pros-cons, pitfalls of each technique. Primarily video based focusing on essential surgical techniques to ensure success of the hip reconstruction.

I. Preoperative Templating
   Douglas A. Dennis, MD, Denver, CO

II. Surgical Exposure
   Anterolateral – Michael E. Berend, MD, Mooseville, IN
   Posterior – William A. Jiranek, MD, Richmond, VA
   Direct Anterior – Joel M. Matta, MD, Santa Monica, CA

III. Preparation and Acetabular Component Placement
   Mark W. Pagnano, MD, Rochester, MN

IV. Femur
   Cemented Stem – John J. Callaghan, MD, Iowa City, IA
   Fully-Coated Stem – C. Anderson Engb, MD, Alexandria, VA
   Proximally Tapered Stem – Richard H. Rothman, MD, Philadelphia, PA
   Short Stem – Keith R. Berend, MD, New Albany, OH

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Thursday, March 21

V. Revision Total Hip Arthroplasty Exposure
   Extended Trochanteric Posterior-Based Osteotomy – Wayne G. Paprosky, MD, Winfield, IL
   Extended Trochanteric Anterior-Based Osteotomy – Arlen D. Hanssen, Rochester, MN

VI. Cup Revision
   Cavitary Defects – Aaron G. Rosenberg, MD, FACS, Chicago, IL
   Segmental Defects – Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada
   Pelvic Disassociation – David G. Lewallen, MD, Rochester, MN
   Cup Cage Reconstruction – Allen E. Gross, MD, FRCSC, Toronto, ON, Canada

VII. Femoral Revision
   Impaction Grafting – Douglas E. Padgett, MD, New York, NY
   Fully-Coated Stems – Wayne G. Paprosky, MD, Winfield, IL
   Modular Stems – William J. Maloney, MD, Redwood City, CA
   Femoral Head Size, Composition, Insertion Technique – Craig J. Della Valle, MD, Chicago, IL

VIII. Discussion

SYMPOSIUM
1:30 PM — 3:30 PM
Room S105

Medical-Legal Considerations in Managing Patients with Musculoskeletal Tumors (R)
Moderator: Carol D. Morris, MD, MS, New York, NY

Review common causes of litigation against the general orthopaedic surgeon in the treatment and referral of potential musculoskeletal neoplasms. Common pitfalls in managing these patients will be highlighted along with a strategy to avoid such consequences.

I. Medical Legal Considerations In Orthopedic Practice
   B. Sonny Bal, MD, Columbia, MO

II. Common Pitfalls In Managing Patients with Musculoskeletal Tumors with Corresponding Alternative Strategies
   Joseph Benevenia, MD, Newark, NJ

III. Orthopaedic Oncology Malpractice: An Attorney’s Perspective
   Elizabeth M. D’Elia, Esq, RN, New York, NY

IV. Panel

INSTRUCTIONAL COURSE LECTURE
1:30 PM — 3:30 PM

341 Hip Replacement or Hip Resurfacing: What’s Best for My Young Patients?
Moderator: Thomas P. Schmalzried, MD, Los Angeles, CA
Michael A. Mont, MD, Baltimore, MD
Ryan Nunley, MD, Saint Louis, MO
Thomas P. Vail, MD, San Francisco, CA

Outline and debate the current indications, contraindications, benefits and risks of hip resurfacing compared to contemporary total hip replacement.

342 Innovative Techniques and Frontiers in Revision Total Knee Arthroplasty
Moderator: Paul F. Lachiewicz, MD, Chapel Hill, NC
Michael P. Bolognesi, MD, Durham, NC
Jessa H. Lonner, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

Describe the indications and techniques for the use of metaphyseal cones, stems, and different levels of constraint in revision knee arthroplasty. New techniques for patella revision and the diagnosis of prosthetic joint infection will be covered.

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Thursday, March 21

343 Management of Acute (Traumatic) and Chronic Charcot Foot and Ankle Disease: A Surgical Algorithm
Moderator: Vincent J. Sammarco, MD, Cincinnati, OH
Dolf Herscovici Jr, DO, Temple Terrace, FL
Dror Paley, MD, West Palm Beach, FL

Explores the operative treatment of Charcot foot and ankle deformity. Includes both acute (traumatic) and chronic management, with special consideration for managing fractures in diabetics. Indications and techniques for internal and external fixation presented including the treatment of infection, dynamic correction with external fixation, planter plate, locking plate and axial screw fixation for fusions.

344 PIP Joint Fracture Dislocations: Evaluation and Treatment Options
Moderator: Julie E. Adams, MD, Minneapolis, MN
O A. Barron, MD, New York, NY
Ryan P. Calfee, MD, Saint Louis, MO
Robert J. Strach, MD, New Rochelle, NY

Strategies for evaluation and treatment of proximal interphalangeal joint injuries are discussed. Individual treatment options discussed with emphasis on indications, contraindications, postoperative rehabilitation, complications and anticipated outcomes. Cases and interactive discussion with audience participation.

Challenges of evaluation and treatment include discerning which treatment option is most appropriate.

345 Pediatric Sports Medicine Operative Challenges and Solutions: A Case Based Approach
Moderator: Mininder S. Kocher, MD, MPH, Boston, MA
Donald S. Bae, MD, Boston, MA
Michael T. Busch, MD, Atlanta, GA
Eric Wall, MD, Cincinnati, OH

This ICL uses a case-based interactive format with expert faculty to discuss hot topics in pediatric sports medicine from the shoulder to the foot.

346 Strategic Positioning and Marketing
Moderator: Eric N. Berkowitz, PhD, Amherst MA

Session will focus on developing market responsive strategies to attract patients, referrals and managed care subscribers. Understanding how to develop market responsive strategic plans along with recognizing what physicians, patients, and other customers are buying from your organization is essential in an evolving health care market. As health care moves from a fee-for-service to managed care market, the strategies involving promotion, pricing, and distribution of services must also be refined and will be reviewed. Identify market needs, understand how physicians and patients make choices among organizations, determine your marketplace differential. Learn strategies for market research, pricing and advertising. Develop methods for controlling patient flow and enhancing bargaining strategy.

347 Open Revision Surgery for Failed Arthroscopic Shoulder Surgery: A Lost Art Resurrected
Moderator: Wayne Z. Burkhead Jr, MD, Dallas, TX
Todd Moen, MD, Dallas, TX
Michael J. Pagnani, MD, Nashville, TN
Michael A. Wirth, MD, San Antonio, TX

Increased knowledge about and the correct performance of these techniques may help the surgeon avoid failure in certain cases when applied as primary surgery. The indications and technical aspects of this lost art will be emphasized.

348 Arthroscopic Rotator Cuff Repair: An Evolution of Techniques. Are Our Patients Really Benefiting?
Moderator: Leesa M. Galatz, MD, Saint Louis, MO
Christopher S. Ahmad, MD, New York, NY
Bradford Parsons, MD, New York, NY
Olivier Verborgt, MD, PhD, Wilrijk, Belgium

Evidence based discussion of controversial issues surrounding rotator cuff repair including the latest science of tendon healing and augmentation opportunities, and the effect of surgical approach and devices on results. Latest techniques for repair are demonstrated. International faculty offers a unique commentary on future directions and the impact of economics on surgical decision making.

349 Realignment Planning in Adult Deformity: The Newest Tools, Formulas and Techniques to Get It Right
Moderator: Thomas J. Errico, MD, New York, NY
Robert S. Bess, MD, Castle Rock, CO
Virginie Lafage, PhD, New York, NY
Justin S. Smith, MD, Charlottesville, VA

Treatment of adult spinal deformity focusing on clinical data and new tools to help improve surgical planning, outcomes and avoid complications.

350 High Tibial Osteotomy and Distal Femoral Osteotomy: Indications, Techniques and Post-Op Management for the Treatment of Arthrosis and Cartilage Deficiency
Moderator: Chadwick C. Prodromos, MD, Glenview, IL
Ammunziato Amendola, MD, Iowa City, IA
Roland P. Jakob, MD, Motier, Switzerland

This course provides complete guidelines on how to use high tibial osteotomy and distal femoral osteotomy as primary treatment for arthrosis and as a necessary adjunct to un-weight the knee in conjunction with cartilage restoration procedures.

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Thursday, March 21

351 Pediatric Orthopaedic Trauma: Principles of Management
Moderator: Shital Parikh, MD, Cincinnati, OH
James H. Beaty, Memphis, TN
Charles T. Mehlman, DO, MPH, Cincinnati, OH
David L. Skaggs, MD, Los Angeles, CA

Discuss the fundamentals of pediatric orthopaedic trauma management in general and for specific injuries, providing guidelines for management.

352 Treatment of Periprosthetic Fractures
Moderator: Jeremy Hall, MD, FRCS (ORTHO), MEd, Toronto, ON, Canada
Richard Jenkinson, MD, Toronto, ON, Canada
Aaron Nauth, MD, Toronto, ON, Canada
Markku Nousiainen, MD, Toronto, ON, Canada

Practical treatment of upper and lower extremity periprosthetic fractures will be illustrated and discussed using a case-based approach.

1:30 PM — 2:30 PM
FD5 The Art of Using PowerPoint for Effective Presentations
Moderator: Roy W. Sanders, MD, Tampa, FL
Paul Tornetta III, MD, Boston, MA

This hands on session will focus on utilizing PowerPoint especially for the medical professional. Learn tips and tricks that you can use to enhance your teaching skills when participating in educational sessions for your colleagues and for patient education both individually and community wide.

1:30 PM — 3:30 PM
PAPER PRESENTATION
Room N427

Adult Reconstruction Knee V: Primary Total Knee Arthroplasty
Moderator(s): William L. Griffin, MD, Charlotte, NC
Ormonde M. Mahoney, MD, Athens, GA

1:30 PM
The Ergonomics of Efficient Surgical Technique in Total Knee Replacement
Stuart M. Michnick, BS, Houston, TX
Philip C. Noble, PhD, Houston, TX
Gaurav S. Sharma, BA, Houston, TX
Holly Adams, PA, PA-C, Houston, TX
Sabir Ismaily, Houston, TX
Robert E. Booth Jr, MD, Philadelphia, PA
Kenneth B. Mathis, MD, Houston, TX

By knowing which phase of a TKR procedure results in the most errors and how those errors are committed, a training exercise can be developed that allows the surgical teams to increase efficiency.

1:36 PM
PAPER: 422
Cruciate Retaining Versus Posterior Stabilized Bilateral Total Knee Replacements: Gait And Fluoro Analyses
Lisa Berti
Francesco Cenni, Bologna, Italy
Claudio Belvedere, PhD, Bologna, Italy
Alberto Leardini, Bologna, Italy
Gabriele Bove, Roma, Italy
Giorgio Bove, Roma, Italy
Francesco Bove, MD, Roma, Italy
Sandro Giannini, MD, Bologna, Italy

This study reported the combination between three-dimensional gait and fluoroscopic analyses for assessing the functional performance of two different total knee replacement designs implanted bilaterally on the same subjects.

1:42 PM
PAPER: 423
Vascular Anatomy of the Patella: Implications for Total Knee Arthroplasty Surgical Approaches
Lionel E. Lazaro, MD, New York, NY
Michael B. Cross, MD, New York, NY
Nadine Pardee, BS, New York, NY
Peter K. Sculco, MD, New York, NY
Craig Klinger, BS, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorich, MD, New York, NY

Standard surgical dissection during TKA can completely compromise the patellar vascular supply. Careful management of the soft tissue has the potential to preserve the vascular supply to the patella.

Discussion - 6 Minutes

1:54 PM
PAPER: 424
Intra-Operative Assessment of Mid-Flexion Instability in Total Knee Arthroplasty
Yukihide Minoda, MD, Osaka, Japan
Shigeru Nakagawa, MD, Osaka, Japan
Akio Kobayashi, MD, Nara, Japan
Yoshinori Kadoya, MD, Sakai, Japan
Kazuhide Tomari, MD, Oita, Japan
Makoto Kondo, MD, Nara, Japan
Ryo Sugama, MD, Osaka, Japan
Takahiro Noguchi, MD, Fukuoka, Japan
Yasuo Higuma, MD, Oita, Japan

We carried out multicenter study of intra-operative assessment of joint gap in 259 TKAs. This study clearly showed that joint gap became loose in mid-flexion range after implantation.
Thursday, March 21

2:00 PM  PAPER: 425
RCT Multicenter Comparison of Primary TKA Using Patient Specific Versus Conventional Instrumentation
Moussa Hamadouche, PhD, Paris, France
Lamine Abane, MD, Paris, France
Stephane Boisgard, PhD, Clermont Ferrand, France
Stephane Descamps, Clermont-Ferrand, France
Jean Levaux Sr, MD, Clermont Ferrand, France
Jean-Pierre Courpédié, PhD, Paris, France
Philippe Anract, MD, Paris, France
This RCT compares clinical results, alignment, and components positioning using conventional versus patient specific (MRI and standing long-leg radiograph based) instrumentation in primary TKA.

2:06 PM  PAPER: 426
Do Patients Return to Work After Total Knee Arthroplasty?
Adolph V. Lombardi Jr, MD, New Albany, OH
Ryan Nunley, MD, Saint Louis, MO
Keith R. Berend, MD, New Albany, OH
Erie Rub, MS, Saint Louis, MO
John C. Clodsey, MD, Saint Louis, MO
William G. Hamilton, MD, Alexandria, VA
Craig J. Della Valle, MD, Chicago, IL
Javad Parvizi, MD, Philadelphia, PA
Robert L. Barrack, MD, Saint Louis, MO
A high percentage of patients return to their previous occupation following total knee arthroplasty (TKA).

2:18 PM  PAPER: 427
Why are Total Knees Failing Today? Etiology of Total Knee Revision in 2010 and 2011
William C. Schroer, MD, Saint Louis, MO
Keith R. Berend, MD, New Albany, OH
C. Lowry Barnes, MD, Little Rock, AR
Michael P. Bolognesi, MD, Durham, NC
Ryan Nunley, MD, Saint Louis, MO
Michael E. Berend, MD, Mooresville, IN
Adolph V. Lombardi Jr, MD, New Albany, OH
In a multicenter study, 36% of knee failures occurred within two years of surgery. Aseptic loosening, instability and infection account for 67% of knee failures.

2:24 PM  PAPER: 428
Risk Factors for Early Revision of Total Knee Arthroplasty
Christopher J. Dy, MD, New York, NY
Kevin J. Bozic, MD, MBA, San Francisco, CA
Douglas E. Padgett, MD, New York, NY
Timothy M. Wright, PhD, New York, NY
Robert G. Marx, MD, New York, NY
Ting-Jung Pan, MPH, New York, NY
Hung Do, MA, New York, NY
Stephen Lyman, PhD, New York, NY
Patient, hospital, and community risk factors for early revision total knee arthroplasty were identified using a population based approach.

2:30 PM  PAPER: 429
Prevalence of Comorbidities and Clinical Outcomes in Total Knee Arthroplasty Patients 80 Years of Age and Older
Jung Ha Lee, MD, Seoul, Republic of Korea
Min Soo Je, Gyeonggi-Do, Republic of Korea
Moon Jong Chang, MD, Gyeonggi-Do, Republic of Korea
Sang C. Seong, MD, Seoul, Republic of Korea
Tae Kyun Kim, MD, Gyeonggi-Do, Republic of Korea
Chong Bum Chang, MD, PhD, Gyeonggi-Do, Republic of Korea
Yeon Gwi Kang, MD, Gyeonggi-Do, Republic of Korea
Ho Hyun Won, Gyeonggi-Do, Republic of Korea
With careful patients selection and patient care to minimize medical complication, TKA is a valuable treatment for symptomatic advanced knee osteoarthritis in patients over 80 years of age.

2:42 PM  PAPER: 430
Does Obesity Influence Clinical Outcomes at Nine Years Following Total Knee Arthroplasty?
Rachel Collins, Edinburgh, United Kingdom
Phil Walmsley, FRCS, Fife, United Kingdom
Anish Amin, FRCS MBChB, Edinburgh, United Kingdom
Ivan Brenkel, FRCS, Dunfermline, United Kingdom
Robert A. Clayton, MB, ChB, Kirkaldy, United Kingdom
445 TKAs were followed up at 9 years. Obesity did not influence complication rates or prosthesis survivorship. Obese patients had substantial, sustained improvements in outcome scores at 9 years.

2:48 PM  PAPER: 431
Risk Factors for Total Knee Arthroplasty Aseptic Revision
Robert S. Namba, MD, Corona Del Mar, CA
Monti Khatod, MD, Santa Monica, CA
Maria C. Inacio, MS, San Diego, CA
Guy Capri, PhD, La Jolla, CA
Liz Paxton, MA, San Diego, CA
Tim T. Brox, MD, Fresno, CA
Survival and risk of aseptic revision were assessed in 69469 primary total knee arthroplasties. Patient, implant, and surgical characteristics were associated with risk of aseptic revision.

2:54 PM  PAPER: 432
Total Knee Arthroplasty with the Uncemented Trabecular Metal Tibia
Mika Niemelainen, MD, Tampere, Finland
Eerik T. Skyyta, MD, PhD, Tampere, Finland
Ville M. Remes, MD, Helsinki, Finland
Keijo Makela, MD, Turku, Finland
Antti Eskelainen, MD, PhD, Tampere, Finland
Uncemented trabecular metal tibia has excellent mid-term survival.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Topical tranexamic acid significantly decreases blood loss in total knee arthroplasty.

Despite its lower cost, we cannot justify hydrogen peroxide irrigation as an alternative to intra-articular tranexamic acid to reduce blood loss during total knee arthroplasty.

TKA in obesity has been associated with inferior clinical scores. Our prospective study shows no difference in range of movement, clinical scores and complications between obese and non-obese patients.

The jaw thrust maneuver results in less motion at an unstable C1-2 injury as compared to the head tilt-chin lift maneuver and should be used in the setting of a suspected spine injured patient.

Patients with traumatic spine fractures were more likely to receive surgery if they were insured, regardless of the presence of neurologic injury or fracture location.
Thursday, March 21

2:06 PM  PAPER: 441
Current Cervical Spine Clearance Protocols in Level I Trauma Centers in the United States
Alexander Theologis, MD, San Francisco, CA
Robert G. Dionisio, BS, San Francisco, CA
Robert C. Mackersie, San Francisco, CA
Robert T. McClellan, MD, San Francisco, CA
Murat Pekmezci, MD, San Francisco, CA

Of participating Level I trauma centers in the United States, 54% have a cervical spine clearance protocol. The protocols were variable and many were not in agreement with current recommendations.

Discussion - 6 Minutes

2:18 PM  PAPER: 442
Operative vs. Non-operative Treatment of Thoracolumbar Burst Fractures: 15-20 Year Follow Up
Kirkham B. Wood, MD, Boston, MA
Brian D. Shannon, MD, New Wilmington, PA
Glenn R. Buttermann, MD, Mahtomedi, MN
Christopher C. Harrod, MD, Baton Rouge, LA
Avraam L. Ploumis, MD, PhD, Plagiari, Thessaloniki, Greece
Amir A. Mehbod, MD, Minneapolis, MN

Patients with thoracolumbar burst fractures have improved outcomes at 17 years when treated non-operatively.

2:24 PM  PAPER: 443
Fusion vs. Nonfusion for Surgically Treated Thoracolumbar and Lumbar Burst Fractures - A Prospective Trial
Po H. Chou, MD, Taipei, Taiwan
Hsiao-Li Ma, MD, Taipei, Taiwan
Shih-Tien Wang, MD, Taipei, Taiwan
Chien-Lin Liu, MD, Taipei, Taiwan
Ming-Chau Chang, MD, Taipei City, Taiwan
Wing-Kwong Yu, MD, Taipei, Taiwan

The posterior fusion with autograft may not be routinely performed in surgically treated thoracolumbar and lumbar burst fractures.

Discussion - 6 Minutes

2:30 PM  PAPER: 444
Clinical Relationship Between Cervical Spinal Canal Stenosis and Spinal Cord Injury Without Major Bony Injury
Tsuneaki Takao, MD, Iizuka, Japan
Takeshi Maeda, Iizuka, Japan
Eiji Mori, MD, Fukuoka, Japan
Itaru Yuge, MD, Iizuka Fukuoka, Japan
Osamu Kawano, MD
Hiroaki Sakai, MD
Yunichiro Morishita, MD, PhD, Iizuka, Japan
Tetsuo Hayashi, MD, Fukuoka, Japan
Keiichiro Shibah, MD, Iizuka, Japan

A congenitally narrow cervical spinal canal might be an important risk factor for cervical spinal cord injury (CSCI). However, prophylactic surgical management of cervical spinal canal stenosis (CSCS).

Discussion - 6 Minutes

2:42 PM  PAPER: 445
Odontoid Nonunions: Implications of the “Second Fall”
Timothy A. Moore, MD, Shaker Heights, OH
Michael P. Steinmetz, MD, Cleveland, OH

The treatment of acute type II odontoid fractures in the elderly (age > 70) is controversial. These fractures are inherently unstable due to the loss of bony and ligamentous restraints to translation of C1 on C2.

2:48 PM  PAPER: 446
Factors Associated with Nonunion in 100 Consecutive Type 2 and Type 3 Odontoid Fractures in Elderly Patients
Michael Merrick, MD, Grand Rapids, MI
Casey L. Smith, MD, Grand Rapids, MI
Debra Sietsema, PhD, Grand Rapids, MI
Tan Chen, BA, Grand Rapids, MI
Clifford B. Jones, MD, FACS, Grand Rapids, MI
James R. Stubbart, MD, Ada, MI
Scott S. Russo, MD, Grand Rapids, MI

Factors predictive of nonunion in older patients with odontoid fractures include: type 2 odontoid fractures, posteriorly displaced fractures, non-operative treatment, males, and low-energy mechanisms.

2:54 PM  PAPER: 447
Higher Rates of Union in Older Patients with Type 2 and Type 3 Odontoid Fractures Treated with Teriparatide
Michael Merrick, MD, Grand Rapids, MI
Casey L. Smith, MD, Grand Rapids, MI
Debra Sietsema, PhD, Grand Rapids, MI
Tan Chen, BA, Grand Rapids, MI
Tammy Beckett, NP, Grand Rapids, MI
Clifford B. Jones, MD, FACS, Grand Rapids, MI
James R. Stubbart, MD, Ada, MI
Scott S. Russo, MD, Grand Rapids, MI

Teriparatide may lead to higher union rates in type 2 and type 3 odontoid fractures. More studies with larger sample sizes including other contributing factors are needed to confirm this finding.

Discussion - 6 Minutes

3:06 PM  PAPER: 448
Morbidity and Mortality after Vertebral Augmentation and Non-Operative Management of Vertebral Fractures
Aeram A. Edidin, PhD, Portola Valley, CA
Kevin Ong, Philadelphia, PA
Edmund Lau, MS, Menlo Park, CA
Steven M. Kurtz, PhD, Philadelphia, PA

VCF patients in the Medicare population who received vertebral augmentation therapies experienced lower mortality and overall morbidity than those who received conservative management.
The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

Thursday, March 21

3:12 PM  PAPER: 449
Total En Bloc Spondylectomy at Three or More Levels: Clinical Outcome
Katsuhito Yoshioka, MD, Kanazawa, Japan
Hideki Murakami, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Satoshi Kato, MD, Kanazawa, Japan
Takashi Ota, MD, Kanazawa, Japan
Kazuya Shimura, MD, Ishikawa, Japan
Noriaki Yokogawa, MD, Ishikawa, Japan
Katsuro Tomita, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Good clinical results of the reconstruction were achieved in all 15 patients who underwent whole three or more levels total en bloc spondylectomy.

3:18 PM  PAPER: 450
Novel Technique of Total En Bloc Spondylectomy Enhancing Antitumor Immunity for Spinal Tumors
Hideki Murakami, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Hideji Nishida, MD, Kanazawa City, Japan
Satoshi Kato, MD, Kanazawa, Japan
Katsuhito Yoshioka, MD, Kanazawa, Japan
Hiroyuki Hayashi, MD, Kanazawa, Japan
Takashi Ota, MD, Kanazawa, Japan
Kazuya Shimura, MD, Ishikawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We newly developed second-generation TES enhancing antitumor immunity to prolong patient’s survival. Antitumor immunity was enhanced after this surgery in more than 75% of the cases.

1:36 PM  PAPER: 452
Do Findings on Post-Operative Radiographs Result in the Need for Additional Surgery after Posterior Spinal Fusion?
Grant Garcia, MD, New York, NY
Min J. Park, MD, MSc, Philadelphia, PA
Keith D. Baldwin, MD, Sicklerville, NJ
John M. Flynn, MD, Philadelphia, PA
David A. Spiegel, MD, Philadelphia, PA

Isolated postoperative x-rays did not lead to any change in management, and consideration should be given to current protocols for imaging following PSF.

1:42 PM  PAPER: 453
Inclusion of the Proximal Thoracic Curve Does Not Provide Better Shoulder Balance in All Lenke 2 Curves
Daniel J. Sucato, MD, Dallas, TX
Anna McClung, RN, Dallas, TX

This study demonstrates greater likelihood of including the PT curve when the Lenke classification and pedicle screws are used for Lenke type 2 curves without improved shoulder balance at 2 years.

2:00 PM  PAPER: 455
Increased Body Mass Index Negatively Affects Patient Satisfaction after a Posterior Fusion for AIS
Adriana De La Rocha, MS, Dallas, TX
Daniel J. Sucato, MD, Dallas, TX
Anna McClung, RN, Dallas, TX

Increased BMI negatively affected the Mental, Appearance, and Pain relief domains of self-reported outcomes scores in patients treated with a PSF for AIS.
2:06 PM  PAPER: 456
**Cost Effectiveness of Surgical Treatment for Adolescent Idiopathic Scoliosis (AIS)**
Chia H. Wu, Reading, PA
Lisa Mcleod, Philadelphia, PA
John M. Flynn, MD, Philadelphia, PA
The cost effectiveness of surgical treating AIS is derived by dividing total direct cost by QALYs gained over remaining life span to yield $8,182 per QALY. PSF for severe AIS is very cost effective.
Discussion - 6 Minutes

2:18 PM  PAPER: 457
**Bacterial Colonization of Growth Retaining Spine Implants in Children with Severe Spinal and Thoracic Deformities**
Christian Plaass, MD, Hanover, Germany
Andrej Trampuz, MD, Lausanne, Switzerland
Carol Claudius Hasler, MD, Basel, Switzerland
Daniel Studer, Bern, Switzerland
Children treated with growth retaining implants for severe spinal and thoracic deformities have bacterial colonizations rates up to 6 times higher than clinical apparent infections.

2:24 PM  PAPER: 458
**Factors Predicting the Cobb Angle after Casting for Progressive Infantile Scoliosis**
Caleb J. Behrend, MD, Rochester, NY
John R. Faust, MD, Rochester, NY
Albert E. Sanders, MD, San Antonio, TX
Paul T. Rubery Jr, MD, Honeoye Falls, NY
James O. Sanders, MD, Rochester, NY
Serial casting for infantile scoliosis results in resolution or improvement for most patients. Increasing age, initial cobb angle, and syndromic etiology predicted surgery and persistent curvature.
Discussion - 6 Minutes

2:30 PM  PAPER: 459
**Vertebral Body Stapling for Juvenile and Early Adolescent Idiopathic Scoliosis**
David B. Bumpass, MD, Saint Louis, MO
Sara K. Fuhrhop, BS, Baltimore, MD
Scott J. Luhmann, MD, Saint Louis, MO
Vertebral body stapling successfully stabilized juvenile and early adolescent idiopathic scoliosis curves with a low rate of minor complications and subsequent spinal fusion.
Discussion - 6 Minutes

2:42 PM  PAPER: 460
**Three Dimensional Visualization of Vertebral Growth Cartilage and Disc; the Effects of Growth Modulation**
Christine L. Farnsworth, MS, San Diego, CA
Josh Doan, MS, San Diego, CA
Diana A. Glaser, PhD, San Diego, CA
Peter O. Newton, MD, San Diego, CA
Following anterolateral tethered growth, bovine spinal motion segments were evaluated with novel 3D techniques to determine tether effects on growth cartilage and disc morphology.

2:48 PM  PAPER: 461
**Biomechanics of Spinal Hemiepiphysiodesis for Fusionless Scoliosis Treatment using Titanium Implant**
Donita Bylaki-Austrow, Cincinnati, OH
Matthew Coombs, Cincinnati, OH
David Glos, Research Eng, Cincinnati, OH
Eric Wall, MD, Cincinnati, OH
Spinal hemiepiphysiodesis by titanium staple implant decreased range of motion by <20% in flexion-extension and lateral bending compared to pre-treatment controls.

2:54 PM  PAPER: 462
**Prevalence of Scoliosis in Patients with Fontan Circulation**
Muayad Kadhim, MD, Wilmington, DE
William G. Mackenzie, MD, Wilmington, DE
Pizarro Christian, MD, Wilmington, DE
Laurens Holmes, PhD, DrPH, Wilmington, DE
Kenneth J. Rogers, PhD, Wilmington, DE
Kallur K. Antony, MD, Albuquerque, NM
High prevalence of scoliosis was observed and inter-disciplinary monitoring is recommended for children with Fontan circulation.
Discussion - 6 Minutes

3:06 PM  PAPER: 463
**Perioperative Use of Gabapentin in Idiopathic Scoliosis Improves Pain Management after Posterior Spinal Fusion**
Curtis D. VandenBerg, MD, New York, NY
Suken A. Shah, MD, Wilmington, DE
Peter G. Gabos, MD, Wilmington, DE
Richard R. Bowen, MD, Wilmington, DE
Dinesh K. Choudhry, MD, Wilmington, DE
Karen Sacks, Wilmington, DE
Kenneth J. Rogers, PhD, Wilmington, DE
Perioperative gabapentin reduced morphine consumption and facilitated transition to oral pain medication on the first postoperative day after PSF for AIS. There was a tendency for earlier ambulation.
Thursday, March 21

3:12 PM  PAPER: 464
Early Complications of High-Dose Steroids After Pediatric Spinal Trauma
Jeffrey B. Knox, MD, New York, NY
Jason M. Cage, DO, Honolulu, HI
John E. Schneider, MD, Dallas, TX
Anthony J. Riccio, MD, Dallas, TX
Robert L. Wimberly, MD, Dallas, TX
High rates of infectious and endocrine complications are present in children with spinal trauma regardless of the administration of high-dose corticosteroids.

3:18 PM  PAPER: 465
The Use of Magnetic Resonance Imaging in the Evaluation of Spondylolysis
Jeremy K. Rush, MD, San Antonio, TX
William C. Warner Jr, MD, Germantown, TN
Stephanie E. Scott, Chicago, IL
Nelson Astur Neto, MD, São Paulo, Brazil
Jeffrey R. Sawyer, MD, Germantown, TN
Derek M. Kelly, MD, Memphis, TN
Magnetic resonance imaging (MRI), utilizing a specific protocol for evaluation of the pars interarticularis, is an effective tool in the diagnosis of pars injury in adolescents and young adults.

1:30 PM — 3:30 PM
Room S103
Foot and Ankle II: Ankle Arthritis: Arthroplasty, Osteotomy, and Arthrodesis
Moderator(s): Naren G. Gurbari, Capistrano Beach, CA
Stuart D. Miller, MD, Baltimore, MD

1:30 PM  PAPER: 466
Supramalleolar Osteotomy is More Effective than Calcaneal Osteotomy in Varus Ankle Osteoarthritis
Woo Chun Lee, Seoul, Republic of Korea
Kang Lee, MD, Seoul, Republic of Korea
Hong Joon Choi, MD, Seoul, Republic of Korea
Chullhun Park, MD, Daegu, Republic of Korea
Jiyoung Ahn, MD, Seoul, Republic of Korea
Dong-Il Chun, Seoul, Republic of Korea
Ju Pil P. Seok, MD, Seoul, Republic of Korea
Jae Cho, MD, Seoul, Republic of Korea
This study compared supramalleolar and calcaneal osteotomy for varus ankle osteoarthritis. Clinical improvement was significantly better after supramalleolar osteotomy.

1:36 PM  PAPER: 467
Novel Double Osteotomy of Distal Tibia for Correction of Asymmetric Varus Osteoarthritic Ankle
Beat Hintermann, MD, Liestal, Switzerland
Markus Knupp, MD, Liestal, Switzerland
Alexey Barg, MD, Liestal, Switzerland
This prospective study illustrated that the novel double osteotomy technique provides pain relief and realignment of the hindfoot in patients with painful asymmetric varus ankle osteoarthritis.

1:42 PM  PAPER: 468
Ankle Arthroscopy: Medium-Term Outcomes for New Onset Mechanical Symptoms in Osteo and Post-Traumatic Arthritis
Ryan Flanagan, MD, Rochester, NY
Benedict F. DiGiovanni, MD, Rochester, NY
Ankle arthroscopy can be an effective tool in reducing pain and maintaining function in patients with a new mechanical symptom in the setting of osteo or post-traumatic arthritis.

1:54 PM  PAPER: 469
Prospective Comparison of Ankle Arthroplasty and Arthrodesis
Paul H. Kim, MD, Seattle, WA
Nathan W. Coleman, MD, Seattle, WA
Marisa R. Bench, BS, Seattle, WA
Natalie R. Doerr, Seattle, WA
Bill R. Ledoux, PhD, Seattle, WA
Sigvard T. Hansen Jr, MD, Seattle, WA
Bruce J. Sangeorzan, MD, Seattle, WA
Prospective comparison study of outcomes for ankle fusion and replacement. Both cohorts showed improvements in all outcome measures. Complication and reoperation rates were similar.

2:00 PM  PAPER: 470
Multicenter Study Comparing Total Ankle Arthroplasty and Ankle Arthrodesis: Mid-Term Results
Alastair S. E. Younger, MD, Vancouver, BC, Canada
Timothy R. Daniels, MD, FRCSC, Toronto, ON, Canada
Mark Glazebrook, MD, Halifax, NS, Canada
Murray J. Penner, MD, Vancouver, BC, Canada
Kevin J. Wing, MD, Vancouver, BC, Canada
Peter Dryden, MD, Victoria, BC, Canada
Hubert Wong, PhD, Vancouver, BC, Canada
A multicenter study of 267 ankle arthroplasty (TAR) and 99 ankle arthrodesis (AA) patients at 4.9 years. AOS and SF-36 PCS and MCS scores improved and were the same for TAR and AA.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Thursday, March 21

2:06 PM 
PAPER: 471
Comparison of Trends in Ankle Arthrodesis and Total Ankle Replacement in the United States
Rodney Terrell, MD, Los Angeles, CA
Scott Montgomery, MD, Venice, CA
William Pannell, BS, Los Angeles, CA
Michael I. Sandlin, MD, Los Angeles, CA
Hirokazu Inoue, MD, Shimotsuke, Japan
Jeffrey C. Wang, MD, Sherman Oaks, CA
Nelson F. SooHoo, MD, Los Angeles, CA

In a review of a large insurance database of orthopedic patients, total ankle replacement and arthroscopic fusion were found to be increasing from 2004 to 2009.

Discussion - 6 Minutes

2:18 PM 
PAPER: 472
Total Ankle Replacement in Patients Under the Age of 50. Should this Still be Contraindicated?
Ricardo Rodrigues-Pinto, MD, Povoa De Varzim, Portugal
José M. Muras Geada, Porto, Portugal
Xavier Martín Oliva, Barcelona, Spain
Paulo Amado, Portugal

Total ankle replacement in patients under 50 years of age yields better clinical and functional results and similar complication and survivor rates as when it is performed in those aged 50 or older.

2:24 PM 
PAPER: 473
Outcomes of Ankle Arthroplasty for Post-traumatic Arthritis Following Pilon Fractures
Rajeshkumar Kakwani, FRCS, Newcastle-Upon-Tyne, United Kingdom
Jayasree Ramaskandhan, MSc, Newcastle Upon Tyne, United Kingdom
Malik S. Siddique, MD, Newcastle-upon-Tyne, United Kingdom

The Indications for TAR can be safely broadened to include younger patients with arthritis following pilon fractures of the tibia.

2:30 PM 
PAPER: 474
The Lateral Distal Tibial Articular Angle and its Relationship to Talar Subluxation in TAR
Andrea Veljkovic, MD, FRCS, Kentville, NS, Canada
Adam Norton, BA, Iowa City, IA
Peter Salat, MD, FRCS, Wolfville, NS, Canada
Charles L. Saltzman, MD, Salt Lake City, UT
John E. Femino, MD, Iowa City, IA
Phinit Phisitkul, MD, Iowa City, IA
Annunziato Amendola, MD, Iowa City, IA

73% of pre-operative ankles were classified as anterior or neutral while 27% presented posterior. We have illustrated that posterior subluxation is corrected by opening the DTAA.

Discussion - 6 Minutes

2:42 PM 
PAPER: 475
The Total Ankle Replacement Learning Curve
Gregory C. Berlet, MD, Westerville, OH
Terrence Philbin, DO, Dublin, OH
Christopher Hyer, DPM, Westerville, OH
Jaymes Granata, MD, Lewis Center, OH
Kevin Zartman, MD, Cleveland Heights, OH
W. Bret Smith, DO, Lexington, SC
Thomas H. Lee, MD, Westerville, OH
Emily Stansbury, BA, Westerville, OH

The purpose of this study was to report the tourniquet time and intraoperative complication rate for 3 different TAR implants as surgeon experience increased.

2:48 PM 
PAPER: 476
Management of Ankle Pain Following Ankle Arthroplasty
Rajeshkumar Kakwani, FRCS, Newcastle-Upon-Tyne, United Kingdom
Mohammed A. Al-Mayah, Middlesbrough, United Kingdom
Jayasree Ramaskandhan, MSc, Newcastle Upon Tyne, United Kingdom
Malik S. Siddique, MD, Newcastle-upon-Tyne, United Kingdom

10–13% of Ankle Arthroplasty have moderate/severe ankle pain with low AOFAS scores. Mapping of the pain aids decision of management options.

2:54 PM 
PAPER: 477
Patient Reported Outcomes, Function and Gait Mechanics After Fixed and Mobile-Bearing Total Ankle Replacement
Robin M. Queen, PhD, Durham, NC
Robert J. Butler, DPT, PhD, Durham, NC
Samuel B. Adams Jr, MD, Durham, NC
James K. DeOrio, MD, Durham, NC
Mark E. Easley, MD, Durham, NC
James A. Nunley II, MD, Durham, NC

This study examines the differences in gait mechanics, patient reported outcomes, and function between a mobile and fixed bearing TAR from before surgery through 2 years following surgery.

Discussion - 6 Minutes

3:00 PM 
PAPER: 478
Tibiotalocalcaneal (TTC) Fusion with Bone Block Allograft: Rates of Fusion and Clinical Outcomes
Edward Tang, MD, San Leandro, CA
Clifford L. Jeng, MD, Baltimore, MD
John T. Campbell, MD, Baltimore, MD
Rebecca Cerrato, MD, Falls, MD
Mark S. Myerson, MD, Baltimore, MD

Bone block tibiotalocalcaneal fusion is an accepted salvage procedure for bone loss in the ankle. We had a 71.9% limb salvage rate in our case series and these patients were satisfied.
Thursday, March 21

3:12 PM PAPER: 479
Clinical Outcome of Tibiotalocalcaneal Arthrodesis with Lateral Blade Plate
Michael Iossi, MD, Milwaukee, WI
Jeffrey E. Johnson, MD, Saint Louis, MO
Sandra E. Klein, MD, Saint Louis, MO
Jeremy J. McCormick, MD, Saint Louis, MO

Tibiotalocalcaneal arthrodesis with blade plate fixation is a procedure with high rates of complication. However, once a fusion is achieved, patients exhibit a high level of relief and satisfaction.

3:18 PM PAPER: 480
Subtalar Arthrodesis in Patients with Previous Ankle Fusion
Diego Zanotti, MD, Durham, NC
Mark E. Easley, MD, Durham, NC
James A. Nunley II, MD, Durham, NC

Retrospective study that compares subtalar fusion rates in isolated subtalar arthrodesis in patients with previous ankle fusion to patients without prior ankle fusion.

Discussion - 6 Minutes

SURGICAL SKILLS COURSE
1:30 PM — 4:30 PM

8SK Advanced Ponseti Course and Minimally Invasive Management of Vertical Talus
Moderator: Matthew B. Dobbs, MD, Saint Louis, MO
Haemish A. Crawford, MBChB, Auckland, New Zealand, New Zealand
Steven L. Frick, MD, Orlando, FL
John E. Herzenberg, MD, Baltimore, MD
Harold J. Van Bosse, MD, Wynnewood, PA

Learn the tricks for dealing with complex, neurogenic, and syndromic clubfeet as well as the principles of correcting congenital vertical talus with the minimally invasive approach. Simulated bone models only.

9SK Shoulder Instability
Moderator: April D. Armstrong, MD, Hershey, PA
Anand M. Murthi, MD, Baltimore, MD
Robert Z. Tashjian, MD, Salt Lake City, UT
Brian R. Wolf, MD, Iowa City, IA

A surgical skills course that will provide one hour of course lecture on the anatomy of the shoulder and arthroscopic portals, and techniques of anterior and posterior shoulder instability repairs followed by a skills session for 1.5 hours with simulated bone models. Course will end with case presentation and discussion.

INSTRUCTIONAL COURSE LECTURE
1:30 PM — 4:30 PM

• 383 MRI-Arthroscopy Correlations of the Shoulder, Elbow, Hip and Knee: A Case Based Approach
Moderator: Mark D. Miller, MD, Charlottesville, VA
Stephen F. Brockmeier, MD, Charlottesville, VA
Hollis Potter, MD, New York, NY
Anil S. Ranawat, MD, New York, NY

Brief introduction to MRI, a series of knee, shoulder, elbow, and hip cases will be presented and discussed. MRI and arthroscopy correlation will be emphasized.

384 Complex Elbow Injuries: New Techniques for Operative Management and Avoiding Complications
Moderator: Scott P. Steinmann, MD, Rochester, MN
Douglas P. Hanel, MD, Seattle, WA
Michael Hausman, MD, New York, NY
Donald H. Lee, MD, Nashville, TN
A L. Osterman, MD, Villanova, PA

Treatment of complex elbow injuries has evolved over the past decade. Discuss treatment algorithms for all aspects of elbow trauma. Management of distal humeral fractures, medial and lateral fracture dislocations, and radial head/coronoid fracture will be emphasized.

SYMPOSIUM
4:00 PM — 6:00 PM
Grand Ballroom

Eight Common Pitfalls In Shoulder Arthroplasty (S)
Moderator: Edward V. Craig, MD, New York, NY

Among factors determining TSR success are patient selection, soft tissue analysis, intraoperative decisions, and post operative rehabilitation. This symposium will address eight common pitfalls hindering optimal outcome of shoulder arthroplasty

I. Pre Op and Intra Op Decisions to Minimize Component Malposition
Thomas B. Edwards, MD, Houston, TX

II. Avoiding Infection in Shoulder Arthroplasty
Andrew Green, MD, Providence, RI

III. Avoidable Causes of Prosthetic Instability and Dislocation
Evan L. Flatow, MD, New York, NY

IV. Pre Op and Intraoperative Decision Making to Minimize Post Operative Cuff Failure
Robert H. Cofield, MD, Rochester, MN

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Thursday, March 21

V. Will Intraoperative Monitoring Avoid Nerve Injury In TSR
   Gerald R. Williams Jr, MD, Philadelphia, PA

VI. Pitfalls of the Difficult Osteoarthritic: Marked Posterior Humeral Head Subluxation and Glenoid Erosion
    Richard J. Hawkins, MD, Greenville, SC

VII. Component Loosening in Anatomic and Reverse Arthroplasty. Can It Be Avoided?
     Mark A. Frankle, MD, Temple Terrace, FL

VIII. Minimizing the Long Term Problems with Periprosthetic Fracture
      John W. Sperling, MD, MBA, Rochester, MN

SYMPOSIUM
4:00 PM — 6:00 PM
Room S406

Debates on the Use of BMP in Spine Surgery (T)
Moderator: Jeffrey C. Wang, MD, Sherman Oaks, CA

This will provide an evidence-based update on the risks of BMP usage in the spine, an understanding of the controversy that exists in the literature regarding the reporting of adverse events, and a debate on the merits/indications of its usage in the spine.

I. BMP Usage Increases Rate Of Retrograde Ejaculation
   Thomas E. Mroz, MD, Cleveland, OH

II. BMP Does Not Lead to Increased Retrograde Ejaculation
    Jean-Jacques Abitbol, MD, San Diego, CA

III. BMP Can Be Used For Cervical Fusion
     K. Daniel Riew, MD, Saint Louis, MO

IV. BMP Should Not Be Used For Cervical Fusion
    Alan S. Hillbrand, MD, Philadelphia, PA

V. BMP Can Be Used For Thoracolumbar Fusion
   Michael D. Daubs, MD, Salt Lake City, UT

VI. BMP Should Not Be Used For Thoracolumbar Fusion
    Wellington K. Hsu, MD, Chicago, IL

VII. BMP Adverse Events Were Appropriately Reported In the Literature
    Paul A. Anderson, MD, Madison, WI

VIII. BMP Adverse Events Were Under-Reported In the Literature
      Eugene J. Carragee, MD, Redwood City, CA

INSTRUCTIONAL COURSE LECTURE
4:00 PM — 6:00 PM

361 Revision in Total Hip Arthroplasty: Understanding and Management of Osteolysis
Moderator: Charles A. Engh Jr, MD, Alexandria, VA
William J. Maloney, MD, Redwood City, CA
Wayne G. Paprosky, MD, Winfield, IL
Neil P. Sheth, MD, Philadelphia, PA

Review the etiology, evaluation, and surgical treatment of periprosthetic hip osteolysis. Will include polyethylene and metal on metal bearing surface associated osteolysis. Emphasis on surgical decision making techniques.

362 Direct Anterior Hip Surgery: Techniques for Arthroplasty and Surgical Approach to Hip Surgery
Moderator: Anthony S. Unger, MD, Washington, DC
Stefan Kreuzer, MD, Houston, TX
Tim P. Lovell, MD, Spokane, WA
Javad Parvizi, MD, FRCS, Philadelphia, PA

Explore the history, anatomy and science of the DAA. The surgical technique for arthroplasty and FAI treatment will be presented.

363 Emerging Methods for Treatment of Ankle Arthritis
Moderator: Timothy R. Daniels, MD, FRCSC, Toronto, ON, Canada
Annunziato Amendola, MD, Iowa City, IA
James W. Brodsky, MD, Dallas, TX
Bruce J. Sangeorzan, MD, Seattle, WA

Compare the functional and biomechanical outcomes of ankle fusion and total ankle arthroplasty. Indications, complications, surgical techniques and outcomes of both surgical procedures.

364 Scaphoid Fractures and Nonunions: What’s Hot, What’s Not
Moderator: William B. Geissler, MD, Jackson, MS
Randipsingh R. Bindra, MD, Maywood, IL
Dean G. Sotereanos, MD, Pittsburgh, PA

Novel and minimally invasive techniques for scaphoid surgery will be reviewed and the panel will demonstrate pearls and pitfalls to safely treat these common but potentially debilitating injuries.

365 Current Perspectives on the Diagnosis and Management of DDH through Early Adulthood
Co-moderators: Stuart L. Weinstein, MD, Iowa City, IA
Dennis R. Wenger, MD, San Diego, CA
Nicholas Clarke, FRCS, Southampton, United Kingdom
Klaus Siebenrock, MD, Bern, Switzerland

Provide the international perspective to the diagnosis and management of developmental hip dysplasia and dislocation from birth through early adulthood.

An alphabetical faculty financial disclosure list can be found starting on page 292.

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Thursday, March 21

366  Coding and Reimbursement Update 2013
Moderator: John P. Heiner, MD, Madison, WI
R. Dale Blasier, MD, Little Rock, AR
William R. Creevy, MD, Boston, MA
Richard J. Friedman, MD, Charleston, SC
M. B. Henley, MD, MBA, Seattle, WA
Room S501

Annual update on changes to CPT and Reimbursement from physicians actively involved in the AAOS coding and reimbursement activities.

367  Leading a Digital Life in Orthopaedics
Moderator: Jack Choueka, MD, Lawrence, NY
Matthew J. DiPaola, MD, Dayton, OH
Eric Eisemon, MD, Brooklyn, NY
Yvette Ho, MD, Brooklyn, NY
Ira H. Kirschenbaum, MD, Bronx, NY
Norman Stone, MD, Alexandria, VA
Room S103a

Computerized medical records, online resources, smartphones and iPads can seem foreign and complicated to the busy orthopaedic surgeon. This presentation will demonstrate the tremendous potential that these technologies hold to improve efficiency, safety and patient care.

368  Elbow Arthroscopy: Beginners to Advanced
Moderator: Christopher S. Ahmad, MD, New York, NY
Matthew L. Ramsey, MD, Philadelphia, PA
Anthony A. Romeo, MD, Chicago, IL
Felix H. Saviose III, MD, New Orleans, LA
Room S104

Detailed presentations will instruct patient positioning, portal placement and use of retractors. Specific procedures will include basic loose body removal, arthroscopic treatment of throwing elbow injuries, techniques to manage elbow arthritis and advanced techniques such as arthroscopic assisted fracture treatment.

369  Controversies in Hip Arthroscopy
Moderator: Paul E. Beaulé, MD, Ottawa, ON, Canada
J W T. Byrd, MD, Nashville, TN
John C. Clohisy, MD, Saint Louis, MO
Christopher Larson, MD, Edina, MN
Room N227b

Deciding on how to address the various pathologies such as FAI as well as dealing with the more complex clinical scenarios such as the failed hip arthroscopy are becoming more complex. This course brings together world experts on the subject matter combined with case base discussions.

370  Comprehensive Contemporary Osteoporotic Care
Moderator: Stephen L. Kates, MD, Rochester, NY
Troy H. Caron, DO, Springfield, MO
Alexandra K. Schwartz, MD, San Diego, CA
Room S503

Establishing a hip fracture service, hip fractures - tips to avoid surgical failure, post-fracture osteoporosis for the orthopaedic surgeon, pearls on hip fracture care.

371  Humeral Shaft Fractures: Is Nonoperative Treatment Still an Option?
Moderator: Amer J. Mirza, MD, Portland, OR
Erik Kubiak, MD, Salt Lake City, UT
Matthew D. McElvany, MD, Seattle, WA
Samir Mehta, MD, Philadelphia, PA
Room S504a

Identify which humeral shaft fractures benefit from operative stabilization and the optimum techniques for managing these fractures and their complications will be detailed.

FD6  Perspectives on Mentorship
Moderator: Robert A. Hart, MD, Portland, OR
James H. Beatty, MD, Memphis, TN
Edward N. Hanley Jr, MD, Charlotte, NC
Vernon T. Tolo, MD, Los Angeles, CA
Room N227a

History, definition, and description of the mentoring process will be presented, emphasizing importance of good mentorship to career and personal satisfaction. Specific examples of successful and less successful approaches to mentoring will be described.

PAPER PRESENTATION

4:00 PM — 6:00 PM
Room S105

Adult Reconstruction Hip V: Infection/Other
Moderator(s): Kevin L. Garvin, MD, Omaha, NE
Bryan D. Springer, MD, Charlotte, NC

4:00 PM  PAPER: 481

• Nasal Decolonization of Staphylococcus aureus with Antimicrobial Photodynamic Therapy
Elizabeth Bryce, DMed, Vancouver, BC, Canada
Titus Wong, MD, Vancouver, BC, Canada
Diane Roscoe, MD, Vancouver, BC, Canada
Cate Street, PhD, MBA, Mundelein, IL
Deborah Jeske, RN, Burnaby, BC, Canada
Bassam A. Masri, MD, FRCS, Vancouver, BC, Canada
Shelagh Weatherill, MA, RN, Vancouver, BC, Canada
Leslie Forrester, Vancouver, BC, Canada

Intranasal antimicrobial photodynamic therapy is a safe and effective method of decreasing surgical site infections in orthopaedic patients.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Thursday, March 21

4:06 PM
PAPER: 482
Optimal ESR and CRP Cut-off Values Based on New Criteria for Periprosthetic Joint Infection
Pouya Alijanipour, MD, Málaga, Spain
Hooman Bakhshe, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

In this large-scale single-institution study, optimal cut-off values for ESR and CRP were calculated based on recently defined criteria for diagnosis of periprosthetic joint infection.

4:12 PM
PAPER: 483
Allogeneic Blood Transfusions and Postoperative Infections after Orthopaedic Surgery
Richard J. Friedman, MD, Charleston, SC
Martin Homering, PhD, Wuppertal, Germany
Susanne Hess, MD, Berlin, Germany
Scott D. Berkowitz, MD, Montville, NJ

Postoperative infections were significantly increased after elective total hip or knee arthroplasty in patients who received allogeneic compared with autologous or no blood transfusion.

4:24 PM
PAPER: 484
Association between Surgical Site Infections and Antiocoagulant Thromboprophylaxis following Elective THA or TKA
Zhong Wang, PhD, Bethesda, MD
Frederick A. Anderson, PhD, Worcester, MA
Michael M. Ward, MD, Bethesda, MD
Timothy Bhattacharyya, MD, Bethesda, MD

Anticoagulants have been extensively used to reduce the risk of venous thromboembolism (VTE) for surgical patients. However, concern remains for surgical site complications besides bleeding. We sought

4:30 PM
PAPER: 485
Total Hip Arthroplasty Following Ancient Native Hip Joint Infection
Nathaniel J. Nelms, MD, Burlington, VT
Rafael J. Sierra, MD, Rochester, MN

Retrospective review of primary total hip arthroplasty in patients with a history of childhood hip infection. Nineteen patients with no reinfections at average 67 month follow up

4:36 PM
PAPER: 486
Use of an Antibiotic Cement Spacer in Two-stage Revision of Infected Hip Arthroplasty
Vijay Kumar, MD, New Delhi, India
Bhavuk Garg, MS Ortho, New Delhi, India
Rajesh Malhotra, MS, New Delhi, India

Two-stage revision THA using an antibiotic-impregnated cement spacer is a useful technique for treating infected hip arthroplasty.

4:48 PM
PAPER: 487
Use of Massive Structural Allografts in Revision of Infected Total Hip Replacement
Rajesh Malhotra, MS, New Delhi, India
Vijay Kumar, MD, New Delhi, India
Bhavuk Garg, MS Ortho, New Delhi, India

Massive allografts are useful in two stage revision of infected total hip arthroplasty.

4:54 PM
PAPER: 488
Reduced Re-Infection Rates with Postoperative Oral Antibiotics After Two-Stage Revision Hip Arthroplasty
Aaron J. Johnson, MD, Baltimore, MD
Lynne C. Jones, PhD, Baltimore, MD
Ronald E. Delanois, MD, Baltimore, MD
David A. Stroh, MD, Baltimore, MD
Michael A. Mont, MD, Baltimore, MD

This study demonstrates that patients undergoing two-stage revision hip arthroplasty had reduced re-infection rates when receiving oral postoperative antibiotics.

5:00 PM
PAPER: 489
Are Multiple Cultures Worth the Effort? Impact on Hip and Knee Revision Arthroplasty
Alexander DeHaan, MD, Portland, OR
Michael Kuhne, MD, Portland, OR
Yee-Cheen Doung, MD, Portland, OR
James B. Hayden, MD, Lake Oswego, OR
Thomas Huff, MD, Portland, OR
Penelope Barnes, MBBS, PhD, Portland, OR
Kathryn Schabel, MD, Portland, OR

5 or more biopsies held for 10 day incubation altered antibiotic management in 13% of hip and knee revision arthroplasty cases, while predicting joint sterility 95% of the time.

5:12 PM
PAPER: 490
Comprehensive Look at Blood Transfusion Utilization in Total Joint Arthroplasty at a Single Academic Medical Center
Sean Robinson, Brookline, MA
Sam Volin, Falmouth, ME
Eric L. Smith, MD, Boston, MA

Pre-operative hematocrit is the strongest predictor of future transfusion, primary total knee had the greatest autologous waste and primary total hip required the most transfused units.
Thursday, March 21

5:18 PM  PAPER: 491
Comparison of Real-time Polymerase Chain Reaction and Frozen Section in Diagnosing Periprosthetic Infection
Yushi Miyamae, MD, PhD, Yokohama, Japan
Yutaka Inaba, MD, Yokohama, Japan
Naomi Kobayashi, MD, Yokohama, Japan
Hyomin Choe, MD, Yokohama, Japan
Hiroyuki Ike, MD, Yokohama Kanagawa, Japan
Tomoyuki Saito, MD, Yokohama, Japan

This study demonstrated that real-time PCR and frozen section have different roles in diagnosing periprosthetic infection. It is important to consider each characteristic of both tests.

5:24 PM  PAPER: 492
The Fracture Pattern and Incidence of Osteoporotic Sequential Hip Fractures
Taek R. Yoon, MD, PhD, Jeonnam, Republic of Korea
Jong-Keun Seon, MD, Hwasungun, Republic of Korea
Eun K. Song, MD, Hwasun-Gun, Republic of Korea
Kyung Soon Park, MD, Jeonnam, Republic of Korea
Jae-Wook Byun, MD, Gwangju, Republic of Korea

A sequential hip fracture showed correlation with previous contralateral hip fracture pattern.

5:36 PM  PAPER: 493
Surgical Anatomy of the Inferior Retinacular Branch of the Medial Femoral Circumflex Artery
Lionel E. Lazaro, MD, New York, NY
Peter K. Sculco, MD, New York, NY
Nadine Pardue, BS, New York, NY
Craig Klinger, BS, New York, NY
Marshall B. Berkes, MD, New York, NY
David L. Helfet, MD, New York, NY
Bryan T. Kelly, MD, New York, NY
Edwin P. Su, MD, New York, NY
Dean G. Lorich, MD, New York, NY

This study provides topographic anatomy of the inferior retinacular artery, a constant branch of the MFCA that penetrates the capsule inferiomedially and can be preserved with a careful capsulotomy.

5:42 PM  PAPER: 494
Patient Perceptions of the Cost of Total Hip and Knee Arthroplasty
Joseph Maratt, MD, Ann Arbor, MI
Joel J. Gagnier, PhD, Ann Arbor, MI
M M. Gomberawalla, MD, Ann Arbor, MI
Sharon E. Reske, RN, BS, Ann Arbor, MI
Brian R. Hallstrom, MD, Ann Arbor, MI
Andrew G. Urguhart, MD, Ann Arbor, MI

Patients who underwent hip or knee arthroplasty were surveyed post-operatively to determine their understanding of surgeon and hospital cost and reimbursement for their procedures.

5:48 PM  PAPER: 495
Characteristics and Trends of Published Adult Hip Research over the Last Decade
Jeong J. Yoo, MD, Seoul, Republic of Korea
Pil Whan Yoon, MD, Seoul, Republic of Korea
Young-Kyun Lee, MD, Seongnam-Si, Republic of Korea
Moon Seok Park, MD, Sungnam, Republic of Korea
Kyung-Hoi Koo, MD, Seongnam-Si, Republic of Korea
Kang Sup Yoon, MD, Seoul, Republic of Korea
Hee J. Kim, MD, Seoul, Republic of Korea

The United States is the most productive country in adult hip research in selected journals. An oligopoly led by several countries is disclosed in this systematic review.

Discussion - 6 Minutes

5:54 PM  PAPER: 496
Outcomes of Massive Rotator Cuff Tears Treated with Porcine Dermal Tissue Matrix
Anil K. Gupta, MD, Durham, NC
Kevin T. Hug, MD, Seattle, WA
Blake Boggess, DO, Durham, NC
Gavigan Molly, RN, JD, Durham, NC
Alison P. Toth, MD, Durham, NC

Purpose of this study was to evaluate the clinical and sonographic outcomes of interposition repair of massive rotator cuff tears through a mini-open approach using porcine dermal tissue matrix.

4:00 PM — 6:00 PM
Room N427
Sports Medicine/Arthroscopy VI: Shoulder (RC), Elbow
Moderator(s): Diane L. Dahm, MD, Rochester, MN
Morgan H. Jones, MD, Cleveland Heights, OH

4:06 PM  PAPER: 497
Mid-term Outcome of Concomitant Rotator Cuff Repair and Calcium Excision with Average Follow Up of 48 Months
Eddie Y. Lo, MD, Dallas, TX
Ronald P. Karzel, MD, Van Nuys, CA

Although most patients with calcific tendonitis undergo arthroscopic debridement only, some require additional cuff repair. In this study, calcium excision and cuff repair leads to >90% success.

Discussion - 6 Minutes

4:12 PM  PAPER: 498
Surgeon-Sonographer Interaction on Ultrasound Diagnosis of Rotator Cuff Tears: Five-Year Study in 775 Shoulders
Adrian Kurz, MBBS, Wollongong, Australia
Mattheew J. Kelly, MD, Camp Hill, PA
Lisa Briggs, Sonographer, Coogee, Australia
George A. Marrrell, MD, Kogarah, Australia

This cohort study showed improvement in the diagnostic utility of office-based ultrasound over time, mostly with respect to accuracy for detection, and ability to predict size, of rotator cuff tears.

Discussion - 6 Minutes

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Thursday, March 21

4:24 PM  PAPER: 499
Arthroscopic Repair of Concomitant Slap Lesions and Large to Massive Cuff Tears: Comparison with Biceps Tenotomy
Sung-Jae Kim, MD, Seoul, Republic of Korea
Sung-Hwan Kim, MD, Seoul, Republic of Korea
Seong-Hun Kim, MD, Seoul, Republic of Korea
Su Keon A. Lee, MD, Seoul, Republic of Korea
Min Jung, MD, Seoul, Republic of Korea
Yun-Rak Choi, MD, PhD, Seoul, Republic of Korea
Jae-Hoo Lee, MD, Seoul, Republic of Korea
Yong-Min Chun, MD, Seoul, Republic of Korea

The outcomes of simultaneous arthroscopic SLAP and rotator cuff repair were inferior to those of arthroscopic biceps tenotomy and cuff repair in large to massive rotator cuff tear.

4:30 PM  PAPER: 500
Biomechanical and Clinical Results of an Arthroscopic, Knotless, Intra-articular Biceps Tenodesis Technique
Darin D. Nye, MD, Pittsburgh, PA
Brian Waterman, MD, El Paso, TX
Sam Akhavan, MD, Sewickley, PA

We present biomechanical data and clinical follow-up for an all-arthroscopic, knotless proximal biceps tenodesis technique.

4:36 PM  PAPER: 501
The Effect of Anchor Length and Insertion Angle on Suture Anchor Pullout Strength
Samuel Linford, MD, Salt Lake City, UT
Christopher West, BS, Houston, TX
Gregory J. Stoddard, MPH, Salt Lake City, UT
Benjamin Widmer, MD, Murray, UT
Hugh S. West Jr, MD, Salt Lake City, UT

This study characterizes the effect of the insertion angle and anchor length on the suture anchor pullout strength in both normal and osteoporotic bone models.

4:48 PM  PAPER: 502
Effect of Capitellar Osteochondral Defect on Elbow Valgus Laxity and Radiocapitellar Contact Pressure
Teruhisa Mihata, MD, PhD, Osaka, Japan
Ryan Quigley, BS, Long Beach, CA
Grant W. Rohschaux, MD, Orange, CA
Michelle H. McGarry, MD, Long Beach, CA
Thay Q. Lee, PhD, Long Beach, CA

Both central and lateral capitellar osteochondral defects increased elbow valgus laxity; radiocapitellar joint contact pressure was also increased with lateral osteochondral defects.

4:54 PM  PAPER: 503
Osteochondritis Dissecans of the Humeral Capitellum Among Teenage Baseball Players; Survey Using Ultrasonography
Yoshikazu Kida, MD, Kyoto, Japan
Toru Morihara, MD, Kyoto, Japan
Yoshibiro Kotoura, MD, Kyoto, Japan
Tsuyoshi Sukenari, MD, Kyoto, Japan
Ryo Oda, MD, Kyoto, Japan
Tatsuya Hojo, Koyotanabe, Japan
Yuji Arai, Kamigyo-ku, Kyoto, Japan
Hiroyoshi Fujisawa, MD, Kyoto, Japan
Toshikazu Kubo, MD, Kyoto, Japan

The prevalence of osteochondritis dissecans of the humeral capitellum among teenage baseball players (n=1912) was 3.6%, which were investigated in field by portable ultrasonography.

5:00 PM  PAPER: 504
Platelet Rich Plasma Significantly Improves Clinical Outcomes in Patients with Chronic Tennis Elbow
Allen K. Mishra, MD, Menlo Park, CA
Nebojsa V. Skrepnik, MD, Tucson, AZ
Scott G. Edwards, MD, Washington, DC
Grant L. Jones, MD, Columbus, OH
Steve Sampson, DO, Los Angeles, CA
Doug A. Vermillion, MD, Anchorage, AK
Matthew L. Ramsey, MD, Philadelphia, PA
David Karli, Vail, CO
Arthur C. Retig, MD, Indianapolis, IN

In a prospective, randomized, double-blind, controlled trial of 230 patients with tennis elbow, needling with platelet rich plasma significantly improved clinical outcomes compared to needling alone.

5:12 PM  PAPER: 505
Ultrasound Assessment of the Medial Ulnar Collateral Ligament Distal Ulnar Attachment
Lutul D. Farrow, MD, Garfield Heights, OH
Andrew P. Mahoney, MD, Tucson, AZ
Mark S. Schickendantz, MD, Cleveland, OH
Joseph E. Sheppard, MD, Anchorage, AK
Mihra S. Tafjanzovic, MD, Tucson, AZ

We are the first to present the previously undescribed sonographic anatomy of the MUCL distal ulnar attachment.
Thursday, March 21

5:18 PM  PAPER: 506
The Docking Technique for Elbow Ulnar Collateral Ligament Insufficiency: Two-Year Follow Up in Adolescent Athletes
Kristofer Jones, MD, New York, NY
Joshua Dines, MD, Great Neck, NY
Brian Rebollodo, MD, New York, NY
Kenneth D. Weeks, MD, New York, NY
David M. Dines, MD, Great Neck, NY
David W. Altchek, MD, New York, NY

Previous reports suggest moderately favorable outcomes in adolescent athletes following UCL reconstruction. We hypothesized more favorable outcomes using the docking technique.

5:24 PM  PAPER: 507
Using Dynamic Elbow Ultrasound to Characterize Ulnar Collateral Ligament Abnormalities in Baseball Pitchers
Michael G. Ciccotti, MD, Philadelphia, PA
Alfred Atanda, MD, Philadelphia, PA
Levon N. Nazarian, MD, Philadelphia, PA
Steven B. Cohen, MD, Media, PA
Laurens Holmes, PhD, DrPH, Wilmington, DE
Christopher Dodson, MD, Philadelphia, PA

Using Dynamic Elbow Ultrasound to Characterize Ulnar Collateral Ligament Abnormalities in Baseball Pitchers.

5:36 PM  PAPER: 508
Characterizing Bone Tunnel Placement in Elbow MUCL Reconstruction Utilizing Computer Simulated CT Modeling
Ian R. Byram, MD, Franklin, TN
Krish Kharap, BS, New York, NY
Thomas R. Gardner, MCE, New York, NY
Christopher S. Ahmad, MD, New York, NY

This study demonstrates the effects of varying tunnel starting point, angle, and diameter on maximal bone tunnel length and bone bridge size for multiple techniques in elbow MUCL reconstruction.

5:42 PM  PAPER: 509
Functional Outcomes Following Revision Elbow UCL Reconstruction in Major League Baseball Pitchers
Joshua Dines, MD, Great Neck, NY
Kristofer Jones, MD, New York, NY
Stan Conte, PT, San Carlos, CA
Neal S. ElAttrache, MD, Los Angeles, CA

The rate of return to competitive pitching is low amongst MLB pitchers following revision UCL reconstruction. Starting pitchers may be at higher risk for treatment failure relative to relief pitchers.

5:48 PM  PAPER: 510
Long Term Outcomes after Ulnar Collateral Ligament Reconstruction in Competitive Baseball Players
Daryl C. Osbahr, MD, Baltimore, MD
E. Lyle Cain Jr, MD, Birmingham, AL
Benjamin T. Raines, MA, ATC, Decatur, AL
Dave Fortenbaugh, PhD, Birmingham, AL
Jeffrey R. Dugas, MD, Birmingham, AL
James R. Andrews, MD, Gulf Breeze, FL

Baseball players who underwent UCL reconstruction during their career had excellent long-term follow-up outcomes in relation to their baseball and post-baseball career.

4:00 PM — 6:00 PM
Room N426
Shoulder and Elbow III: Reverse Arthroplasty and Revision Shoulder Arthroplasty
Moderator(s): Joseph P. Iannotti, MD, Cleveland, OH
Jon JP Warner, MD, Boston, MA

4:06 PM  PAPER: 511
Reverse Shoulder Arthroplasty for Proximal Humeral Fractures in the Elderly: Results with Minimum One-Year FU
Tjarco D. Alta, MD, Amstelveen, Netherlands
Lauryl Decroocq, Lorigues, France
Grégoire Moineau, MD
Francois Sirvenaux, PhD, Nancy, France
Philippe Clavert, MD, PhD, Illkirch, France
Luc Favard, MD, Tours, France
Nicholas Brassart, Cagnes Sur Mer, France
Pascal Boileau, MD, Nice, France

In proximal humeral fractures of the elderly, tuberosity healing (associated with active ROM) can be achieved by reattachment and bone grafting around a specific Reverse Fracture prosthesis.

4:12 PM  PAPER: 512
Hemiarthroplasty vs. Reverse Shoulder Arthroplasty for the Treatment of Proximal Humeral Fractures in the Elderly
Derek J. Cuff, MD, Venice, FL
Derek Pupello, Tampa, FL

This study is a comparison of hemiarthroplasty versus reverse shoulder arthroplasty for the treatment of comminuted proximal humeral fractures in elderly patients.

4:24 PM  PAPER: 513
Hemiarthroplasty vs. Reverse Shoulder Arthroplasty for the Treatment of Proximal Humeral Fractures in the Elderly
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* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.
Thursday, March 21

4:24 PM  PAPER: 514  Bony Increased Offset Reverse Shoulder Arthroplasty: Results of a Prospective Randomized Control Trial
Clayton H. Riley, MD, Little Rock, AR
Raj H. Shani, MD, Houston, TX
Daniel O’Connor, PhD, Houston, TX
Hussein A. Elkousy, MD, Houston, TX
Gary M. Gartsman, MD, Houston, TX
Thomas B. Edwards, MD, Houston, TX

Grafting of the glenoid with a cancellous autograft employing the bony increased offset reverse shoulder arthroplasty technique did not offer any radiographic or clinical benefits.

4:30 PM  PAPER: 515  Randomized Controlled Trial of Concentric versus Eccentric Glenospheres in Reverse Shoulder Arthroplasty
Simon Young, MD, Auckland, New Zealand
Peter Poon, MD, Auckland, New Zealand
Justin, Chuan-Tsung Chou, Whangarei, New Zealand
Peter Mutch, MD, Wellington South, New Zealand

Eccentric glenospheres reduce inferior scapular notching in reverse shoulder arthroplasty.

4:36 PM  PAPER: 516  Scapular Morphology and Surgical Techniques as Predictors of Notching in Reverse Shoulder Arthroplasty
Vani J. Sabesan, MD, Kalamazoo, MI
Mark C. Callanan, MA, Grand Rapids, MI
George M. Ghareeb, BS, Grand Rapids, MI
J. Michael Wiater, MD, Beverly Hills, MI
Joseph P. Iannotti, MD, PhD, Cleveland, OH

Our results shows that previously published predictors of scapular notching do not hold true and do not support an universal index for predicting scapular notching in patients who have undergone a primary RSA.

4:48 PM  PAPER: 517  Reverse Shoulder Arthroplasty with Deltoid Insufficiency
Alexandre Laedermann, MD, Meyrin, Switzerland
Gilles Walch, MD, Lyon, France
Patrick J. Denard, MD, Medford, OR
Philippe Collin, St Gregoire, France
Luc Favard, MD, Tours, France
Francois Sirveaux, PhD, Nancy, France
Thomas B. Edwards, MD, Houston, TX
Pascal Bosleau, MD, Nice, France

Mid to long-term functional outcome and patient satisfaction of RSA implanted in the setting of deltoid insufficiency.

4:54 PM  PAPER: 518  Acromial Fractures after Reverse Shoulder Arthroplasty: Multicenter Evaluation of Risk Factors
Randall Otto, MD, Fenton, MO
Nazeem Virani, MD, MPH, Tampa, FL
Phillip T. Nigro, MD, Darien, IL
Jonathan C. Levy, MD, Fort Lauderdale, FL
Mark A. Frankle, MD, Temple Terrace, FL

Osteoporosis is a risk factor for acromial fractures after RSA. Radiographs unreliably detect fractures, but serial films may improve detection. The current classification is not reproducible.

5:00 PM  PAPER: 519  Infection after Anatomic & Reverse Total Shoulder Arthroplasty - Is there a Difference?
Paul D. Lane Jr, MD, Augusta, GA
Lynn A. Crosby, MD, Augusta, GA
Anthony V. Florschutz, MD, Augusta, GA

The goal of this study was to determine if there was a difference in the rate of infections seen after anatomic total shoulder arthroplasty versus reverse total shoulder arthroplasty.

5:12 PM  PAPER: 520  Early Dislocation Following Reverse Total Shoulder Arthroplasty: An Evaluation of Risk Factors
Gregory P. Nicholson, MD, Chicago, IL
Daniel Enriquez, MA, Chicago, IL
Anthony A. Romeo, MD, Chicago, IL
Stacy L. Twigg, PA-C, Chicago, IL

Early dislocations of RTSA , unrelated to a fall, are uncommon, but do occur. In this study the most common factors were a BMI over 30, male gender, and any type of previous surgery.

5:18 PM  PAPER: 521  Salvage Reverse Shoulder Arthroplasty in Patients Less than 65 Years - Results After Minimum Five Years
Eugene Ek, MBBS, PhD, New York, NY
Lisa Neukom, MD, Zurich, Switzerland
Sabrina Catanzaro, Zurich, Switzerland
Dominik C. Meyer, MD, Zurich, Switzerland
Christian Gerber, MD, Zurich, Switzerland

RSA is a reliable salvage option for relatively young patients with debilitating complex shoulder problems where there is a non-functioning rotator cuff.
Thursday, March 21

5:24 PM  
**PAPER: 522**
**Effects of Glenosphere Positioning on Internal and External Rotation Following Reverse Shoulder Arthroplasty**
Xinning Li, MD, Lexington, MA
ZaKary A. Knutson, MD, Oklahoma City, OK
Daniel Choi, MS, New York, NY
Daniel Lobatto, MSc, Naarden, Netherlands
Joseph D. Lipman, MS, New York, NY
Edward V. Craig, MD, New York, NY
Russell F. Warren, MD, New York, NY
Lawrence Gulotta, MD, New York, NY

Glenosphere position significantly affected humeral internal and external rotation after RTSA. Inferior translation or lateralization appears to have the most beneficial effects.

- Discussion - 6 Minutes

5:36 PM  
**PAPER: 523**
**Revision Shoulder Arthroplasty Without Humeral Stem Removal**
Eugene Ek, MBBS, PhD, New York, NY
Karl Wieser, Zollikon, Switzerland
Sarbrina Catanzaro, Zurich, Switzerland
Silvan Beeler, MD, Zurich, Switzerland
Olivier Verborgt, MD, PhD, Vilrijk, Belgium
Christian Gerber, MD, Zurich, Switzerland

Revision shoulder arthroplasty using a modular system has substantial advantages especially when there is a well-fixed humeral stem.

5:42 PM  
**PAPER: 524**
**Revision Total Shoulder Arthroplasty With or Without Humeral Stem Removal, How Much of a Difference Does it Make?**
Lynn A. Crosby, MD, Augusta, GA
Joseph D. Zuckerman, MD, New York, NY
Thomas W. Wright, MD, Gainesville, FL

The results of revision TSA without humeral stem removal results in fewer complications and is significantly less expensive. The functional results with or without stem removal are similar.

5:48 PM  
**PAPER: 525**
**Readmission After Shoulder Arthroplasty - Causes and Risk Factors**
William W. Schairer, San Francisco, CA
Brian T. Feeley, MD, San Francisco, CA

This study assessed utilization of emergency or inpatient care following shoulder arthroplasty and identified risk factors associated hospital readmission.

5:54 PM  
**PAPER: 828**
**The Role of Eccentric and Offset Humeral Head Variations in Total Shoulder Arthroplasty**
Adam Sassoon, MD, Orlando, FL
Bradley Schoch, MD, Rochester, MN
Peter C. Rhee, MD, Rochester, MN
Cathy Schleck, BS, Rochester, MN
William Harmsen, MS, Rochester, MN
John W. Sperling, MD, MBA, Rochester, MN
Robert H. Cofield, MD, Rochester, MN

Clinical and radiographic outcomes of standard, eccentric, and offset humeral heads are equivalent after 4.7 years follow-up. No specific complications related to head design were demonstrated.

- Discussion - 6 Minutes
Thursday, March 21

4:12 PM  PAPER: 528  Management of Open Femur Fractures in a Developing Country Using the Surgical Implant Generation Network (SIGN) Nail
Paul S. Whiting, MD, Boston, MA
Daniel D. Galat, MD, Bomet, Kenya
Douglas W. Lundy, MD, Marietta, GA

Open femur fractures can be managed effectively using the SIGN nail with low rates of deep infection and non-union, despite significant delays from injury to IV antibiotics and debridement.

4:24 PM  PAPER: 529  Multi-Disciplinary Care of the Hip Fracture Patient
Manish S. Noticewala, MD, New York, NY
Jonathan H. Lee, MD, New York, NY
William B. Macaulay, MD, New York, NY
Jeffrey A. Geller, MD, New York, NY

A comprehensive multi-disciplinary team leads to improved clinical processes but does not impact complication or mortality rates in hip fracture patients.

4:30 PM  PAPER: 530  Reduced Mortality in Hip Fracture Patients: Combining a Perioperative Approach and Medical Home Care
Jove Graham, PhD, Danville, PA
Thomas R. Bowen, MD, Danville, PA
Kent Strohecker, MS, Danville, PA
Kaan Irgit, MD, Ankara, Turkey
Wade R. Smith, MD, Englewood, CO

This prospective study showed patients receiving post-discharge care from a Medical Home program showed benefits in terms of reduced mortality, with similar costs and functional outcomes at 12 months.

4:36 PM  PAPER: 531  Predicting the Need for Blood Transfusion in Patients with Hip Fractures
Assaf Kadar, MD, Giwatayim, Israel
Ofir Chechik, MD, Ramat Hasharon, Israel
Ely L. Steinberg, MD, Rishob LeZion, Israel
Amir Sternheim, Toronto, ON, Canada

The study assesses the variables effecting blood transfusion requirement in patients with hip fracture. Based on the data we suggest an algorithm to predict which patient will need blood transfusion.

Earnest C. Casstevens, Cincinnati, OH
James P. Martens, MD, Owens Crossroads, AL
Michael T. Archdeacon, MD, Cincinnati, OH
Theodore T. Le, MD, Cincinnati, OH
John D. Wyrick, MD, Cincinnati, OH

The goal of this study was to compare perioperative factors between hip fracture patients taking clopidogrel to a comorbidity-matched cohort not on clopidogrel.

5:00 PM  PAPER: 534  Survivorship, Utilization Trends and Cost Analysis of Uncemented Hip Hemiarthroplasty in a Community Registry
Daniel P. Hoeffel, MD, Woodbury, MN
Brandon J. Kelly, Saint Paul, MN
Penny Tatman, MPH, Saint Paul, MN
Susan C. Mehl, Saint Paul, MN
Kathleen Killeen, OT, Woodbury, MN

A community based registry identified increased use of uncemented hip hemiarthroplasty. Survivorship and cost analysis was performed to examine financial justification/impact.

5:12 PM  PAPER: 535  Twenty-year Experience with Rigid Intramedullary Nailing of Skeletally Immature Femur Fractures
Samuel Crosby, MD, Nashville, TN
Daniel Koehler, MD, Iowa City, IA
Gregory A. Mencio, MD, Nashville, TN
Neil E. Green, MD, Nashville, TN
Steven A. Lovejoy, MD, Nashville, TN
Jonathan G. Schoenecker, MD, Nashville, TN
Jeffrey E. Martus, MD, MS, Nashville, TN

A retrospective review of 241 skeletally immature patients undergoing rigid intramedullary nailing of femur fractures over a 22-year period with clinical and radiographic outcomes.

An alphabetical faculty financial disclosure list can be found starting on page 292.
The purpose of this study was to evaluate the influence of coronal and sagittal plane malreductions on time to union of subtrochanteric femur fractures treated with an intramedullary device.

Timing intervals of femur fracture treatment are highly correlated to known, available, and quantifiable country data on health and economics and may be used as indicators for trauma system efficiency.

Rotation or flexion of the femur as an aid in fracture reduction results in quantifiable inaccuracies when neck-shaft angle and tip-apex distances are considered.

Is it Safe to Place a Retrograde Femoral Intramedullary Nail through a Traumatic Knee Arthroscopy?
Jesse E. Bible, MD, MHS, Nashville, TN
Rishin Kadakia, Nashville, TN
Ankeet Choxi, BS, Nashville, TN
Jennifer M. Bauer, MD, Nashville, TN
Hassan R. Mir, MD, Nashville, TN

This is the first study to investigate retrograde femoral nail placement through a traumatic knee arthroscopy with comparison to 2 control groups with no difference found in union rates or infection.

The metal articular surface of the metal implant for secondary osteochondral defects of the talus can be overgrowth with cartilage-like tissue.

Discussion - 6 Minutes
Thursday, March 21

4:24 PM
PAPER: 544
Comparison of Arthroscopic and Histological Evaluation on Injured Anterior Talofibular Ligament
Youichi Yasui, MD, Tokyo, Japan
Masato Takao, MD, Itabashi, Japan
Wataru Miyamoto, Tokyo, Japan
Shinya Miki, MD, Tokyo, Japan
Jun Sasahara, MD, Tokyo, Japan
Kenichiro Nakajima, MD, Tokyo, Japan
Fumito Komatsu, MD, PhD, Ibaraki, Japan
Ken Innami, Tokyo, Japan
Takashi Matsushita, MD, Tokyo, Japan

This study suggests the possibility that anterior talofibular ligament (ATFL) remnant did not have enough strength for early accelerated rehabilitation after repair of ATFL.

4:30 PM
PAPER: 545
Dynamic Ankle Stabilization using Extensor Digitorum Brevis Muscle Transfer - A Single Surgeon Case Series
Jagan M. Velpula, MRCS, Suttoncoldfield, United Kingdom
Krishnaveni Nayini, MBBS, Derby, United Kingdom
Aswin Pimpalnerkar, FRCS (Ortho), Suttoncoldfield, United Kingdom

Dynamic Ankle Stabilisation using Extensor Digitorum Brevis muscle transfer - a Single Surgeon Case Series.

4:36 PM
PAPER: 546
Outcomes Following Lateral Ankle Ligament Repair versus Reconstruction
Lauren M. Matheny, Vail, CO
Thomas O. Clanton, MD, Vail, CO

Outcomes following lateral ankle ligament repair and reconstruction were similar. Patients who underwent reconstruction had significantly longer time from injury to surgery.

Discussion - 6 Minutes

4:48 PM
PAPER: 547
Anatomic Lateral Ligament Reconstruction with Semitendinosus Allograft for Chronic Lateral Ankle Instability
Brian Dierckman, MD, Westfield, IN
Richard D. Ferkel, MD, Van Nuys, CA

Anatomic lateral ankle ligament reconstruction with semitendinosus allograft and modified Brostrom procedure for treatment of chronic lateral ankle instability.

4:54 PM
PAPER: 548
Intermittent Pneumatic Compression Therapy Reduces the Risk for Deep Vein Thrombosis after Achilles Tendon Surgery
Erica Averud, MD, Stockholm, Sweden
Ali Latifi, MSc, Stockholm, Sweden
Fausto Labruto, MD, PhD, Stockholm, Sweden
Gunnar Nilsson, MD, PhD, Stockholm, Sweden
Paul W. W. Ackermann, MD, PhD, Stockholm, Sweden

Lower limb surgery has demonstrated high incidences of deep venous thrombosis (DVT), such as after Achilles tendon rupture (ATR) surgery, 36%. Moreover, pharmacoprophylaxis with Dalteparin has not been shown to affect the incidence of DVT after ATR surgery.

5:00 PM
PAPER: 549
SER IV Ankle Fractures: Is it Better to Have an Unrepaired Ligament or an Anatomically Fixed Malleolus?
Marschall B. Berkes, MD, New York, NY
Milton T. Little, MD, New York, NY
Lionel E. Lazaro, MD, New York, NY
Nadine Pardee, BS, New York, NY
Patrick C. Schottel, MD, New York, NY
Lauren E. Lamont, MD, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorich, MD, New York, NY

SER IV ankles with ligament injury and healing enjoy no better outcomes compared to those relying on bony healing of multiple malleolus fractures assuming anatomic reduction is achieved.

Discussion - 6 Minutes

5:12 PM
PAPER: 550
Outcomes of a Z-Lengthening (Griend) Calcaneal Osteotomy for Adult-Acquired Flatfoot Deformity
Constantine Demetracopoulos, MD, New York, NY
Pallavi Nair, BS, Washington, DC
Andrew Malzberg, BA, New York, NY
Jonathan T. Deland, MD, New York, NY

Patients who underwent a Griend osteotomy for AAFD demonstrated correction of the deformity, complete healing at a mean of 7.7 weeks, and an improvement in FAOS and SF-36 functional scores.

5:18 PM
PAPER: 551
Results of Surgical Correction in Grade II Posterior Tibial Tendon Dysfunction: A 24-Month Follow Up
Amila Silva, MBBS, Singapore, Singapore
David Hsien Ching H. Su, FRCS, MBBS, Singapore, Singapore
Hwei Chi Chong, Singapore, Singapore
Inderjeet S. Singh Rikbraj, MD, Singapore, Singapore

Grade 2 PTPTD could be effectively treated with double calcaneal osteotomies, tendo-achilles lengthening and Flexor Digitorum longus transfer to the Navicular. A clinical and radiological outcome study.
Thursday, March 21

5:24 PM  PAPER: 552
Passive and Functional Mobility of the Medial Column after Lateral Column Lengthening Procedure
Heather Barske, MD, Vancouver, BC, Canada
Ruth Chimenti, DPT, Rochester, NY
Elizabeth A. Martin, MD, Rochester, NY
Josh Tome, MS, Rochester, NY
Adolf S. Flemister Jr, MD, Rochester, NY
Jeff R. Houck, PhD, PT, Rochester, NY

Subjects after LCL surgery for Stage II Adult Acquired Flatfoot Dysfunction demonstrate increased medial column dorsiflexion both passively and functionally.

Discussion - 6 Minutes

5:36 PM  PAPER: 553
Can We Tell if the Syndesmosis is Reduced using Fluoroscopy?
Paul Tornetta III, MD, Boston, MA
Scott Koenig, MD, Chestnut Hill, MA
Gabriel Merlin, MD, Boston, MA
Yelena Bogdan, MD, Boston, MA

The purpose of this study was to evaluate the ability of surgeons to determine if the fibula is reduced, anteriorly displaced, or posteriorly displaced based on fluoroscopic images.

5:42 PM  PAPER: 554
Diagnosing Chronic Instability of the Syndesmosis - A Novel Measurement using Computed Tomography
Gautam Malhotra, MD, Chicago, IL
James I. Cameron, MD, Chicago, IL
Brian C. Toolan, MD, Flossmoor, IL

Based on axial CT scans we describe a novel technique, using an angular measurement as well as a measure of area, to aid in the diagnosis of syndesmotic instability.

5:48 PM  PAPER: 555
Evaluation of Clinical Measurements of the Ankle Syndesmosis with a 3D Model
Thomas Ebinger, MD, Iowa City, IA
Jessica Goetz, PhD, Iowa City, IA
Lori Dolan, PhD, Iowa City, IA
Phinit Phisitkul, MD, Iowa City, IA

We evaluated existing clinical measurements of the ankle syndesmosis on CT by comparing to a 3D Model.

Discussion - 6 Minutes

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Friday, March 22

**SURGICAL SKILLS COURSE**

7:00 AM — 10:00 AM

10SK  **Reverse Shoulder Arthroplasty**  
**Moderator:** Edward G. McFarland, MD, Lutherville, MD  
Lynn A. Crosby, MD, Augusta, GA  
Xavier A. Durulde, MD, Atlanta, GA  
Guido Marra, MD, Chicago, IL  
Steve A. Petersen, MD, Lutherville, MD  

A surgical skills course that encompasses the theory and methodology of reverse shoulder arthroplasty as applied to primary and revision situations. Simulated bone models only.

**SYMPOSIUM**

8:00 AM — 10:00 AM  
Grand Ballroom  

**Optimizing Management of Patients with Metal-on-Metal Hips (U)**  
**Moderator:** Adolph V. Lombardi Jr, MD, New Albany, OH  

Case-based presentations and discussion will illustrate challenges in diagnosis and treatment of patients with metal-on-metal hip arthroplasties. Current evidence and recommendations including a systematic diagnostic algorithm will be presented.

I. **Risk Stratification for MoM Hip Arthroplasty**  
   **Adolph V. Lombardi Jr, MD, New Albany, OH**

II. **Case Presentations and Discussion**  
   **Moderator:** Adolph V. Lombardi Jr, MD, New Albany, OH  
   **Panel:** Thomas K. Febrin, MD, Charlotte, NC, Joshua J. Jacobs, MD, Chicago, IL, Young-Min Kwon, PhD, Philadelphia, PA, Michael A. Mont, MD, Baltimore, MD, Thomas P. Schmalzried, MD, Los Angeles, CA

III. **Causes of Pain in MoM Hip Arthroplasty Other Than Adverse Local Tissue Reaction?**  
    **Thomas P. Schmalzried, MD, Los Angeles, CA**

IV. **Case Presentations and Discussion**  
   **Moderator:** Adolph V. Lombardi Jr, MD, New Albany, OH  
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V. **Significance of Serum Metal Ions in MoM Hip Arthroplasty**  
   **Thomas K. Febrin, MD, Charlotte, NC**

VI. **Case Presentations and Discussion**  
   **Moderator:** Adolph V. Lombardi Jr, MD, New Albany, OH  
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VII. **Use of MRI in Evaluating Soft Tissue Reactions Around MoM Hip Arthroplasty**  
    **Young-Min Kwon, PhD, Philadelphia, PA**

VIII. **Case Presentations and Discussion**  
   **Moderator:** Adolph V. Lombardi Jr, MD, New Albany, OH  
   **Panel:** Thomas K. Febrin, MD, Charlotte, NC, Joshua J. Jacobs, MD, Chicago, IL, Young-Min Kwon, PhD, Philadelphia, PA, Michael A. Mont, MD, Baltimore, MD, Thomas P. Schmalzried, MD, Los Angeles, CA

IX. **The Addictive Effect of Taper Corrosion in MoM Hip Arthroplasty**  
   **Joshua J. Jacobs, MD, Chicago, IL**

X. **Case Presentations and Discussion**  
   **Moderator:** Adolph V. Lombardi Jr, MD, New Albany, OH  
   **Panel:** Thomas K. Febrin, MD, Charlotte, NC, Joshua J. Jacobs, MD, Chicago, IL, Young-Min Kwon, PhD, Philadelphia, PA, Michael A. Mont, MD, Baltimore, MD, Thomas P. Schmalzried, MD, Los Angeles, CA

XI. **A Summary of the Clinical Results to Date with MoM Hip Arthroplasty**  
   **Michael A. Mont, MD, Baltimore, MD**

XII. **Case Presentations and Discussion**  
    **Moderator:** Adolph V. Lombardi Jr, MD, New Albany, OH  
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VIII. Conclusion/Take Home Message
John R. Tongue, MD, Tualatin, OR

IX. Questions and Answers
John R. Tongue, MD, Tualatin, OR

The Social and Economic Value of Orthopaedic Surgery (V)
Moderator: John R. Tongue, MD, Tualatin, OR
The AAOS commissioned a health economist to assist with assessing the societal and economic value of musculoskeletal care for a broad range of conditions and treatments. This symposium represents the culmination of a two-phase project to develop a model for valuing musculoskeletal care, and then apply it to estimate the value of surgical treatments for end-stage osteoarthritis of the knee, hip fracture, disc herniation, rotator cuff tears, and anterior cruciate ligament tears. Surgery for end-stage osteoarthritis of the knee, hip fracture, and disc herniation were found to benefit society more than the additional direct medical costs. Although the societal benefits from rotator cuff repair and ACL repair were not found to offset treatment costs, these surgical treatments yield significant improvements in quality of life per dollar of increased medical costs. With the growing emphasis on increasing the value of the U.S. healthcare system, data such as this, demonstrating the societal value of orthopaedic surgery, will be increasingly important to insure that patients have access to these treatment options.

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**404** How to Build a Safe and Quality Orthopaedic OR Team in 2013: A Tool Kit to Improve Surgical Outcomes for Your Patients  
*Room S504a*  
*Moderator: William J. Robb III, MD, Winnetka, IL, Dwight W. Barney III, MD, Albuquerque, NM, David Jevsevar, MD, MBA, Saint George, UT, William J. Richardson, MD, Durham, NC*  
Surgical safety is now established as a critical core element of surgical quality and value. Validated and reliable surgical processes are now available to reduce surgical errors and improve surgical patient outcomes. Incorporating these processes in all parts of orthopaedic practice is essential to insure that all patients benefit from our care. Review role of safety in your practice and provide you with the tools needed to directly benefit your patients.

**405** Magnetic Resonance Imaging of the Knee and Shoulder  
*Room S502*  
*Moderator: Dennis D. Crawford, MD, Portland, OR, Lynne S. Steinbach, MD, San Francisco, CA, Carl S. Winslaski, MD, Cleveland, OH*  
Overview of MRI diagnostic criteria for injury and conditions of the knee and shoulder including pitfalls, confounders and potential applications for novel technologies is planned.

**406** What Every Resident Should Know About Distal Radius Fractures  
*Room S106a*  
*Moderator: Kevin F. Lutsky, MD, Egg Harbor Township, NJ, Martin I. Boyer, MD, Saint Louis, MO, Douglas P. Hanel, MD, Seattle, WA, Jesse B. Jupiter, MD, Boston, MA*  
Review wrist fractures treated by hand surgeons including information residents and fellows should know while preparing for practice, the in-training and boards.

**407** Hip Pathology in the Adolescent Athlete  
*Room S106b*  
*Moderator: Jeremy S. Frank, MD, Hollywood, FL, Peter Gambaccorta, DO, Clarence Ctr, NY, Lyle J. Micheli, MD, Boston, MA, Ira Zaltz, MD, Royal Oak, MI*  
Hip and groin pathology in the adolescent athlete is an emerging topic in young adult sports medicine. Expert faculty will review various etiologies and treatment options in this ever evolving field within sports medicine.

**408** The Art of Teaching Orthopaedic Surgery  
*Room S103a*  
Will provide the learner with an assessment of barriers to the implementation of modern teaching strategies in orthopaedic residencies and will discuss the historical and current models for training in the US. Focus on the didactic and clinical education options currently available to programs training orthopaedic learners. Discuss methods for evaluation and present methods to improve resident assessment. Question and answer period for audience participation.

**409** How About That Proximal Biceps Tendon?  
*Room N228*  
*Moderator: Richard J. Hawkins, MD, Greenville, SC, Robert H. Bell, MD, Akron, OH, Robert T. Burks, MD, Salt Lake City, UT, Peter B. MacDonald, MD, Winnipeg, MB, Canada*  
Feature basic science along with associated pathologies such as: massive rotator cuff tears and the treatment, tenotomy vs tenodesis in various techniques of biceps tenodesis.

**410** Degenerative Spondylolisthesis: A Participant Driven Interactive Program for Evidence Based Decision Making  
*Room S104*  
*Moderator: Mark B. Dekutoski, MD, Rochester, MN, John R. Dimar II, MD, Louisville, KY, Paul M. Huddleston, MD, Rochester, MN, Ahmad Nassr, MD, Rochester, MN, Joseph H. Perra, MD, Minneapolis, MN, James D. Schwender, MD, Minneapolis, MN, Adam L. Wollowick, MD, New York, NY*  
A case based, interactive, educational session focused on contemporary practice and evidence in the management of degenerative spondylolisthesis.

**411** Arthroscopic Management of Shoulder Instabilities: Anterior, Posterior and Multidirectional  
*Room S501*  
*Moderator: Richard L. Angelo, MD, Woodinville, WA, Brian J. Cole, MD, MBA, Chicago, IL, Laurence D. Higgins, MD, Boston, MA, Felix H. Savoie III, MD, New Orleans, LA*  
Hybrid course with 50% lectures including “Mistakes I’ve Made” and 50% patient-based clinical case controversies followed by audience questions.

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Friday, March 22

412 Locked and Minimally Invasive Plating: Technique, Advantages, Unique Properties and Potential Pitfalls
Moderator: Stephen Kottmeier, MD, Stony Brook, NY
Clifford B. Jones, MD, FACS, Grand Rapids, MI
Thomas A. Russell, MD, Eads, TN
Paul Tornetta III, MD, Boston, MA

How do we incorporate our past knowledge an experience with newer techniques and implants in plate and screw fixation? Place locking plate technologies and minimally invasive surgery in proper perspective and assist the surgeon in how to optimally apply and configure these new techniques and concepts.

413 Implant Removal: Point - Counterpoint - When to Remove When Not to Remove
Moderator: David Seligson, MD, Louisville, KY
James F. Kellam, MD, Charlotte, NC
Robert Geoff Richards, PhD, Davos-Platz, Switzerland
Dagmar Vos, MD, Breda, Netherlands

This lively counterpoint covers the metallurgical facts, the indications, and practical technique tips on implant removal.

414 The Changing Landscape of Orthopaedic Practice: What are the Options
Moderator: Gerald R. Williams Jr, MD, Philadelphia, PA
Bernard F. Morrey, MD, San Antonio, TX
Richard H. Rothman, MD, Philadelphia, PA
Roger D. Strode, JD, Chicago, IL

Describe the characteristics of full time employed, pure private practice, and hybrid practice models in addition to implications for each type of health care reform.

PAPER PRESENTATION

8:00 AM — 10:00 AM
Room S105
Adult Reconstruction Hip VI: Bearings in Total Hip Arthroplasty / Non-Arthroplasty
Moderator(s): Douglas E. Padgett, MD, New York, NY
Richard E. White Jr, MD, Albuquerque, NM

8:00 AM
Matched Ceramic-Ceramic versus Ceramic-Polyethylene on the Contralateral Hip: A 30-Year Study
Philippe Hernigou, PhD, Creteil France, France
Alexandre Poignant, MD, Creteil, France
Charles Henri Flouzaat-Lachaniette, MD, Creteil, France

with the first generation of alumina, better survivorship without osteolysis, easier revision, no re-revision, and no late dislocation were the advantages of AL/AL at 30 years follow-up.

8:06 AM
Long Term Wear of Highly Cross-Linked Polyethylene in Total Hip Arthroplasty: A Ten-Year Double Blind RCT Using RSA
Patrick Garfield Roberts, MBBS, Oxford, United Kingdom
Geraint E. Thomas, MA, MBBS, Oxford, United Kingdom
Antony Palmer, MA, BMBC, Oxford, United Kingdom
Duncan Whitwell, FRCS, Oxford, United Kingdom
Adrian Taylor, MBBS, FRCS, Oxford, United Kingdom
Peter McLardy-Smith, FRCS, Oxford, United Kingdom
Harinderjit Gill, PhD, Oxford/Oxon, United Kingdom
David W. Murray, MD, Oxford, United Kingdom
Sion Glynt-Jones, MA, MBBS, Oxford, United Kingdom

The wear of HXLPE is significantly lower than that of conventional UHMWPE after creep has occurred. This may decrease the incidence of failure due to osteolysis and aseptic loosening.

8:12 AM
RCT Comparison after a Minimal 8-year Follow Up of XLPE Versus Contemporary Annealed Polyethylene in THA
Jean Langlois, MD, Paris, France
Franck Atlan, MD, Paris, France
Jean-Pierre Courpied, PhD, Paris, France
Moussa Hamadouche, PhD, Paris, France

This paper compares the minimum 8-year penetration rate of highly cross-linked versus contemporary annealed sockets using the Martell system.

8:24 AM
The 8-year Wear of Highly Cross-Linked Polyethylene in Total Hip Arthroplasty for Developmental Dysplasia of the Hip
Atsuko Sato, MD, Tokyo, Japan
Masaaki Matsuura, MD, Tokyo, Japan
Akimasa Kimura, MD, Tokyo, Japan
Hiroyuki Ogawa, Tokyo, Japan

The radiographic results of highly cross-linked polyethylene is reported in this, randomized, controlled trial. The highly cross-linked polyethylene liners has a significantly lower wear rate.

8:30 AM
RSA Evaluation of Vitamin E Doped Highly Cross-linked Polyethylene and Acetabular and Femoral Component Stability
Meridith E. Greene, Boston, MA
Nanna Sillesen, Boston, MA
Audrey Nebergall, Boston, MA
Harry E. Rubash, MD, Boston, MA
Young-Min Kwon, MD, PhD, Boston, MA
Charles R. Bragdon, PhD, Boston, MA
Henrik Malchau, MD, Boston, MA

Radiostereometric Analysis shows no significant migration of the cup or stem as well as encouraging early wear results of the Vitamin E doped highly cross-linked polyethylene at the 3 year follow-up.

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Friday, March 22

8:36 AM  PAPER: 561  Multi-center Analysis of Clinical Factors Affecting Polyethylene Wear in 945 Total Hip Arthroplasties
Christopher J. Barr, BS, Boston, MA
Charles R. Bragdon, PhD, Boston, MA
Young-Min Kwon, MD, PhD, Boston, MA
John M. Martell, MD, Chicago, IL
Henrik Malchau, MD, Boston, MA

A number of factors affecting clinical outcomes of THA have been identified. We sought to evaluate the role of clinical and demographic factors in polyethylene wear in a large cohort of patients.

8:48 AM  PAPER: 562  Evidence of Permanent Oxidative Stabilization of Bearing Materials in Crosslinked Vitamin E Grafted Polyethylene
Gavin Braithwaite, PhD, Boston, MA
Stephen Spiegelberg, Boston, MA
Norman Stark, MSc, MBA, Winterthur, Switzerland
Ming Guo, PhD, Warsaw, IN
Alicia Rufner, MSc, Warsaw, IN
Andrew A. Freiberg, MD, Boston, MA

Evidence of permanent attachment of antioxidant in blended Vitamin E polyethylene points to the possibility of enhanced, longer-lived, protection in modern total arthroplasty bearings.

8:54 AM  PAPER: 563  The Role of M1 and M2 Macrophage Polarization in Wear Particle-Induced Osteolysis
Allison J. Rao, BA, Stanford, CA
Emmanuel Gibon, MD, Paris, France
Christophe Nich, MD, PhD, Stanford, CA
R. Lane, PhD, Stanford, CA
Stuart B. Goodman, MD, Redwood City, CA

Macrophages in particle-induced osteolysis are polarized towards an M1 pro-inflammatory phenotype, which can be changed to an M2 bone preserving response with the addition of IL-4.

9:00 AM  PAPER: 564  Role of Direct Estrogen Receptor Signaling in Wear Particle-Induced Osteolysis
Christophe Nich, MD, PhD, Stanford, CA
Roberto Valladares, BS, Stanford, CA
Allison J. Rao, BA, Stanford, CA
Stefan Zwengenberger, Dresden, Germany
Chenguang Li, BS, Stanford, CA
Zhenyu Yao, PhD, Stanford, CA
Herve Petitte, PhD
Moussa Hamadache, PhD, Paris, France
Stuart B. Goodman, MD, Redwood City, CA

This study provides evidence that estrogen receptors play a prominent role in particle-induced osteolysis, by modulating pro-inflammatory signals from macrophages. These findings open a new field of p.

9:12 AM  PAPER: 565  Outcomes after Periacetabular Osteotomy are Comparable to Total Hip Arthroplasty in Young Patients
Benjamin L. Gray, MD, Saint Louis, MO
John C. Clohisy, MD, Saint Louis, MO

While still viewed by many as a risky procedure with complications, periacetabular osteotomy can produce similar outcomes to total hip arthroplasty without the issues of survivorship of implants.

9:18 AM  PAPER: 566  Intermediate to Long-Term Results of Periacetabular Osteotomy in Patients Younger and Older Than Forty Years of Age
Hiroshi Ito, MD, Asahikawa, Japan
Hiromasa Tanino, MD, Asahikawa, Japan
Yasuhiro Yamanaka, MD, Asahikawa, Japan
Tatsuya Sato, MD, Asahikawa, Japan
Yasuhiro Nishida, MD, Asahikawa, Japan
Takeo Matuno, MD, Asahikawa, Japan

Periacetabular osteotomy yielded similar results for two groups at five-year follow-up, however, the results of the older group deteriorated thereafter.

9:24 AM  PAPER: 567  Obesity is a Major Risk Factor for Postoperative Complication after Periacetabular Osteotomy
Eduardo N. Novais, MD, Aurora, CO
Gorden D. Potter III, MD, Rochester, MN
Patrick Carry, Aurora, CO
John C. Clohisy, MD, Saint Louis, MO
Perry L. Schoenecker, MD, Saint Louis, MO
Robert T. Trousdale, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN

In this retrospective study, the odds of developing a complication after a Periacetabular Osteotomy were 10 greater for obese (BMI>30) compared non-obese patients.

9:36 AM  PAPER: 568  The Chiari Pelvic Osteotomy for Patients with Dysplastic Hips and Poor Joint Congruency
Hiroshi Ito, MD, Asahikawa, Japan
Hiromasa Tanino, MD, Asahikawa, Japan
Yasuhiro Yamanaka, MD, Asahikawa, Japan
Tatsuya Sato, MD, Asahikawa, Japan
Yasuhiro Nishida, MD, Asahikawa, Japan
Takeo Matuno, MD, Asahikawa, Japan

Chiari pelvic osteotomy still has a role in those cases showing preoperative poor joint congruency in abduction even for hips with advanced osteoarthritis.
The long-term results of RAO was satisfactory in early osteoarthritic patients, but was not in more advanced cases. Early joint preserving procedure is essential in case of symptomatic dysplastic hip.

We reported more good clinical and radiological results after TVO with shelf procedure compared with TVO only.

Early results using a short-stem humeral component demonstrated excellent results. The use of these implants with less reaming, possible less blood loss and ease of use in certain anatomical situation.

Ream and Run provides modest improvements in pain and function; however, patients require revision surgery on average less than 1 year postoperative rather than previous reports of 2 years.

The clinical outcome of humeral head resurfacing with soft tissue resurfacing of the glenoid has not yielded encouraging results, as both pain and function are not significantly improved.

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Friday, March 22

8:36 AM  PAPER: 576
The Outcomes of Full Thickness Rotator Cuff Repair during Anatomic Total Shoulder Arthroplasty
Juan P. Simone, MD, Buenos Aires, Argentina
Philipp N. Streubel, MD, Rochester, MN
George S. Athwal, MD, London, ON, Canada
John W. Sperling, MD, MBA, Rochester, MN
Robert H. Cofield, MD, Rochester, MN

Our results showed that full thickness rotator cuff repairs should be performed during total shoulder arthroplasty for patients with small sized tears.

9:12 AM  PAPER: 580
Sensitivity of Frozen Section Histology for Identifying P. acnes Infections in Revision Shoulder Arthroplasty
Matthew Grosso, BS, Roslyn, NY
Salvatore J. Frangiamore, MD, MS, Cleveland, OH
Eric T. Ricchetti, MD, Cleveland, OH
Geraldine Hall, Cleveland, OH
Thomas W. Bauer, MD, PhD, Cleveland, OH
Joseph P. Iannotti, MD, PhD, Cleveland, OH

Although better than preoperative serum tests, intraoperative frozen section histology was not reliable in determining the presence of a P. acnes infection in revision shoulder arthroplasty.

8:48 AM  PAPER: 577
Observation of Radiolucent Lines on Initial Post-op Radiographs using Modern Pegged Glenoid Design
Jonathan C. Levy, MD, Fort Lauderdale, FL
Sara Blum, PA-C, Fort Lauderdale, FL
Christopher R. Anderson, MS, Sunrise, FL

Using modern surgical techniques and peg glenoid components, initial post-operative radiolucent lines can be eliminated. Incomplete seating may be related to incomplete correction of glenoid version.

9:18 AM  PAPER: 581
Clinical Presentation of Hemolytic Strains of Propionibacterium acnes Shoulder Infections
Scott Nodzo, MD, Buffalo, NY
Donald W. Hohman Jr, MD, Buffalo, NY
John K. Crane, MD, PhD, Buffalo, NY
Thomas Duquen, MD, Buffalo, NY

We evaluated the clinical presentation of orthopedic shoulder infections with hemolytic and non-hemolytic strains of Propionibacterium acnes.

8:54 AM  PAPER: 578
Prognostic Factors for Positive Bacterial Cultures in a Large Shoulder Arthroplasty Revision Series
Paul Pottinger, MD, Seattle, WA
Susan M. Butler-Wu, PhD, Seattle, WA
Moni B. Neradilek, MS, Seattle, WA
Andrew L. Merritt, MD, New York, NY
Alexander Bertelsen, PA, Lynnwood, WA
Jocelyn L. Jette, BS, Seattle, WA
Winston J. Warne, MD, Bellevue, WA
Frederick A. Matsen III, MD, Seattle, WA

Pre- and intra-op factors prognosticate the risk of P. acnes positive culture. This evidence is clinically relevant regarding the critical question of prosthesis removal vs retention during revision.

9:24 AM  PAPER: 582
Propionibacterium acnes as a Pathogen in Shoulder Surgery-Antibiotic Sensitivities to Guide Treatment
Donald W. Hohman Jr, MD, Buffalo, NY
Scott Nodzo, MD, Buffalo, NY
John K. Crane, MD, PhD, Buffalo, NY
Cathy M. Buyea, Orchard Park, NY
Philip Stegemann, MD, Buffalo, NY
Thomas Duquen, MD, Buffalo, NY

This study investigated the antibiotic susceptibility patterns of P. acnes isolates from shoulder surgery infections and the biochemical diversity between the two groups.

9:00 AM  PAPER: 579
Infection Rates and Frozen Sections in Revision Shoulder and Elbow Surgery Holding Cultures 21 Days
Michael P. Beckett, MD, Santa Monica, CA
John M. Itamura, MD, Los Angeles, CA

With cultures held 21 days in revision shoulder/elbow surgery, Propionibacterium acnes, grew at an average of 12.5 days with 34% growing after 14 days, with poor correlation to frozen sections.

9:36 AM  PAPER: 583
Inhibition of Chondrocyte Death Following Exposure to Commonly Used Anesthetics
Allison J. Rao, BA, Stanford, CA
Tyler Johnston, MS, BA, Palo Alto, CA
R L. Smith, PhD, Stanford, CA
John G. Costouros, MD, Los Gatos, CA

This is the first report demonstrating inhibition of chondrocyte apoptosis following exposure to commonly used anesthetics.
Proteomic Analysis of Shoulder Osteoarthritis
John Paul Wanner, BS, Wauwatosa, WI
Roopa Shree Subbaiah, PhD, Cleveland, OH
Yousef Shishani, MD, Cleveland, OH
Olena Skomorovska-Proksolit, PhD, Cleveland, OH
Robert J. Gillespie, MD, Shaker Heights, OH
Eric Boslard, PhD, QC City, Canada
Sujatha Mohan, Yokohama, Japan
Masaru Miyagi, Cleveland, NY
Reuben Gobeze, MD, Cleveland, OH

Employing proteomic and bioinformatic analysis, this study examined the proteome of osteoarthritic shoulders at varying stages of OA progression to identify biomarkers and dysregulated pathways.

The Effect of Local Anesthetics on Synoviocytes: An Indirect Contributor to Chondrolysis?
Hillary Braun, BA, Redwood City, CA
Benjamin T. Busfield, MD, Antioch, CA
Hyeon Joo Kim, PhD
Gaetano J. Scuderi, MD, Jupiter, FL
Jason L. Dragoo, MD, Redwood City, CA

0.5% bupivacaine with epinephrine caused significant synoviocyte death. 0.5% bupivacaine alone produced a significant release of matrix metalloprotease which may contribute indirectly to chondrolysis.

Stability of Posteromedial Tibial Plateau Fracture Fragment - Size Does Matter
Igor Immerman, MD, Sacramento, CA
Danny F. Martinez, MS, New York, NY
Vanessa G. Cuellar, MD, New York, NY
Sonya Khurana, MD, Freehold, NJ
Scott R. Hadley, MD, New York, NY
Peter S. Walker, PhD, New York, NY
Kenneth A. Egol, MD, New York, NY

Stability of the knee joint and posteromedial tibial plateau fracture fragment depends on both fragment size and knee flexion.

Meniscal Tears in Tibial Plateau Fractures as Predicted by Measuring Internal Depression on CT Scans
Bryan Whitfield, MD, Washington, DC
Peter Alexandrov, MS, Washington, DC
Konstantinos Triantafillou, MD, Arlington, VA
Cary C. Schwartzbach, MD, Annandale, VA

In analyzing tibial plateau fractures and CT scans, we found a new measurement, internal depression, which creates a better model of predicting which fractures have a concurrent meniscal tear.

Tibial Plateau Fractures and Compartment Syndrome: Are Infection Rates Increased and Does the Timing of ORIF Matter?
Andrew G. Dubina, Millersville, MD
Theodore T. Manson, MD, Bel Air, MD
Robert V. O’Toole, MD, Baltimore, MD

Tibial plateau fractures with ipsilateral compartment syndrome are a clinical challenge with conflicting data regarding increased rates of infection versus the ideal time for operative fixation.

Diagnosing Acute Compartment Syndrome: Clarity at Last!
Kirsten G. Elliott, MRCS, Aberdeen, United Kingdom
Alan J. Johnstone, MD, Aberdeen, United Kingdom

A prospective clinical trial showing intramuscular pH outperforms pressure variables in diagnosing Acute Compartment Syndrome.

Delayed Primary Closure of Fasciotomy Wounds in the Lower Leg: Will They Close Next Time?
Trevor Owen, MD, Roanoke, VA
Mitchel B. Harris, MD, Boston, MA

Probability of delayed primary closure of fasciotomy wounds of the lower leg in the setting if tibial fractures decreases with each subsequent procedure.

Blowing Smoke: A Meta-Analysis of Smoking on Fracture Healing and Post-Operative Infection
Mara L. Schenker, MD, Philadelphia, PA
John A. Scolaro, MD, Seattle, WA
Sarah M. Yannascoli, MD, Philadelphia, PA
Keith D. Baldwin, MD, Sicklerville, NJ
Samir Mehta, MD, Philadelphia, PA

Smoking was associated with higher overall nonunion rates and a trend towards longer mean healing times in patients with fractures.

Discussion - 6 Minutes

Discussion - 6 Minutes

Discussion - 6 Minutes

Discussion - 6 Minutes

Discussion - 6 Minutes
Friday, March 22

8:48 AM PAPER: 592
Fractures Due to Gunshot Wounds: Do Retained Bullet Fragments Affect Union?
John Riehl, MD, Orlando, FL
Keith P. Connolly, BS, Orlando, FL
George J. Haidukewych, MD, Orlando, FL
Kenneth J. Koval, MD, Orlando, FL

This study examines the effect of retained bullet material near the fracture site on time to fracture union.

8:54 AM PAPER: 593
Ballistic Fractures of the Lower Extremities: A Review of Soft Tissue Complications from a Level I Trauma Center
James C. Black, MD, Atlanta, GA
Thomas J. Moore, MD, Atlanta, GA
Michael C. Yonz, MD, Lexington, KY
Whitney A. Barnes, Savannah, GA

The anatomic location of ballistic fractures in the lower extremities can predict an increased risk of infection, vascular injury and the development of compartment syndrome.

9:00 AM PAPER: 594
Prevalence and Risk Factors of Reinterventions following Reamed Intramedullary Tibia Nailing
Petros Z. Stavrou, N. Erythrea, Athens, Greece
Stylianos Theocharakis, Voula, Athens, Greece
Surbirah Gandhi, MBBS, MRCS, Wakefield, United Kingdom
Vincenzo Ciriello, Roma, Italy
Theodorus Tosoumidis, Thessaloniki, Greece
Nikolaos K. Kanakaris, MD, Leeds, United Kingdom
Peter Giannoudis, MD, FRCS, Leeds, United Kingdom

Prevalence and risk factors of reinterventions following Reamed Intramedullary Tibia Nailing.

Discussion - 6 Minutes

9:12 AM PAPER: 595
Twelve to Twenty-Two Year Outcomes of Tibial Shaft Fractures in 1,509 Patients
Leela C. Biant, FRCS (Ortho), MS, Edinburgh, United Kingdom
Vittoria Bucknall, BMSc, MBChB, Edinburgh, Scotland, United Kingdom
Clare L. Connelly, BMedSci (Hons), Edinburgh, United Kingdom
Margaret M. McQueen, MD, Edinburgh, United Kingdom
Charles M. Court-Brown, MD, Dalketh, United Kingdom

A 12 to 22 year follow up of 1509 consecutive patients with tibial shaft fracture demonstrates the negative impact on long-term function and economic outcomes.

9:18 AM PAPER: 596
Improved Outcomes with Antibiotic Cement Nails in the Treatment of Osteomyelitis
Daniel S. Chan, MD, Tampa, FL
Gerald E. Alexander, MD, Tampa, FL
Ian Smithson, MD, Lutz, FL
Kristopher Collins, MD, Tampa, FL
Henry C. Sagi, MD, Tampa, FL
Roy W. Sanders, MD, Tampa, FL

Reaming with the addition of antibiotic impregnated cement nails resulted in a markedly lower rate of osteomyelitis recurrence when compared to reaming alone, with an overall relative decrease of 76%.

9:24 AM PAPER: 597
Can We Place an Intramedullary Nail in Infected Non-unions of Tibia?
Professor Shahabuddin, Peshawar, Pakistan
Faseeh Shahab, MBBS, Peshawar, Pakistan

Infection and non-union are two dreaded complications for any procedure, but a combination is a nightmare. We present a paper in which infected non-unions of tibia were treated with SIGN IM-nails.

Discussion - 6 Minutes

9:36 AM PAPER: 598
Patella Fracture Fixation with Suture and Wire: You Reap What You Sew
Daniel O. Howard, BS, New York, NY
Alexa N. Monroy, BS, New York, NY
Roy Davidowitch, MD, New York, NY
Nirmal C. Tejwani, MD, New York, NY
Kenneth A. Egol, MD, New York, NY

We investigate outcomes of patients receiving suture intervention following inferior pole patella fractures.

9:42 AM PAPER: 599
Effect of Body Mass Index on Complications after Traumatic Extensor Mechanism Surgery
Ronald A. Navarro, MD, Rolling Hills, CA
Mary Helen Black, MS, PhD, Pasadena, CA
Bonnie Li, MS, Pasadena, CA
Wesley H. Tran, MD, Irvine, CA
Elliot Mendelsohn, MD, Manhattan Beach, CA
Christopher M. Hoshino, MD, Baltimore, MD

Higher BMI may be protective of complications after extensor mechanism injury. While contrary to conventional orthopaedic wisdom, this relationship has been reported in other surgical literature.

An alphabetical faculty financial disclosure list can be found starting on page 292.
The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

Friday, March 22

9:48 AM PAPER: 600

Functional Outcomes after Patella Fracture: Open Reduction Internal Fixation versus Partial Patellectomy
Nicolas Bonnaig, MD, Cincinnati, OH
Michael T. Archdeacon, MD, Cincinnati, OH
Earnest C. Cassie, Cincinnati, OH
Camille Comelly, MD, Cincinnati, OH

This study compares functional outcome between patients treated with open reduction internal fixation to patients treated with partial patellectomy following isolated patella fractures.

Discussion - 6 Minutes

8:12 AM PAPER: 603

The Importance of Central Screw Placement in the Distal and Proximal Pole in Scaphoid Waist Fractures
Geert Meermans, MD, Berchem, Belgium
Francis van Glabbeek, PhD, Edegem, Belgium
Marc Braem, DDS, PhD, Antwerpen, Belgium
Frederik Verschuren, MD, Deurne, Belgium

Central and eccentric screws in fixation of scaphoid waist fractures were compared. Central placement of the screws in the proximal and distal pole resulted in greater stiffness and load to failure.

Discussion - 6 Minutes

Friday 9:48 AM

PAPER: 600

Functional Outcomes after Patella Fracture: Open Reduction Internal Fixation versus Partial Patellectomy
Nicolas Bonnaig, MD, Cincinnati, OH
Michael T. Archdeacon, MD, Cincinnati, OH
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Discussion - 6 Minutes

8:12 AM PAPER: 603

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Discussion - 6 Minutes

8:24 AM PAPER: 604

Outcomes of Open Reduction and Internal Fixation of Acute Proximal Pole Scaphoid Fractures
David M. Brogan, MD, Rochester, MN
Steven L. Moran, MD, Rochester, MN
Alexander Yong Shik Shun, MD, Rochester, MN

Displacement and mechanism of proximal pole scaphoid injuries have the most significant effects on early rates of union after ORIF of acute proximal pole scaphoid fractures.

Discussion - 6 Minutes

8:24 AM PAPER: 604

Outcomes of Open Reduction and Internal Fixation of Acute Proximal Pole Scaphoid Fractures
David M. Brogan, MD, Rochester, MN
Steven L. Moran, MD, Rochester, MN
Alexander Yong Shik Shun, MD, Rochester, MN

Displacement and mechanism of proximal pole scaphoid injuries have the most significant effects on early rates of union after ORIF of acute proximal pole scaphoid fractures.

Discussion - 6 Minutes

8:30 AM PAPER: 605

Recommendation of a Minimal Set of Core Domains for Use in Distal Radius Fracture Clinical Practice and Research
Amy Hoang-Kim, MSc, Toronto, ON, Canada
Amy L. Ladd, MD, Palo Alto, CA
Joy C. MacDermid, PhD, London, ON, Canada
Francesco Pegoretti, MD, PhD, Bologna, Italy
Dorcus Beaton, OT, Toronto, ON, Canada

There are disputes on how to best incorporate the patient’s preferences and concerns, the purpose of our consensus-based approach was to define a core set of outcomes to be included in distal radius.

Discussion - 6 Minutes

8:36 AM PAPER: 606

Treatment Patterns, Outcomes and Cost of Care for Distal Radius Fracture Patients in the Medicare Population
Scott Farner, MD, Louisville, KY
Arthur L. Malkani, MD, Louisville, KY
Edmund Lau, MS, Menlo Park, CA
Judd Day, PhD, Philadelphia, PA
Jorge A. Ochoa, PhD, Bellevue, WA
Kevin Ong, Philadelphia, PA

A 5% Medicare database sample from 1997-2009 was utilized to compare trends, morbidity, and cost, including complications, associated with percutaneous and open treatment of distal radius fractures.

Discussion - 6 Minutes

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### Friday, March 22

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>8:48 AM</td>
<td>Biomechanical Study of Distal Locking Screw Configuration of Distal Radial Volar Locked Plating</td>
<td>Samuel Crosby, MD, Nashville, TN; Nicholas D. Fletcher, MD, Atlanta, GA; Erwin R. Yap, MS, Arlington, VA; Donald H. Lee, MD, Nashville, TN</td>
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<td>In a fracture model, there is no significant biomechanical difference in filling half versus filling all of the distal locking screws in volar locked plating of the distal radius.</td>
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<td>8:54 AM</td>
<td>Utility of Post-Operative Radiographs in Clinical Management of AO A-Type Distal Radius Fractures</td>
<td>Dexter Louie, BA, Boston, MA; Stephen J. Huffaker, MD, Jamaica Plain, MA; Brandon E. Earp, MD, Boston, MA; Philip E. Blazar, MD, Boston, MA</td>
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<td>Review of post-operative radiographs and clinic notes after A-type distal radius fracture stabilization with volar locking plate (VLP) found that 94.4% did not contribute to clinical decision-making.</td>
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<tr>
<td>9:00 AM</td>
<td>Temporary Loss of Normal Thumb Flexion after Volar Plate Fixation of Distal Radius Fractures</td>
<td>Brian Chilli, MD, Chicago, IL; Ronak Patel, MD, Chicago, IL; David M. Kalainov, MD, Chicago, IL</td>
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<td>Temporary loss of normal thumb flexion following volar plating of distal radius fractures may be a common phenomenon and is likely caused by intraoperative retraction and soft tissue stripping.</td>
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<td>9:12 AM</td>
<td>Metaanalysis of Functional Outcomes of Distal Radius Fractures: Internal Versus External Fixation Techniques</td>
<td>Chinyelu Menakaya, MB, BS, Yorkshire, United Kingdom; Rishi Malhotra, MBBS, Hull, United Kingdom; Muhammed Shah, MBBS, High Wycombe, United Kingdom; Helen Ingoo, Northumberland, United Kingdom; Timothy Boddice, MBBS, MSc, Hull, United Kingdom; Martin Bland, Heslington, United Kingdom; Amr Mabien, FRCS (Ortho), FRCS, Hull, United Kingdom</td>
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<td>Current literature supports better functional outcome following internal fixation over external fixation for distal radius fractures assessed with DASH.</td>
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<td>9:18 AM</td>
<td>Outcomes of Scapholunate Instability after Distal Radius Volar Plating</td>
<td>VA M. Mooney Jones, MD, Pittsburgh, PA; Nathan Everding, MD, Shaker Heights, OH; Jason M. Desmarais, Boston, MA; Maximilian C. Soong, MD, Peabody, MA</td>
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<td>Static scapholunate instability is uncommon despite early motion after internal fixation of distal radius fractures. There was no significant benefit from ligament repair in the intermediate term.</td>
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<td>9:24 AM</td>
<td>Arthroscopic Treatment of Dorsal Wrist Syndrome</td>
<td>Ramesh Srinivasan, MD, Ann Arbor, MI; Robert W. Wysocki Jr, MD, Chicago, IL; Deeptee Jain, BA, Durham, NC; Marc J. Richard, MD, Durham, NC; Fraser J. Leversedge, MD, Durham, NC; David S. Ruch, MD, Durham, NC</td>
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<td>Description of, management and clinical outcomes after arthroscopic treatment of Dorsal Wrist Syndrome (DWS).</td>
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<td>9:36 AM</td>
<td>Proximal Row Carpectomy: Minimum 20-year Follow Up</td>
<td>Lindley B. Wall, MD, Dallas, TX; Michael L. DiDonna, MD, Carmel, IN; Thomas R. Kiefhaber, MD, Cincinnati, OH; Peter J. Stern, MD, Cincinnati, OH</td>
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<td>PRC provides continued satisfaction and good wrist function at a minimum of twenty years, with a survival rate of 65%. Degenerative radiographic changes do not correlate with clinical outcome.</td>
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<td>9:42 AM</td>
<td>Comparison of the Midcarpal Contact Biomechanics after Radioscapholunate Arthrodesis &amp; Distal Scaphoid Excision</td>
<td>Adam Holleran, MD, Orange, CA; Ryan Quigley, BS, Long Beach, CA; Gregory H. Rafiah, MD, Orange, CA; Thay Q. Lee, PhD, Long Beach, CA</td>
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<td>The radioscapholunate fusion increased average and peak pressures at the scaphotrapeziozatepidal and lunocapitate joint. Distal scaphoid excision further increased average and peak pressures at the lu.</td>
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</tbody>
</table>
Total Wrist Arthrodesis vs. Total Wrist Arthroplasty for the Treatment of Posttraumatic Arthritis
James Watt, DO, Fort Walton Beach, FL
Jason Nydick, DO, Pensacola Beach, FL
Bailee Williams, BS, Temple Terrace, FL
Alfred V. Hess, MD, Temple Terrace, FL
This study compares total wrist arthroplasty in 13 patients to wrist arthrodesis in 12 patients for the treatment of posttraumatic arthritis.

Degenerative Osteoarthritis of the Second Metatarsophalangeal Joint Second Toe Rigidus
Jae Cho, MD, Seoul, Republic of Korea
Woo Chun Lee, Seoul, Republic of Korea
Hong Joon Choi, MD, Seoul, Republic of Korea
Ju P. Seok, MD, Seoul, Republic of Korea
Chulhyun Park, MD, Daegu, Republic of Korea
Kang Lee, MD, Seoul, Republic of Korea
Jiyong Ahn, MD, Seoul, Republic of Korea
Second toe rigidus should be considered a diagnosis in patients with painful limitation of dorsiflexion of the second metatarsophalangeal joint without evidence of Freiberg's infraction and trauma.

Novel Surgical Treatment for Dislocation of the Lesser Metatarsophalangeal Joint Associated with Hallux Valgus
Hiroaki Shima, MD, Osaka, Japan
Ryuzo Okuda, MD, Takatsuki, Japan
Toshito Yasuda, MD, Takatsuki City, Japan
Tsuyoshi Jotoku, MD, Osaka, Japan
Takashi Hida, MD, Osaka, Japan
Our procedure for hallux valgus with dislocation of the lesser MTP joint achieved good clinical and radiological outcomes.

Radiographic Evaluation of Plantar Plate Injury: An In Vitro Biomechanical Study
Norman Waldrop III, MD, Mountain Brook, AL
Chris A. Zirker, MSc, Vail, CO
Coen A. Wijdicks, PhD, Vail, CO
Robert F. LaPrade, MD, PhD, Vail, CO
Thomas O. Clanton, MD, Vail, CO
Turf toe is a debilitating condition requiring different treatment depending on the severity of injury. Our study is the first to quantify the extent of the injury based on radiographic measurements.

Reliability and Relationship of Radiographic Measurements in Hallux Valgus
Kyoung Min Lee, MD, Sungnam, Republic of Korea
Chin Y. Chung, MD,PhD, Seoul, Republic of Korea
Ki Hyuk Sung, MD, Kyungki, Republic of Korea
Seung Yeol Lee, MD, Seongnam, Republic of Korea
In H. Choi, MD, Seoul, Republic of Korea
Tae-Joon Cho, Seoul, Republic of Korea
Moon Seok Park, MD, Sungnam, Republic of Korea
We suggest using hallux valgus angle, intermetatarsal angle, interphalangeal angle, sesamoid rotation angle, and first metatarsal protrusion distance considering their reliability and prediction of the deformity.

Geographic and Demographic Variability in Cost and Surgical Correction of Hallux Valgus
Rodney Terrell, MD, Los Angeles, CA
William Pannell, BS, Los Angeles, CA
Scott Montgomery, MD, Venice, CA
Bayan Aghdasi, BA, Clovis, CA
Jeffrey C. Wang, MD, Sherman Oaks, CA
Nelson F. SooHoo, MD, Los Angeles, CA
A database search was performed to determine geographic and demographic variability in cost and surgical correction of hallux valgus.

Effects of First Ray Instability on Midfoot Joint Forces and Forefoot Ground Force Distribution: A Cadaver Study
John C. Tanner III, MD, Grandville, MI
Travis Burgers, PhD, Grand Rapids, MI
Cameron Patthanancharoenphon, MD, Grand Rapids, MI
Matthew J. Dubiel, MD, Grand Rapids, MI
James Mason, PhD, Grand Rapids, MI
Donald R. Bohay, MD, Grand Rapids, MI
John G. Anderson, MD, Grand Rapids, MI
A cadaveric assessment of sequential sectioning of select midfoot ligaments and their effect on forefoot ground force.
Friday, March 22

8:48 AM PAPER: 622
Prospective Randomized Comparative Study on V-Y and Pants-Over-Vest Capsulorrhaphy in Chevron and Scarf Osteotomy
Giovanni A. Matricali, MD, Zaventem, Belgium
Gert Vermeersch, MD, Vilvoorde, Belgium
Steffen Fieuws, PhD, Leuven, Belgium
Ellen Busschots, MD, Pellenberg, Belgium
Kevin Deschamps, MD, Pellenberg, Belgium

No statistical significant differences in loss of correction were seen between the V-Y and the pants-over-vest capsulorrhaphy groups for both the chevron and the scarf osteotomy.

8:54 AM PAPER: 623
The Effect of Metatarsus Adductus on Outcomes of the Scarf Bunionectomy
Erin E. Klein, DPM, MS, Mount Prospect, IL
Lowell S. Weil, DPM, Lake Forest, IL
Lowell S. Weil Sr, DPM, Des Plaines, IL
Jessica M. Knight, DPM, Des Plaines, IL
Mitchell B. Sheinkop, MD, Chicago, IL

A subtle increase in the metatarsus angle significantly decreased objective outcomes in patients who undergo a scarf bunionectomy.

9:00 AM PAPER: 624
Effect of Scarf Osteotomy on the First Cuneometatarsal Joint
Jean M. Brilhaut, MD, Tours, France
Vincent Noël, MD, Tours, France

This retrospective study conducted on 49 cases of hallux valgus treated with scarf osteotomy documented modification of the first cuneometatarsal joint potentially narrowing its indications.

9:12 AM PAPER: 625
Percutaneous Chevron Osteotomy; Description of a New Technique and Two-Year Follow Up vs. Standard Open Technique
Sureesha Svanathan, MD, London, United Kingdom
Samer S. Morgan, MRCS, Wigan, United Kingdom
Ibrahim Roushdi, MBBS, MRCS, Reigate, United Kingdom
Simon Palmer, FRCS, Angmering, West Sussex, United Kingdom

Minimally Invasive Chevron Osteotomy is as effective as the open surgical technique in patients with hallux valgus angle of 18° or less.

9:18 AM PAPER: 626
Base Opening Wedge Osteotomies for HAV Correction: Does it Increase the Length of the 1st Metatarsal?
Bret Smith, DO, Lexington, SC

Review of BOW osteotomies of the 1st MT for HAV correction and the effect on MT length.

9:24 AM PAPER: 627
Proximal Supination Osteotomy of the First Metatarsal for Hallux Valgus
Toshiro Yasuda, MD, Takatsuki City, Japan
Ryuzo Okuda, MD, Takatsuki, Japan
Tsuyoshi Jotoku, MD, Osaka, Japan
Hiroaki Shima, MD, Takatsuki City, Japan
Takashi Hida, MD, Osaka, Japan

We newly devised a proximal supination osteotomy of the first metatarsal for hallux valgus. This was an effective procedure for correction of hallux valgus and could provide the low rate of recurrence.

Discussion - 6 Minutes

9:36 AM PAPER: 628
Revision Metatarsophalangeal (MTP) Arthrodesis for Failed MTP Arthroplasty
Christopher E. Gross, MD, Chicago, IL
Andrew R. Hsu, MD, Chicago, IL
Johnny L. Lin, MD, Chicago, IL
George B. Holmes Jr, MD, Lisle, IL
Simon Lee, MD, Chicago, IL

While the salvage arthrodesis for failed silastic implants have generally favorable satisfaction rates and is a powerful tool in treating this painful condition, they are fraught with complications.

9:42 AM PAPER: 629
Can We Justify the Use of Pre-Contoured Plates for First Metatarsophalangeal Joint Arthrodesis?
Stephanie W. Mayer, MD, Durham, NC
Nicole Zelenski, BS, Durham, NC
Mark E. Easley, MD, Durham, NC
James K. DeOrio, MD, Durham, NC
James A. Nunley II, MD, Durham, NC

There is no difference in overall rate of union, time to union, complications, pain, or function between non-contoured and pre-contoured plates for first metatarsophalangeal joint fusion.

Discussion - 6 Minutes

9:48 AM PAPER: 630
Fluoroscopic Guided Steroid and Local Anaesthetic Injection for Tarso-metatarsal Osteoarthritis
Kamrul Hasan, MBBS, PhD, Essex, United Kingdom
Dishan Singh, ChB, Middlesex, United Kingdom
Chandra Pasapula, Norfolk, United Kingdom

There are no reports in the literature on the role of steroid and local anaesthetic injection for tarso-metatarsal joint (TMTJ) arthritis. A retrospective review of TMTJ injections performed in our department.

Discussion - 6 Minutes

An alphabetical faculty financial disclosure list can be found starting on page 292.
<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Speakers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instructional Course Lecture</strong></td>
<td>8:00 AM – 11:00 AM</td>
<td>Lakeside, Room E350</td>
<td>Current Management of Posterior Wall Fractures of the Acetabulum&lt;br&gt;Moderator: Berton R. Moed, MD, Saint Louis, MO&lt;br&gt;Philip J. Kregor, MD, Nashville, TN&lt;br&gt;Mark C. Reilly, MD, Newark, NJ&lt;br&gt;Michael D. Stover, MD, Chicago, IL&lt;br&gt;Mark S. Vrahas, MD, Boston, MA</td>
<td>Geared to community-based orthopaedic surgeons and those in training, will review posterior wall acetabular fracture radiology, surgical indications, surgical techniques, pitfalls and complications.</td>
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<td></td>
<td>10:30 AM – 11:30 AM</td>
<td>Room N227a</td>
<td>Using Social Media in Your Practice&lt;br&gt;Moderator: Tony Edwards, Omaha, NE&lt;br&gt;Bill Champion, Omaha, NE</td>
<td>This session will focus on utilizing social media in your medical practice. Learn tips and tricks that you can use to enhance your marketing through the use of Facebook, Twitter and other forms of social media.</td>
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<tr>
<td><strong>Orthopaedic Review Course</strong></td>
<td>8:00 AM – 5:35 PM</td>
<td>Lakeside, Room E354a</td>
<td>Orthopaedic Review Course&lt;br&gt;Moderator: David L. Skaggs, MD, Los Angeles, CA&lt;br&gt;Donald A. Wiss, MD, Los Angeles, CA&lt;br&gt;Steven L. Haddad, MD, Glenview, IL&lt;br&gt;Mark C. Miller, PhD, Pittsburgh, PA&lt;br&gt;Martin I. Boyer, MD, Saint Louis, MO&lt;br&gt;Ken Yamaguchi, MD, Chesterfield, MO&lt;br&gt;William C. Warner Jr, MD, Germantown, TN&lt;br&gt;Jeffrey R. Sawyer, MD, Germantown, TN&lt;br&gt;John M. Flynn, MD, Philadelphia, PA&lt;br&gt;Jens R. Chapman, MD, Seattle, WA&lt;br&gt;Todd J. Albert, MD, Philadelphia, PA&lt;br&gt;Joseph M. Lane, MD, New York, NY</td>
<td>Review of current knowledge on diagnosis and management of clinical problems from a nationally accepted orthopaedic practice perspective. Major sections of the course are pediatrics, upper and lower extremities, tumors and metabolic bone disease and spine. Each section includes discussion of fractures, complications, infections and trauma. Please note, the Orthopaedic Review Course is not intended as a review for the Board Examination; it is a review of orthopaedic basics. For more details see page 52.</td>
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<tr>
<td><strong>Symposium</strong></td>
<td>10:30 AM – 12:30 PM</td>
<td>Grand Ballroom</td>
<td>New Concepts Regarding Athletic Induced Mild Traumatic (Concussion) and Catastrophic Brain Injuries (W)&lt;br&gt;Moderator: Barry P. Boden, MD, Rockville, MD</td>
<td>Present a state of the art review of concussions and catastrophic brain injuries in sports. Review the epidemiology, mechanisms of injury, pathophysiology, injury susceptibility profiles, management, and prevention strategies for brain injury. The effectiveness of neurocognitive testing via Immediate Postconcussion Assessment and Cognitive Testing (ImPACT) and the head impact telemetry system (HITS) as clinical and research tools will be discussed. Best practices, policies, and education discussed with particular attention to return to play guidelines.</td>
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</tbody>
</table>
Friday, March 22

**SYMPOSIUM**
10:30 AM — 12:30 PM
Room S406

**Changing the Surgical Education Paradigm:**
*How Do You Teach Someone to Have the Surgical Skills of an Orthopaedic Surgeon? (X)*

**Sponsoring Society:** American Orthopaedic Association

**Moderator:** Ranjan Gupta, MD, Orange, CA

The reduction in resident work hours and an increased emphasis on core competencies that include ethics, basic science, patient safety, and non-operative care, has increased challenges in teaching residents how to operate and become effective orthopaedic surgeons. Discussion will include strategies to optimize surgical education, use of surgical skills labs, decreasing service-related activities, focused mentoring, robotic surgery, and psychometric testing. Discussion will include how to deal with a small group of surgeons who do not have the skills to operate competently.

I. **Education vs. Service**
   Augustus D. Mazzocca, MD, MS, West Hartford, CT

II. **Development and Application of a Surgical Skills Lab – “The Bioskills Lab”**
    Augustus D. Mazzocca, MD, MS, West Havenford, CT

III. **The Role of Surgical Simulation & Orthopaedic Surgery**
    Ranjan Gupta, MD, Orange, CA

IV. **The Technically Incompetent Resident**
    Peter J. Stern, MD, Cincinnati, OH

**SYMPOSIUM**
10:30 AM — 12:30 PM
Room S105

*Women as Surgeons and Patients: Obstacles and Solutions for Increasing Diversity and Improving Care (Y)*

**Moderator:** Caroline M Chebli, MD, Seattle, WA

Women comprise greater than 50% of the population of medical students, yet only 4% of orthopedists are women. This symposia will look at communication differences, sex specific medical and social issues, and ways to overcome the gender disparity in our profession.

I. **Barriers To Women Entering Orthopaedics From Medical School Forward**
    How Gender Impacts Training As An Orthopaedic Surgeon With An Emphasis On Education
    Ann E. Van Heest, MD, Minneapolis, MN

II. **Bridging the Gap: Exposure and Mentoring How You Can Participate To Increase Diversity**
    Lisa L. Lattanza, MD, San Francisco, CA

III. **Increasing Accuracy in Knee Arthroplasty**
    *Moderator: Emmanuel Thienpont, MD, Asse, Belgium*
    Wolfgang Fitz, MD, Sherborn, MA
    William J. Hozack, MD, Philadelphia, PA
    Jess H. Lonner, MD, Philadelphia, PA

During this course new tools are presented to increase accuracy in knee arthroplasty. Knee navigation, patient specific instruments, robotics and patient specific implants will be discussed.

IV. **Osteochondral Lesions of the Talus:**
    *Current Treatment Dilemmas*
    **Moderator:** Mark Glazebrook, MD, Halifax, NS, Canada
    Richard D. Ferkel, MD, Van Nuys, CA
    C. N. Van Dijk, MD, Abcoude, Netherlands
    Alastair S. E. Younger, MD, Vancouver, BC, Canada

Explore the natural history of the untreated osteochondral lesion of the talus, as well as the current treatment options, including arthroscopic autograft, allograft, or autologous chondrocyte implantation.

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An alphabetical faculty financial disclosure list can be found starting on page 292.

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Friday, March 22

424 Stress Management and Balance for the Orthopaedic Surgeon
Moderator: John M. Flynn, MD, Philadelphia, PA
Eric C. McCarty, MD, Boulder, CO
Peter M. Waters, MD, Boston, MA
Jennifer M. Weiss, MD, Los Angeles, CA
Orthopaedic surgeons work hard and stress can compromise performance. We address managing time and stress, life balance, maintaining happy families, and issues unique to the female orthopaedic surgeon.

425 Hand and Wrist Problems Orthopedic Treat (or should treat): Diagnostic and Operative Tips
Moderator: Nader Pakima, DO, New York, NY
Jeffrey A. Greenberg, MD, Indianapolis, IN
Fraser J. Leversedge, MD, Durham, NC
Anthony Sapinanza, MD, New York, NY
Focus on diagnostic and treatment pearls and avoiding pitfalls in the treatment of hand conditions by general orthopedic surgeons.

426 The Diagnosis and Management of Pediatric Elbow Injuries That Are Not Supracondylar Fractures
Moderator: Martin J. Herman, MD, Philadelphia, PA
Joshua M. Abzug, MD, Timonium, MD
Bernard D. Horn, MD, Philadelphia, PA
Scott H. Kozin, MD, Philadelphia, PA
Case-based course discusses pediatric elbow injuries except for supracondylar fractures. Fractures of radial neck, lateral condyle, and medial epicondyle among others will be presented.

427 Preparing a Medical Manuscript
Moderator: Charles R. Clark, MD, Iowa City, IA
Marc F. Swiontkowski, MD, Minneapolis, MN
Vernon T. Tolo, MD, Los Angeles, CA
Cover all aspects of medical writing with a focus on preparing an outline, methods and statistics and common writing errors. An audience participation section focuses on “how to state it better.”

428 What Went Wrong and What Was Done About It: Pitfalls in Treatment of Common Shoulder Surgery
Moderator: Gerald R. Williams Jr, MD, Philadelphia, PA
Gary M. Gartman, MD, Houston, TX
Edwin E. Spencer Jr, MD, Knoxville, TN
Joseph D. Zucker, MD, New York, NY
Address the common complications of arthroscopic cuff repair, Bankart repair, hemiarthroplasty for fracture, and acromioclavicular reconstruction in primarily a case-based format.

429 Complex Trauma to Shoulder Girdle Including Clavicle, Scapula and Proximal Humerus: Current Concepts in Diagnosis and Treatment
Moderator: Mark A. Mighell, MD, Tampa, FL
Frank A. Liporace, MD, Englewood Cliffs, NJ
Roy W. Sanders, MD, Tampa, FL
J. Tracy Watson, MD, Saint Louis, MO
Current concepts in treatment of acute and chronic trauma to the shoulder girdle including the clavicle, scapula and proximal humerus will be presented comprehensively.

430 Current Concepts in Cervical Spine Trauma
Moderator: John C. France, MD, Morgantown, West VA
Richard J. Bransford, MD, Seattle, WA
Alpesh A. Patel, MD, Maywood, IL
Alexander Vaccaro, MD, PhD, Gladwyne, PA
Review current concepts in evaluation and treatment of cervical spine trauma to include; upper and lower cervical fractures, spinal cord injury and central cord syndromes.

431 Cases and Controversies in Treatment of SLAP Injuries
Moderator: Felix H. Savoie III, MD, New Orleans, LA
Neal S. ElAttrache, MD, Los Angeles, CA
Michael J. O’Brien, MD, New Orleans, LA
Richard K. N. Ryu, Santa Barbara, CA
Improve diagnostic skills, and then learn to use these skills to determine the best treatment option for each case: Rehabilitation, Repair, or Tenodesis. Cases presented will include the young overhead athlete, a highly active middle age patient, a work related injury with pain, and a relatively sedentary patient with a positive MRI for a SLAP lesion. Emphasis on accurate physical examination techniques.

432 Surgical Techniques for Complex Proximal Tibia Fractures
David432 Bared, MD, FRCS(C), Seattle, WA
Gregory J. Della Rocca, MD, PhD, Columbia, MO
Michael Suk, MD, Danville, PA
Interactive discussion of intra-and-extra-articular proximal tibia fracture evaluation and management including soft tissue injuries, surgical approaches and reduction and fixation strategies.

434 Complex Skeletal Reconstruction in Infection, Post Trauma, and Tumor
Moderator: Joseph Benevenia, MD, Newark, NJ
Francis R. Patterson, MD, Newark, NJ
Michael S. Sirkkin, MD, Newark, NJ
Virak Tan, MD, Newark, NJ
Complex skeletal defects which having different etiologies may be approached with common principles of limb-preservation using biologic and endoprosthetic means. By using a multi subspecialty treatment approach the patient may be afforded many of the available options.

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* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
10:30 AM — 12:30 PM
Room N427

Trauma VI: Fracture Care: Miscellaneous
Moderator(s): Paul Duwelius, MD, Portland, OR
Edward J. Harvey, MD, MSc, Montreal, QC, Canada
Thomas A. Russell, MD, Eads, TN

10:30 AM  
Systemic Growth Factor Release Following Trauma
Hiang Boon Tan, MBBS, Leeds, United Kingdom
Elena Jones, PhD, Leeds, United Kingdom
Agata N. Burska, PhD, MSc, Leeds, United Kingdom
Karen Henshaw, MD, Leeds, United Kingdom
Dennis McGonagle, MD, Leeds, United Kingdom
Peter Giammoudis, MD, FRCS, Leeds, United Kingdom

The temporal pattern of growth factor release following trauma and the influence of trauma severity and traumatic brain injury is presented.

10:36 AM
Relevant Proteins in Bone Graft from the Iliac Crest Versus Harvested Using the RIA System and its Wastewater
Brett D Crist, MD, Columbia, MO
Aaron M. Stoker, MS, PhD, Columbia, MO
James L. Cook, DVM, PhD, Columbia, MO
James P. Stannard, MD, Columbia, MO

Bone graft harvested using the RIA system has similar osteogenic proteins compared to iliac crest autograft. The RIA wastewater is a significant source of osteogenic proteins as well.

10:42 AM
Rib Fracture Fixation Restores Inspiratory Volume and Peak Flow in a Full Thorax Human Cadaveric Breathing Model
Gerard Slobogean, MD, MPH, Toronto, ON, Canada
Hyunchul Kim, MS, College Park, MD
Adam H. Hsieh, PhD, College Park, MD
Robert V. O'Toole, MD, Baltimore, MD

Using a novel full thorax negative pressure breathing model, significant decreases in respiratory outcomes are seen with a flail chest and are subsequently normalized with plate fixation.

11:00 AM
Duration of Post-Operative Antibiotics for Open Fractures
Sara L. Miniaci, MD, Rochester, NY
Holman Chan, MD, Vancouver, BC, Canada
John P. Ketz, MD, Pittsford, NY
Catherine A. Humphrey, MD, Rochester, NY
John T. Gorczyca, MD, Rochester, NY
Jonathan M. Gross, MD, Rochester, NY

In this preliminary study, there is no statistical difference between post-operative antibiotic duration and the rate of infection in open fractures.

11:06 AM
Symptomatic Venous Thromboembolism in Low Energy Isolated Fractures in Hospitalized Patients
Colin J. Prensky, BA, New York, NY
Adriana Urnuela, BS, New York, NY
Michael S. Giess, MD, New York, NY
Raj Karia, MPH, New York, NY
Kenneth A. Egol, MD, New York, NY

1,701 low energy fracture patients were retrospectively studied to determine the incidence and factors associated with the development of symptomatic venous thromboembolic events.

11:18 AM
Can We Trust Ex Vivo Mechanical Testing of Cadaveric Specimens? The Effect of Specimen Temperature
Zane Hartsell, Memphis, TN
Jacob Cartner, Memphis, TN
Paul Tornetta III, MD, Boston, MA

This study evaluated the use of fresh frozen cadaveric femora at different temperatures from frozen to body temperature for biomechanical testing.

11:24 AM
Can Over-drilling the Near Cortex Reduce the Stiffness of Locking Plate-bone Constructs?
Jerry Chen, MBBS, Singapore, Singapore
Zhou Zhibong, MD, Singapore, Singapore
Benjamin Ang Fu Hong, MBBS, Singapore, Singapore
Andy Yew, PhD
Saw Meng Choo, PhD, Nanyang, Singapore
Shii-Ke Chia, MBBS, Singapore, Singapore
Joyce S. Koh, MD, Outram Road, Singapore
Tet S. Howe, MD, Singapore, Singapore

Over-drilling the near cortex with ‘Figure-of-8’ holes reduces the axial stiffness of the locking plate-bone construct without compromising the strength of the construct.
Friday, March 22

11:30 AM  PAPER: 639
**Mechanical Behavior and Failure Mode for Cross-threaded Locking Screws**  
Jacob Cartner, Memphis, TN  
Tim Petteys, Memphis, TN  
Paul Tornetta III, MD, Boston, MA  

These findings indicate that the practice of cross-threading locking screws may not be mechanically advantageous.

11:42 AM  PAPER: 640
**Evaluation of Heat Generated with Drill Tip K-wires**  
Zane Hartsell, Memphis, TN  
James Livingstone, MBBS, MD, Bristol, United Kingdom  

This study evaluated the use of both fluted and trochar tipped k-wires. Comparisons were made based on heat generated and time to insertion.

11:48 AM  PAPER: 641
**Analysis of Usage and Associated Cost of External Fixators at an Urban Level 1 Trauma Center**  
George W. Chaus, MD, Aurora, CO  
Chase A. Dukes, BA, MS, Denver, CO  
Eric M. Hammerberg, MD, Boulder, CO  

Three-year review of external fixator usage and cost demonstrates most fixators are used as temporary fixation, suggesting that used fixator components may be more appropriate and cost effective.

11:54 AM  PAPER: 642
**Pneumatic Tourniquets in Orthopaedic Surgery: What are the Safe Parameters?**  
Charles J. Jordan, MD, Coral Gables, FL  
Sean M. Bradley, BS, Seminole, FL  
Roy W. Sanders, MD, Tampa, FL  

This study suggests that in difficult cases, it is acceptable to use a tourniquet at a setting of 350 mm Hg for as long as 150 minutes without increased risk of tourniquet-associated complications.

12:06 PM  PAPER: 643
**Treatment and Complications in Orthopaedic Trauma Patients with Pulmonary Embolism**  
Yelena Bogdan, MD, Boston, MA  
Paul Tornetta III, MD, Boston, MA  
Ross K. Leighton, MD, Halifax, NS, Canada  
Henry C. Sagi, MD, Tampa, FL  
David Sanders, MD, London, ON, Canada  
Judith Siegel, MD, Worcester, MA  
Brian Mullis, MD, Indianapolis, IN  
Alysse Boyd, MA, Cleveland, OH  
Andrew H. Schmidt, MD, Minneapolis, MN  

A snapshot of PE management reveals high complication rates for anticoagulation, which are as common in lower risk clots as higher risk clots. We may alter our approach to treatment based on clot size.

12:12 PM  PAPER: 644
**Combat-Related Hemipelvectomy: Eleven Cases, a Review of the Literature and Lessons Learned**  
Jean-Claude D’Alleyrand, MD, Bethesda, MD  
Scott M. Tintle, MD, Fairfax, VA  
Mark Fleming, DO, Clarksburg, MD  
Wade T. Gordon, MD, Takoma Park, MD  
Romney C. Andersen, MD, Stafford, VA  
Brian Mullis, MD, Indianapolis, IN  
Benjamin K. Potter, MD, Bethesda, MD  

Trauma-related hemipelvectomy is a catastrophic injury that leaves little margin for error on the part of the treating surgeon and medical team.

12:18 PM  PAPER: 645
**Improving Decision-Making in Fracture Care: Cognitive Bias and Rational Choice**  
Joseph Bernstein, MD, Haverford, PA  
Jaimo Ahn, MD, PhD, Philadelphia, PA  

Our data indicate the potential for irrationality when patients consider fracture care options. Surgeons need to be aware of the cognitive biases which lead to irrational decision making.

12:24 PM  PAPER: 830
**Blockade Of Matrix Metalloproteinase-3 After Traumatic Nerve Injury Offers A Novel Treatment For Improving Functional Recovery**  
Tom Chao, MD, Carson, CA  
Derek Frump, BS, Irvine, CA  
Peter Hamb, MD, Irvine, CA  
Vincent Caiozzo, MD, Irvine, CA  
Tahseen Mozaffar, MD, Orange, CA  
Ranjit Gupta, MD, Orange, CA  

Discussion - 6 Minutes

The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Friday, March 22

PAPER PRESENTATION

10:30 AM — 12:30 PM  
Room N426

Adult Reconstruction Knee VI: Revision Total Knee Arthroplasty
Moderator(s): Gregg R. Klein, MD, Paramus, NJ  
Arthur L. Malkani, MD, Louisville, KY

10:30 AM  
PAPER: 646

One Intraoperative Dose of Tranexamic Acid is Safe and Effective in Revision Total Knee Arthroplasty
Kevin Smit, MD, London, ON, Canada  
Doug Naudie, MD, FRCSC, London, ON, Canada  
Fiona E. Ralley, MD, London, ON, Canada  
James Howard, MD, London, ON, Canada

One 20 mg/kg intraoperative dose of TXA significantly reduced red blood cells loss and transfusion rates in patients undergoing revision TKA and was not associated with an increased complication rate.

10:36 AM  
PAPER: 647

The Role of Primary Bearing Type in Revision Total Knee Arthroplasty
Wael K. Barsoum, MD, Bay Village, OH  
Kevin J. Bloom, BA, South Euclid, OH  
Joseph W. Caravella, BA, Bay Village, OH  
Alison K. Klika, MS, Cleveland, OH  
Yousef Shishani, MD, Cleveland, OH  
Rishi R. Gupta, MD, St Helena, CA

We compared the complexity of revision procedures for failed fixed- (FB) and mobile-bearing (MB) knee designs. Our data show that MB knees fail earlier and require greater constraint than FB knees.

10:42 AM  
PAPER: 648

Recurrent Periprosthetic Joint Infection: Persistent or New Infection?
Benjamin Zmistowski, BS, Philadelphia, PA  
Matthew Tetreault, BA, Pittsburgh, PA  
Pourya Alijanipour, MD, Malaga, Spain  
Antonia Chen, MD, Pittsburgh, PA  
Christopher E. Gross, MD, Chicago, IL  
Brian A. Klatt, MD, Pittsburgh, PA  
Craig J. Della Valle, MD, Chicago, IL  
Javad Parvizi, MD, FRCS, Philadelphia, PA

Most failures following two-stage treatment for PJI appear to occur as a result of “new” infection or infection by an organism that was not detected during initial surgery for PJI.

10:54 AM  
PAPER: 649

Two-Stage Revision Total Knee Arthroplasty is Associated with High Complication and Failure Rates
Christopher Pelt, MD, Salt Lake City, UT  
Jill Erickson, PA, Salt Lake City, UT  
Mike Anderson, MS, ATC, Salt Lake City, UT  
Lucas Anderson, MD, Salt Lake City, UT  
Erik Kubiak, MD, Salt Lake City, UT  
Christopher L. Peters, MD, Salt Lake City, UT

A 17% reinfection rate, with 28% receiving reoperations, and 6% complication rate with two-stage revision TKA, although comparable to previous reports, remains concerning.

11:00 AM  
PAPER: 650

Systematic Review of Static and Articulating Spacers for Infected Total Knee Arthroplasty Revision
Qais Naziri, MD, Brooklyn, NY  
Aaron J. Johnson, MD, Baltimore, MD  
Christopher R. Costa, MD, Dallas, TX  
Michael A. Mont, MD, Baltimore, MD  
Robert Pivec, MD, Baltimore, MD

Articulating spacers offer the potential for greater range of motion at final follow-up, however, they should be used cautiously in complex infection cases.

11:06 AM  
PAPER: 651

Reported Pain After Total Knee Arthroplasty: A Prospective, Randomized Trial Comparing Two Surgical Approaches
Wayne E. Moschetti, MD  
Ishaan Swarup, BA, Stockton, CA  
Stephen R. Kantor, MD  
Kevin F. Spratt, PhD  
Ivan M. Tomek, MD

Comparison of post-operative pain after total knee replacement performed with contemporary minimally invasive surgery principles using either a quad sparing approach or medial parapatellar arthrotomy

Discussion - 6 Minutes

11:18 AM  
PAPER: 652

Failure Mechanism of Knee Arthroplasties: A Retrospective Analysis
Kathi Thiele, MD, Berlin, Germany  
Carsten Perka, MD, Berlin, Germany  
Georg Matziolis, Berlin, Germany  
Hermann Mayr, MD, Munich, Germany  
Michael Sostheim, MD, München, Germany  
Kristin Seidemann, Berlin, Germany  
Robert Hube, MD, Munchen, Germany

All results subsumed we see an explicit shift from aseptic loosening and polyethylene wear to instability, malalignment and periprosthetic infection as main failure mechanisms.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Friday, March 22

11:24 AM  PAPER: 653
TKA Revision in a Femur with a Total Hip Arthroplasty: Is There a Safe Distance between the Stem Tips?
Bernardo Innocenti, PhD, Bruxelles, Belgium
Marc Soenen, MD, Cholet, France
Matteo Baracchi, Bagno A Ripoli, Italy
Luc Labey, Leuven, Belgium

The risk for fracture in a femur, with both a THA and a revision TKA present, is depending on the TKA stem length and it dramatically increases when distances between the tips are smaller than 100 mm.

11:30 AM  PAPER: 654
Retrieval Analysis of Fixed Versus Mobile Bearing Retrieved Polyethylene Inserts Using Laser Scanning Technology
Nader A. Nassif, MD, New York, NY
Kirsten Stoner, M.S., New York, NY
Marcella Elpers, BS, New York, NY
Timothy M. Wright, PhD, New York, NY
Douglas E. Padgett, MD, Chicago, IL

Rotating platform designs showed similar wear characteristics to fixed bearing designs.

11:42 AM  PAPER: 655
Management of the Patella in Revision Total Knee Arthroplasty
Christopher E. Gross, MD, Chicago, IL
Matthew Tetreault, BA, Pittsburgh, PA
Paul H. Yi, BA, Chicago, IL
Scott M. Sporer, MD, Wheaton, IL
Craig J. Della Valle, MD, Chicago, IL

In most aseptic revision total knee arthroplasties, a well-fixed patellar component can be retained, and if revision is required, a standard polyethylene component is sufficient in most cases.

11:48 AM  PAPER: 656
The Impact of Periprosthetic Infections Following Total Knee Arthroplasty at a Specialized Tertiary-Care Center
Bhavva Kapadia, MD, Baltimore, MD
Aaron J. Johnson, MD, Baltimore, MD
Quais Nazir, MD, Brooklyn, NY
Jacqueline A. Daley, MLT, Baltimore, MD
Michael A. Mont, MD, Baltimore, MD

The purpose of this study was to measure the impact of periprosthetic joint infections on the length of hospitalization, readmissions, and the associated costs.

11:54 AM  PAPER: 657
Single Stage Revision for the Infected Total Knee Replacement - Results from a Single Center
Saket Tibrewal, MD
Luckshmana Jeyaseelan, MBBS, London, United Kingdom
Francesc Malagelada, London, United Kingdom
Gareth Scott, FRCS, Brentwood, United Kingdom

A series of 50 cases from a single centre of single-stage revision arthroplasty for infected total knee replacements.

12:06 PM  PAPER: 658
Increased Intraoperative Contamination with Space Suit Use - A Mechanism
Simon Young, MD, Auckland, New Zealand
Carl Chisbolm, Wellington, New Zealand
Mark Zhu, Auckland, New Zealand

Higher infection rates with Space suits may be due to particle egress around surgeon’s cuffs.

12:12 PM  PAPER: 659
Targeted Use of Vancomycin Reduces Rate of PJI and Methicillin Resistant Organisms in TKA
Kevin J. Bozic, MD, MBA, San Francisco, CA
Liu Catherine, San Francisco, CA
Steven Takemoto, PhD, San Francisco, CA
Michael D. Ries, MD, San Francisco, CA
Anthony Kakis, DPM, San Francisco, CA
Thomas P. Vail, MD, San Francisco, CA

Targeted use of Vancomycin in high-risk patients was effective in reducing the rate of periprosthetic joint infection (PJI) and PJI due to methicillin resistant organisms at our institution.

12:18 PM  PAPER: 660
Stemmed Femoral Implants Show Lower Failure Rates in Revision Total Knee Arthroplasty
Maria A. Varnushkina, BS, Albany, NY
Kaan Irgit, MD, Ankara, Turkey
Kent Strohecker, MS, Danville, PA
Thomas R. Bowen, MD, Danville, PA
Charles L. Nelson, MD, Voorhees, NJ

Stem augments lower re-revision rates during revision TKA.

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Friday, March 22

**PAPER PRESENTATION**

**10:30 AM — 12:30 PM**

**Room S102**

**Pediatrics IV: Foot-Lower Extremity-Miscellaneous**

Moderator(s): Matthew B. Dobbs, MD, Saint Louis, MO
Steven L. Frick, MD, Orlando, FL

10:30 AM  
**PAPER: 661**

**Is Ponseti Method Useful in Older Children with Clubfoot after the Walking Age?**

Vikas Gupta, MS
Akshat Sharma, MBBS, MS, Rohini, India
Kumar Shashi S. Kant Jr, Jehanabad, India

The Ponseti method of serial casting is proving to be a low cost, effective treatment strategy in older children with club foot presenting after the walking age.

10:42 AM  
**PAPER: 662**

**The Programmatic Treatment of Clubfoot Using the Ponseti Method in a Low-income Setting**

Mansoor A. Khan, Karachi, Pakistan
Fayez Jawed, BS, Karachi, Pakistan
Aziza Burfat JR, MA, Karachi, Pakistan
Shama Mohammed, Karachi, Pakistan
Muhammad A. Riffat, MBBS, Karachi, Pakistan
Muhammad A. Chinoy, FRCS, MBBS, Karachi, Pakistan
Lubna Samad, MBBS, Karachi, Pakistan
Syed Ahmed, DMed, MBBS, Karachi, Pakistan

Our program was developed to create a sustainable, locally acceptable model for the treatment of clubfoot in a developing country using the Ponseti method. Overall, excellent compliance has been noted.

10:54 AM  
**PAPER: 664**

**EOS Low-dose Biplanar Radiography: The New Gold Standard in Radiographic Limb Length Assessment**

Benjamin Escott, MBBS, Toronto, ON, Canada
Bheesma Ravi, MD, Toronto, ON, Canada
Adam Weathermon, MD, Delta, Canada
Jay Acharya, New York, NY
Chris Gordon, Toronto, ON, Canada
Paul Babyn, MD, Saskatoon, Canada
Simon Kelley, MBCB, FRCS (Ortho), Toronto, ON, Canada
Unni G. Narayanan, MBBS, MSc, Toronto, ON, Canada

Upright EOS using a faster gantry speed and lower current is more accurate than CT scanograms and CR for the assessment of length, and also utilizes a significantly lower radiation exposure.

11:00 AM  
**PAPER: 665**

**Relationship between Leg Length Discrepancy and Degenerative Spine, Hip and Knee Disease**

Raymond Liu, MD, Cleveland, OH
Jonathan Streit, MD, Shaker Heights, OH
Jeremy D. Shaw, MD, MS, Burlingame, CA
Daniel R. Cooperman, MD, Cleveland, OH

We studied 600 cadaveric skeletons and did not find any correlation between leg length discrepancy of 2 cm or under with degenerative joint disease of the spine, hips and knees.

11:06 AM  
**PAPER: 666**

**Thermal Epiphysiodesis Made with Radio Frequency Ablation: An Alternative Treatment for Leg Length Discrepancy**

Juan M. Shiguetomi-Medina, MD, Aarhus N, Denmark
Ole Rabbek, MD, Aarhus, Denmark
Hans Stodkilde-Jorgenson, MD, DMSci
Bjarne Moller-Madsen, MD, MSCI, Aarhus, Denmark

In a porcine model, epiphysiodesis using radio frequency ablation inhibited growth without damaging the surrounding structures. This may represent an alternative treatment for leg length discrepancy.

11:18 AM  
**PAPER: 667**

**Medial Malleolar Screw versus Tension Band Plate Hemihippophysiosis for Ankle Valgus in the Skeletally Immature**

Matthew D. Driscoll, MD, Temple, TX
Judith Linton, PT, MS, Houston, TX
Allison C. Scott, MD, Houston, TX

While MMS and TBP hemihippophysiosis both correct ankle valgus in the growing child, MMS may be associated with a faster rate of deformity correction and TBP with fewer hardware related complications.
Friday, March 22

11:24 AM  
**PAPER: 668**  
**Limb Salvage Outcome in the Immature Pediatric Bone Tumor Population**  
Antoimette W. Lindberg, MD, Seattle, WA  
Stephanie Punt, BS, Seattle, WA  
Jedediah K. White, BS, Seattle, WA  
Viviana Bompadre, PhD, Seattle, WA  
Darin Davidson, MD, Seattle, WA  
Ernest U. Conrad III, MD, Seattle, WA  
pediatric limb salvage techniques (allograft and oncologic implants) identifying issues leading to surgical revision, complications, function, and failure were compared.

11:30 AM  
**PAPER: 669**  
**Scaffold Free Cartilage Tissue Equivalent Transplantation to Physeal Cartilage Injury of Rabbit**  
Chang-Hoon Jeong, MD, PhD, Seoul, South Korea  
Jae Young Lee, MD, Buchon, South Korea  
Transplantation of a scaffold free cartilage tissue equivalent (CTE) generated in suspension chondrocyte culture to physeal cartilage injury of the proximal tibia in rabbit.

11:42 AM  
**PAPER: 670**  
**Distal Femoral Physeal Fixation: Are Smooth Pins Really Safe?**  
William J. Dahl, MD, Whitmore Lake, MI  
Kelly L. Vanderhave, MD, Ann Arbor, MI  
Selina R. Silva, MD, Albuquerque, NM  
Cross pinning with smooth K wires results in a low rate of physeal injury. Pins that cross the physis both centrally and peripherally appear to have the same risk for physeal bar formation.

11:48 AM  
**PAPER: 671**  
**Acetabular Changes with Avascular Necrosis of Femoral Head in Piglet Model**  
Frederic Shapiro, MD, Boston, MA  
Susan Connolly, MD  
David Zurakowski, PhD, Boston, MA  
Evelyn Flynn, MA  
Diego Jaramillo, MD, Philadelphia, PA  
A piglet model for avascular necrosis of the femoral head also leads to acetabular changes. We have assessed these by MRI and histology and show statistically significant changes by 4 and 8 weeks.

11:54 AM  
**PAPER: 672**  
**ESET Histone Methyltransferase Affects Bone Morphology and Secondary Ossification in a Mouse Model**  
Jacques H. Hacquebord, MD, Seattle, WA  
Howard A. Chansky, MD, Seattle, WA  
Liu Yang, PhD, Seattle, WA  
ESET Histone Methyltransferase function is required for normal skeletal growth. Conditional knockout of ESET is associated with abnormal bone morphology and absence of a secondary ossification center.

12:06 PM  
**PAPER: 673**  
**Incidence Rate and Factors Related to Pediatric Cast Saw Injuries**  
Peter M. Waters, MD, Boston, MA  
Sarah Hutchinson, BS, ATC, Boston, MA  
Maire Harris, MPH, Boston, MA  
Donald S. Bae, MD, Boston, MA  
Cast saw injuries are a known complication of casting. By establishing a scientific incidence rate and reducing known risk factors each patient will be safer from this avoidable risk.

12:12 PM  
**PAPER: 674**  
**Internet Search Term Affects the Quality and Accuracy of Online Information About Developmental Hip Dysplasia**  
Peter D. Fabricant, MD, New York, NY  
Christopher J. Dy, MD, New York, NY  
Ronak Patel, MD, Chicago, IL  
John S. Blanco, MD, Pelham, NY  
Shevaun M. Doyle, MD, New York, NY  
The quality and accuracy of information available on the internet regarding developmental hip dysplasia varied by search term and was above recommended reading level for information on the internet.

12:18 PM  
**PAPER: 675**  
**Improved Orthopaedic Resident Surgical Preparedness after e-Learning - A Randomized Controlled Study**  
Thomas M. Hearty, MD, FPO  
Max Maizels, MD  
Maya Pring, MD, San Diego, CA  
John M. Mazur, MD, Jacksonville, FL  
Raymond Liu, MD, Cleveland, OH  
John E. Sarwark, MD, Chicago, IL  
Joseph A. Janicki, MD, Chicago, IL  
We showed that e-Learning can significantly improve orthopaedic resident preparedness, confidence and comfort with percutaneous closed reduction and pinning of pediatric supracondylar fracture.
Friday, March 22

**PAPER PRESENTATION**

10:30 AM — 12:30 PM  
Room S103

Tumor/Metabolic Disease II: Pre-Clinical and Clinical Research in Orthopaedic Oncology  
Moderator(s): Brian E. Brigman, MD, Durham, NC  
Joel Mayerson, MD, Columbus, OH

**10:30 AM**  
PAPER: 676  
A Novel Murine Model of Post-Radiation Osteonecrosis after Simulated Soft-Tissue Sarcoma Resection  
Matthew A. Popa, MD, Ada, MI  
Tessa M. Grabinski, BS, Grand Rapids, MI  
Travis Burgers, PhD, Grand Rapids, MI  
Daniel E. Hess, Grand Rapids, MI  
Matthew Steensma, MD, Byron Center, MI

The proposed murine model is a valid model with which to study the effect of postoperative radiation therapy on long bones following a simulated soft-tissue sarcoma resection.

**10:36 AM**  
PAPER: 677  
MiRNA in Chondrosarcoma: A Rat Model  
Heather R. Harrison, MD, Detroit, MI  
Caroline Wolfe, MD, Ann Arbor, MI  
Clifford M. Les, DVM, Detroit, MI  
Gary Gibson, Detroit, MI  
Michael P. Mott, MD, Detroit, MI  
Theodore W. Parsons, MD, FACS, Detroit, MI

An attempt to identify a miRNA profile in chondrosarcoma for future use in diagnosis.

**10:42 AM**  
PAPER: 678  
Bone Loss Associated with an Expandable Prosthesis for Treatment of Pediatric Distal Femoral Malignancies  
Cara A. Cipriano, MD, Chicago, IL  
Irina Grunzovova, Chicago, IL  
Rachel M. Frank, MD, Chicago, IL  
Steven Gitels, MD, Chicago, IL  
Walter W. Virkus, MD, Chicago, IL

In our experience, pediatric limb salvage with a distal femoral expandable prosthesis has produced good oncologic results but is associated with significant loss of bone stock and other complications.

**10:54 AM**  
PAPER: 679  
Pre-Referral Magnetic Resonance Imaging in Musculoskeletal Oncology is Not Excessive  
Christopher T. Martin, MD, Iowa City, IA  
Jose A. Morcuende, MD, Iowa City, IA  
Joseph A. Buckwalter, MD, Iowa City, IA  
Benjamin J. Miller, MD, Iowa City, IA

Magnetic resonance imaging use prior to referral of musculoskeletal oncology patients is not excessive, and the incidence of inappropriate studies may not be as high as previously reported.

**11:00 AM**  
PAPER: 680  
Failure to Correctly Diagnose Extremity Soft Tissue Sarcomas - Is a Lack of Education to Blame?  
Vignesh Alamanda, BS, Nashville, TN  
Samuel Crosby, MD, Nashville, TN  
Kristin Archer, PhD, Nashville, TN  
Shannon Mathis, Nashville, TN  
Herbert S. Schwartz, MD, Nashville, TN  
Ginger E. Holt, MD, Nashville, TN

Educational opportunities in recognizing soft tissue sarcomas exist at the resident level in both general and orthopaedic surgery training programs in the United States.

**11:06 AM**  
PAPER: 681  
Risk Factors at Presentation for Metastatic Osteosarcoma: An Analysis of the SEER Database  
Benjamin J. Miller, MD, Iowa City, IA  
Peter Cram, MD, MBA, Iowa City, IA  
Charles Lynch, MD, PhD, Iowa City, IA  
Joseph A. Buckwalter, MD, Iowa City, IA

This is an analysis of the SEER database to determine risk factors for metastatic disease at presentation in osteosarcoma.

**11:18 AM**  
PAPER: 682  
Proximal Femoral Reconstruction with Constrained Acetabulum in Oncologic Patients  
Muhammad U. Jawad, MD, Philadelphia, PA  
Earl W. Brien, MD, Los Angeles, CA

Here we are presenting the outcomes of proximal femoral reconstruction for massive bone loss using a constrained hip.
Friday, March 22

11:24 AM  PAPER: 683
**High Failure Rates for Cemented Modular Oncology Total Knee Implants**
Jedediah K. White, BS, Seattle, WA
Stephanie Punt, BS, Seattle, WA
Antoinette W. Lindberg, MD, Seattle, WA
Darin Davidson, MD, Seattle, WA
Ernest U. Conrad III, MD, Seattle, WA

Cementless stems are being used with increasing frequency to attempt to achieve improved fixation and decreased rates of aseptic loosening. We compared cementless and cemented stems.

11:30 AM  PAPER: 684
**Cause and Effect of Local Recurrence in Extremity Soft Tissue Sarcoma - Are We Making a Difference?**
Vignesh Alamanda, BS, Nashville, TN
Samuel Crosby, MD, Nashville, TN
Kristin Archer, PhD, Nashville, TN
Yanna Song, PhD, Nashville, TN
Jennifer L. Halpern, MD, Nashville, TN
Ginger E. Holt, MD, Nashville, TN

Positive margins continue to remain as a strong predictor of local recurrence and its impact on future prognosis is influenced by a variety of factors such as the tumor’s biological characteristics.

11:42 AM  PAPER: 685
**Total Joint Arthroplasty in Patients with Prior Cancer**
Joseph Karam, MD, Philadelphia, PA
Ronald Huang, MD, Philadelphia, PA
John A. Abraham, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

Patients with active malignancy are prone to develop pulmonary, renal and wound problems after TJA. Patients with bone metastases have a high risk of thromboses and short-term mortality rates.

11:48 AM  PAPER: 686
**Elution of Cisplatin from Commercially Available Bone Cements Without Reduction in Strength**
Jill E. Meyer, PhD, Milwaukee, WI
Matthew W. Squire, MD, MS, Madison, WI
Kevin MacDonald, MD, Seattle, WA

The addition of cisplatin to four commercially available bone cements provided elution for the 4-day study without a significant reduction in bending or compression failure load for all but one brand.

11:54 AM  PAPER: 687
**Prognostic Factors in Elderly Osteosarcoma Patients: A Multi-Institutional Retrospective Study of 90 Cases**
Shintaro Iwata, MD, Tokyo, Japan
Akira Kawai, MD, PhD, Chou-Ku, Japan
Takeshi Ishii, MD, Chiba, Japan
Tsukasa Yonemoto, MD, PhD, Chiba, Japan
Masanobu Takeyama, MD, PhD, Yokohama, Japan
Naofumi Asano, MD, Tokyo, Japan
Hirotu Kamoda, Yachiyo, Japan

Prognostic factor analysis of patients with osteosarcoma over 40 years old revealed that definitive surgery was significantly associated with survival, although current chemotherapy was not beneficial.

12:06 PM  PAPER: 688
**Biological Reconstructions of the Forearm for Primary Malignant Bone Tumors: An Analysis of 30 Cases**
Guiseppe Bianchi, MD, Bologna, Italy
Teresa Calabro, Bologna, Italy
Andrea Angelini, MD, Bologna BO, Italy
Pietro Ruggieri, Bologna, Italy
Pietro Ruggieri, Bologna, Italy

Allograft reconstruction after resection of primary malignant bone tumors of the forearm has valid indications and gives good function with an acceptably low rate of complications.

12:12 PM  PAPER: 689
**Sacrectomy and Adjuvant Radiotherapy for the Treatment of Sacral Chordomas: A Single Center Experience Over 27 Years**
Joseph P. Gjolaj, MD, Charlottesville, VA
Arjun Dhawale, MD, South Miami, FL
Laurens Holmes, PhD, DrPH, Wilmington, DE
H. T. Temple, MD, Miami, FL
Frank J. Eismont, MD, Miami, FL

In the sacral chordoma patient, despite the prevalence of recurrence and complications, increased long term survival can be achieved with treatment.

12:18 PM  PAPER: 690
**High Incidence of Regional and In-transit Lymph Node Metastasis in Patients with Alveolar Rhabdomyosarcoma**
Yoshihiro Nishida, Nagoya, Japan
Hideshi Sugiura, MD, Nagoya City, Japan
Satoshi Tsukushi, MD, Nagoya, Japan
Hiroshi Urama, Nagoya, Japan
Eisuke Arai, Nagoya, Japan
Naoki Ishiguro, MD, Aichi, Japan

Physicians should be aware of lymphatic spread, including the in-transit spread, in patients with rhabdomyosarcoma, particularly with alveolar type.
Friday, March 22

SYMPOSIUM
1:30 PM — 3:30 PM
Room S406
Best of AAOS (AA)
Moderator(s): Annunziato Amendola, MD, Iowa City, IA and Brian J. Cole, MD, Chicago, IL
The Best of AAOS symposium will feature highlights from the best papers and posters presented at the 2013 Annual Meeting as chosen by the AAOS Program Committee.

I. Adult Reconstruction Knee
   Fred D. Cushner, MD, New York, NY

II. Sports Medicine/Arthroplasty
    Diane L. Dahm, MD, Rochester, MN

III. Foot and Ankle
     Steven L. Haddad, MD, Glenview, IL

IV. Pediatrics
    Martin J. Herman, MD, Philadelphia, PA

V. Shoulder and Elbow
    Spero G. Karas, MD, Atlanta, GA

VI. Hand and Wrist
    Fraser J. Leversedge, MD, Durham, NC

VII. Adult Reconstruction Hip
     William B. Macaulay, MD, New York, NY

VIII. Practice Management/Rehabilitation
      Thomas A. Malvitz, MD, Grand Rapids, MI

IX. Tumor/Metabolic Disease
    R. Lor Randall, MD, Salt Lake City, UT

X. Spine
    Michael Vives, MD, Mendham, NJ

XI. Trauma
    Bruce Ziran, MD, Atlanta, GA

SYMPOSIUM
1:30 PM — 3:30 PM
Grand Ballroom
Improving Outcomes with Total Knee Arthroplasty (Z)
Moderator: Giles R. Scuderi, MD, New York, NY
Patient expectations continue to challenge the evolving techniques and technologies. In an effort to influence the outcome, the pre-operative evaluation and surgical planning will be reviewed. A comparison of conventional and advanced patient specific surgical techniques will be compared. Outcome measures, registry information and complication reporting will be discussed.

Pre-Operative Evaluation and Surgical Planning
Moderator: Giles R. Scuderi, MD, New York, NY

I. Documenting the Indications for Surgery
   Carlos J. Lavernia, MD, Coral Gables, FL

II. Counseling the Younger Patient
    Thomas P. Vail, MD, San Francisco, CA

III. The Posttraumatic Patient With Prior Incisions and Hardware
     Thomas K. Febring, MD, Charlotte, NC

IV. Avoiding Surgical Site Infections: Who’s At Risk
    Douglas A. Dennis, MD, Denver, CO

V. Bilateral Deformity: Staged Or Simultaneous
    Steven J. MacDonald, MD, London, ON, Canada

VI. Discussion
    Surgical Technique and Advanced Technology
    Moderator: Steven J. MacDonald, MD, London, ON, Canada

I. Conventional Instruments Can Balance the Gaps
    Arlen D. Hanssen, MD, Rochester, MN

II. Computer Navigation Improves Accuracy
    Mark W. Pagnano, MD, Rochester, MN

III. Patient Specific Instruments
     Adolph V. Lombardi Jr, MD, New Albany, OH

IV. Patient Specific Implants
    Tom Minas, MD, Chestnut Hill, MA

V. Smart Tools
    Giles R. Scuderi, MD, New York, NY

An alphabetical faculty financial disclosure list can be found starting on page 292.

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### Educational Programs

#### Friday, March 22

<table>
<thead>
<tr>
<th>Time</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM — 3:30 PM</td>
<td>Advances in Acetabular Reconstruction in Revision Total Hip Arthroplasty: Maximizing Function and Outcomes</td>
</tr>
<tr>
<td>Room 5503</td>
<td>Moderator: Khaled J. Saleh, MD, MSc, Springfield, IL</td>
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<td>William J. Maloney, MD, Redwood City, CA</td>
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<td>Wayne G. Paprosky, MD, Winfield, IL</td>
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<td>Michael D. Ries, MD, San Francisco, CA</td>
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<td></td>
<td>Advanced imaging modality strategies to diagnose and manage acetabular osteolysis, exposure techniques, advances in component removal, and techniques to address bone defects.</td>
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</tbody>
</table>

|        | Hip Preservation Surgery: How to Avoid and Treat Complications and Failures |
|        | Moderator: Christopher Larson, MD, Edina, MN                            |
| Room 5103a | John C. Clohisy, MD, Saint Louis, MO                                    |
|        | Bryan T. Kelly, MD, New York, NY                                        |
|        | Michael Leunig, MD, Zurich, Switzerland                                 |
|        | Complications and early treatment failures are seen after arthroscopic and open joint preservation procedures. Contemporary strategies to avoid and manage sub-optimal outcomes discussed. |

|        | State of the Art in Partial Knee Arthroplasty                           |
|        | Moderator: Jess H. Lonner, MD, Philadelphia, PA                         |
| Room 5228 | Michael E. Berend, MD, Mooresville, IN                                  |
|        | David E. Dalury, MD, Baltimore, MD                                       |
|        | Aaron A. Hofmann, MD, Salt Lake City, UT                                |
|        | Review the rationale, indications, technical aspects and results of fixed and mobile bearing unicompartamental, patellofemoral, bicompartamental knee arthroplasty. |

#### Discussion

**VI.** Reporting the Outcome  
**Moderator:** Giles R. Scuderi, MD, New York, NY

**II.** The Value of a Joint Registry  
**David G. Lewallen, MD, Rochester, MN**

**IV.** Activity After TKA  
**Michael A. Mont, MD, Baltimore, MD**

**V.** Reporting Complications  
**William L. Healy, MD, Burlington, MA**

**VI.** Discussion

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
Friday, March 22

449  Elbow Arthroscopy: Indications, Techniques, Outcomes and Complications  
Moderator: Julie E. Adams, MD, Minneapolis, MN  
Mark S. Cohen, MD, Chicago, IL  
Graham J. King, MD, London, ON, Canada  
Scott P. Steinmann, MD, Rochester, MN  
Outline techniques for performing arthroscopic procedures at the elbow, with a specific focus on indications, tips and pearls, and outcomes and alternative treatment strategies. Potential complications will be studied with emphasis on how to avoid them.

450  Challenging Adolescent Sports Injuries: A Case Based Approach  
Moderator: Rick W. Wright, MD, Saint Louis, MO  
Asheesh Bedi, MD, Ann Arbor, MI  
Matthew J. Matava, MD, Chesterfield, MO  
Matthew V. Smith, MD, Town and Country, MO  
Case-based approach to reviewing the challenges and controversies in the diagnosis, treatment and outcome a variety of adolescent sports injuries.

451  Dilemmas of the Throwing Shoulder  
Moderator: Richard J. Hawkins, MD, Greenville, SC  
James R. Andrews, MD, Gulf Breeze, FL  
Richard K. N. Ryu, MD, Santa Barbara, CA  
John M. Tokish, MD, Kailua, HI  
Discuss the various pathologies of the throwing shoulder, including the role of retroversion and soft tissue, the physical examination signs and treatment options.

452  Fractures in the Osteoporotic and Elderly: Technical Tips and Tricks  
Moderator: Daniel S. Horwitz, MD, Danville, PA  
Erik Kubiak, MD, Salt Lake City, UT  
Frank A. Liporace, MD, Englewood Cliffs, NJ  
Stephen A. Sems, MD, Rochester, MN  
This course is designed to discuss technical tips and tricks useful in the operative treatment of fractures in the elderly and osteoporotic patient.

453  Periarticular Fractures of the Lower Extremity: IM Nail versus Plate  
Moderator: Robert F. Ostrum, MD, Chapel Hill, NC  
Cory A. Collinge, MD, Fort Worth, TX  
Robert A. Probe, MD, Temple, TX  
Paul Tornetta III, MD, Boston, MA  
Explore the indications and implant implications for the treatment of periarticular fractures of the proximal and distal femur and tibia. Case based discussions will be used to complement the presentations.

FD8  The Art of the Orthopaedic Lecture  
Moderator: James H. Beaty, MD, Memphis, TN  
James J. McCarthy, MD, Cincinnati, OH  
Learn to develop a lecture for an orthopaedic audience. From a 6 minute paper presentation to a 60 minute lecture on a specific research project or clinical subject. This session will give you the tools to prepare and present. Powerpoint preparation and tips included. This course is offered at no charge.

PAPER PRESENTATION

1:30 PM — 3:30 PM  
Room S105

Adult Reconstruction Knee VII: Complications  
Moderator(s): Hari Bezawada, MD, Princeton, NJ  
Ray C. Wasielewski, MD, New Albany, OH

1:30 PM  
PAPER: 691  
Identification of Polymicrobial Infection in Total Knee Arthroplasty Through Sonicate Fluid Cultures  
Viktor Janz, MD, Berlin, Germany  
Georg Wassilew, MD, Berlin, Germany  
Georg Matziolis, Berlin, Germany  
Stephan Werner Tohtz, MD, Berlin, Germany  
Carsten Perka, MD, Berlin, Germany  
In this study the use of sonicate fluid cultures was able to improve both the detection of PJI and the rate of polymicrobial isolations compared to conventional microbiological methods in 74 patients.

1:36 PM  
PAPER: 692  
Comparative Effectiveness of Prophylactic Antibiotic Choice and Surgical Infection in Arthroplasty  
Brent A. Ponce, MD, Birmingham, AL  
Benjamin T. Raines, MA, ATC, Decatur, AL  
Vick C. Catherine, MS, BA, Chapel Hill, NC  
Joshua Richman, Birmingham, AL  
Mary Hawn, MD, FACS, Birmingham, AL  
Stratified analyses identified an increase in surgical site infection rates among orthopedic patients with vancomycin only prophylaxis compared to other SCIP-approved antibiotics.
**1:42 PM**  
**PAPER: 693**  
**Aspirin is an Effective Alternative Prophylaxis for Prevention of Pulmonary Embolism Following Joint Arthroplasty**  
Javad Parvizi, MD, FRCS, Philadelphia, PA  
Ronald Huang, MD, Philadelphia, PA  
Ibrahim Raphael, MD, Philadelphia, PA  
Eric H. Tischler, BA, Philadelphia, PA  
Peter F. Sharkey, MD, Media, PA  
William J. Hozack, MD, Philadelphia, PA  
Richard H. Rothman, MD, Philadelphia, PA  

Aspirin is as effective as warfarin in the prevention of pulmonary embolus following joint replacement in healthy patients, with a lower rate of bleeding and wound complications.

**Discussion - 6 Minutes**

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**1:54 PM**  
**PAPER: 694**  
**Risk of Symptomatic VTE Associated with Flying in the Early Postoperative Period after THA and TKA**  
Herbert J. Cooper, MD, New York, NY  
Sheila Sanders, RN, Hickory Hills, IL  
Richard A. Berger, MD, Chicago, IL  

Among 1465 consecutive patients, there was no difference in the rate of PE, DVT, or VTE between 220 patients who flew in the early postoperative period and 1245 patients who did not fly.

---

**2:00 PM**  
**PAPER: 695**  
**Inpatient Myocardial Infarction after Elective Primary Hip or Knee Arthroplasty**  
Usman Zahir, MD, Baltimore, MD  
Robert S. Sterling, MD, Owings Mills, MD  
Mary L. Forte, PhD, DC, RN, Baltimore, MD  

Acute myocardial infarction after elective arthroplasty is as common as PE but with higher mortality. Multiple procedure patients are at the highest risk for acute MI and post-MI mortality.

---

**2:06 PM**  
**PAPER: 696**  
**The Effect of Aspirin and Low-molecular-weight Heparin on Venous Thromboembolism after Knee Replacement**  
Simon Jameson, Middlesbrough, United Kingdom  
Paul Baker, MB, ChB, Newcastle Upon Tyne, United Kingdom  
Susan Charman, BSc, London, United Kingdom  
David Deehan, MD, FRCS, England, United Kingdom  
Mike R. Reed, MBBS MD, Northumberland, United Kingdom  
Paul J. Gregg, Cleveland, United Kingdom  
Jan Van Der Meulen, MBBS, London, United Kingdom  

Between patients receiving LMWH or aspirin, there was no difference in the risk of pulmonary embolus, 90-day mortality and major haemorrhage in 156798 TKRs.

**Discussion - 6 Minutes**

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**2:18 PM**  
**PAPER: 697**  
**Two-stage Revision Total Knee Arthroplasty with an Articulating Spacer: Minimum Five-year Review**  
Ted Varsakaly, MD, MSc, London, ON, Canada  
James Howard, MD, London, ON, Canada  
Doug Naudie, MD, FRCS, London, ON, Canada  
Richard W. McCallem, MD, London, ON, Canada  
Steven J. MacDonald, MD, London, ON, Canada  

To review the minimum 5-year results of two-stage revision tka with articulating spacers for chronically infected total knee arthroplasty, and compare these outcomes with non-articulating spacers.

**2:24 PM**  
**PAPER: 698**  
**High Level of Residual Symptoms in Young Patients with Total Knee Arthroplasty**  
Keith R. Berend, MD, New Albany, OH  
Ryan Nunley, MD, Saint Louis, MO  
Adolph V. Lombardi Jr, MD, New Albany, OH  
Erin Rub, MS, Saint Louis, MO  
John C. Clohisy, MD, Saint Louis, MO  
William G. Hamilton, MD, Alexandria, VA  
Crag J. Della Valle, MD, Chicago, IL  
Javad Parvizi, MD, FRCS, Philadelphia, PA  
Robert L. Barrack, MD, Saint Louis, MO  

When interviewed by an independent third party, a surprising percentage of young, active patients report residual symptoms and limitations following modern TKA.

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**2:30 PM**  
**PAPER: 699**  
**The Effect of Timing of Manipulation Under Anesthesia to Improve Range-of-Motion Following TKA**  
Kimona Issa, MD, Santa Clarita, CA  
Aaron J. Johnson, MD, Baltimore, MD  
Tiffany Tatevosian, MPH, KS City, MO  
Mark A. Kester, PhD, Mahwah, NJ  
Harpal S. Khanuja, MD, Cockeyesville, MD  
Peter M. Bonutti, MD, Effingham, IL  
Ronald E. Delanois, MD, Baltimore, MD  
Michael A. Mont, MD, Baltimore, MD  

Our study demonstrated significantly improved range-of-motion in patients who had undergone manipulations before 12 weeks compared to the cohorts who had undergone later manipulations.

**Discussion - 6 Minutes**

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
Friday, March 22

2:42 PM  PAPER: 700  
Intraoperative Swab Cultures are Not as Good as Tissue Samples for Diagnosis of Periprosthetic Joint Infection  
Vinay Aggarwal, BS, Philadelphia, PA  
Carlos A. Higuera, MD, Lakewood, OH  
Gregory K. Deirmengian, MD, Broomall, PA  
Javad Parvizi, MD, FRCS, Philadelphia, PA  
Matthew Austin, MD, Philadelphia, PA  
Tissue cultures are better for isolation of infecting organisms than swabs and demonstrated higher sensitivity, specificity, PPV, and NPV for diagnosing PJI.

2:48 PM  PAPER: 701  
Are Bilateral Total Joint Replacement Patients at a Higher Risk of Developing Pulmonary Embolism Following Surgery?  
Geoffrey H. Westrich, MD, New York, NY  
Alyssa Yeager, New York, NY  
In a large patient cohort, there was a three-fold increase in the rate of pulmonary embolism following bilateral total hip and total knee arthroplasty when compared to unilateral procedures.

2:54 PM  PAPER: 702  
Arthroplasty Immediately after an Infected Surgery: How Much is the Risk of Periprosthetic Infection?  
Mansour Abolghasemian, MD, Toronto, ON, Canada  
Amir Sternheim, Toronto, ON, Canada  
Alireza Shakib, MD, Toronto, ON, Canada  
Oleg Safir, MD, Toronto, ON, Canada  
Allan E. Gross, MD, FRCS, Toronto, ON, Canada  
David Backstein, MD, Toronto, ON, Canada  
In a case-control study, we could not find any increased risk of infection in arthroplasties done immediately after a surgery on an infected case in the same operating room, or any infection by an org.

3:06 PM  PAPER: 703  
Periprosthetic Joint Infection: A Fatal Condition?  
Benjamin Zmistowski, BS, Philadelphia, PA  
Joseph Karam, MD, Philadelphia, PA  
Joel Durinka, MD, Philadelphia, PA  
Javad Parvizi, MD, FRCS, Philadelphia, PA  
Periprosthetic joint infection is an independent predictor of mortality. The risk of 1st year mortality was four times greater in patients suffering PJI than those undergoing aseptic joint revision.

3:12 PM  PAPER: 704  
Threshold for Synovial Cell Count and Differential for PJI in Knee: Using Standard MSIS Definition  
Benjamin Zmistowski, BS, Philadelphia, PA  
Carlos A. Higuera, MD, Lakewood, OH  
Joseph Mendelis, Philadelphia, PA  
Javad Parvizi, MD, FRCS, Philadelphia, PA  
We provide a threshold for synovial cell count and neutrophil percentage using a standard definition for PJI. Fluid analysis and good clinical judgment remain invaluable tools in diagnosing PJI.

3:18 PM  PAPER: 705  
Characterization of Pulmonary Emboli in Orthopaedic Surgery Patients Compared to General Medical Patients  
Nathaniel Jove, MD, Royal Oak, MI  
Sam Samaan, MD, Royal Oak, MI  
David C. Markel, MD, Southfield, MI  
Denis Lincoln, Southfield, MI  
Post-Operative Total Joint Arthroplasty patients have smaller, multiple pulmonary emboli post operatively compared to medical patients who have fewer and larger pulmonary emboli.

1:30 PM — 3:30 PM  
Shoulder and Elbow V: Instability, Fractures, and Shoulder Stiffness  
Moderator(s): G. Russell Huffman, MD, Philadelphia, PA  
Robert Z. Tashjian, MD, Salt Lake City, UT

1:30 PM  PAPER: 706  
Prognostic Factors for Reoperation Following Plate Fixation of Fractures of the Midshaft Clavicle  
Laura Schemitsch, BA, Thornhill, ON, Canada  
Michael D. McKee, MD, Toronto, ON, Canada  
Emil H. Schemitsch, MD, Toronto, ON, Canada  
Paul R. Kuczyk, MD, FRCS, MSc, Toronto, ON, Canada  
Milena Vicente, RN, Toronto, ON, Canada  
A retrospective review to determine which prognostic factors were associated with reoperation following plate fixation of completely displaced mid-shaft fractures.
Friday, March 22

1:36 PM  PAPER: 707  
**Open Reduction and Plate Fixation vs. Nonoperative Treatment for Displaced Midshaft Clavicle Fractures**  
Ewan B. Goudie, MBChB, Edinburgh, United Kingdom  
Christopher M. Robinson, MD, Edinburgh, United Kingdom  
Iain Murray, MD, Edinburgh, United Kingdom  
Paul J. Jenkins, MRCS, Edinburgh, United Kingdom  
Andrew Brooksbank, MD, Dundee, United Kingdom  
Angus Arthur, FRCS, Glasgow, United Kingdom  
Tim Chesser, MD, Bristol, United Kingdom  
Iain Packham, FRCS, Bristol, United Kingdom  
Mark A. Crouther, MBBS, FRCS, Bristol, United Kingdom  

This multicenter, randomized control trial compares primary open reduction and plate fixation with nonoperative treatment in patients with displaced midshaft clavicle fractures.

1:42 PM  PAPER: 708  
**Clavicular Bone Tunnel Malposition Leads to Early Failures in Coracoclavicular Ligament Reconstructions**  
Jay B. Cook, MD, Leesburg, FL  
James S. Shaha, MD, Tripler AMC, HI  
Douglas J. Rowles, MD, Aiea, HI  
Craig R. Bottoni, MD, Honolulu, HI  
Steve Shaha, Draper, UT  
Lt.Col John M. Tokish, MD, Kailua, HI  

Clavicular bone tunnel location is a risk factor for early loss of reduction in anatomic CC ligament reconstructions.

1:54 PM  PAPER: 709  
**Proximal Humeral Fractures Treated with Locked Plating and an Intramedullary Strut Allograft**  
Brian L. Badman, MD, Avon, IN  
Jonathan C. Levy, MD, Fort Lauderdale, FL  
Randall Otto, MD, Fenton, MO  
Mark A. Migbell, MD, Tampa, FL  
Jonathan C. Levy, Fort Lauderdale, FL  
Randall Otto, MD, Fenton, MO  
Brian L. Badman, MD, Avon, IN  

Intramedullary strut allograft can assist in proximal humeral fracture reduction and, in this series, results in a lower incidence of hardware related complications while using a locked plate.

2:06 PM  PAPER: 711  
**A Comparison of Reconstructive Procedures for Glenoid Bone Loss and Recurrent Anterior Shoulder Instability**  
Benjamin Noonan, MD, West Fargo, ND  
Jon K. Sekiya, MD, Ann Arbor, MI  
Scott J. Hollister, PhD, Ann Arbor, MI  
Answorh A. Allen, MD, New York, NY  
Joshua Dines, MD, Great Neck, NY  
Ashesh Bedi, MD, Ann Arbor, MI  

Tibial plafond and iliac crest allograft more closely restore the native glenoid dimensions compared to standard Latarjet reconstruction for glenoid bone loss in recurrent anterior instability.

2:18 PM  PAPER: 712  
**Does Suture and Anchor Placement Technique Matter When Performing Remplissage for Hill-Sachs Lesions?**  
Josh W. Giles, BSc, Toronto, ON, Canada  
Ilia Elkinsson, MD, Wellington, New Zealand  
Kenneth Faber, MD, London, ON, Canada  
Louis Ferreira, MSc, London, ON, Canada  
James A. Johnson, PhD, London, ON, Canada  
George S. Athwal, MD, London, ON, Canada  

Remplissage technique does have a significant effect on joint biomechanics. Specifically, proper suture placement is critical as over medialization results in excessive stiffen and motion restriction.

2:24 PM  PAPER: 713  
**The Histologic and Biomechanical Analysis of the Two Smallest Available Glenoid Anchors for use in Labral Repairs**  
Matthew J. Smith, MD, Columbia, MO  
James L. Cook, DVM, PhD, Columbia, MO  
Ferris Pfeiffer, PhD, Boonville, MO  
Keichi Kuroki, DVM, PhD, Columbia, MO  

The objective of this study was to evaluate and compare both the histologic responses and biomechanical properties of a “solid” bioabsorbable suture anchor and an “all-suture” anchor.

2:30 PM  PAPER: 714  
**Open Bankart Repair for Revision of Failed Stabilization: Outcome Analysis at Mean Nine Years**  
Robert J. Neviaser, MD, Washington, DC  
Michael T. Benke, MD, Santa Monica, CA  
Andrew Neviaser, MD, Washington, DC  

Open Bankart repair offers a highly reliable option with consistently successful outcomes as a revision procedure for a variety of failed prior stabilization procedures, especially arthroscopic Bankart repairs.

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.*
Friday, March 22

2:42 PM  PAPER: 715  
Arthroscopic Repair of Small and Medium Sized Bony Bankart Lesions  
Seung-Hyun Cho, MD, Incheon  
A bony Bankart lesion is associated with glenohumeral instability and its incidence ranges from 4% to 70%. Since successful arthroscopic reduction and fixation of an anterior glenoid fracture was desc.

2:48 PM  PAPER: 716  
Long-term Results of Latarjet Procedure for the Treatment of Anterior Glenohumeral Instability  
Naoko Mizuno, MD, Osaka, Japan  
Patrick J. Denard, MD, Medford, OR  
Patrick Rais, MD, Heidelberg, Germany  
Gilles Welch, MD, Lyon, France  
Latarjet procedure for anterior glenohumeral instability provides excellent long-term results. The prevalence of postoperative development of arthritis is 18.5% at 20 years follow-up.

2:54 PM  PAPER: 717  
All-arthroscopic Revision Procedure for Failed Latarjet Surgery: Technique and Preliminary Results  
Antonios Giannakos, MD, Hamburg, Germany  
Richard Jany, MD, PhD, Parndorf, Austria  
Daniel G. Schwartz, MD, Chicago, IL  
Laurent Lafosse, MD, Annecy, France  
Arthroscopic revision procedure for failed Latarjet surgery is a safe and reproducible surgery. Offering all advantages of arthroscopic surgery, it restores shoulder stability after failed Latarjet.

3:06 PM  PAPER: 718  
Accuracy and Reliability Testing of Two Methods for Measuring Internal Rotation of the Glenohumeral Joint  
Thomas W. Throckmorton, MD, Germantown, TN  
Justin Hall, MD, Memphis, TN  
Frederick M. Azar, MD, Memphis, TN  
Estimation of spinous process level for measuring internal rotation of the shoulder demonstrates good inter-observer reliability. However, estimation in degrees is more reliable.

3:12 PM  PAPER: 719  
Blind Versus Ultrasound Guided Glenohumeral Injection of Corticosteroid for Shoulder Stiffness  
Yang-Soo Kim, MD, Seoul  
Ultrasound-guided injection does not guarantee better outcomes than blind injection in the stiff shoulder.

3:18 PM  PAPER: 720  
Risk Factors for the Nonoperative Treatment of Stiff Shoulder: Multivariable Analysis in 497 Patients  
Akira Ando, Sendai, Japan  
Hiroyuki Suwaya, MD, Chiba, Japan  
Yoshihiro Hagiwara, MD, Sendai, Japan  
Norimasa Takahashi, MD, Funabashi, Japan  
Nobuaki Kawai, MD, Funabashi, Japan  
Kenji Kanazawa, MD, Sendai, Japan  
Eiji Itoi, MD, Sendai, Japan  
Diabetes mellitus and external rotation under 0° at first visit were risk factors of worse prognosis and age over 60 was of better prognosis in the treatment of stiff shoulder.

1:30 PM — 3:30 PM  Room N426  
Sports Medicine/Arthroscopy VII: Hip  
Moderator(s): Bruce A. Levy, MD, Rochester, MN  
Marc J. Philippon, MD, Vail, CO

1:30 PM  PAPER: 721  
At What Age Do Cam and Pincer Morphology Become Apparent: An Analysis of 225 Pediatric and Adolescent CT Scans  
Shafagh Monazzam, MD, San Diego, CA  
James D. Bomar, San Diego, CA  
Jerry R. Duwek, MD, San Diego, CA  
Harish S. Hosalkar, MD, San Diego, CA  
Andrew T. Pennock, MD, San Diego, CA  
Analysis of 225 pediatric CTs revealed increase in acetabular coverage and a decrease in alpha angle with age; with cam and pincer morphology first appearing at 10 and 12 years of age respectively.

1:36 PM  PAPER: 722  
Complications after Hip Arthroscopy: A Prospective Multicenter Study Using a Validated Grading Classification  
Christopher Larson, MD, Edina, MN  
John C. Clohisy, MD, Saint Louis, MO  
Paul E. Beaule, MD, Ottawa, ON, Canada  
M. R. Giveans, PhD, Eden Prairie, MN  
Rebecca M. Stone, ATC, Edina, MN  
Kathryn Samuelson, BS, Edina, MN  
There is very little published literature looking at comprehensive complication rates after hip arthroscopy with current techniques and indications.

An alphabetical faculty financial disclosure list can be found starting on page 292.
The Prevalence of CAM Impingement: A Study of 3,500 Adult Femurs
Shane Hanzlik, MD, Shaker Heights, OH
Michael Salata, MD, Cleveland, OH
Michael Abdulian, MD, Studio City, CA
Shane J. Nho, MD, Chicago, IL
Charles A. Bush-Joseph, MD, Chicago, IL
Daniele Gurin, BS, Cleveland, OH
The prevalence of CAM lesions of the femoral neck in 3558 femurs shows a prevalence of 30% in the general population with bilateral involvement in 80% of individuals.

Avulsion of Proximal Hamstrings: Is Non-Operative Management Justified?
Kamal Bali, MBBS, Crows Nest, Australia
David G. Wood, FRACS, Wollstonecraft, Australia
Evaluation of outcomes in 488 proximal hamstring avulsion injuries showed that complete avulsions should undergo early fixation while initial conservative management is justified in partial avulsions.

Morphology of the Anterior Acetabular Rim in an Asymptomatic Population
Michael D. Hellman, MD, Chicago, IL
Christopher E. Gross, MD, Chicago, IL
Michael Hart, Chicago, IL
Ryan Freedman, BS, Chicago, IL
Charles A. Bush-Joseph, MD, Chicago, IL
Shane J. Nho, MD, Chicago, IL
New anterior acetabular rim parameters are measured within an asymptomatic population and appear to be different than within a symptomatic population.

Hip Morphology as a Predictor of Radiographic Osteoarthritis and Total Hip Arthroplasty at 19-Year Follow Up
Geraint E. Thomas, MA, MBBS, Oxford, United Kingdom
Antony Palmer, MA, MBChB, Oxford, United Kingdom
Deborah Hart, MD
Tim D. Spector, MD
Harinderjit Gill, PhD, Oxford/Oxon, United Kingdom
David W. Murray, MD, Oxford, United Kingdom
Andrew J. Carr, FRCS, Headington Oxford, United Kingdom
Nigel Arden, MD, Oxford, United Kingdom
Sion Glyn-Jones, MA, MBBS, Oxford, United Kingdom
This study provides longitudinal evidence that measurements of hip morphology characteristic of FAI and undiagnosed mild dysplasia are centre edge angle) are predictive of OA development and THA.

Return to Duty After Mini-Open Arthroscopic Assisted Treatment of FAI in an Active Duty Military Population
Justin J. Ernat, MD, Tripler AMC, HI
Daniel Song, MD, Honolulu, HI
Gregory Y. Lee, MD, Kailua, HI
Lt.Col John M. Tokish, MD, Kailua, HI
Surgical treatment of FAI is effective in improving hip pain and function; however, with a return to duty rate of 53% the demands of the military may not be compatible with this subgroup of patients.

Can Patients Return to High Level Activity After Open Hip Preservation Surgery?
Ljiljana Bogunovic, MD, Saint Louis, MO
Meghan Gottlieb, Saint Louis, MO
John C. Clohisy, MD, Saint Louis, MO
Open hip preservation surgery with the surgical hip dislocation and/or periacetabular osteotomy does not preclude return to high level activity or sport in active patients.

Does Hip Motion Range after Arthroscopic Surgery Depend on the Extent of Cam Impingement Resection?
Myung-Sik Park, MD, Jeonju
Hongman Cho, MD, Gwangju
Sun Jung Yoon, Jeonju
Hal D. Martin, DO, Oklahoma City, OK
Range of motion changes after hip arthroscopic surgery.

Revision Hip Preservation Surgery following Treatment for Femoroacetabular Impingement
Sarah Knapp, BA, New York, NY
Bryan T. Kelly, MD, New York, NY
Anil S. Ranawat, MD, New York, NY
Struan H. Coleman, MD, New York, NY
Ernest L. Sink, MD, New York, NY
While residual cam deformity was the most commonly treated pathology at time of revision, extra-articular impingement and dysplasia were also addressed surgically.
Friday, March 22

2:48 PM  PAPER: 731
Arthroscopic Labral Repair Versus Selective Debridement Associated with FAI: A Prospective Randomized Study
Aaron J. Krych, MD, Rochester, MN
Matthew M. Thompson, MD, KS City, MO
ZaKary A. Knutson, MD, Oklahoma City, OK
Joanna Scoon, BA
Struan H. Coleman, MD, New York, NY

In a prospective randomized trial, arthroscopic treatment of FAI with labral repair resulted in superior improvement in functional outcomes and patient satisfaction compared with selective debridement.

2:54 PM  PAPER: 732
Response from Intra Articular Hip Injection to Predict Outcome after Arthroscopic Management of FAI
Oluwemi Ayeni, MD, MSc, Oakville, ON, Canada
Clary J. Foote, MD, Hamilton, ON, Canada
Kevin Debparshad, MD, Hamilton, ON, Canada
Sarah Crouch, BSc(Cand), Stony Creek, ON, Canada
Ze’ev Maizlin, MD, FRCP, Hamilton, ON, Canada
Forough Farrokhyar, PhD, Hamilton, ON, Canada

The results of this study showed that the response from an intraarticular hip injection is a poor predictor of short-term outcomes following arthroscopic management of FAI.

3:00 PM  PAPER: 733
The Impact of Ankle Bracing on Functional Ankle Instability in Elite Volleyball Athletes
Michael S. Pinzur, MD, Maywood, IL
Marc Angerame, MD, Charlotte, NC
Pietro M. Tonino, MD, Maywood, IL

The results of this investigation suggest a potential impairment in performance and dynamic stabilization while using a hinged ankle orthosis for prophylactic purposes.

3:12 PM  PAPER: 734
Can PRP Improve Healing of Achilles Tendon after Surgical Repair? A Case Control Randomized Study
Riccardo Maria Lanzetti, Roma, Italy
Alessandro Ciempi, MD, Roma, Italy
Angelo De Carli, MD, Rome, Italy
Antonio Vadala, MD, Rome, Italy
Domenico Lupariello, Matera, Italy
Giuseppe Argento, MD, Rome, Italy
Mario Vetrano, Rome, Italy
Maria C. Vulpiani, MD, Rome, Italy
Andrea Ferretti, MD, Rome, Italy

The use of PRP during surgery can improve tendon healing in Achilles tendon rupture, but in our study this did not correlate with a clinical advantage.

3:18 PM  PAPER: 735
Performance Outcomes after Repair of Complete Achilles Tendon Ruptures in National Basketball Association Players
Rohit Garg, MD, Chicago, IL
Nirae H. Amin, MD, Philadelphia, PA
Andrew B. Old, MD, Philadelphia, PA
Aaron Beck, BA, MS, Philadelphia, PA
Nader Toossi, MD, Philadelphia, PA
Douglas Cerynik, Downingtown, PA

Data analyzed for 18 NBA players with full Achilles ruptures over a 20-year period. 38.9% never returned to play. Playing time and performance decreased significantly for all returning athletes.

Discussion - 6 Minutes

PAPER PRESENTATION

1:30 PM — 3:30 PM
Room S102
Spine V: Infections and Complications
Moderator(s): Patrick J. Cahill, MD, Philadelphia, PA
Christopher G. Furey, MD, Cleveland, OH

1:30 PM  PAPER: 736
Use of Single Dose Tranexamic Acid to Reduce Blood Loss in Operative Thoracolumbar Trauma: A Comparative Study
Bhavuk Garg, MS Ortho, New Delhi, India
Sarvdeep S. dhatt, MS, Chandigarh, India
Vijay Kumar, MD, New Delhi, India
Rajesh Malhotra, MS, New Delhi, India

One single intravenous dose of TA (15mg/kg) just before surgery reduces intraoperative as well as postoperative blood loss in patients undergoing operative thoracolumbar trauma, without increasing risk of thromboembolic events.

1:36 PM  PAPER: 737
The Association between Allogenic Transfusion Volume and Infection Rates following Spine Surgery
Barrett I. Woods, MD, Pittsburgh, PA
Antonia Chen, MD, Pittsburgh, PA
William F. Donaldson III, MD, Pittsburgh, PA
Joon Y. Lee, MD, Pittsburgh, PA
James Kang, MD, Pittsburgh, PA

The volume of perioperative allogenic blood transfusion may be one of many factors that increases the risk of surgical site infection follow thoracolumbar and lumbar spine surgery.

An alphabetical faculty financial disclosure list can be found starting on page 292.
1:42 PM PAPER: 738
A Randomized Clinical Trial for the Treatment of Bedsores in Traumatic Paraplegia Patients
Rajeshwar N. Srivastava, MS, Lucknow, India

There is, however, recent evidence in the literature that negative pressure wound therapy helps in faster healing in a closed environment.

Discussion - 6 Minutes

1:54 PM PAPER: 739
Risk Factors and Surgical Outcome of Thoracic Ossification of the Ligamentum Flavum
Kei Ando, MD, Nagoya, Japan
Shiro Imagama, MD, Nagoya, Japan
Zenyu Ito, PhD, Nagoya, Japan
Naoki Ishiguro, MD, Nagoya, Japan

Ninety-six patients with thoracic OLF were evaluated. Patients with longer duration of symptoms, the ossification of dura mater, and Type D OALL had poorer surgical outcomes.

2:00 PM PAPER: 740
Intrawound Vancomycin Powder Prevented Bacterial Infection in a Rabbit Spine Surgical Model
Lukas P. Zebala, MD, Saint Louis, MO
Tapanut Chuntarapap, MD, Saint Louis, MO
Mike Talcott, DVM DACLAM, Saint Louis, MO
K. Daniel Riew, MD, Saint Louis, MO

Intrawound Vancomycin powder appears to be 100% effective at preventing surgical site infection in a rabbit spine surgery model.

2:06 PM PAPER: 741
Intrawound Vancomycin Powder Reduces Surgical Site Infections in Posterior Cervical Fusion
Cyrus T. Caroom, MD, Temple, TX
Jessica Tuellar, PhD, Houston, TX
Jason R. Jones, BS, MS, Georgetown, TX
Christopher D. Chaput, MD, Temple, TX

A prospective study with historical controls of 112 cases of multilevel posterior cervical fusion showed a decreased rate of surgical site infection with intrawound application of vancomycin powder.

Discussion - 6 Minutes

2:18 PM PAPER: 742
Bacteriology and Risk Factors of Late Deep Infection Following Spinal Fusion with Instrumentation
Sumeet Garg, MD, Denver, CO
Jaren LaGreca, BA, Aurora, CO
Mark Hotchkiss, BA, Aurora, CO
Kevin Messacar, MD, Aurora, CO
Ann-Christine Nyquist, MD, MSPH, Aurora, CO
Patrick Carry, Aurora, CO
Mark A. Erickson, MD, Aurora, CO

A 3% incidence of delayed deep infection following instrumented spinal fusion was identified at a single center with Propionibacterium acnes as the most commonly identified organism.

2:24 PM PAPER: 743
Spinal Epidural Abscesses: Risk Factors, Medical vs. Surgical Management; A Retrospective Review of 100 Cases
Timothy B. Alton, MD, Seattle, WA
Amit R. Patel, MD, York, PA
Carlo Bellabarba, MD, Seattle, WA
Jens R. Chapman, MD, Seattle, WA
Lee J. Michael, MD, Seattle, WA
Harsha Malempati, MD, Vancouver, BC, Canada
Richard J. Bransford, MD, Seattle, WA

A Single-Center Retrospective Review of 100 Patients with Spinal Epidural Abscesses: Risk Factors, Current Trends, Radiographic Analysis, and Outcomes of Medical vs Surgical Management.

2:30 PM PAPER: 744
Preoperative Narcotics and Anterior Cervical Surgery: A Post-hoc Analysis of Two Prospective, Randomized Trials
Michael P. Kelly, MD, Saint Louis, MO
Paul A. Anderson, MD, Madison, WI
K. Daniel Riew, MD, Saint Louis, MO

No differences in outcomes existed between patients taking high and low strength narcotics preoperatively.

Discussion - 6 Minutes

2:42 PM PAPER: 745
Rate of Venous Thromboembolic Events after Spine Surgery
William W. Schairer, San Francisco, CA
Andrew Pedtke, MD, San Francisco, CA
Serena S. Hu, MD, San Francisco, CA

We used a claims database with 100% of emergency, ambulatory, and inpatient claims to evaluate the rate of thromboembolic events up to 90 days after spine surgery.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
2:48 PM  PAPER: 746
Patient-Specific Factors and Co-Morbidities that Influence Mortality and Complications After Spinal Fusion
Andrew J. Schoenfeld, MD, Canutillo, TX
Paul A. Carey, MD, El Paso, TX
Philip J. Belmont Jr, MD, El Paso, TX
Andrew J. Schoenfeld, MD, Canutillo, TX
Several factors, including patient age, BMI, the absolute number of medical co-morbidities, pulmonary conditions, procedural times, and pre-operative albumin < 3.5 seem to influence the risk of post-operative morbidity.

2:54 PM  PAPER: 747
90-Day Readmission Rate after Spine Fusion for Adult Deformity
William W. Schairer, San Francisco, CA
Alexandra Carrer, MD, New York, NY
Vedat Deviren, MD, San Francisco, CA
Serena S. Hu, MD, San Francisco, CA
Praveen V. Munnameni, San Francisco, CA
Christopher Ames, MD, San Francisco, CA
Dean Chou, MD, San Francisco, CA
Steven Takemoto, PhD, San Francisco, CA
Sigurd H. Berven, MD, San Francisco, CA
This study evaluated the 90-day readmission rate after spine fusion for adult deformity, and assessed causes and associated risk factors.

3:06 PM  PAPER: 748
Towards Quality and Safety in Spinal Surgery: Use of a Multicenter Database Registry for Quality Improvement
Suken A. Shah, MD, Wilmington, DE
Michelle Marks, NMD, Tucson, AZ
Maty Petcharaporn, BS, San Diego, CA
Baron Lonner, MD, New York, NY
Peter O. Newton, MD, San Diego, CA
A multicenter adolescent idiopathic scoliosis (AIS) database registry was utilized to provide peer benchmark comparison data which can be used for process improvement and ongoing performance feedback.

3:12 PM  PAPER: 749
Reducing Adverse Event Reporting Bias in Spine Surgery
Joshua D. Auerbach, MD, Chappaqua, NY
Kevin B. McGowan, PhD, New York, NY
Marc Halwi, New York, NY
Greg Maislin, MS, MA, Wynnewood, PA
The use of an independent Clinical Events Committee to evaluate all adverse events from an industry-sponsored IDE trial revealed that 37% of all adverse events were re-classified, the vast majority of which were upgrades in the Ivel of severity, or a designation of greater relatedness to surgery or device.

3:18 PM  PAPER: 750
The National Burden of Revision Spinal Fusion: A Focus on Patient Characteristics and Complications
Sean Rajaee, MS, Woodland Hills, CA
Linda E. Kanim, MA, Los Angeles, CA
Hyun W. Bae, MD, Los Angeles, CA
This study presents (1) national trends in revision spinal fusion and (2) a comparison of co-morbidities, inpatient complications and surgical factors in revision spinal fusion compared to primary fusion discharges.

1:30 PM — 3:30 PM
Room S103
Practice Management/Rehabilitation III: Education
Moderator(s): Kevin P. Black, MD, Hershey
Roy Davidovitch, MD, New York, NY
Richard O. Lander, MD, Palmerston North, New Zealand

1:30 PM  PAPER: 751
Fluid Resuscitation Using Enteral Route is a Safe and Effective Alternative to Parenteral Resuscitation
Kavita Baghel, Lucknow, India
Rajeshwar N. Srivastava, MS, Lucknow, India
Saloni Rai, Bangalore, India
Fluid resuscitation using enteral route is a safe and effective alternative to parental resuscitation in patients undergoing major elective surgery.

1:36 PM  PAPER: 752
Physical Therapy after Unicompartmental Knee Arthroplasty: Is it Necessary?
Walter A. van der Weegen, MD, Geldrop, Netherlands
Noortje Koolen, Asten, Netherlands
Rogier van Drunen, Geldrop, Netherlands
H. J. Hoekstra, MD, Sterksel, Netherlands
The majority of patients (70%) recover very well after UKA without out-patient physical therapy (PT). If PT is needed, a short treatment course is sufficient to restore normal recovery.
1:42 PM  PAPER: 753  
**Time-Driven Activity-Based Costing in Orthopaedic Surgery: A Game Changer?**

Apurva Shah, MD, MBA, Iowa City, IA  
Sohrab Vork, MD, Columbus, OH  
William P. Hemmikus, BA, Boston, MA  
Mary L. Witkowski, MBA, Boston, MA  
Donald S. Bae, MD, Boston, MA  
William Maxwell, Boston, MA  
Peter M. Waters, MD, Boston, MA

Time-driven activity-based costing (TDABC) offers healthcare provider organizations an improved understanding of cost and cost drivers.

Discussion - 6 Minutes

1:54 PM  PAPER: 754  
**The Fate of Manuscripts Rejected by The Journal of Bone and Joint Surgery: American Volume**

Kanu M. Okike, MD, Baltimore, MD  
Munnder S. Kocher, MD, MPH, Boston, MA  
Benedict U. Nwachukwu, Boston, MA  
Charles T. Mehlman, DO, MPH, Cincinnati, OH  
James D. Heckman, MD, Manchester, VT  
Mohit Bhandari, MD, FRSC, Hamilton, ON, Canada

Most manuscripts not accepted by JBJS were published elsewhere within 5 years of rejection, and the factors predictive of subsequent publication were primarily investigator-related.

2:00 PM  PAPER: 755  
**AAOS Disclosure Policy Fails to Accurately Inform Its Members of Conflicts of Interest**

Michael Tanzer, MD, Montreal, QC, Canada  
Dylan Tanzer, Hampstead, Canada  
Karen Smith, CRA, Montreal, QC, Canada

This study reveals that surgeon compliance is very poor when comparing the disclosures of the Orthopaedic companies to the disclosures of these consultants in the AAOS Disclosure Program Records.

2:06 PM  PAPER: 756  
**Role of Vitamin D in Osteoarthritis Knee: A Six-Month Double Blind, Randomized, Placebo Control Trial**

Divya Sanghi, Lucknow, India  
Rajeshwar N. Srivastava, MS, Lucknow, India  
Saloni Raj, Bangalore, India

Inadequate sunlight exposure and lower serum levels of 25(OH)D appears to be associated with an increased risk for progression of Osteoarthritis knee

Discussion - 6 Minutes

2:18 PM  PAPER: 757  
**Residual Limb Measures During Work-Related Activities in Men with Transtibial Amputation due to Trauma**

William J. Ertl, MD, Oklahoma City, OK  
Carol Dionne, DPT, PhD, Oklahoma City, OK  
Jonathan Day, CPO, Oklahoma City, OK  
David M. Thompson, PT, PhD, Oklahoma City, OK  
Brenda J. Smith, PhD, Stillwater, OK  
Sesh Commuri, PhD, Norman, OK

Residual limb activity in osteomyoplastic trans-tibial amputees.

Discussion - 6 Minutes

2:24 PM  PAPER: 758  
**Long-term Safety and Efficacy of Tanezumab as Treatment for Osteoarthritis**

Evan F. Ekman, MD, Columbia, SC  
Alfonso Bello, MD, Glendive, IL  
David Radin, MD, Stamford, CT  
Isabelle Davignon, Ann Arbor, MI  
Michael D. Smith, Groton, CT  
Mark T. Brown, MD, Groton, CT  
Christine West, Groton, CT  
Kenneth M. Verburg, PhD, Groton, CT

Tanezumab monotherapy has sustained clinical utility in patients experiencing inadequate analgesia with existing therapies and potential to significantly impact orthopedic practice.

2:30 PM  PAPER: 759  
**Differentiating Septic Arthritis from Acute Atraumatic Joint Effusion**

Robert A. Gallo, MD, Hershey, PA  
John Roberts  
Schaefer Eric, Hershey, PA

Differentiating septic arthritis from other causes of effusion can be difficult. Among variables tested, only CRP was statistically different among culture-positive and culture-negative effusions.

Discussion - 6 Minutes

2:42 PM  PAPER: 760  
**Critical Analysis of a Trauma Fellowship-modeled Six-year Orthopaedic Surgery Training Program**

Alan H. Daniels, MD, Providence, RI  
Matthew McDonnell, MD, Providence, RI  
Michael G. Ehrlich, MD, Providence, RI  
Peter G. Trafton, MD, Providence, RI  
Roman A. Hayda, MD, Providence, RI  
Christopher T. Born, MD, Providence, RI  
Staci Fischer, Providence, RI  
Christopher W. DiGiovanni, MD, Providence, RI

The trauma fellowship-modeled sixth year of training was felt to be an extremely valuable experience by a majority of trainees, especially those who completed residency under duty hour restrictions.

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.*
2:48 PM  PAPER: 761  PRESENTATION
Prevalence of Answers to OITE Questions in Three Commonly Used Orthopaedic Review Sources
Chad A. Krueger, MD, Fort Sam Houston, TX
Irshad A. Shakir, MD, Saint Louis, MO
Brian C. Fuller, MD, Fort Sam Houston, TX

Online-based orthopaedic review sources may expose residents to more OITE answers than traditional text-based review sources.

2:54 PM  PAPER: 762  PRESENTATION
Orthopaedic Surgery Residency Application Process: Survey of Graduating Medical Students
Debdut Biswas, MD, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL
Walter W. Virkus, MD, Chicago, IL
Brett R. Levine, MD, Chicago, IL

A survey study of graduating medical students applying for residency in Orthopaedic Surgery reveals the factors that influenced them when evaluating and ranking individual residency training programs.

3:06 PM  PAPER: 763  PRESENTATION
A Surgical Skills Simulation Training Program in an Articular Fracture Model for Orthopaedic Junior Residents
Jennifer Y. Kho, MD, Iowa City, IA
Matthew D. Karam, MD, Iowa City, IA
Gary T. Ohrt, Iowa City, IA
Geb Thomas, PhD, Iowa City, IA
Tameem M. Yehyaoui, MD, Iowa City, IA
Donald D. Anderson, PhD, Iowa City, IA
John L. Marsh, MD, Iowa City, IA

Simulation training in an articular fracture model improves performance in junior residents, as measured by higher Objective Structured Assessment of Technical Skills scores and less fluoroscopy time.

3:12 PM  PAPER: 764  PRESENTATION
The Impact of Tort Reform and Quality Improvements on Medical Liability Claims: A Tale of Two States
Kenneth Illingworth, MD, Springfield, IL
Steve Shaha, Draper, UT
Brooke Robinson, MPh, Springfield, IL
Michael Sinha
Khaled J. Saleh, MD, MSc, Springfield, IL

Quality improvements alone can significantly decrease healthcare costs by decreasing the frequency of medical liability claims.

3:18 PM  PAPER: 765  PRESENTATION
Disparity Between Primary Care Physicians and Orthopedists in the Use of Magnetic Resonance Imaging
Paul Johnson, MD, Latham, NY
Jared T. Roberts, MD, Watervliet, NY
Ian J. Dempsey, MSIV, Albany, NY
Shazaan Hushmendy, Albany, NY

We found significant differences between Primary Care Physicians and Orthopedists in the rate of MRI scans ordered and in the utility of those scans in identifying arthroscopically operable pathology.

3:30 PM — 4:30 PM  COURSE
Let’s Do A Total Shoulder Replacement
Moderator: Edward V. Craig, MD, New York, NY
Lynn A. Crosby, MD, Augusta, GA
Thomas B. Edwards, MD, Houston, TX
Evan L. Flatow, MD, New York, NY
John W. Sperling, MD, MBA, Rochester, MN

Through presentation by lecture, video, saw-bones laboratory, and case discussion, registrants will learn a safe and effective technique of unconstrained and reverse shoulder arthroplasty. Simulated bone models only.

4:00 PM — 6:00 PM  SYMPOSIUM
Hip Arthroscopy: To the Cutting Edge… Without Falling Off (BB)
Moderator: Dean K. Matsuda, MD, Los Angeles, CA

A fast-paced case-based interactive discussion with renowned faculty on emerging, evolving, and controversial hip arthroscopy topics with audience participation.

I. Introductions and Indications
Dean K. Matsuda, MD, Los Angeles, CA

II. Dysplasia
J.W. Thomas Byrd, MD, Nashville, TN

III. Femoroacetabular Impingement Controversies I
John C. Clohisy, MD, Saint Louis, MO

IV. Femoroacetabular Impingement Controversies II
Marc J. Philippon, MD, Vail, CO

V. Femoroacetabular Impingement Controversies III
Thomas G. Sampson, MD, San Francisco, CA
Friday, March 22

VI. Chondral Repair and Restoration
Marc R. Safran, MD, Redwood City, CA

VII. Osteosynthesis and OCD
Dean K. Matsuda, MD, Los Angeles, CA

VIII. Peritrochanteric Space Disorders
Asheesh A. Bedi, MD, Ann Arbor, MI

IX. Subgluteal Pubalgia
Christopher M. Larson, MD, Edina, MN

X. Case Presentations/Question and Answer Session
Panel

SYMPOSIUM
4:00 PM — 6:00 PM
Room S406
Orthopaedic Trauma Mythbusters (CO)
Moderator: Robert F. Ostrum, MD, Chapel Hill, NC
Examine some of the myths associated with the care of fracture and trauma patients. Evidence based lectures, case presentations, and audience response will be part of this learning experience.

I. Minimally Invasive Fracture Surgery Is Of Minimal Benefit To The Patient
Robert F. Ostrum, MD, Chapel Hill, NC

II. Case Presentations
Paul Tornetta III, MD, Boston, MA

III. Intra-op Cultures Have No Role In The Management Of Open Fractures And Should Be Abandoned
J. Tracy Watson, MD, Saint Louis, MO

IV. Case Presentations
Robert A. Probe, MD, Temple, TX

V. Locking Plates Are Always Best For Tibial Plateau Fractures
Paul Tornetta III, MD, Boston, MA

VI. Case Presentations
J. Tracy Watson, MD, Saint Louis, MO

VII. Femoral Shaft Fractures Should Be Fixed Only On The Day Of Injury
Robert A. Probe, MD, Temple, TX

VIII. Case Presentations
Robert F. Ostrum, MD, Chapel Hill, NC

INSTRUCTIONAL COURSE LECTURE
4:00 PM — 6:00 PM
Room S228
461 Complications after Total Hip Arthroplasty: Current Strategies for Prevention and Treatment
Moderator: Craig J. Della Valle, MD, Chicago, IL
Fares S. Haddad, FRCS, London, United Kingdom
David J. Jacobsky, MD, Phoenix, AZ
Robert M. Meneghini, MD, Fishers, IN
Learn to avoid and optimize the management of complications associated with total hip arthroplasty including dislocation and leg length discrepancy, infection, symptomatic DVT and periprosthetic fractures.

462 Strategic Marketing: Spend Less and Expect To Win
Moderator: Bill Champion, Omaha, NE
Tony Edwards, Omaha, NE
Based on the best research and data gathered over nearly 25 years dedicated to marketing orthopaedic practices. Present data-driven strategies for practices interested in establishing a clear competitive advantage in their market, while allocating their resources effectively and efficiently.

463 Massive Rotator Cuff Tears: Arthroscopy to Arthroplasty
Moderator: Robert H. Bell, MD, Akron, OH
Frances Cuomo, MD, New York, NY
Reuben Gobezie, MD, Cleveland, OH
Gerald R. Williams Jr, MD, Philadelphia, PA
Cover the diagnosis, classification and treatment of massive cuff tears, including open and arthroscopic repair, the use of grafts and transfers, and arthroplasty options.

464 Risks, Benefits and Evidence-Based Recommendations for Improving the Outcome of ACL Reconstruction
Moderator: James H. Lubowitz, MD, Taos, NM
Matthew T. Provencher, MD, San Diego, CA
John M. Tokish, MD, Kailua, HI
Nikhil N. Verma, MD, Chicago, IL
Describe the risks and benefits of ACL reconstruction with focus on anatomy, graft selection, rehabilitation, and fixation. Each case presentation will be the basis for a faculty panel discussion and audience question and answer session, where faculty will review evidence-based recommendations for improving outcome based upon comparative effectiveness research.

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Friday, March 22

465 Lumbar Spinal Stenosis: Today and Tomorrow
Moderator: Darrel S. Brodke, MD, Salt Lake City, UT
D G. Anderson, MD, Moorestown, NJ
Theodore J. Choma, MD, Columbia, MO
Brandon Laurence, MD, Salt Lake City, UT
This course will cover the indications and evidence base for current treatment options in spinal stenosis, as well as future trends, including minimally invasive techniques.

466 The Management of Meniscal Pathology: From Partial Meniscectomy to Transplantation
Moderator: Laith M. Jazrawi, MD, New York, NY
Philip A. Davidson, MD, Park City, UT
James N. Gladstone, MD, New York, NY
Eric Strauss, MD, New York, NY
Provide a focused consolidation of expert lectures on current diagnoses and management of meniscus pathology and treatment.

467 Fractures and Dislocations About the Elbow and Their Adverse Sequelae: Contemporary Perspectives
Moderator: Mark S. Cohen, MD, Chicago, IL
Graham J. King, MD, London, ON, Canada
Shawn W. O’Driscoll, MD, Rochester, MN
Scott P. Stemmell, MD, Rochester, MN
Based upon clinical cases and surgical videos, this course will address contemporary treatments and controversies regarding traumatic injuries about the elbow and their sequel.

PAPER PRESENTATION

4:00 PM — 6:00 PM
Room S105

Adult Reconstruction Hip VII: Metabolic Issues in Total Hip Arthroplasty / Complications in Total Hip Arthroplasty
Moderator(s): David C. Ayers, MD, Worcester, MA
John Owen, MD, Sydney, Australia

4:00 PM PAPER: 766
No Increased Risk of Venous Thromboembolism with Tranexamic Acid after Primary Hip and Knee Arthroplasty
Blake P. Gillette, MD, Rochester, MN
Lori J. Desimone, PA-C, Rochester, MN
Hugh M. Smith, MD, PhD, Rochester, MN
Christopher Duncan, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
Mark W. Pagnano, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
Venous thromboembolic complications compared with and without intraoperative tranexamic acid after primary total hip and knee arthroplasty within three different DVT prophylactic regimens.

4:06 PM PAPER: 767
Topical Tranexamic Acid is a Useful Adjunct in a Blood Management Program for Primary Total Hip Arthroplasty
Brian R. Hamlin, MD, Pittsburgh, PA
Gerhardt Konig, MD, Pittsburgh, PA
Jonathan Waters, MD, Pittsburgh, PA
Anthony M. DiGioia III, MD, Pittsburgh, PA
The topical application of the antifibrinolytic tranexamic acid significantly decreased the blood loss and transfusion requirements in patients undergoing primary total hip arthroplasty.

4:12 PM PAPER: 768
Pulmonary Embolus Following Total Joint Arthroplasty: Identification and Stratification of Risk Factors
Javad Parvizi, MD, FRCS, Philadelphia, PA
Ronald Huang, MD, Philadelphia, PA
William V. Arnold, MD, Jenkintown, PA
Ibrahim Raphael, MD, Philadelphia, PA
James J. Purtill, MD, Philadelphia, PA
Richard H. Rothman, MD, Philadelphia, PA
Patients that are obese, undergo knee procedures, have an elevated CCI, COPD, atrial fibrillation, anemia, depression, and postoperative DVT are at a higher risk of developing a pulmonary embolism.

4:24 PM PAPER: 769
Mobile Compression Devices are Efficacious for VTE Prophylaxis Following Total Joint Arthroplasty
Ryan Nunley, MD, Saint Louis, MO
Robert L. Barrack, MD, Saint Louis, MO
John C. Clohisy, MD, Saint Louis, MO
James A. Keeney, MD, Saint Louis, MO
Staci Johnson, M.Ed, Saint Louis, MO
Douglas J. McDonald, MD, Saint Louis, MO
Use of a mobile compression device is excellent for VTE prophylaxis in primary and revision total joint arthroplasty and is associated with high efficacy and high patient compliance.

4:30 PM PAPER: 770
Thromboembolic and Bleeding Events following Elective Hip and Knee Arthroplasty using Oral Factor Xa Inhibitor
John J. Murnaghan, MD, MSc, Toronto, ON, Canada
Deborah A. Murnaghan, RN, CRC, Toronto, ON, Canada
Helen Razmjou, PhD, Toronto, ON, Canada
Andrea Donovan, MD, Toronto, ON, Canada
Vikas K. Bansal, MD, Toronto, ON, Canada
Jeffrey D. Gollish, MD, Toronto, ON, Canada
Prospective observational study of 2342 subjects followed for 3 mos had 1.2% VTE, 4 deaths (not attributed to VTE or bleeding), 1 major bleed and 5% transfusions.
**Friday, March 22**

**3:36 PM**  
**Paper: 771**  
Should Patients Undergoing Elective Arthroplasty Be Screened for Malnutrition?  
Glenn J. Kerr, MD, Glen Allen, VA  
Max Greenky, Philadelphia, PA  
Ronald Huang, MD, Philadelphia, PA  
Matthew Austin, MD, Philadelphia, PA  
James J. Purtill, MD, Philadelphia, PA  
William J. Hozack, MD, Philadelphia, PA  
Javad Parvizi, MD, FRCSS, Philadelphia, PA  
Malnutrition is prevalent in total joint arthroplasty patients. Serum albumin and transferrin are useful pre-operative screening labs and are predictive of an increased rate of complications.

**Discussion - 6 Minutes**

**4:48 PM**  
**Paper: 772**  
Hemoglobin A1C is a Marker for Surgical Risk in Diabetic Patients Undergoing Total Joint Arthroplasty  
Nicholas J. Giori, MD, Palo Alto, CA  
Alexander H. Harris, PhD, MS  
In 6090 diabetic patients having TJA, those with HbA1c > 7% had 68% increased odds of 30 day mortality (p<.05) and 24% increased odds of complications compared to patients with HbA1c<7% (p=.02).

**5:18 PM**  
**Paper: 776**  
Complications Following Conversion Total Hip Replacement After Fixation of Intertrochanteric Hip Fractures  
Christine Pui, MD, Minneapolis, MN  
Mathias P. Bostrom, MD, New York, NY  
Geoffrey H. Westrich, MD, New York, NY  
Craig J. della Valle, MD, Chicago, IL  
William B. Macaulay, MD, New York, NY  
Michael A. Mont, MD, Baltimore, MD  
Douglas E. Padgett, MD, New York, NY  
Conversion total hip replacement for intertrochanteric hip fracture after cephalomedullary fixation is associated with a significantly higher complication rate than after sliding hip screw fixation.

**Discussion - 6 Minutes**

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**Friday, March 22**

**5:42 PM**
**PAPER: 779**

**Mortality, Cost and Downstream Disease of Total Hip Arthroplasty Patients in the Medicare Population**
Scott T. Lowald, PhD, MBA, Philadelphia, PA
Kevin Ong, Philadelphia, PA
Edmund Lau, MS, Menlo Park, CA
Jordana K. Schmier, MA, Alexandria, VA
Kevin J. Bozic, MD, MBA, San Francisco, CA
Steven M. Kurtz, PhD, Philadelphia, PA

Cost, mortality and disease outcomes were compared between hip osteoarthritic patients who underwent total hip replacement therapy and those who did not.

**5:48 PM**
**PAPER: 780**

**90-Day Readmission Rate for Total Hip Arthroplasty**
William W. Schairer, San Francisco, CA
David Sing, San Francisco, CA
Thomas P. Vail, MD, San Francisco, CA
Kevin J. Bozic, MD, MBA, San Francisco, CA

This study assessed all planned and unplanned hospital readmissions following total hip arthroplasty (THA) procedures, and identified risk factors associated with unplanned hospital readmission.

**4:00 PM — 6:00 PM**
**Room N427**

**Shoulder and Elbow VI: Elbow Disorders**
Moderator(s): Theodore A. Blaine, MD, New Haven, CT
Thomas Throckmorton, MD, Germantown, TN

**4:00 PM**
**PAPER: 781**

**The Epidemiology of Lateral and Medial Epicondylitis and Its Surgical Treatment**
Neil G. Harness, MD, Villa Park, CA
Gabriel T. Trainer, MD, Corona Del Mar, CA

This study found the incidence and prevalence of lateral and medial epicondylitis in a large, adult patient population and the number of epicondylitis cases that are treated surgically within one year.

**4:06 PM**
**PAPER: 782**

**Suture Anchor Repair is More Effective for Chronic Lateral Epicondylitis than Debridement**
Raymond R. Monte, MD, Nantucket, MA

The long-term clinical results of combined extensor carpi radialis brevis (ECRB) debridement and suture anchor repair were superior to ECRB debridement alone.

**4:12 PM**
**PAPER: 783**

**Prospective Randomized Study for Treatment of Lateral Epicondylitis Comparing PRP and Three Different Methods**
Sang-hoon Lhee, Seoul

According to our level 1 study for lateral epicondylitis, PRP showed better outcome compared to prolotherapy, ESWT and physiotherapy. Ultrasound serial followup showed no difference among 4 methods.

**4:24 PM**
**PAPER: 784**

**Intermediate Term Follow Up on Distal Humeral Hemiarthroplasty**
Rick F. Papandrea, MD, Waukesha, WI

Intermediate follow up of 3 to 11 years demonstrates good to excellent results in 7 of 8 distal humeral hemiarthroplasties.

**4:30 PM**
**PAPER: 785**

**Arthrodesis for Failed Elbow Arthroplasty**
Philip Mulieri, MD, Danbury, CT
Randall Otto, MD, Fenton, MO
Mark A. Migbell, MD, Tampa, FL
Randall Otto, MD, Fenton, MO
Philip Mulieri, MD, Danbury, CT

Elbow arthrodesis with plating and grafting can result in acceptable outcomes for patients with failed elbow arthroplasty, but it is not recommended as a salvage procedure for an infected elbow.

**4:36 PM**
**PAPER: 786**

**Effect of Radial Head Implant Shape on Joint Contact Area and Location during Static Loading**
Hannah L. Shannon, London, ON, Canada
Simon R. Deluce, London, ON, Canada
Emily Lalone, PhD, London, ON, Canada
Ryan Willing, PhD, London, ON, Canada
Graham J. King, MD, London, ON, Canada
James A. Johnson, PhD, London, ON, Canada

In this biomechanical study, the effect of implant shape on radiocapitellar joint contact area and location was examined.

**4:48 PM**
**PAPER: 787**

**Incidence of Post-Operative Elbow Contractures**
Mark Schrumpf, MD, Sausalito, CA
Huong Do, MA, New York, NY
Stephen Lyman, PhD, New York, NY
Robert G. Marx, MD, New York, NY
Aaron Daluiski, MD, New York, NY

The incidence of post-traumatic elbow contracture that undergoes surgical release depends upon the severity of the initial diagnosis and treatment.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Friday, March 22

4:54 PM  PAPER: 788
Heterotopic Ossification After Surgery of Distal Humerus Fractures
Antonio Maria Foruria de Diego, MD, PhD, Madrid, Spain
Tom M. Lawrence, MD, Nottingham, United Kingdom
Salvador Augustin, MD, Madrid, Spain
Bernard F. Morrey, MD, San Antonio, TX
Joaquin Sanchez-Sotelo, MD, Rochester, MN

Heterotopic bone continues to be a clinically significant complication interfering with elbow motion in one third of the patients undergoing surgery for distal humerus fractures.

5:00 PM  PAPER: 789
Radial Head Implant Shape Does Not Affect Radiocapitellar Kinematics During In-Vitro Forearm Rotation
Hannah L. Shannon, London, ON, Canada
Simon R. Deluce, London, ON, Canada
Josh W. Giles, BESc, London, ON, Canada
Jim A. Johnson, PhD, London, ON, Canada
Graham J. King, MD, London, ON, Canada

This in-vitro biomechanical study compared radiocapitellar kinematics for three implant s as well as the native head to determine the optimal shape of a radial head implant to ensure proper tracking.

5:12 PM  PAPER: 790
Factors Affecting Supination Strength Following a Distal Biceps Rupture
Christopher C. Schmidt, MD, Pittsburgh, PA
Brandon Brown, BS, Pittsburgh, PA
Prasad J. Sawardeker, MD, Eureka, MO
Martin deGravelle, MD, Delhi, LA
Mark C. Miller, PhD, Pittsburgh, PA

Our measurements show greater than previously reported supination strength loss; furthermore the strength loss is independent of forearm position, dominance, time from injury, pain and disability.

5:18 PM  PAPER: 791
Implication of Proximal Ulna Anatomy in Distal Biceps Tendon Ruptures and Elbow Osteoarthritis
Alec Cikes, MD, Lausanne, Switzerland
Julien Chapelou, Montreal, QC, Canada
Jonah Hebert-Davies, MD, Montreal, QC, Canada
Emilie Sandman, MD, Outremont, QC, Canada
Roger P. van Riet, MD, Wârnik, Belgium
Dominique Rouleau, MD, Montreal, QC, Canada

The etiology of osteoarthritis and distal biceps tendon rupture is multifactorial. However, the proximal ulna dorsal angulation plays a role in both pathologies by affecting the elbow range of motion.

5:24 PM  PAPER: 792
Prognosis for Recovery of Posterior Interosseous Nerve Palsy After Distal Biceps Repair
Phillip T. Nigro, MD, Darien, IL
Richard A. Cam Jr, MD, Tampa, FL
Mark A. Migbell, MD, Tampa, FL

All patients that developed a posterior interosseous nerve palsy after primary distal biceps repair eventually recovered at an average of 86 days postoperatively.

5:36 PM  PAPER: 793
Results of Lateral Ulno-Collateral Ligament Repairs of the Elbow: Is a Tendon Graft Necessary?
Mark Schrumpf, MD, Sausalito, CA
Aaron Daluisi, MD, New York, NY
Joseph Nguyen, MPH, New York, NY
Robert N. Hotchkiss, MD, New York, NY

Direct surgical repair of the lateral ulnar collateral ligament complex (LUCL) can reliably be performed with good outcomes regardless of the chronicity of the injury.

5:42 PM  PAPER: 794
Anatomical Study of the Coracoid Process: Safety Margin and Practical Implication
Benno Ejnisman, MD, Sao Paulo, Brazil
Bernardo Terra, MD, Vitória, Brazil
Eduardo A. Ferreira do Sr, MD, São Paulo, Brazil
Alberto C. Pochini, MD, Sao Paulo, Brazil
Carlos Andreoli, MD, San Paulo, Brazil
Gustavo C. Monteiro, MD, Sao Paulo, Brazil
Carina Cohen, MD, Sao Paulo, Brazil
Paulo S. Belangero, MD, Sao Paulo, Brazil

The aim of this study is to define a safety margin for coracoid process osteotomy that does not compromise the coracoclavicular ligaments and that can be identified reproducibly during surgery.

5:48 PM  PAPER: 795
A Novel Investigation into the Mechanism of Acute Elbow Dislocation
Joseph Schreiber, MD, New York, NY
Russell F. Warren, MD, New York, NY
Robert N. Hotchkiss, MD, New York, NY
Aaron Daluisi, MD, New York, NY

Acute elbow dislocations fall into one of four discrete patterns. They occur in relative extension from a valgus deformity suggesting an initial and requisite MCL disruption.

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Friday, March 22

**PAPER PRESENTATION**

**4:00 PM — 6:00 PM**
**Room N426**

**Hand and Wrist III: Nerve, Imaging, and Outcomes Evaluation**
Moderator(s): Julie E. Adams, MD, Minneapolis, MN
Gordon A. Brody, MD, Palo Alto, CA

**4:00 PM**
**PAPER: 796**
**Utility of Electrodiagnostic Studies in the Diagnosis of Ulnar Nerve Entrapment**
Vamsi Kancherla, MD, Bethlehem, PA
Kristofer S. Mattullo, MD, Ambler, PA

Electrodiagnostic studies had a significant and clinically relevant impact on treatment plans for carpal tunnel syndrome.

**4:06 PM**
**PAPER: 797**
**Changes in Treatment Plan for Carpal Tunnel Syndrome Based on Electrodiagnostic Test Results**
Stéphanie J. Becker, MD, Boston, MA
Heeren Makamji, MS, Boston, MA
David C. Ring, MD, Boston, MA

A three-fold incidence of CTS was found in patients treated for multiple TD versus those with single TD. Awareness of this association may aid in early diagnosis and treatment of CTS these patients.

**4:12 PM**
**PAPER: 798**
**The Association Between Multiple Trigger Digits and Ipsilateral Carpal Tunnel Syndrome**
Lauren E. Wessel, BS, Saint Louis, MO
Duretti Fufa, MD, Saint Louis, MO
Martin I. Boyer, MD, Saint Louis, MO
Ryan P. Caffee, MD, Saint Louis, MO

Increased MMP-3, bFGF, and VEGF expression was associated with the degenerative changes of transverse carpal ligament and may play a role in pathogenesis of carpal tunnel syndrome.

**4:24 PM**
**PAPER: 799**
**Outcomes of Mini-Open Carpal Tunnel Release at a Minimum Ten-Year Follow Up**
Dexter Louie, BA, Boston, MA
Brandon E. Earl, MD, Boston, MA
Jamie E. Collins, MA, Boston, MA
Elena Losina, MD, Boston, MA
Jeffrey N. Katz, MD, Brookline, MA
Eric M. Black, MD, Boston, MA
Barry P. Simmons, MD, Boston, MA
Philip E. Blazar, MD, Boston, MA

At a minimum of 10 years after mini-OCTR patients report high satisfaction, low levels of symptoms and functional impairment, and very low levels of revision surgery.

**4:30 PM**
**PAPER: 800**
**Increased MMP-3, bFGF and VEGF Expressions in Idiopathic Carpal Tunnel Syndrome**
Sittisak Honsawek, MD, PhD, Bangkok, Thailand
Prawit Kitidumrongsook, MD, Bangkok, Thailand
Vina Parkpian, MD, Bangkok, Thailand

Increased MMP-3, bFGF, and VEGF expression was associated with the degenerative changes of transverse carpal ligament and may play a role in pathogenesis of carpal tunnel syndrome.

**4:36 PM**
**PAPER: 801**
**Comparison between Long Nerve Grafts and Nerve Transfers for Axillary Nerve Injuries**
Scott W. Wolfe, MD, New York, NY
Parker Johnsen, BS, Christiansburg, VA
Adele Mirbey, BA, New York, NY
Joseph Feinberg, MD, New York, NY
Steve K. Lee, MD, New York, NY

While nerve grafts >7cm have traditionally been associated with poor outcomes, we demonstrated excellent and comparable results of long nerve grafts and nerve transfers for axillary nerve palsy.

**5:00 PM**
**PAPER: 804**
**Functional Outcomes of Microsurgical Toe Transfers for Reconstruction of Pediatric Adactylous Hand Deformities**
Jesse Kaplan, BS, Newport Beach, CA
Neil E. Jones, MD, Orange, CA

Children with congenital missing digits who undergo reconstruction by microsurgical toe-to-hand transfer can achieve remarkable gains in function, sensation and ability to perform daily activities.
Intraoperative Fluorescent Angiography to Assess Flap Perfusion and Optimize Coverage of Wartime Extremity Wounds

Reed Heckert, MD, Bethesda, MD
Scott M. Tintle, MD, Fairfax, VA
Mark Fleming, DO, Clarksburg, MD
Ian L. Valerio, MD, MS, MBA, Bethesda, MD

This technique allows for intraoperative imaging of free, pedicle or local tissue flaps to optimize coverage of traumatic wounds and fractures.

Does Recent Deep Vein Thrombosis and/or Pulmonary Embolus Preclude Complex Extremity Flap Reconstruction?

Reed Heckert, MD, Bethesda, MD
Scott M. Tintle, MD, Fairfax, VA
Mark Fleming, DO, Clarksburg, MD
Ian L. Valerio, MD, MS, MBA, Bethesda, MD

Free and pedicle tissue transfers can be safely performed in patients with extremity trauma in the setting of acute PE or DVT.

Axial MRI Sequences Versus Coronal Sequences for Detecting Scapholunate Ligament Tears: Which is More Sensitive?

Harry G. Greditzer IV, MD, Miami Beach, FL
Check C. Kam, MD, Zionsville, IN
Douglas N. Mintz, MD, Miami, FL
Paul D. Clifford, MD, Miami Shores, FL
Robert R. Gray, MD, Miami, FL
Jean Jose, MSc, DO, Miami, FL

Scapholunate ligament (SL) injuries can often be difficult to detect using non-contrast magnetic resonance imaging. Our study demonstrates that SL tears are more readily detectable on axial sequences.

Factors Associated with being a Nonresponder to a Research Study

Arjan G. Bot, MD, Boston, MA
Jade A. Anderson, Boston, MA
Valentin Neuhaus, MD, Boston, MA
David C. Ring, MD, Boston, MA

We enrolled 104 patients in a prospective study and asked them to complete a 6 month follow-up in order to study differences between patients that did follow-up and those that did not.

The Comparison of Paper- and Web-based Questionnaires in Patients with Hand and Upper Extremity Illness

Arjan G.J. G. Bot, MD, Boston, MA
Mariano E. Menendez, Boston, MA
Valentin Neuhaus, MD, Boston, MA
Chaitanya S. Mudgal, MD, Boston, MA
David C. Ring, MD, Boston, MA

We prospectively evaluated the differences in QuickDASH, PHQ-2, PSEQ, pain, SHAI-6 and PCS-6 questionnaire outcomes when administered in web- and paper-based format in hand patients.

Internet health information regarding CMC arthritis of the thumb is of generally poor quality and highly variable.

Variations in Costs of Spinal Implants

Sohrab Pahlavan, MD, Orange, CA
Samuel Bederman, MD, PhD, FRCCS, Orange, CA

Comparing purchasing records of a group of academic medical centers revealed variability in the unit costs of spinal implants, which did not correlate to the purchase volumes.

MRI utilization increased with practice volume and decreased over recent years due to utilization review.
Friday, March 22

4:12 PM  **PAPER: 813**

**Validity of Computed Tomography versus Manual Measurements in the Three-Dimensional Spine Structure**

Jason T. Le, BS, Norfolk, VA  
Wooin Cho, MD, PhD, New York, NY  
Adam L. Shimer, MD, Charlottesville, VA  
Brian C. Werner, MD, Charlottesville, VA  
John A. Glaser, MD, Charleston, SC  
Francis H. Shen, MD, Charlottesville, VA

CT and manual measurements were made on cadaver, and compared along multiple anatomical parameters. Both methods compared well. Anatomical landmarks are important in achieving a precise specimen.

Discussion - 6 Minutes

4:24 PM  **PAPER: 814**

**Diffusion Tensor Imaging in Assessing the Extent of Severity of Spinal Cord Injury in a Calf Spinal Cord Model**

S Rajasekaran, PhD, Coimbatore, India  
Rishi M. M. Kanna, MRCS, Coimbatore, India  
Ajoy P. Shetty, Coimbatore, India

Diffusion Tensor Imaging of the Spinal Cord is a novel method of quantifying the severity of spinal cord injury and to differentiate intact and injured fiber tracts of spinal cord.

Discussion - 6 Minutes

4:30 PM  **PAPER: 815**

**Oxy133, A Novel Oxysterol, Induces Osteogenic Differentiation In Vitro and Promotes Spine Fusion In Vivo**

Scott Montgomery, MD, Venice, CA  
Jared Johnson, MD, Los Angeles, CA  
Bayan Agbadi, BA, Clovis, CA  
Haijun Tian, MD, Shanghai, China  
Hirokazu Inoue, MD, Shimotsuke, Japan  
Jeffrey C. Wang, MD, Sherman Oaks, CA  
Michael D. Daubs, MD, Santa Monica, CA  
Farhad Parhami, PhD

Oxy133 induced osteogenic differentiation in vitro and spinal fusion in vivo, demonstrating potential to promote bone formation in orthopaedic applications such as spinal fusion and fracture healing.

Discussion - 6 Minutes

4:36 PM  **PAPER: 816**

**A Novel Source of Mesenchymal Stem Cells: Isolation and Characterization**

Joseph S. Fernandez-Moure, MD, MD, Houston, TX  
Bradley K. Weiner, MD, Houston, TX  
Pralena Rameshwar, PhD, Newark, NJ  
Barbara Bass, Houston, TX  
Ennio Tasciotti, PhD, Houston, TX

Isolation and characterization of mesenchymal stromal cells from spinal lamina cortical bone for use in bone grafting and tissue engineering.

Discussion - 6 Minutes

4:48 PM  **PAPER: 817**

**Human Adipose Derived Stromal Cells in a Novel 3D Culture System for Spine Fusion: An In Vitro and In Vivo Investigation**

Brian C. Werner, MD, Charlottesville, VA  
Haixiang Liang, MD, Charlottesville, VA  
Hulan Shang, Charlottesville, VA  
Gary Balian, PhD, Charlottesville, VA  
Adam J. Katz, MD, Gainesville, FL  
Francis H. Shen, MD, Charlottesville, VA

Human adipose-derived stromal cells cultured as multicellular aggregates allow improved manipulation during transplantation and exhibit increased osteogenic differentiation and matrix mineralization.

4:54 PM  **PAPER: 818**

**Laser Surface Topography to Assess Wear and Deformation in Retrieved Total Disc Replacements**

Fadi Taher, MD, New York, NY  
Darren R. Lebl, MD, New York, NY  
Frank P. Cammisa Jr, MD, New York, NY  
Joseph Nguyen, MPH, New York, NY  
Timothy M. Wright, PhD, New York, NY  
Celeste Abojornson, PhD, New York, NY

Sixteen retrieved total disc replacements (TDRs) were examined by laser scanning. Average dimensional changes were greater and affected a larger surface area in lumbar compared to cervical TDRs.

Discussion - 6 Minutes

5:00 PM  **PAPER: 819**

**Pedicle Screw Re-Insertion Using Previous Pilot Hole and Trajectory Does Not Reduce Fixation Strength**

Daniel Kang, MD, Bethesda, MD  
Ronald A. Lehman, MD, Potomac, MD  
Adam Bevevino, MD, Washington, DC  
Michael Donohue, MD, BS, Chevy Chase, MD  
Rachel E. Gaume, BS  
Dieya Ambati, A, Fairfax, VA  
Anton E. Dmitriev, Fort Belvoir, VA

Despite a significant reduction in pedicle screw insertional torque with re-insertion along a previous tract, there was no significant difference in pedicle screw pullout strength.

Discussion - 6 Minutes

5:12 PM  **PAPER: 820**

**Thoracic Disc Herniation with and without Myelopathy: Analysis of 9,811 Patients**

Amit Jain, MD, Baltimore, MD  
Emmanuel N. Menga, MD, Baltimore, MD  
Surbhi Jain, Portland, OR  
Hamid Hassanzadeh, MD, Baltimore, MD  
Addisu Mesfin, MD, Rochester, NY

Treatment of myelopathy due to thoracic disc herniation is shifting predominantly toward use of posterior surgical approaches.
Friday, March 22

5:18 PM  PAPER: 821
Physical Exam Findings in Patients with Cord Signal Change on MRI
Han Jo Kim, MD, Saint Louis, MO
Chawat Pyaskulkhaew, MD, Saint Louis, MO
Addisu Mesfin, MD, Rochester, NY
Stuart H. Hershman, MD, Miami, FL
Jeremy L. Fogelson, MD, Rochester, MN
K. Daniel Riew, MD, Saint Louis, MO

Patients with cord signal change present with inconsistent physical exam findings and many do not exhibit any signs or symptoms of myelopathy.

5:24 PM  PAPER: 822
Assessment of Nerve Root Decompression by Mechanomyography
Jad Khalil, MD, Rochester, MN
Edward R. Anderson III, MD, San Antonio, TX
Petrovic Olga, PA-C, Detroit, MI
Wendela Rebecca, Southfield, MI
Stephen Bartol, MD, Detroit, MI

MMG, a novel spinal root localization and monitoring technique provides direct feedback regarding adequacy of decompression of nerve roots in the lumbar spine.

Discussion - 6 Minutes

5:36 PM  PAPER: 823
Glucosamine Supplementation May Have a Negative Effect on Intervertebral Disc Matrix
Lloydine Jacobs, MD, Pittsburgh, PA
James Kang, MD, Pittsburgh, PA
Gwendolyn Sowa, MD, PhD, Pittsburgh, PA

Disc degeneration is a major contributor of spine pain. Billions are spent yearly on glucosamine. We found that it negatively affects disc matrix and works differently in normal vs degenerated discs.

5:42 PM  PAPER: 824
Intervertebral Disc Regeneration with an Injectable Biopolymeric Hydrogel Containing Growth Factors
Steven Erickson, MD, Wichita, KS
Casey Bachison, MD, Eden, UT
Tristan Maerz, MS, Royal Oak, MI
Kevin Baker, PhD, Royal Oak, MI
Daniel K. Park, MD, Troy, MI
Harry N. Herkowitz, MD, Royal Oak, MI
Jeffrey S. Fischgrund, MD, Southfield, MI

In vivo delivery of TGF-B3, BMP-4, TIMP-2 via an injectable Chitosan hydrogel stimulates regeneration of the intervertebral disc.

5:48 PM  PAPER: 825
Metabolic and Endocrine Abnormalities in Spinal Fusion Patients with Pseudarthrosis
Colin G. Crosby, MD, Atlanta, GA
Kevin R. O’Neill, MD, Saint Louis, MO
Jesse E. Bible, MD, MHS, Nashville, TN
Clinton J. Devin, MD, Nashville, TN

In this study, 93% patients that developed symptomatic pseudarthrosis after spinal fusion surgery had metabolic or endocrine abnormalities detected. Vitamin D abnormalities were present in 50% of patients.

5:54 PM  PAPER: 826
Pedicle Screw Hubbing in the Adult and Immature Thoracic Spine: A Biomechanical and Micro-CT Evaluation
Daniel Kang, MD, Bethesda, MD
Ronald A. Lehman, MD, Potomac, MD
Adam Beverino, MD, Washington, DC
Rachel E. Gaume, BS
Haines Park, MD, Boston, MA
Anton E. Dmitriev, Fort Belvoir, VA
Lawrence G. Lenke, MD, Saint Louis, MO

Hubbing of pedicle screws resulted in significantly lower POS compared to conventional pedicle screws in the adult and immature thoracic spine.

Discussion - 6 Minutes

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.
**AWARD PROGRAMS**

**OVT01** ................................................................. Station 1
Midfoot Anatomy, Pathology and Physical Examination
Matthias Vanbees, MD, Stabroek, Belgium
Saskia Van Bouwel, MD, Stabroek, Belgium
Francis van Glabbeek, PhD, Edegem, Belgium
Geoffroy S. Vandeputte, MD, Bonheiden, Belgium

This video gives a brief and clear insight into the anatomy, the most common pathology, and the physical examination of the midfoot.

(Product no. V13001, DVD-Video, 15:00 minutes)

**OVT02** .................................................................. Station 2
Index Finger Ray Resection
Robert M. Orfaly, MD, Portland, Oregon

An index finger ray resection of a painful and stiff digit is presented with specific attention to soft tissue handling. The post-operative treatment plan and expected outcomes are also discussed.

(Product no. V13002, DVD-Video, 12:00 minutes)

**OVT03** ................................................................. Station 3
Stoppa Approach for Removal of the Intrapelvic Cup for Acetabular Revision
Francisco Chana, MD, PhD, Madrid, Spain
Manuel Villanueva, MD, PhD, Madrid, Spain
José M. Roto-Manante, MD, PhD, Madrid, Spain
Maria Pérez-Díaz, MD, Madrid, Spain
José Fernández-Parillo, MD, PhD, Madrid, Spain
Javier Vaquero-Martín, MD, PhD, Madrid, Spain

This video describes the preoperative planning and the surgical procedure for removing severely displaced acetabular components.

(Product no. V13003, DVD-Video, 19:00 minutes)

**OVT04** ................................................................. Station 4
Surgical Technique for Articulating Spacers With Stem Extensions To Treat The Infected TKA-Part 1
Stephen J. Incavo, MD, Houston, Texas
Azim Karim, MD, Houston, Texas
Brian Dominguez, BA, Cypress, Texas

In this video we present the technique of using a commercially available articulating cement spacer modified by the addition of stem extensions for the treatment of deep infection.

(Product no. V13004, DVD-Video, 12:00 minutes)

**AWARD PROGRAMS**

**OVT05** ................................................................. Station 1
Instability After Total Knee Arthroplasty. Limits of Constraints
Manuel Villanueva, MD, PhD, Madrid, Spain
Francisco Chana, MD, PhD, Madrid, Spain
Javier Pereiro, MD, Madrid, Spain
Antonio Rios-Luna, MD, PhD, El Ejido, Almeria, Spain
José M Rojo-Manante SR, MD, PhD, Madrid, Spain
Felipe Benito Del Carmen, MD, Madrid, Spain
Homid Fahandez-Saddi, MD, Madrid, Spain
Antonio J. Perez-Caballer, MD, Las Rozas (Madrid), Spain

The authors illustrate some of the most common causes and patterns of instability after a TKA and identify the limits of constraint that might make surgical reconstruction procedures more predictable.

(Product no. V13005, DVD-Video, 20:00 minutes)

**OVT06** .................................................................. Station 2
Arthroplasty for Chronic Locked Posterior Shoulder Dislocations
Cezar Sandu, MD, Dallas, Texas
Justin R. Brazeal, MD, College Station, Texas
Michael A. Wirth, MD, San Antonio, Texas

This video illustrates open reduction and hemiarthroplasty. Outcome was assessed by a modified American Shoulder and Elbow Score, a simple shoulder test, and visual analog scores.

(Product no. V13006, DVD-Video, 11:00 minutes)

**OVT07** .................................................................. Station 3
Open Reduction in Missed Irreducible Congenital Dislocation of the Hip
Cesare Faldini, MD, Bologna, Italy
Mohammadreza Chehrassan, MD, Bologna, Italy
Francesco Traina, MD, Bologna, Italy
Francesco Acri, MD, Bologna, Italy
Camilla Pungetti, MD, Bologna, Italy
Daniele Fabbri, MD, Bologna, Italy
Marcello De Fine, MD, Bologna, Italy
Alberto Di Martino, MD, Rome, Italy
Alice Bondi, MD, Cesnatico, Italy

This video shows the open reduction of a missed irreducible dislocated hip through the anterior approach in a 5-year-old patient affected by developmental dysplasia of the hip.

(Product no. V13007, DVD-Video, 18:00 minutes)
OVT08 ................................................................. Station 4
Aseptic Both Bone Forearm Nonunion Treated by Plate and Opposite Allograft Strut
Cesare Faldini, MD, Bologna, Italy
Mohammadreza Chehraossan, MD, Bologna, Italy
Matteo Nanni, MD, Bagheria, Italy
Marra Teresa Miscione, MD, Bologna, Italy
Michele D’Amato, MD, Bologna, Italy
Raffaele Borghi, MD, Bologna, Italy
Alberto Di Martino, MD, Rome, Italy
Alice Bondi, MD, Cesnatico, Italy
Costantino Errani, MD, Bagheria, Italy
Antonio Mazzotti, MD, Bologna, Italy
This video shows the surgical treatment of aseptic forearm nonunion. From the previous skin incisions, both ulna and radio were exposed.
(Product no. V13008, 18:00 minutes)

3D
OVT26 ............................................................. 3D
Latarjet Technique and Biomechanics in Shoulder Instability
Giovanni Di Giacomo, MD, Rome, Italy
Alberto Costantini, MD, Rome, Italy
Andrea De Vita, MD, Rome, Italy
Nicola De Gasperis, MD, Rome, Italy
The authors demonstrate an arthroscopic technique that allows reparative and reconstructive surgical procedures aimed at selective treatment of the injured structures.

OVT62 ............................................................. 3D
Hip Arthroplasty - the Direct Anterior Approach without a Traction Table
Michael Nogler, MD, Austria
Martin Krismer, MD, Austria
David Putzer, Innsbruck, Austria
This video teaches the anatomy of the hip as seen from anterior and the DAA approach, allowing the learner to reproduce each single step in surgery. Key points are given at each section.

Tuesday-Wednesday

ADULT RECONSTRUCTION HIP
OVT09 .......................................................... Station 5
Short Stem Metaphyseal Engaging Implants: Design, Implantation and Alignment
Alejandro Marquez-Lara, MD, Chicago, Illinois
Daniel M. Curtis, BA, Chicago, Illinois
Ronak Patel, MD, Chicago, Illinois
S. David Stulberg, MD, Chicago, Illinois
This video illustrates the use of metaphyseal-engaging short stem implants in total hip arthroplasty (THA) within the proximal femur to achieve an extensive circumferential fit.
(Product no. V13009, DVD-Video, 12 minutes)

OVT11 .......................................................... Station 6
Metaphyseal Short Stem Total Hip Arthroplasty
Sam Hakki, MD, Saint Petersburg, Florida
This video illustrates a minimally invasive, bone sparing short stem primary hip arthroplasty.
(Product no. V13011, DVD-Video, 15 minutes)

OVT13 .......................................................... Station 7
Modified Supercapsular Percutaneously-Assisted Total Hip (SuperPATH) - Technique and Results
James Chou, MD, Phoenix, Arizona
This video portrays a combined superiorly-based minimally-invasive approach that exploits the interval between the piriformis and minimus.
(Product no. V13013, DVD-Video, 24:00 minutes)

Thursday-Saturday

ADULT RECONSTRUCTION HIP
OVT10 .......................................................... Station 5
Minimal Invasive Peri-acetabular Osteotomy: Surgical Technique and Outcomes
Federico De Meo, MD, Messina, Italy
Manuel Ribas Fernandez, MD, Barcelona, Spain
Carlonmagno A. Cardenas Nylander, MD, Barcelona, Spain
Vittorio Bellotti, Barcelona, Spain
Emanuele Astarita, Barcelona, Spain
Pietro Cavaliere SR, MD, Reggio Calabria, Italy
This video shows the step-by-step details that the authors believe are crucial to the good practice of the Söballe minimally invasive modification of the Bernese procedure.
(Product no. V13010, DVD-Video, 20:00 minutes)

OVT12 .......................................................... Station 6
Total Hip Arthroplasty: Computer Assisted Navigation for Acetabular Positioning
Richard H. Walker, MD, San Diego, California
Amy K. Stemboff, MD, San Diego, California
In this video, the authors describe patient planar registration, a novel technique for registration for THA performed in LDP that avoids the dissatisfaction with the LDP prior to navigation.
(Product no. V13012, DVD-Video, 20:00 minutes)

OVT62 .......................................................... Station 7
Hip Arthroplasty - the Direct Anterior Approach without a Traction Table
Michael Nogler, MD, Austria
Martin Krismer, MD, Austria
David Putzer, Innsbruck, Austria
This video teaches the anatomy of the hip as seen from anterior and the DAA approach, allowing the learner to reproduce each single step in surgery. Key points are given at each section.
(Product no. V13062, DVD-Video, 22:00 minutes)

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Tuesday-Wednesday

**ADULT RECONSTRUCTION KNEE**

**OVT14** .......................................................... Station 8
Technique For Removal of Structured Titanium Cementless Total Knee Replacement
Ira H. Kirschenbaum, MD, Bronx, New York
Pawel Hamulewicz, MD, Sayreville, New Jersey

This video illustrates a technique for the effective removal and preparation of the bone for a revision knee replacement.
(Product no. V13014, DVD-Video, 20:00 minutes)

**OVT16** .......................................................... Station 9
Total Knee Arthroplasty Utilizing Surgical Navigation With an Automated Robotic Cutting Guide
Louis Keppler, MD, Independence, Ohio
Timothy McGlone, Dr. H.S. (hc), Chagrin Falls, Ohio

In this video the authors address, the specific techniques that are encountered to successfully prepare and implant a conventional cemented total knee with the use of automated cutting guides.
(Product no. V13016, DVD-Video, 20:00 minutes)

**OVT18** .......................................................... Station 10
Safe and Accurate Utilization of Patient Specific Instrumentation in Total Knee Arthroplasty
Anay R. Patel, MD, Chicago, Illinois
Mark A. Yaffe, MD, Chicago, Illinois
Raju S. Ghate, MD, Chicago, Illinois
S. D. Studberg, MD, Chicago, Illinois

The authors present a technique for using patient specific instrumentation in TKA. The technique emphasizes the methods for confirming proper guide placement and verifying proper bone resection.
(Product no. V13018, DVD-Video, 16:00 minutes)

**FOOT AND ANKLE**

**OVT20** .......................................................... Station 11
Endoscopic Plantar Fascia Release
Randy R. Clark, MD, Saint George, Utah
Richard D. Ferkel, MD, Van Nuys, California

In this video, the authors evaluate and appropriately diagnose the causes of heel pain, review operating room set-up, and demonstrate the surgical technique to perform a successful endoscopic EPFR.
(Product no. V13020, DVD-Video, 9:00 minutes)

**ADULT RECONSTRUCTION KNEE**

**OVT15** .......................................................... Station 8
Minimal Invasive, Navigated Implantation of a Total Knee Replacement
Jean-Yves Jenny, MD, Illkirch, France

In this video we demonstrate the use of a non-image based navigation system for total knee replacement using instruments adapted for use with a 10 cm (typically) skin incision.
(Product no. V13015, DVD-Video, 15:00 minutes)

**OVT17** .......................................................... Station 9
Surgical Technique for the Removal of the Interim Primary TKA and 2nd Stage Revision-Part 2
Azim Karim, MD, Houston, Texas
Stephen J. Incavo, MD, Houston, Texas
Brian Dominguez, BA, Cypress, Texas

This video demonstrates a technique using a commercially available articulating cement spacer for the treatment of deep infection in primary and revision total knee arthroplasty.
(Product no. V13017, DVD-Video, 12:00 minutes)

**OVT19** .......................................................... Station 10
Quantifying Sagittal Plane Kinetics and Flexion Gap Balance in TKR's Utilizing Integrated Sensors
Martin W. Roche, MD, Fort Lauderdale, Florida
Christopher R. Anderson, MS, Sunrise, Florida

The authors present a surgical technique that utilizes micro sensors embedded in the tibial trial insert to provide a quantitative assessment of the inter-compartmental loads and center of load.
(Product no. V13019, DVD-Video, 13:00 minutes)

**FOOT AND ANKLE**

**OVT21** .......................................................... Station 11
Arthroscopic Bone Marrow Stimulation of the Ankle: Technical Tips from Simple to Complicated Cases
Chayanin Angthong, MD, Pathum Thani, Thailand
Ichiro Yoshimura, MD, Fukuoka, Japan
Kazuki Kanazawa, MD, Fukuoka, Japan
Masatoshi Naito, MD, Fukuoka, Japan

From this presentation, the audiences will learn about operative indications, preoperative evaluation, operative techniques, and pearls and pitfalls of ankle arthroscopic bone marrow stimulation.
(Product no. V13021, DVD-Video, 15:00 minutes)

An alphabetical faculty financial disclosure list can be found starting on page 292.

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**Tuesday-Wednesday**

**HAND AND WRIST**

**Station 12**

Treatment of Nonunion of Radius Bone With Vascularized Femoral Corticoperiosteal Free Flap
Matteo Guzzini, MD, Rome, Italy
Antonini Andrea, MD, Rome, Italy
Antonio Vada, MD, Rome, Italy
Daniele Paravani, MD, Rome, Italy
Domino Cristina, Rome, Italy
Andrea Ferretti, MD, Rome, Italy

Free vascularized corticoperiosteal graft is harvested from the medial femoral condyle. For the microsurgical portion of the operation the authors performed a termino-terminal anastomosis of the DGA.

(Product no. V13022, DVD-Video, 8:00 minutes)

**PEDiatrics**

**Station 13**

Treatment of the Persistent/Recurrent Clubfoot Following the Ponseti Method
Alice Chu, MD, Livingston, New Jersey
Wallace B. Lehman, MD, New York, New York
Mathew Hamula, BA, BS, New York, New York

In this video, the authors provide an overview of persistent/recurrent (relapsed) clubfoot and the treatment of relapsed bilateral clubfeet by repeating the principles of the original Ponseti method.

(Product no. V13023, DVD-Video, 15:00 minutes)

**Station 14**

Percutaneous Pinning of Supracondylar Humerus Fractures
John Koerner, MD, Hoboken, New Jersey
Sanjeev Sabharwal, MD, Chatham, New Jersey

This video demonstrates the treatment of pediatric supracondylar humerus fractures including initial evaluation, operating room setup, surgical technique, and pearls for difficult cases.

(Product no. V13025, DVD-Video, 13:00 minutes)

**Station 15**

Autograft Reconstruction for Sternoclavicular (SC) Joint Instability
Peter J. Millett, MD, MSc, Vail, Colorado
Frank Martetschlager, MD, Vail, Colorado

In this video, the authors present a technique for sternoclavicular joint stabilization using a gracilis tendon autograft.

(Product no. V13028, DVD-Video, 8:00 minutes)

**Station 16**

Reverse Shoulder Arthroplasty: Steps to Get it Right
Richard J. Hawkins, MD, Greenville, South Carolina

This video illustrates the steps needed to correctly perform a reverse arthroplasty. Positioning, approach, glenosphere insertion, humeral insertion, and fit are included.

(Product no. V13030, DVD-Video, 15:00 minutes)

**Station 17**

Arthroscopic Assisted HemiCAP Insertion for Large Engaging Hill Sachs Lesions
Ed Batenman, MD, Gosford, Australia

Demonstration, assessment and indications for treatment of Hill-Sachs lesions as well as an arthroscopic technique for inserting HemiCAPs® into Hill-Sachs lesions.

(Product no. V13032, DVD-Video, 13:00 minutes)
OVT34 .................................................................. Station 16
Biceps Tenodesis: Open Subpectoral and Arthroscopic Technique
Adam B. Yanke, MD, Chicago, Illinois
Peter N. Chalmers, MD, Chicago, Illinois
Anthony A. Romeo, MD, Chicago, Illinois
Nikhil N. Verma, MD, Chicago, Illinois

The authors present an arthroscopic and open technique for tenodesis of the LHB. Both techniques address the bicipital groove as a pain generator by removing the tendon from the groove.

(Product no. V13034, DVD-Video, 19:00 minutes)

OVT36 .................................................................. Station 19
Arthroscopic Treatment of Calcific Tendinitis in the Rotator Cuff
Eric C. Makhni, MD, New York, New York
Brian M. Schulz, MD, New York, New York
William N. Levine, MD, New York, New York

This video illustrates an arthroscopic management technique for calcific tendinitis in a patient with unusually extensive disease.

(Product no. V13036, DVD-Video, 13:00 minutes)

Thursday-Saturday

SHOULDER AND ELBOW

OVT27 .................................................................. Station 14
Treatment Of Recurrent Anterior Glenohumeral Instability: J-plasty Procedure
Giacomo Marchi, MD, Gardone Val Trompia, Italy
Celeste Bertone, MD, Brescia, Italy
Dario Petriccioli, MD, Brescia, Italy

The video shows the technical details of the J-plasty a procedure for recurrent anterior glenohumeral instability.

(Product no. V13027, DVD-Video, 13:00 minutes)

OVT29 .................................................................. Station 15
Intraoperative Nerve Monitoring During Shoulder Arthroplasty
Andrew F. Kuntz, MD, Philadelphia, Pennsylvania
Bryan B. Wilent, PhD, Philadelphia, Pennsylvania
Gerald R. Williams Jr, MD, Philadelphia, Pennsylvania
Joseph A. Abboud, MD, Philadelphia, Pennsylvania

In this video, the authors present the nerve monitoring technique used during shoulder arthroplasty. Setup, patient positioning, anesthesia considerations, and intraoperative practices are included.

(Product no. V13029, DVD-Video, 10:00 minutes)

OVT31 .................................................................. Station 16
Total Shoulder Arthroplasty: Steps to Get it Right
Richard J. Hawkins, MD, Greenville, South Carolina

This video illustrates the correct steps to perform a routine total shoulder arthroplasty and avoid complications. The example is a routine OA with a concentric glenohumeral relationship.

(Product no. V13031, DVD-Video, 15:00 minutes)

OVT33 .................................................................. Station 17
Reverse Total Shoulder Arthroplasty Technical Note and Results
Thomas W. Wright, MD, Gainesville, Florida
Gonzalo Samitier Solis, MD, Clawson, Michigan
Aimee Struk, MEd, MBA, ATC, Gainesville, Florida

In this video, the authors demonstrate their surgical technique used for rotator cuff tear arthropathy (CTA). A >2 years follow-up results as well as a staged rehabilitation program is included.

(Product no. V13033, DVD-Video, 15:00 minutes)

OVT35 .................................................................. Station 18
Arthroscopic Technique for Biological Augmentation of AC Joint Instability
Peter J. Millett, MD, MSc, Vail, Colorado
Frank Martetschlagler, MD, Vail, Colorado

In this video, the authors present an arthroscopically assisted AC joint reconstruction with tendon graft augmentation.

(Product no. V13035, DVD-Video, 9:00 minutes)

OVT37 .................................................................. Station 20
Hip Capsulotomies Should be Routinely Repaired: A Demonstration of Arthroscopic Capsular Plication
Benjamin Domb, MD, Westmont, Illinois
Itamar Botser, MD, Palo Alto, California
Anthony P. Trenga, Westmont, Illinois

The video presents a surgical demonstration of capsular plication for closure of the capsule.

(Product no. V13037, DVD-Video, 13:00 minutes)
Labral preservation techniques during hip arthroscopy are demonstrated with emphasis on surgical technique, concomitant decompression techniques and preservation of the chondrolabral junction.

(Product no. V13039, CD-Rom, Interactive)

Acetabular retrograde drilling: A new arthroscopic technique for the treatment of chondral lesions in FAI

The authors present a new surgical technique of arthroscopic retrograde drilling for the treatment of grade 1 and 2 acetabular chondral lesions in patients with femoroacetabular impingement.

(Product no. V13041, 7:00 minutes)

The circumferential compression stitch for meniscus repair

This video presentation discusses the basic premise of the circumferential compression stitch for meniscus repair and provides early clinical examples of its utility and feasibility.

(Product no. V13044, 20:00 minutes)

Individualized anatomic ACL reconstruction

Considerations associated with ACL anatomy and the individual patient’s lifestyle, profession, and preferences are discussed.

(Product no. V13046, 20:00 minutes)

ACL anatomic single bundle reconstruction technical note and results

This video shows a detailed demonstration of a novel anatomic, single-bundle, all arthroscopic outside-in anterior cruciate ligament (ACL) reconstruction technique and rehabilitation program.

(Product no. V13048, 13:00 minutes)
**Thursday-Saturday**

**SPORTS MEDICINE AND ARTHROSCOPY**

**OVT38** ............................................................... Station 20

*Hip Arthroscopy: Management of Chondral Lesions Due to FAI*
Srino Bharam, MD, New York, New York
Abiola Atanda, MD, New York, New York
Mathew Hamula, BA, BS, New York, New York

This video presents arthroscopic techniques for managing chondral lesions of the hip. It also shows a case series focusing on microfracture technique for grade IV chondral lesions associated with FAI.

*(Product no. V13038, DVD-Video, 11:00 minutes)*

**OVT40** ............................................................... Station 21

*Evaluation and Management of a Young Athlete with Impingement: A Case-Based Approach*
Anil S. Kanave, MD, New York, New York
Caroline Park, New York, New York
David deForest Keys, New York, New York
Bruno Kavanagh, New York, New York
Abraham Varshose, New York, New York
David Hook, New York, New York

In this interactive program, users are presented with questions at each stage of diagnosis, from the physical exam to radiography and MRI assessment.

*(Product no. V13040, CD-Rom, Interactive)*

**OVT43** ............................................................... Station 22

*UCL reconstruction: Modified Docking Technique*
Douglas J. Wyland, MD, Spartanburg, South Carolina
Stephen C. Hamilton, MD, Greenville, South Carolina

The modified docking technique is used to complete the reconstruction of the medial ulna collateral ligament. The modification demonstrates using a socket on the ulnar side as opposed to a bone tunnel.

*(Product no. V13043, 14:00 minutes)*

**OVT45** ............................................................... Station 23

*Five Minute Fifteen Point Diagnostic Arthroscopic Knee Exam*
Randy R. Clark, MD, Saint George, Utah
Mark H. Getelman, MD, Tarzana, California

This video presents a fifteen point checklist of the arthroscopic knee anatomy that is viewed during knee arthroscopy.

*(Product no. V13045, 10:00 minutes)*

**OVT47** ............................................................... Station 24

*The Safe Mode for Hamstrings Harvesting*
Hubert Lanternier, MD, Saint Nazaire, France
Scott D. Gillogly, MD, Atlanta, Georgia
Henri Robert, MD, Mayenne, France
Michael J. Maynard, MD, New York, New York
Mark K. Bowen, MD, Winnetka, Illinois
Xavier Cassard, MD, Cornebarrieu, France

This short video illustrates a “safe mode” for harvesting the semitendinosus, the gracilis, or both. The installation, the tourniquet, the instruments needed, and the landmarks are detailed.

*(Product no. V13047, 6:00 minutes)*

**OVT49** ............................................................... Station 25

*Anatomic Single Bundle ACL Reconstruction With Hamstring Tendons*
David Figueroa, MD, Santiago, Chile
Rafael Calvo, MD, Santiago, Chile
Alex Vaisman, MD, Santiago, Chile
Agustin Leon, MD, Santiago, Chile
Pablo Mococain-Mac Iver, MD, Santiago, Chile

This video shows a detailed, step by step, anatomic ACL reconstruction through an accessory medial portal. Tips and tricks are emphasized to perform a successful ACL reconstruction.

*(Product no. V13049, 10:00 minutes)*

**OVT51** ............................................................... Station 26

*Anatomic ACL Reconstruction - All Comers*
Mark D. Miller, MD, Charlottesville, Virginia
Joseph Hart, PhD, ATC, Charlottesville, Virginia
Gregory Kurkis, Medical Student, Charlottesville, Virginia

In this video, the authors present techniques for achieving anatomic anterior cruciate ligament (ACL) reconstructions in a variety of clinical scenarios.

*(Product no. V13050, 20:00 minutes)*

**OVT53** ............................................................... Station 27

*Patellar Tendon Augmentation With Hamstring Tendon Autograft*
Laith M. Jazrawi, MD, New York, New York
Robert J. Daber, MD, West Harrison, New York
Abiola Atanda, MD, New York, New York
Ankit Bansal, BS, New York, New York
Mathew Hamula, BA, BS, New York, New York

In this video, the authors present a case of chronic patellar tendon rupture augmentation using a hamstring tendon autograft.

*(Product no. V13053, 11:00 minutes)*
The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

OVT55 ............................................................... Station 28
Medial Patellofemoral Ligament Reconstruction for Patellar Instability
Shital Parikh, MD, Cincinnati, Ohio
Eric Wall, MD, Cincinnati, Ohio
This video illustrates a modified technique for MPFL reconstruction for symptomatic patellar instability that uses a hamstring autograft.
(Product no. V13055, 17:00 minutes)

OVT56 ............................................................... Station 29
Surgical Repair of Proximal Hamstring Avulsion in the Athlete
Tal S. David, MD, San Diego, California
Gabriel L. Petruccelli, MD, Darnestown, Maryland
This video media covers the evaluation and management of proximal hamstring avulsion injuries. Indications for surgery, relevant anatomy and surgical technique are reviewed.
(Product no. V13056, 15:00 minutes)

Thursday-Saturday

TRAUMA
OVT57 ............................................................... Station 30
Removal of a Broken Intramedullary Nail and Exchange Nailing for Tibial Nonunion
Kenneth A. Egol, MD, New York, New York
Abiola Atanda, MD, New York, New York
Mathew Hamula, BA, BS, New York, New York
Jason P. Hochfelder, MD, New York, New York
In this video, the authors demonstrate the technique of retrieving the broken implant and exchange nailing for the tibial nonunion.
(Product no. V13057, 10:00 minutes)

Thursday-Saturday

TUMORS
OVT58 ............................................................... Station 31
Minimally Invasive Technique for Curettage of Benign Bone Tumors Using Endoscopic Technique
Costantino Errani, MD, Bagheria, Italy
Mohammadreza Chehrassan, MD, Bologna, Italy
Angelo Toscano, MD, Mori (TN), Italy
Matteo Nanni, MD, Bagheria, Italy
Alice Bondi, MD, Cesnatico, Italy
Marcello De Fine, MD, Bologna, Italy
Salvatore Calderone, MD, Palermo, Italy
Francesco Trama, MD, Bologna, Italy
Jennifer Kreshak, MD, Bologna, Italy
Cesare Faldini, MD, Bologna, Italy
This video presents an innovative, minimally invasive technique for curettage and packing of benign bone tumors performed by a small bone window.
(Product no. V13058, 11:00 minutes)

OVT59 ............................................................... Station 31
Resection of Axillary Sarcoma
Brendan Comer, BA, New York, New York
Brett Hayden, BA, New York, New York
Camilo Villalobos, MD, New York, New York
James C. Wittig, MD, New York, New York
This video demonstrates an extensive surgical approach to remove the tumor safely while meticulously separating the neurological and vascular structures from the tumor.
(Product no. V13059, 8:00 minutes)

OVT60 ............................................................... Station 31
Radical Resection of the Glenoid and Scapular Neck for Sarcoma and Reconstruction
Brendan J. Comer, BA, New York, New York
Brett Hayden, BA, New York, New York
Camilo E. Villalobos, MD, New York, New York
James C. Wittig, MD, New York, New York
Video shows a radical resection of the left scapular neck including the lateral one half of the scapula and complex reconstruction of left shoulder girdle with static stabilization of the humeral head.
(Product no. V13060, 11:00 minutes)

OVT61 ............................................................... Station 31
Non-invasive ‘Magnetic’ Distal Femoral Expandable Endoprosthesis
Brendan J. Comer, New York, New York
Brett Hayden, New York, New York
Camilo E. Villalobos, MD, New York, New York
James C. Wittig, MD, New York, New York
A limb-sparing resection of a distal femur is performed for a 8 year-old male patient with an Ewing’s Sarcoma involving the distal femur.
(Product no. V13061, 16:00 minutes)
Adult Reconstruction Hip

Scientific Exhibit SE01
Femoral Neck Modularity in THA: Not a Bridge Too Far!
Stephen B. Murphy, MD, Boston, Massachusetts
J. D. Blaha, MD, Ann Arbor, Michigan
James Ochoa, MD, Phoenix, Arizona
Alon Katz, MSc, Cleveland, Ohio
A. Seth Greenwald, DPhil Oxon, Cleveland Heights, Ohio

This exhibit provides a laboratory basis for establishing the structural integrity and corrosion of both mixed and same metal modular femoral neck/stem combinations.

Scientific Exhibit SE02
Factors Influencing Total Hip Arthroplasty in Obese Patients
Menachem M. Meller, MD, Merion, Pennsylvania
Anne E. E. Summer, Bethesda, Maryland
Mark H. Gonzalez, MD, Chicago, Illinois
A. Seth Greenwald, DPhil Oxon, Cleveland Heights, Ohio

The care of the obese patient presenting with degenerative arthritis is a contemporary dilemma for the Joint replacement surgeon.

Scientific Exhibit SE03
An Evidence-Based Approach for the Evaluation of the Painful Metal-on-Metal Total Hip Replacement
Isabelle Catelas, PhD, Ottawa, Canada
Greg Cron, PhD, Ottawa, Canada
Daniel Figueroa, PhD, SC, Ottawa, Canada
Mark Fabbri, MD, Ottawa, Canada
Kawan S. Rakha, MD, Ottawa, Canada
Paul E. Beaulé, MD, Ottawa, Canada

There is insufficient evidence to use metal ions as a prognostic factor for risk of revision surgery after metal-on-metal THR.

Scientific Exhibit SE04
Do Large (Jumbo) Cups Cause Hip Center Elevation in Revision THA?
Michael D. Ries, MD, San Francisco, California
China D. Nwamaka, BA, San Francisco, California
Nick N. Dong, Mahwah, New Jersey
Christopher D. Heffernan, Mahwah, New Jersey

A jumbo cup technique can result in joint line elevation between ½ and 1 cm due to both a geometric shift in the cup center and also superior reaming despite positioning of the inferior edge of the cup at the level of the interteardrop line.

Scientific Exhibit SE05
The Hip Society: Optimizing Management of Patients With Metal-on-Metal Hips
Adolph V. Lombardi Jr., MD, New Albany, Ohio
Thomas K. Febring, MD, Charlotte, North Carolina
Joshua J. Jacobs, MD, Chicago, Illinois
Young-Min Kuwon, MD, PhD, Boston, Massachusetts
Steven J. MacDonald, MD, London, Canada
Michael A. Mont, MD, Baltimore, Maryland

This purpose of this exhibit is to provide a useful resource for orthopaedic surgeons providing care to MoM hip arthroplasty patients.

Scientific Exhibit SE06
Reducing Surgical Site Infections in Total Joint Arthroplasty: It’s a War and Not Just One Battle
Brian R. Hamlin, MD, Pittsburgh, Pennsylvania
Anthony M. DiGioia III, MD, Pittsburgh, Pennsylvania
Timothy J. Levison, MS, Pittsburgh, Pennsylvania

An enhanced perioperative strategy has proven effective in reduction of surgical site infection in a total joint arthroplasty program.

Scientific Exhibit SE07
AAOS Research Development Committee: Femoroacetabular Impingement (FAI) and Hip OA
John C. Clohsey, MD, Saint Louis, Missouri
Young Jo Kim, MD, PhD, Boston, Massachusetts
Erin L. Ransford, Rosemont, Illinois

Examine the etiology of osteoarthritis of the hip, define the basic science and current knowledge of FAI, review treatment options, and evaluate challenges and strategies to better understand FAI.

Scientific Exhibit SE08
Registries Collecting Level I-IV Data: Institutional and Multicenter Use
Viktor Hansen, MD, Boston, Massachusetts
Meridith E. Greene, MD, Redwood City, California
Audrey Nebergall, MD, Boston, Massachusetts

Sharing our 10-year registry experience, we aim to aid the USA national registry through development of other local registries, resulting in improved patient care and decreased economic burden of TJA.

Scientific Exhibit SE09
AAOS BME and Biological Implants Committee: Skin Patch Testing and Associated Total Joint Outcomes
William M. Mihalko, MD, PhD, Germantown, Tennessee
Stuart B. Goodman, MD, Redwood City, California

This report will aid in serving as a source for all surgeons concerning the possible diagnosis of a hypersensitivity reaction for some TJA patients with poor outcomes.

Scientific Exhibit SE10
Study of the Head-neck Taper Surface of Large-diameter Hard Bearing Hip Prostheses
Massimiliano Baleani, MSc, Bologna, Italy
Susana Stea, BS, Bologna, Italy
Paolo Erani, BS, Bologna, Italy
Alma Beraudi, PhD, Bologna, Italy
Barbara Bordini, MD, Bologna, Italy
Aldo Toni, MD, Bologna, Italy

Taper damage is related to head dimension and follow-up.
Scientific Exhibit SE11
Pathomechanics of FAI and Hip Dysplasia: Current Clinical and Translational Science Perspectives
Michael D. D. Harris, BS, Salt Lake City, Utah
Christopher L. Peters, MD, Salt Lake City, Utah
Jill Erickson, PA, Salt Lake City, Utah
Corinne R. R. Honak, BS, Salt Lake City, Utah
Ashley L. Kapron, BS, Salt Lake City, Utah
Christine L. L. Abraham, BA, Salt Lake City, Utah
Jeffrey A. A. Weiss, Salt Lake City, Utah
Andrew E. Anderson, PhD, Salt Lake City, Utah

We demonstrate how imaging, motion analysis, and 3D modeling can be combined to characterize complex anatomy and estimate subject-specific and population-based pathomechanics of FAI and dysplasia.

Scientific Exhibit SE12
How to Approach the Challenging Femoral Stem Revision
Jason K. Lowry, MD, Dallas, Texas
Robert Pivec, MD, Baltimore, Maryland
Christine B. Molina, Fontana, California
Aaron J. Johnson, MD, Baltimore, Maryland
Tarak S. Shah, Bristow, Virginia
Bhaveen Kapadia, MD, Baltimore, Maryland
Kimona Issa, MD, Santa Clarita, California
Michael A. Mont, MD, Baltimore, Maryland

This review serves to guide the approach to the difficult femoral stem revision.

Scientific Exhibit SE13
The Anterior Approach on a Regular OR Table With One Ipsilateral Assistant: Development of a Safe Surgical Technique
Kristoff Corten, MD, Pellenberg, Belgium
Michael Leunig, MD, Zurich, Switzerland
Jean-Pierre Simon, MD, Pellenberg, Belgium
Christophe Meyer, Pellenberg, Belgium
Johan Bellemans, MD, Langdorp, Belgium
Liselore Maecelbergh, Turnhout, Belgium

The development of the supine anterior approach on a regular OR table with 1 ipsilateral assistant and without fluoroscopic guidance is presented and compares to the posterolateral approach.

Scientific Exhibit SE14
A Comprehensive Blood Management Program in Primary Total Joint Arthroplasty
Brian R. Hamlin, MD, Pittsburgh, Pennsylvania
Anthony M. DiGioia III, MD, Pittsburgh, Pennsylvania
Gerhardt Konig, MD, Pittsburgh, Pennsylvania
Jonathan Waters, MD, Pittsburgh, Pennsylvania
Timothy J. Levison, MS, Pittsburgh, Pennsylvania

A comprehensive blood management program greatly reduces the requirements for allogeneic blood usage and is associated with less cost, shorter length of stay, and improved outcomes.

Scientific Exhibit SE15
Stability of the Implanted Knee During Activities of Daily Living
Clare K. Fitzpatrick, PhD, Denver, Colorado
Chadd Clary, PhD, Warsaw, Indiana
Lorin Maletsky, PhD, Lawrence, Kansas
Douglas A. Dennis, MD, Denver, Colorado
Paul J. Rulkotetter, PhD, Denver, Colorado

The objective of the current study was to assess the dynamic stability of four contemporary TKA designs during high demand activities.

Scientific Exhibit SE16
A Novel Technique of Tomography Detected Small Periprosthetic Bone Defects in TKA
Yukihide Mimada, MD, Osaka, Japan
Hiroyoshi Iwaki, MD, Osaka, Japan
Taku Yoshida, MD, Osaka-city, Osaka, Japan
Mitsubiko Ikebuchi, MD, Abeno-ku Osaka, Japan
Shigekazu Mizokaawa, MD, PhD, Osaka, Japan
Kazutaka Sugimoto, MD, Tokyo, Japan
Shingo Baba, Kyoto, Japan
Akira Kasai, BS, Kyoto-City, Japan
Hiroaki Nakamura, MD, Osaka, Japan

Periprosthetic small bone defect, which could not be detected using fluoroscopically guided radiographs, could be detected using a novel technique of tomography with high sensitivity and specificity.

Scientific Exhibit SE17
High Level of Residual Symptoms in Young Patients With TKA
Keith R. Berend, MD, New Albany, Ohio
Ryan Nunley, MD, Saint Louis, Missouri
Adolph V. Lombardi, Jr, MD, New Albany, Ohio
Erin Rub, MS, Saint Louis, Missouri
John C. Clohisy, MD, Saint Louis, Missouri
William G. Hamilton, MD, Alexandria, Virginia
Craig J. Della Valle, MD, Chicago, Illinois
Javad Parvizi, MD, FRCS, Philadelphia, Pennsylvania
Robert L. Barrack, MD, Saint Louis, Missouri

When interviewed by an independent third party, a surprising percentage of young, active patients report residual symptoms and limitations following modern TKA.

Scientific Exhibit SE18
The Knee Society: Current Status of Arthroplasty of the Knee
Adolph V. Lombardi, Jr, MD, New Albany, Ohio
Jess H. Lommer, MD, Philadelphia, Pennsylvania
Steven J. MacDonald, MD, London, Canada
Keith R. Berend, MD, New Albany, Ohio
Aaron A. Hofmann, MD, Salt Lake City, Utah
Giles R. Scuderi, MD, New York, New York
Thomas P. Sculco, MD, New York, New York

Patellofemoral, medial and lateral unicompartmental, cruciate-retaining total, ultracongruent total, posterior-stabilized total, and varus-valgus constrained total knee arthroplasty are reviewed.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an off-label use). For full information refer to page 17.
Scientific Exhibit SE19
The Management of Extensor Mechanism Complications in Total Knee Arthroplasty
Denis Nam, MD, New York, New York
Michael B. Cross, MD, New York, New York
Matthew P. Abdel, MD, New York, New York
Lauren E. Lamont, MD, New York, New York
Keith R. Reinhardt, MD, New York, New York
Benjamin A. McArthur, MD, New York, New York
David J. Mayman, MD, New York, New York
Arlon D. Hanssen, MD, Rochester, Minnesota
Matthew P. Sculco, MD, New York, New York

This scientific exhibit will present a clinical and diagnostic approach to the management of patients with extensor mechanism and patellofemoral complications following a total knee arthroplasty.

Scientific Exhibit SE20
The Utility and Role of Osteotomies About the Knee
Eric Strauss, MD, New York, New York
Laith M. Jazrawi, MD, New York, New York
Bhavesh B. Joshi, DO, New York, New York

With improved techniques and technology, there is a need for a comprehensive review of the knee osteotomy utility for the management of various knee pathologies corrected by orthopaedic surgeons.

Scientific Exhibit SE21
High Flexion in Contemporary Total Knee Design - A Cause of Increased UHMWPE Damage: A Finite Element Study
Edward Morra, MSME, Cleveland, Ohio
A. Seth Greenwald, DPhil Oxon, Cleveland Heights, Ohio

This study investigates the tibial plateau stresses that occur during high flexion activities in four contemporary total knee designs where evolving crosslinked polyethylenes can be employed.

Scientific Exhibit SE22
Prevention and Treatment of Complications With Medial Unicompartment Knee Arthroplasty (UKA)
Geoffrey F. Dervin, MD, Ottawa, Canada
Paul R. Kim, MD, Ottawa, Canada
Peter Thurston, Ottawa, Canada
Kyle Kemp, MSc, Ottawa, Canada

Early failures of UKA can be sub-classified as a means of understanding failure mechanisms and potentially avoiding several in future.

Scientific Exhibit SE23
The Risks and Benefits of Alternate Bearing Use in Total Knee Arthroplasty
William M. Mihalko, MD, PhD, Germantown, Tennessee
Hani Haidar, PhD, Omaha, Nebraska
Amish Potty, MD, Springfield, Illinois
Khaled J. Saleh, MD, MSc, FRCS, FACS, Springfield, Illinois

We will show the limited clinical basis for use of highly crossed linked polyethylene in a TKA but biomechanical evidence would suggest its use may be suspect to earlier failure mechanisms.

Scientific Exhibit SE24
Long-Term Outcomes of Manipulation Under Anesthesia for Stiffness in Primary Total Knee Arthroplasty
Robert Pivec, MD, Baltimore, Maryland
Komona Issa, MD, Santa Clarita, California
Aaron J. Johnson, MD, Baltimore, Maryland
Mark A. Kester, PhD, Mahwah, New Jersey
Michael A. Mont, MD, Baltimore, Maryland

This study evaluated MUA outcomes and complications of patients treated with manipulations under anesthesia for a stiff knee following primary total knee arthroplasty.

Scientific Exhibit SE25
Basic Uses of Hylauronic Acid in Early Knee Arthritis
Laith M. Jazrawi, MD, New York, New York
Eric Strauss, MD, New York, New York
Shady Prestol, BA, New York, New York
Ankit Bansal, BS, New York, New York
Michael Di Benedetto, Oceanside, New York

This exhibit will review the current indications, evidence, and controversies surrounding use of injectable Hylauronic acid (HA) in patients with early knee arthritis.

Scientific Exhibit SE26
A Large-Scale, Multi-Modality Comparative Retrieval Analysis of 500 Tibial Inserts
Douglas Van Citters, PhD, Hanover, New Hampshire
John H. Carrier, MS, Hanover, New Hampshire
Michael B. Mayor, MD, Hanover, New Hampshire
Barbara H. Carrier, MChE, Hanover, New Hampshire
Evan M. Carlson, MS, Hanover, New Hampshire
Steven D. Reinitz, BA, Hanover, New Hampshire
Ivan M. Tomek, MD, Lebanon, New Hampshire
Stephen R. Kantor, MD, Lebanon, New Hampshire
John P. Collier, DE, Hanover, New Hampshire

A retrieval study of 500 inserts shows that current designs and materials are moving in the right direction, and that refinement of the non-articular surface of TKA would be beneficial to patients.

Scientific Exhibit SE27
Why Do Posterior Stabilized Knees Fail?
Khaled J. Saleh, MD, MSc, FRCS, FACS, Springfield, Illinois
William M. Mihalko, MD, PhD, Germantown, Tennessee
Leo A. Whiteside, MD, Saint Louis, Missouri
William A. Jiranek, MD, Richmond, Virginia
Youssef El Btar, MD, Willoubrook, Illinois

The exhibit will provide a comprehensive overview of all the factors involved in failure of the PS TKAs and the modes of their failure.
Scientific Exhibit SE28
Lifetime Risk of TKR: Role of Knee Injury, Obesity, and Occupational Exposure
Elena Losina, MD, Boston, Massachusetts
Meghan E. Dagle, BS, Boston, Massachusetts
Robert J. Wright, MD, Boston, Massachusetts
Thomas S. Thornhill, MD, Boston, Massachusetts
Jeffrey N. Katz, MD, Brookline, Massachusetts
Established risk factors for knee OA have great influence on the timing and lifetime risk of total knee replacement.

Scientific Exhibit SE29
Mechanism of Primary Knee Arthroplasty Failure: Difference of a Decade
William C. Schroer, MD, Saint Louis, Missouri
Keith R. Berend, MD, New Albany, Ohio
Michael E. Berend, MD, Mooresville, Indiana
Ryan Nunley, MD, Saint Louis, Missouri
C. L. Barnes, MD, Little Rock, Arkansas
Adolph V. Lombardi, Jr, MD, New Albany, Ohio
Michael P. Bolognesi, MD, Durham, North Carolina
In a multicenter study, 37% of knee failures occurred within two years after TKA. Aseptic loosening, instability and infection account for 67% of knee failures.

Scientific Exhibit SE30
Management of the Patella in Revision Total Knee Arthroplasty
Christopher E. Gross, MD, Chicago, Illinois
Matthew Tetreault, BA, Pittsburgh, Pennsylvania
Scott M. Sporer, MD, Wheaton, Illinois
Craig J. Della Valle, MD, Chicago, Illinois
In most aseptic revision total knee arthroplasties, a well-fixed patellar component can be retained, and if revision is required, a standard polyethylene component is sufficient in most cases.

Scientific Exhibit SE31
Alignment in Total Knee Arthroplasty: Where Have We Come From and Where Are We Going?
Aaron J. Johnson, MD, Baltimore, Maryland
Steven F. Harwin, MD, New York, New York
Stephen M. Howell, MD, Sacramento, California
Jonathan R. Dattilo, BS, Baltimore, Maryland
Michael A. Mont, MD, Baltimore, Maryland
Samik Banerjee, MS, Baltimore, MD
This exhibit emphasizes an understanding of the native alignment of the knee, methods for correction of intra- and extra-articular deformity of the knee, and summarizes the existing literature.

Basic Research
Scientific Exhibit SE32
Applied Anatomy of Capsular and Tendon Releases for Anterior Approach THA: A Cadaveric and Clinical Study
Jose A. Rodriguez, MD, New York, New York
Brian Walters, MD, New York, New York
Herbert J. Cooper, MD, New York, New York
A cadaveric study documenting the relationship between the hip capsule and surrounding pericapsular structures, and their relevance in the anterior surgical approach to the hip.

Scientific Exhibit SE33
Generational Perspectives on Current Orthopaedic Challenges: Identifying the Gaps
Chad A. Krueger, MD, Fort Sam Houston, Texas
Daniel J. Stinner, MD, Nashville, Tennessee
This exhibit showcases a new communication technique that removes physical barriers, allows for open discussion and highlights different generation perspectives on current orthopaedic issues.

Scientific Exhibit SE34
The Impact of Vitamin D Deficiency on Musculoskeletal Health and Orthopaedic Outcomes
Shen-Ying R. Ma, MD, New York, New York
Michael E. Angeline, MD, Williams Bay, Wisconsin
Cecilia Pascal Garrido, MD, Denver, Colorado
Clifford Vogt, MD, New York, New York
Russell F. Warren, MD, New York, New York
Scott A. Rodeo, MD, New York, New York
The goal of this exhibit is to provide an overview on vitamin D’s role in musculoskeletal health, its impact on patient outcomes, and provide current best practices for managing hypovitaminosis D.

Scientific Exhibit SE35
Antibiotic Stewardship in Orthopedic Surgery: Principles and Practice
Joseph A. Bosco III, MD, New York, New York
Sapna A. Mehta, MD, New York, New York
Lorraine Hutzler, BA, New York, New York
Michael Phillips, MD, New York, New York
The principles of antibiotic stewardship include determining the appropriate indications for antibiotic administration, choosing the most suitable antibiotics based on knowledge of potential pathogens and determining the proper dosage and length of administration of these antibiotics.

Foot and Ankle
Scientific Exhibit SE36
Spring Ligament Reconstruction in Adult-Acquired Flatfoot Deformity
Palak A. Nair, BS, Washington, Dist. of Columbia
Andrew Malzberg, BA, New York, New York
Constantine Demetropoulos, MD, New York, New York
Jonathan T. Deland, MD, New York, New York
The purpose of this exhibit is to give implications of when to perform a spring ligament reconstruction to address flatfoot deformity, and to explain our new described techniques.
Scientific Exhibit SE37
Bipolar Fresh Total Osteochondral Allograft: Why, Where, When
Sandro Giammini, MD, Bologna, Italy
Roberto Buda, Bologna, Italy
Marco Cavallone, MD, Bologna, Italy
Alberto Raffilli, MD, Bologna, Italy
Gherardo Pagliuzza, Bologna, Italy
Francesco Acri, MD, Bologna, Italy
Deianira Luciani, MD, Bologna, Italy
Simona Neri, PhD, Bologna, Italy
Francesca Vannini, MD, Bologna, Italy

Bipolar fresh total osteochondral allograft is a good option for the treatment of end stage arthritis in young and middle-aged selected patients.

Scientific Exhibit SE38
Contemporary Management of Foot Drop
Edward Tang, MD, San Leandro, California
Arjun Srinath, MD, Weston, Florida
John T. Campbell, MD, Baltimore, Maryland
Clifford L. Jeng, MD, Baltimore, Maryland
Rebecca Cerrato, MD, Fallston, Maryland
Mark S. Myerson, MD, Baltimore, Maryland

Foot drop is a pathologic condition with multiple etiologies that is encountered by many orthopaedic surgical subspecialists. We discuss and display current concepts and management of this problem.

Hand and Wrist
Scientific Exhibit SE39
Complex Regional Pain Syndrome: An Algorithmic Approach to Diagnosis and Management
Nicola Baecher, MD, Washington, Dist. of Columbia
Thomas Sanders, MD, Falls Church, Virginia
Michael Kessler, MD, Cherry Chase, Maryland

CRPS presents considerable problems for the practicing orthopedist. We present an overview of the current literature, and an algorithmic approach to guide management of this complex problem.

Scientific Exhibit SE40
Comparing Non-Locking Distal Radius Fixation Systems With Volar Locking Plates
William H. Seitz, Jr, MD, Cleveland, Ohio
William H. Seitz III Jr, MD, Cleveland, Ohio
Matthew Christian, MD, Baltimore, Maryland
Paul D. Postak, Cleveland, Ohio
A. Seth Greenwald, DPhil Oxon, Cleveland Heights, Ohio

Fixed angle, volar locking plates have become widely used in treatment of unstable distal radius fractures.

Pediatrics
Scientific Exhibit SE41
LLRS Exhibit: Avoiding Complications in Limb Lengthening
Stuart A. Green, MD, Los Alamitos, California

This LLRS exhibit will alert registrants to problems associated with limb lengthening and define both prophylactic measures to prevent their happening, and strategies to overcome them if they occur.

Scientific Exhibit SE42
POSNA: Infantile DDH: Screening, Safe-swaddling, Harness Application and Follow-up Protocol
Harish S. Hosalkar, MD, San Diego, California
Scott J. Mubarak, MD, San Diego, California
Ernest L. Sink, MD, New York, New York
Kishore Mulpuri, MD, Vancouver, Canada
Charles T. Price, MD, Orlando, Florida

This exhibit focuses on DDH Screening, Safe-swaddling, Harness application and follow-up Protocol.

Scientific Exhibit SE43
Subtalar Arthroereisis in Paediatric Flexible Flatfoot: Algorithm of Treatment and Results at Five Years
Antongiulio Marmotti, MD, Torino, Italy
Margherita Germano, MD, Torino, Italy
Mattia Cravino, MD, Torino, Italy
Alessia Tron, MD, Fino, Italy
Alessandra Tellini, MD, Alpignano-Turin, Italy
Raniero Del Din, MD, Persa Argentina, Italy
Gianluca Collo, MD, Torino, Italy
Roberto Rossi, MD, Torino, Italy
Filippo Castoldi, MD, Torino, Italy

Extra-articular subtalar arthroereisis with calcaneo stop allows for properly orienting the talus over the calcaneus with good clinical and radiographic results at a minimum of 5 years of follow up.

Scientific Exhibit SE44
Xinning Li, MD, Lexington, Massachusetts
Richard R. Ma, MD, New York, New York
Natalie M. Egge, MD, Worcester, Massachusetts
Lawrence Gulotta, MD, New York, New York
Joshua Dines, MD, Great Neck, New York
Brett D Owens, MD, West Point, New York

Pediatric shoulder instability after primary glenohumeral dislocation can be a challenging clinical problem.
Educational Programs

Scientific Exhibit SE45
Professionalism Curriculum in Orthopaedic Residency: Teaching and Evaluating Residents
Donna P. Phillips, MD, New York, New York
Kenneth A. Egol, MD, New York, New York
Sondra Zabar, MD, New York, New York
Joseph D. Zuckerman, MD, New York, New York

The purpose of this exhibit is to demonstrate our experience with a comprehensive professionalism curriculum utilizing innovative and objective methods of resident CS and P evaluation.

Scientific Exhibit SE46
A Surgical Skills Training Curriculum for PGY-1 Orthopaedic Residents
Tameem M. Yehyawi, MD, Iowa City, Iowa
John L. Marsh, MD, Iowa City, Iowa
Matthew D. Karam, MD, Iowa City, Iowa

A surgical skills training curriculum for PGY-1 orthopaedic surgery residents designed to take place in January of 2013.

Scientific Exhibit SE47
The Work Injury Recovery Center: A Productive Endeavor in an Orthopaedic Practice
James V. Nepola, MD, Iowa City, Iowa
John P. Albright, MD, Iowa City, Iowa
Phinit Phisitkul, MD, Iowa City, Iowa
Sergio A. Mendoza-Lattes, MD, Iowa City, Iowa
Matthew J. Teusink, MD, Tampa, Florida
Casondra Roethler, Iowa City, Iowa

A model for a comprehensive musculoskeletal worker’s compensation clinic and it’s professional as well as financial rationale is presented.

Scientific Exhibit SE48
AAOS Evidence-Based Practice Committee: Evidence-Based Orthopaedics
David Jevsevar, MD, MBA, Saint George, Utah
Leeaht Gross, Rosemont, Illinois

Evidence-Based Practice is an essential aspect of patient care. Evidence has always been part of decision making and now has even greater importance.

Scientific Exhibit SE49
AAOS Medical Liability Committee: Alternative Dispute Resolution: A Review
Andrew D. Markiewicz, MD, Cincinnati, Ohio
Thomas B. Fleeter, MD, Reston, Virginia
David H. Sohn, MD, Perrysburg, Ohio

As an alternative to costly and time-consuming litigation, Alternative Dispute Resolution (ADR) programs recognize suboptimal outcomes do occur and should be recognized outside of the legal system.

Scientific Exhibit SE50
AAOS Ethics Committee: Resident Ethics Series: From Design to Implementation
Charles Carroll IV, MD, Winnetka, Illinois

The AAOS Ethics Committee has designed a Resident’s Ethics Series and this exhibit will review the program and discuss implementation of the program.

Shoulder and Elbow

Scientific Exhibit SE51
Telesurgery: Use of Augmented Reality in Orthopaedic Education
Brent A. Ponce, MD, Birmingham, Alabama
Terry B. Clay, BS, Birmingham, Alabama
Joseph A. Kundukulam, BS, Birmingham, Alabama
Keith W. Weaver, MD, Birmingham, Alabama
Jonathan K. Jennings, MD, Birmingham, Alabama
Evan Sheppard, BS, West Orange, New Jersey
Matthew May, BA, Birmingham, Alabama
Herrick Siegel, MD, Birmingham, Alabama

Virtual Interactive Presence and Augmented Reality (VIPAR) system can be used to assist in complex orthopaedic surgery by having the remote surgeon be present.

Scientific Exhibit SE52
The Arthroscopic Treatment of Elbow Osteoarthritis
Nathan W. Skelley, MD, Saint Louis, Missouri
Aaron M. Chamberlain, MD, Saint Louis, Missouri
Jay D. Keener, MD, Saint Louis, Missouri
Ken Yamaguchi, MD, Chesterfield, Missouri
Leesa M. Galatz, MD, Saint Louis, Missouri

The purpose of this exhibit is to review the use of arthroscopy as a treatment modality for elbow osteoarthritis.

Scientific Exhibit SE53
Cost Effective 3D Modeling Utilizing Standard CT Scan Data and Shareware Free Software
Rick F. Papandrea, MD, Waukesha, Wisconsin
Bradley R. Kuzel, MD, Duluth, Minnesota

Inexpensive creation of 3D bone models from standard CT scan data manipulated with free software.

Scientific Exhibit SE54
Suprascapular Neuropathy: An Elusive Cause of Shoulder Pain
Lewis L. Shi, MD, Chicago, Illinois
Eugene Ek, MBBS, PhD, FRACS, New York, New York
Michael T. Freehill, MD, Winston-Salem, North Carolina
Peter S. Vezieridis, MD, Boston, Massachusetts
Jeffrey D. Tompson, BA, Boston, Massachusetts
Laurence D. Higgins, MD, Boston, Massachusetts
Jon J. Warner, MD, Boston, Massachusetts

Suprascapular neuropathy is often overlooked as a cause of shoulder pathology. We present the most current understanding of its patho-anatomy, diagnosis, treatment, and its relationship to cuff tears.
Scientific Exhibit SE55
Reverse Shoulder Arthroplasty With Latissimus Dorsi/Teres Major Transfer: Technique, Rehabilitation and Results
Eugene Ek, MBBS, PhD, FRACS, New York, New York
Lewis L. Sbi, MD, Chicago, Illinois
Jeffrey D. Tompson, BA, Boston, Massachusetts
Katherine Phillips, PT, MS, Boston, Massachusetts
Laurence D. Higgins, MD, Boston, Massachusetts
Jon J. Warner, MD, Boston, Massachusetts

In patients with posterosuperior cuff deficiency, a reverse shoulder arthroplasty with latissimus dorsi and teres major transfer can reliably increase active forward flexion and external rotation.

Scientific Exhibit SE56
Blood Supply to the Proximal Humerus: Implications for Fracture Reconstruction
Mahmoud M. Khair, MD, New York, New York
Marschall B. Berkes, MD, New York, New York
Travis G. Maak, MD, Salt Lake City, Utah
David M. Dines, MD, Great Neck, New York
Josh Dines, MD, Great Neck, New York
Dean G. Lorich, MD, New York, New York

This exhibit reviews the data guiding the management of proximal humerus fractures emphasizing blood supply. It describes new approaches and techniques as well as provides a treatment algorithm.

Scientific Exhibit SE57
Humeral Retroversion: Variability in Measurement Practices and Implications for Understanding Humeral Geometry
Spencer Woolwine, CS, Newport Beach, California
Michael L. Pearl, MD, Los Angeles, California
Gabriel Merton, San Diego, California
Fabian Van de Bunt, Amsterdam, Netherlands

By reviewing version literature to date, we can differentiate studies by methodology and approach to humeral geometry, and clarify implications of specific choices to expected values of measurement.

Scientific Exhibit SE58
Resurfacing Arthroplasty for Contained Cuff Tear Arthropathy
William H. Settze, Jr, MD, Cleveland, Ohio
Yuji Umeda, MD, Cleveland, Ohio
Ernest Michaud, OTR/L, Cleveland, Ohio

Cuff Tear Arthropathy (CTA) remains a challenging problem for surgeon and patient alike.

Scientific Exhibit SE59
Scoliosis Research Society: Rates and Causes of Mortality Associated With Spine Surgery Based on 108,419 Procedures
Justin S. Smith, MD, Charlottesville, Virginia
Christopher Ames, MD, San Francisco, California
Lawrence G. Lenke, MD, Saint Louis, Missouri
David W. Polly, Jr, MD, Minneapolis, Minnesota
Manish K. Kasliwal, MD, Charlottesville, Virginia
Paul A. Broadstone, MD, Chattanooga, Tennessee
Steven D. Glassman, MD, Louisville, Kentucky
Alexander Vaccaro, MD, PhD, Gladwyne, Pennsylvania
Christopher I. Shaffrey, MD, Charlottesville, Virginia

This study provides rates and causes of mortality associated with spine surgery for a broad range of diagnoses for adult and pediatric patients.

Scientific Exhibit SE60
Risk-analysis of MRSA in Patients With Traumatic Vertebral Fractures and Spinal Cord Injury
Markus Eichler, MD, Heidelberg, Germany
Bernd Wiedenhoefer, MD, Heidelberg, Germany
Michael Akbar, MD, Heidelberg, Germany

his scientific exhibit emphasizes the MRSA-colonization problem in a specific patient population. Patients with spinal column fractures with neurological deficits are highly at risk for MRSA.

Scientific Exhibit SE61
Spinal Epidural Abscesses: Risk Factors, Medical Versus Surgical Management: A Retrospective Review of 100 Cases
Timothy B. Alton, MD, Seattle, Washington
Amit R. Patel, MD, York, Pennsylvania
Jens R. Chapman, MD, Seattle, Washington
Michael J. Lee, MD, Seattle, Washington
Carlo Bellabarba, MD, Seattle, Washington
Richard J. Bransford, MD, Seattle, Washington

A Single-Center Retrospective Review of 100 Patients with Spinal Epidural Abscesses: Risk Factors, Current Trends, Radiographic Analysis, and Outcomes of Medical vs Surgical Management.

Scientific Exhibit SE62
Comparison of In-hospital Complications Associated With ACDF and Cervical Disc Arthroplasty
Sergiy Nesterenko, MD, Baltimore, Maryland
Lee H. Riley III, MD, Baltimore, Maryland
Richard L. Skolasky, Jr, ScD, Baltimore, Maryland

Perioperative complications reflected in the nationwide inpatient database differ between the patients with cervical discogenic pathology treated with either ACDF or disc arthroplasty.
Scientific Exhibit SE63
Nonoperative Treatment for Anterior Cruciate Ligament Injury in Recreational Alpine Skiers
Iftach Hetroni, MD, Tel Aviv, Israel
Demetris Delos, MD, New York, New York
Greg Fives, PT, Northport, New York
Brian W. Boyle, BA, Montclair, New Jersey
Kaitlyn A. Lillemoe, BA, New York, New York
Robert G. Marx, MD, New York, New York

In recreational skiers who sustain ACL injury and have low-grade Lachman at 6-12 weeks after the injury, good outcome and normal anterior laxity can be expected at more than 2 years without surgery.

Scientific Exhibit SE64
The Management of the Biceps Tendon: Proximal to Distal
Laith M. Jazrawi, MD, New York, New York
Eric Strauss, MD, New York, New York
Young W. Kwon, MD, PhD, New York, New York
Andrew S. Kokito, MD, New York, New York
Matthew Hamula, BA, BS, New York, New York
Omar N. Khattab, MD, Milwaukee, Wisconsin

The purpose of this scientific exhibit is to present practitioners with cutting edge evidence on the pathophysiology, biomechanics, diagnosis, and the management of biceps tendon disorders.

Scientific Exhibit SE65
Magnetic Resonance Imaging of the Hip: Techniques and Spectrum of Disease
Ashvin K. Dewan, MD, Baltimore, Maryland
Michael K. Shindle, MD, Madison, New Jersey
Bryan T. Kelly, MD, New York, New York
Andrew J. Cosgroea, MD, Lutherville, Maryland
John A. Carrino, MD, Baltimore, Maryland
A. J. Khanna, MD, Bethesda, Maryland

The spectrum of hip disease detectable by magnetic resonance imaging and the application of new and current magnetic resonance imaging techniques are reviewed in this exhibit.

Scientific Exhibit SE66
The Mechanical Etiology of Pain in the Non-arthritic Hip: Presentation, Evaluation and Management
Travis G. Maak, MD, Salt Lake City, Utah
Lazaros A. Poultsides, MD, New York, New York
Bryan A. Warme, MD, Ames, Iowa
Christopher L. Peters, MD, Salt Lake City, Utah
Stephen K. Aoki, MD, Salt Lake City, Utah
Ernest L. Sink, MD, New York, New York
Bryan T. Kelly, MD, New York, New York

This exhibit discusses non-arthritis mechanical hip pain and diagnosis, clinical and radiographic evaluation, and management algorithms.
An Algorithmic Approach to the Management of Recurrent Lateral Patellar Dislocation
Asheesh Bedi, MD, Ann Arbor, Michigan
Travis G. Maak, MD, Salt Lake City, Utah
Demetris Delos, MD, New York, New York
Moira M. McCarthy, MD, New York, New York
Beth E. Shubin Stein, MD, New York, New York
Elizabeth A. Arendt, MD, Minneapolis, Minnesota
David W. Altchek, MD, New York, New York
Joshua Dines, MD, Great Neck, New York

An evidence-based discussion of the clinical & radiographic evaluation, surgical indications & techniques, and outcomes of the various options for patellofemoral instability in the active patient.

Revision Anterior Cruciate Ligament (ACL) Surgery After Primary Double-Bundle ACL-Reconstruction
Marcus Hofbauer, MD, Pittsburgh, Pennsylvania
Christopher D. Murawski, New York, New York
Kellie K. Middleton, MPH, Pittsburgh, Pennsylvania
Bart Muller, MD, Pittsburgh, Pennsylvania
Freddie H. Fu, MD, Pittsburgh, Pennsylvania

Representative cases are presented as potential solutions for ACL revision surgery and to constitute that revision after double-bundle ACL reconstruction is reasonable to accomplish.

The Anterolateral Ligament of the Knee: Anatomy, Radiology, Biomechanics and Clinical Implications
Steven A. Claes, MD, Pellenberg, Belgium
Stijn Bartholomeeussen, MD, Malle, Belgium
Eeve E. Vereecke, PhD, Kortrijk, Belgium
Jan M. Victor, MD, GENT, Belgium
Peter Verdonck, MD, PhD, Ghent, Belgium
Johan Bellemans, MD, Langdorp, Belgium

The ALL is a distinct structure with definite biomechanical properties, yielding new insights for the diagnosis and treatment of knee instability previously attributed to isolated injuries of the ACL.

Multiple Ligament Knee Injuries: Diagnosis and Treatment of an Uncommon But Challenging Orthopaedic Problem
Demetris Delos, MD, New York, New York
Travis G. Maak, MD, Salt Lake City, Utah
Kristofer Jones, MD, New York, New York
Mahmoud M. Khair, MD, New York, New York
Robert G. Marx, MD, New York, New York
Russel F. Warren, MD, New York, New York

This exhibit will review the nature of multiple ligament knee injuries, their diagnosis, and treatment.

AAOS Women Health Issues Advisory Board: Celebrating 40 Years of Title IX: The Influence on Your Orthopaedic Practice
Sheila M. Algan, MD, Oklahoma City, Oklahoma
Jennifer M. Weiss, MD, Los Angeles, California
Erin L. Ransford, Rosemont, Illinois

Forty years later, Title IX continues to change the lives of females by enabling active participation in sports. This exhibit examines how orthopaedic surgery has been impacted by Title IX.

Two-Year Outcome of Arthroscopic Capsular Repair of the Hip: A Matched Pair Group Study
Benjamin Domb, MD, Westmont, Illinois
Zachary J. Finley, BA, Westmont, Illinois
Ryan Baise, Orland Park, Illinois
Itamar Botser, Palo Alto, California

Both capsular repair and capsular release following hip arthroscopy showed excellent results at two years follow-up. However, capsular repair showed higher hip specific outcome scores and lower pain.

Cell Based Articular Cartilage Repair in the Knee: An Evidence-Based Review
Seth Sherman, MD, Columbia, Missouri
Tyler J. Jenkins, BS, Columbia, Missouri
Martin Gregory, BA, Columbia, Missouri
James L. Cook, DVM, PhD, Columbia, Missouri
James P. Stannard, MD, Columbia, Missouri

This is an evidence based review of cell based articular cartilage repair techniques in the knee. These techniques have the potential to restore both the structure and function of hyaline cartilage.

Anterior Cruciate Ligament Reconstruction: Observations on 25-Years of Experience
Jaskarndip Chahal, MD, Mississauga, Canada
Andrew Lee, MD, Chicago, Illinois
Bernard R. Bach, Jr, MD, River Forest, Illinois

We describe a single surgeon’s experience with ACLR over 25 years in a cohort of 1981 patients with respect to the rate of reoperation, revision ACLR, and rate of contralateral surgery.

The Syndesmosis: Knowledge Update and Surgical Techniques
Roy Davudovitch, MD, New York, New York
Daniel O. Howard, BS, New York, New York
Kenneth A. Egel, MD, New York, New York

This multimedia presentation aims to review the anatomy, surgical indications and techniques for syndesmotic reduction and fixation.
Scientific Exhibit SE80
Open Knee Joint Injuries: Computed Tomography Scan Is a New Diagnostic Tool That Is Better Than the Saline Load Test
Sanjit R. Konda, MD, Charlotte, North Carolina
Daniel O. Howard, BS, New York, New York
Davidovitch Roy, MD, New York, New York
Kenneth A. Egol, MD, New York, New York

Computed tomography scan has been shown to improve detection of occult traumatic arthrotomies when compared to the Saline Load Test and a low radiation dose protocol does not diminish its accuracy.

Scientific Exhibit SE81
The Results of Acetabulum Fractures Treatment After 10 Years of Follow-up
Kenan Senobradi, MD, Belgrade, Serbia

Fracture of acetabulum are relatively common injuries of the pelvis that are most frequently associated with high-energy trauma. The aim was to show the treatment results after 10 years of follow-up.

Scientific Exhibit SE82
Bio-texture Modeling for Assistance of Acetabular Fracture Surgery: Tactile 3D Bony Manufacturing
Sang Y. Lee, MD, Kobe, Japan
Takahiro Niikura, MD, PhD, Kobe, Japan
Maki Sugimoto, MD, Kobe, Hyogo, Japan
Takaaki Koga, MD, Kobe, Japan
Yoshihiro Dogaki, Kobe City, Hyogo, Japan
Etsuko Okumachi, MD, Kobe, Japan
Takahiro Waki, Kobe, Japan
Ryosuke Kuroda, MD, Kobe, Japan
Masahiro Kurosaka, MD, Kobe, Japan

Tactile three-dimensional bony manufacturing for acetabular fractures using 3D printing technology provides essential and additional information by direct visual and tactile feedback.

Scientific Exhibit SE83
Quadrilateral Plate Fixation Through the Iliofemoral Approach
Ramesh Sen, PhD, Chandigarh, India

The iliofemoral approach permits direct visualization of the entire anterior column and spring plate fixed anteriorly on the ilipectineal eminence provides better mechanical support.

Scientific Exhibit SE84
The Use of Percutaneous Autologous Bone Marrow Grafting for Non-union
Vishal Hegde, BA, New York, New York
Anas Saleh, MD, Beachwood, Ohio
Saad M. Hasan, BA, New York, New York
Kofi A. Mensah, MD, New York, New York
Joseph M. Lane, MD, New York, New York

Percutaneous autologous bone marrow grafting is a minimally invasive alternative to autologous bone grafting for non-unions. Physicians should be made aware of this technique and its appropriate use.
The Alternate Paper designation indicates that this poster has been selected to be given as a paper in the event that one of the papers in the chosen session has to be withdrawn.

**Adult Reconstruction Hip**

**Poster No. P001**

Iliopsoas Muscle Atrophy was Evident in the Patients with Hip Osteoarthritis - MRI Analysis of 800 Cases
Koh Shimizu, MD, Chiba, Japan
Sara Shimizu, MD, Chiba, Japan

This MRI study revealed greater muscle atrophy of the iliopsoas before THA, and the recovery was not sufficient even after THA in patients with hip osteoarthritis.

**Poster No. P002**

Trends in the Surgical Management of Hip Dysplasia in Adults
Jonathan R. Hutt, MBBS, London, United Kingdom

In young adults, non-arthroplasty procedures for hip dysplasia have increased fourfold in number over 10 years, without any significant change in the numbers performed in the paediatric population.

**Poster No. P003**

Hip Translation in Normal Volunteers and Patients with Acetabular Dysplasia
Keisuke Akiyama, MD, PhD, Osaka City, Japan
Takashi Sakai, MD, Suita, Japan
Junichiro Koyanagi, MD, Osaka, Japan
Hideki Yoshikawa, MD, Osaka, Japan
Kazuomi Sugamoto, MD, Osaka, Japan

Hip instability was increased in proportion to age and the severity of acetabular dysplasia.

**Poster No. P004**

Can the Alpha Angle Predict the Incidence of Hip Pain in 200 Volunteers?
Paul E. Beaule, MD, Ottawa, ON, Canada
Heather Belanger, RN, Ottawa, ON, Canada
Kawan S. Rakhra, MD, Ottawa, ON, Canada
Gina Di Primio, MD, Ottawa, ON, Canada

Our results indicate that an elevated alpha angle may be associated with new onset hip pain in this cohort of patients.

**Poster No. P005**

Molecular Characterization of Articular Cartilage from Young Adults with Femoral Acetabular Impingement
Shingo Hashimoto, MD, Kobe, Japan
Corey S. Gill, MD, Dallas, TX
Zhiqi Zhang Jr, MD, PhD, Guangzhou, China
Linda J. Sandell, PhD, St Louis, MO
John C. Clohisy, MD, PhD, St Louis, MO

Data from the current study identifies potential early biomarkers of osteoarthritic hip disease and support increased metabolic and inflammatory activity that is consistent with early osteoarthritis.

**Poster No. P006**

Birmingham Interlocking Triple Pelvic Osteotomy - Outcome at 10 to 18 Years
Dylan Jewell, MD, Worcestershire, United Kingdom
John N. O’Hara, MD, Birmingham, United Kingdom
Callum McBryde, MD, Birmingham, United Kingdom

This study determines the survival and outcomes of the Birmingham Interlocking Triple Pelvic Osteotomy. Kaplan-Meier survival analysis shows 10, 15 and 18-year survival of 76, 54 and 50% respectively.

**Poster No. P007**

Epidemiology of Periprosthetic Femur Fractures in 33,275 Primary Total Hip Arthroplasties
Matthew P. Abdel, MD, New York, NY
David G. Lewallen, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN

In 33,275 primary THAs, intraoperative femoral fractures occurred 9X more often with uncemented stems, but there was an equivalent prevalence of postoperative fractures in cemented & uncemented stems.

**Poster No. P008**

The Prevalence of Acetabular Retroversion in Asymptomatic Adults
Georgi Wassilew, MD, Berlin, Germany
Heller O. Markus, PhD, Berlin, Germany
Perka Carsten, MD, Berlin, Germany
Viktor Jansz, MD, Berlin, Germany
Stephan Werner Tohtz, MD, Berlin, Germany

Our study show that asymptomatic possible acetabular retroversion is not a rare condition, so patients presenting with pain around the hip who may have evidence of FAI should be subjected to strict diagnostic scrutiny.

**Poster No. P009**

The Results of Intertrochanteric Curved Varus Osteotomy for Idiopathic Osteonecrosis of the Femoral Head
Michio Hamanishi, MD, Minami-Ku Hiroshima, Japan
Yuji Yasunaga, MD, Hiroshima City, Japan
Takuma Yamasaki, MD, Hiroshima, Japan
Ryo Mori, MD, Hiroshima, Japan
Takehito Shoji, MD, Hiroshima, Japan
Mitsuo Ochi, MD, PhD, Hiroshima, Japan

The results of intertrochanteric curved varus osteotomy for idiopathic osteonecrosis of the femoral head were successful. Operative indication should be decided carefully when small intact area is est.
**Educational Programs**

**Poster No. P010**

Total Joint Replacement in Patients over 90 Years of Age is a Viable Option but Requires Risk Adjustment

*Alternate Paper: Adult Reconstruction Hip I: Primary Total Hip Arthroplasty*

James A. Browne, MD, Charlottesville, VA
Wendy Novicoff, PhD, Charlottesville, VA
Michele R. D’Apiuzzo, MD, Charlottesville, VA

Age over 90 is associated with increased complications and mortality after total joint arthroplasty.

**Poster No. P011**

Has Total Hip Arthroplasty in Patients 30 Years and Younger Improved Over Time? A Systematic Review

Muyibat A. Adelani, MD, Saint Louis, MO
James A. Keeney, MD, St Louis, MO
Geneva Baca, Saint Louis, MO
Allison Palsich, BS, Saint Louis, MO
Susan Fowler, Saint Louis, MO
John C. Clohisy, MD, Saint Louis, MO

The literature on total hip arthroplasty in patients 30 years of age and younger demonstrates an improvement in clinical outcomes and survivorship over time.

**Poster No. P012**

Cementless THA in Patients Age 50 and Under at Minimum 10-Year Follow Up: What Can Be Learned Concerning Durability?

Ryan K. Takenaga, MD, Iowa City, IA
Nicholas Bedard, BS, Iowa City, IA
Steve S. Liu, MD, Iowa City, IA
John J. Callaghan, MD, Iowa City, IA

Cementless THA with a second generation extensively coated stem demonstrated durable fixation in a younger patients at minimum 10 years. No hips were revised for loosening.

**Poster No. P013**

No Difference in Activity Levels Between Very Young and General Total Hip Arthroplasty Patients Following Surgery

Tennison Malcolm, MD, Iowa City, OH
Wael K. Barsom, MD, Bay Village, OH
Steven J. Spalding, MD, Cleveland, OH
Andrew Zeff, MD, MPH, Cleveland, OH
Alison K. Klika, MS, Cleveland, OH

The activity of total hip arthroplasty ≤30 fails to show any difference from traditional, older arthroplasty patients, likely due to the unique effect of comorbidities in very young patients.

**Poster No. P014**

Young Total Hip Arthroplasty Patients: How Active are They?

James A. Keeney, MD, St Louis, MO
Ryan Nunley, MD, Saint Louis, MO
Robert L. Barrack, MD, Saint Louis, MO
John C. Clohisy, MD, Saint Louis, MO

Young THA patients are diverse: highly active males with OA, moderately active females with OA and DDH, and low activity females with osteonecrosis or inflammatory arthritis.

**Poster No. P015**

Anterior Approach Hip Arthroplasty: Does a Short Stem Increase the Risk of Fracture?

Keith R. Berend, MD, New Albany, OH
Michael J. Morris, MD, New Albany, OH
Adolph V. Lombardi Jr, MD, New Albany, OH

The nearly 1% risk of post-operative fracture with the anterior supine approach appears to be offset by a lower rate of dislocation or infection versus traditional approaches.

**Poster No. P016**

Migration and Thigh Pain with a New Short Modular Femoral Stem for Total Hip Replacement

Jose A. Rodriguez, MD, New York, NY
Herbert J. Cooper, MD, New York, NY
Parthiv A. Rathod, MD, Flushing, NY

There was a high incidence of thigh pain with a new short modular femoral stem associated with a tendency for early varus migration with the tip touching the lateral cortex of the femur.

**Poster No. P017**

Which Muscle Sparing Approach is Better - Direct Anterior or Antero-lateral in Total Hip Arthroplasty?

Hiroyoshi Iwaki, MD, Osaka, Japan
Yukihide Minoda, MD, Osaka, Japan
Mitsuhiko Ikebuchi, MD, Abeno-ku Osaka, Japan
Hiroaki Nakamura, MD, Osaka, Japan

We compared 50 direct anterior approach and 50 antero-lateral approach in total hip arthroplasty. Recovery rates were similar in both group, however the cup orientation is significantly more stable in.

**Poster No. P018**

Differences in Hip Strength Recovery with Direct Anterior and Posterio Approach Total Hip Arthroplasty

Parthiv A. Rathod, MD, Flushing, NY
Takumi Fukunaga, DPT, ATC, New York, NY
Ajit J. Deshmukh, MD, New York, NY
Amar S. Ranawat, MD, New York, NY
Jose A. Rodriguez, MD, New York, NY

Both DAA and PA THA offer similar recovery in hip muscle strength up to 1 year with exceptions of persistent ER strength deficit in PA group and flexion strength deficit at 6 weeks in DAA group.

**Poster No. P019**

Effect of Femoral Offset on Pain and Function Following Total Hip Arthroplasty

Kevin A. Cassidy, MD, New York, NY
Manish S. Noticewala, MD, New York, NY
William B. Macaulay, MD, New York, NY
Jonathan H. Lee, MD, New York, NY
Jeffrey A. Geller, MD, New York, NY

Reducing offset by more than 5mm as compared to the contralateral non-diseased hip can decrease function, while increasing offset by more than 5mm does not increase pain nor decrease function.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
**Poster No. P020**
Are Hip Precautions Necessary after Posterior Approach to Total Hip Arthroplasty?
Aidin Eslampour, MD, West Bloomfield, MI
Greg Erens, MD, Decatur, GA
Thomas L. Bradbury, MD, Atlanta, GA
James R. Roberson, MD, Atlanta, GA
Alex A. Johnson, Decatur, GA

Intraoperative stability testing is necessary during primary total hip arthroplasty. If the hip meets stability criteria intraoperatively, hip precautions may not be necessary.

**Poster No. P021**
The Association Between Femoral Tilt and Impingement Free Range-of-motion in Total Hip Arthroplasty
Tobias Renkawitz, MD, PhD, Bad Abbach, Germany
Martin Haimerl, PhD, MSc, Feldkirchen, Germany
Markus Weber, Bad Abbach, Germany
Michael Woerner, Bad Abbach, Germany
Phillipp Lechler, MD, Marburg, Germany
Joachim Grifka, MD, Pentling, Germany

The Femoral Tilt has a significant impact on recommended cup positions within the concept of “femur first” or “combined anteversion”.

**Poster No. P022**
Efficacy of Intra-operative Digital Radiography in Total Hip Arthroplasty
Brad L. Penenberg, MD, Beverly Hills, CA
William S. Bolling, MD, Beverly Hills, CA
Michelle Riley, PA, Beverly Hills, CA

use of intra-operative digital radiography is reliable and permits improved precision of component placement in total hip arthroplasty.

**Poster No. P023**
Sexual Function Improves Significantly After Primary Total Hip and Knee Arthroplasty: A Prospective Study
Parthw A. Rathod, MD, Flushing, NY
Ajit J. Deshmukh, MD, New York, NY
Amar S. Ranawat, MD, New York, NY
Jose A. Rodriguez, MD, New York, NY

THA or TKA improved overall sexual function in 90% of patients with higher rate of improvement after THA than TKA. Sexual function needs to be included in routine evaluation of patients after THA /TKA.

**Poster No. P024**
Patient Education Influence on Patient Reported Outcomes after Total Hip Replacement
Meridith E. Greene, Boston, MA
Ola Rolfsen, MD, PhD, Gothenburg, Sweden
Max Gordon, MD, Stockholm, Sweden
Henrik Malchau, MD, Boston, MA
Goran Garellick, MD, PhD, Göteborg, Sweden

The highest education attained and the marital status of patients in addition to their age, gender, and co-morbidities significantly influence patient reported outcomes after THR.

**Poster No. P025**
A Clinical Investigation of Metal Ion Release in Total Joint Replacements
Elie Khoury, MD, Albury, Australia
Jenny Burke, Pagewood, Australia
Ronald M. Gilles, Sydney, Australia

This paper has investigated the metal ion release due to total hip replacement (THR), hip resurfacing (HR) and total knee replacement (TKR). All patient metal ion levels were in the safe range.

**Poster No. P026**
Cup Anteversion is Smaller on Anteroposterior Radiographs and Larger on Cross-table Lateral Radiographs than on CT
Tomohiro Nomura, MD, Fukuoka City, Japan
Masatoshi Naito, MD, Fukuoka, Japan
Yoshinari Nakamura, MD, Fukuoka, Japan
Takahiro Ida, MD, Fukuoka, Japan
Daisuke Kuroda, MD, Fukuoka City, Japan
Tomohiro Kobayashi, MD, Fukuoka, Japan
Tomonobu Hagio, MD, Fukuoka, Japan
Tetsuya Sakamoto, MD, Fukuoka, Japan
Kunihide Muraoka, Fukuoka, Japan

Accurate assessment of cup anteversion is important after total hip arthroplasty. We compared the accuracy of cup anteversion assessment on anteroposterior and cross-table lateral radiographs with CT.

**Poster No. P027**
Acetabular Cup Positioning in Total Hip Replacement: The Impact of Obesity
Benjamin A. McArthur, MD, New York, NY
Ettore Vulcano, MD, New York, NY
Denis Nam, MD, New York, NY
Michael B. Cross, MD, New York, NY
Joseph Nguyen, MPH, New York, NY
Eduardo A. Salvati, MD, New York, NY

We compared the incidence of malpositioning of total hip replacement acetabular cups in obese and non-obese patients for a high-volume surgeon using a posterolateral approach and found no difference.

**Poster No. P028**
Are Morbidly Obese Patients Undergoing Total Hip Arthroplasty at Higher Risk for Component Malposition?
Shawn E. Chandran, MD, Pls Vrds Ptsl, CA
Leah Elson, Boston, MA
Viktor Hansen, MD, Boston, MA
Henrik Malchau, MD, Boston, MA
Young-Min Kwon, MD, PhD, Boston, MA

The results of our study suggest that obese patients are at higher risk for acetabular component malposition.
**Poster No. P029**

A Novel Method for Accurate and Reproducible Functional Cup Positioning in Total Hip Replacement

Morteza Meftah, MD, New York, NY
Amar S. Ranawat, MD, New York, NY
Chitraranjan S. Ranawat, MD, New York, NY

This is an easy, accurate, and reproducible novel method for functional cup positioning, adjusting for femoral anteversion and pelvis tilt and obliquity, using weight-bearing radiographs.

**Poster No. P030**

Comparison of Femoral Nerve Block with and without Combined Sciatic Nerve Block after Total Hip Arthroplasty

Shoji Nishio, MD, Nishinomiya, Japan
Shigeo Fukunishi, MD, Nishinomiya, Japan
Tomokazu Fukui, MD, Osaka, Japan
Yuki Fujihara, Nishinomiya, Japan
Shohei Okahisa, MD, Hyogo, Japan
Shinichi Yoshiya, MD, Nishinomiya, Hyogo, Japan

Comparison of continuous femoral nerve block with and without combined sciatic nerve block after total hip arthroplasty.

**Poster No. P031**

Clinical and Process Outcomes of Same Day Total Joint Arthroplasty

Jeffrey G. Mokris, MD, Charlotte, NC
Monica C. Mowry, MSN, RN, Matthews, NC
Michael Odell, RN, Charlotte, NC
Grace Mathis, PA-C, Charlotte, NC

The purpose of this study is to evaluate the clinical and process improvement outcomes of a retrospective, consecutive series of outpatient total knee arthroplasty performed by a single surgeon.

**Poster No. P032**

Cementless Total Hip Arthroplasty has Higher Incidence and Severity of Thigh Pain than Surface Replacement

Ryan Nienley, MD, Saint Louis, MO
Peter J. Brooks, MD, Cleveland, OH
John C. Clohisy, MD, Saint Louis, MO
Staci Johnson, M.Ed, Saint Louis, MO
Robert L. Barrack, MD, Saint Louis, MO

Patients with SRA and THA are equally likely to have groin pain. Young, active patients with THA have significantly more anterior thigh pain with a surprising number having severe anterior thigh pain.

**Poster No. P033**

Serial Bone Remodeling around DCPD Coated Metaphyseal-loading Cementless Short Stems in Elderly Patients

Kieun J. Oh, MD, Seoul, Republic of Korea
Kyung-Jae Lee, MD, Daegu, South Korea
Amit Mishra, Mumbai, India

Serial assessment of bone remodeling pattern with dicalcium phosphate dihydrate (DCPD) coated metaphyseal-loading short stems, has not, to our knowledge, been described previously.

**Poster No. P034**

RSA Analysis of Early Migration of a Short vs. Standard Length Metaphyseal Cementless Stem: A Prospective RCT

Richard W. McCalden, MD, London, ON, Canada
Doug Naude, MD, FRCSC, London, ON, Canada
Ahigael E. Thompson, BScN, London, ON, Canada
Lyndsay Somerville, PhD, London, ON, Canada

RSA demonstrated similar micro-motion between a new short femoral stem and standard length femoral stem design. The introduction of this new shorter stem design can now be supported with RSA data.

**Poster No. P035**

• Is Diaphyseal Stem Fixation Necessary for Primary Total Hip Arthroplasty in Patient with Osteoporotic Class C Bone?

Young-Hoo Kim, MD, Seoul, Republic of Korea
Jangwon Park, MD, Seoul, Republic of Korea
Jun S. Kim, MD, Seoul, Republic of Korea

After a minimum follow-up of 5 years of 200 patients with Class A, B, or C bone, a short, metaphyseal-fitting anatomic cementless femoral component was fixed rigidly in all patients.

**Poster No. P036**

Correlation Between Histopathology and Metal Ion Levels in Failed Metal-on-metal Hips

Aleksi Reito, MD, Tampere, Finland
Jorma Pajamäki, MD, PhD, Tampere, Finland
Timo J. Puolakka, MD, PhD, Tampere, Finland
Antti Eskelinen, MD, PhD, Tampere, Finland

We describe the results regarding correlation of metal ion levels and histopathological findings in failed ASR hips.

**Poster No. P037**

Ten-Year Outcome of Serum Metal Ion Levels after Primary Total Hip Arthroplasty

Brett R. Levine, MD, Chicago, IL
Andrew R. Hsu, MD, Chicago, IL
Anastasia K. Skipor, Chicago, IL
Wayne G. Paprosky, MD, Winfield, IL
Joshua J. Jacobs, MD, Chicago, IL

Patients with well functioning primary metal-on-polyethylene total hip replacements had elevated serum metal ion levels up to 10 years after surgery.

**Poster No. P038**

Prevalence of Pseudotumors in Asymptomatic Patients with Modular Metal-on-Metal Total Hip Arthroplasties

Kwan S. Oh, MD, Seoul, Republic of Korea
Sunghee Lee, MD, Daegu, South Korea
Amit Mishra, Mumbai, India

Serial assessment of bone remodeling pattern with dicalcium phosphate dihydrate (DCPD) coated metaphyseal-loading short stems, has not, to our knowledge, been described previously.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*

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**Poster No. P039**
Predisposing Factors for Pseudotumor Formation in Patients with Adverse Reaction to Metal Debris

Aleksi Reito, MD, Tampere, Finland
Jorma Pajamäki, MD, PhD, Tampere, Finland
Timo J. Puolakka, MD, PhD, Tampere, Finland
Antti Eskelinen, MD, PhD, Tampere, Finland

In this study we analysed predisposing factors for pseudotumour formation in patients with adverse reaction to metal debris.

**Poster No. P040**
Magnetic Resonance Imaging is Predictive of Adverse Tissue Reaction in Failed Metal-on-metal Hip Arthroplasty

Alissa J. Barge, MD, New York, NY
Danyal Nawabi, MD, FRCS, New York, NY
Stephanie L. Gold, BA, New York, NY
Stephen Lyman, PhD, New York, NY
Douglas E. Padgett, MD, New York, NY
Matthew Koff, PhD, New York, NY
Hollis Potter, MD, New York, NY

In patients with failed metal-on-metal hip arthroplasty, MRI can be used to identify an adverse tissue reaction and predict the presence of soft tissue damage, helping to guide the need for revision.

**Poster No. P041**
The Role of Patient Activities in Edge Wear of Hip Resurfacing Arthroplasties

Lauren E. Karbach, BA, Houston, TX
Ashley Matties, BSc, London, United Kingdom
Sabir Ismaily, Houston, TX
Jon Gold, BS, Houston, TX
Alister Hart, FRCS, London, United Kingdom
Philip C. Noble, PhD, Houston, TX

Edge loading occurs during sit to stand and stand to sit activities in virtually any cup orientation and is postulated as the missing factor explaining component wear.

**Poster No. P042**
The ‘Contact Patch to Rim Distance’ Can be Used to Predict Wear in Metal-on-Metal Hip Resurfacing

Ashley Matties, BSc, London, United Kingdom
Alexander D. Suarez, Houston, TX
Johann Henckel, MD, London, United Kingdom
Lauren E. Karbach, BA, Houston, TX
Sabir Ismaily, Houston, TX
John Skinner, FRCS, London, United Kingdom
Philip C. Noble, PhD, Houston, TX
Alister Hart, FRCS, London, United Kingdom

Combining all contributing variables to calculate the ‘contact patch to rim distance’ dramatically improves prediction of component wear and blood metal ion levels in metal-on-metal hip arthroplasty.

**Poster No. P043**
High Rate of Complications Following Revision of Large Head Metal-on-Metal Total Hip Arthroplasty

Jacob Munro, MD, Auckland, New Zealand
Nelson V. Greidanus, MD, MPH, Vancouver, BC, Canada
Bassam A. Masri, MD, FRCS, Vancouver, BC, Canada
Clive P. Duncan, MD, MSc, Vancouver, BC, Canada
Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada

We reviewed 32 hips with large head metal-on-metal arthroplasty. High rates of dislocation and re-revision were observed with lower than expected quality-of-life scores.

**Poster No. P044**
The Effect of Gender on Adverse Reactions to Metal Debris: Outcomes of 1,159 38mm Metal-on-Metal Hip Replacements

Toby Brier-Evans, FRCS, Winchester, United Kingdom
Mark D. Price, MD, Worcester, MA
Andrea R. Pearce, Basingstoke, United Kingdom
Richard Harker, MA, FRCS, Hampshire, United Kingdom
Kevin Conn, FRCS, Basingstoke, United Kingdom
John M. Britton, Hampshire, United Kingdom
Geoffrey Stranks, FRCS, FRCS, Tadley, United Kingdom

At medium term follow up, 1,159 metal-on-metal hips with a single bearing size of 38mm showed a significantly increased incidence of metal reactions in women, independent of cup size and other factors.

**Poster No. P045**
Primary Cementless Total Hip Arthroplasty with Second Generation Metal-on-Metal Bearings

Richard Lass, MD, Vienna, Austria
Alexander Gruebl, MD, Vienna, Austria
Alexander Kolb, MD, Vienna, Austria
Bernd Kubista, MD, Vienna, Austria
Alexander Giurea, MD, Vienna, Austria
Stephan Domayer, Dedham, MA
Reinhard Windhager, MD, Vienna, Austria

Primary cementless total hip arthroplasty with second generation metal-on-metal bearings. Clinical, radiological and laboratory results after a minimum of seventeen years of follow-up.

**Poster No. P046**
Metal on Metal Hips Surveillance Program: Welsh Experience of 1,400 Hips from a High Volume Center

Ibrahim Malek, MD, Cardiff, United Kingdom
Amanda King, BSc(Hons), MBChB, Cardiff, United Kingdom
Kathleen Lyons, MB, Cardiff, United Kingdom
Marcellino Masone, MD, Cardiff, United Kingdom
Stephen A. Jones, MD, Vale Of Glamorgan, United Kingdom
Alun John, MD, Cardiff, United Kingdom

An effective designated MoM hips surveillance programme with rapid access to laboratory and radiology facilities was set up for early identification of patients with Adverse Reaction to Metal Debris.
Educational Programs

Poster No. P047
ASR Mid-term Results in a Single Center: Clinical, Hematological and Radiological Results at More Than Six Years
Filippo Randelli, MD, Milano, Italy
Lorenzo Banci, MD, Milano, Italy
Ornella Visentini, MD, Castano Primo, Italy
Alberto Aliprandi Sr, MD, Milan, Italy
Gianni Randelli, MD, Roma, Italy
Survivorship and mid-term results of a consecutive series of 155 hips treated with ASR implants.

Poster No. P048
The Results of Revision of Metal on Metal Hip Resurfacing
Rory J. Norris, MBChB, MRCS, Warwick, United Kingdom
Nick A. Smith, MBBS, West Midlands, United Kingdom
Pedro Voguet, FRCS, Coventry, United Kingdom
When making a decision for revision surgery of metal on metal hip resurfacings, metal ions are not of any significant predictive or prognostic value.

Poster No. P049
The Relative Risk of Early Aseptic Revision for Surface Replacement Arthroplasty
Thomas C. Barber, MD, Oakland, CA
Alan L. Schepps, San Diego, CA
Guy Cafri, PhD, La Jolla, CA
Iqbal A. Anwar, MD, Pacific Palisades, CA
Liz Paxton, MA, San Diego, CA
The relative risk of early aseptic revision for the Birmingham Surface Replacement: A comparison to standard THR, metal on metal THR, and metal on metal THR utilizing the Birmingham cup.

Poster No. P050
Metal on Metal versus Polyethylene in Total Hip Arthroplasty: Ten-Year Results of a Randomized Clinical Trial
Joseph Assini, MD, London, ON, Canada
Steven J. MacDonald, MD, London, ON, Canada
Richard W. McCalden, MD, London, ON, Canada
Robert B. Bourne, MD, FACSC, London, ON, Canada
At minimum 10-year follow-up, metal on metal total hip articularizations exhibited higher levels of cobalt and chromium ion levels than those seen in metal on polyethylene articulations.

Poster No. P051
Retrieved Metal on Metal Implants Provide Evidence for Hip Distraction During Swing Phase
Evan M. Carlson, MS, Hanover, NH
John H. Carrier, MS, Hanover, NH
Barbara H. Carrier, MChE, Hanover, NH
Dermott J. McHugh, BA, BS, Roslindale, MA
Michael B. Mayor, MD, Hanover, NH
John P. Collier, DE, Hanover, NH
Examination of MoM retrievals provides evidence that swing phase micro-separation occurs in vivo and causes damage to the articular surfaces.

Poster No. P052
High Incidence of Adverse Tissue Reaction and Elevation of Serum Cobalt in One Design of Modular Femoral Component
Carl T. Talmo, MD, Boston, MA
Steven D. Werner, DO, Glendale, AZ
Claire E. Robbins, PT, DPT, Franklin, MA
Mebran Agazzadeh, MD, Boston, MA
Samun Nandi, MD, Boston, MA
James V. Bono, MD, Boston, MA
Daniel M. Ward, MD, Chestnut Hill, MA
A consecutive series of 112 THR with a single design of cementless titanium component with a modular cobalt-chrome neck demonstrated a significant incidence of adverse local tissue reaction (9.8%).

Poster No. P053
Are 36+ MM Diameter HXLPE Bearings at Risk of Increased Wear from Modular Taper Corrosion with Ceramic and CoCr Heads?
Steven M. Kurtz, PhD, Philadelphia, PA
Daniel MacDonald, Philadelphia, PA
Genymphas Higgs, Philadelphia, PA
Jeremy Gilbert, PhD, Syracuse, NY
Gregg R. Klein, MD, Paramus, NJ
Michael A. Mont, MD, Baltimore, MD
Jawad Parvizi, MD, FRCS, Philadelphia, PA
Matthew J. Kraay, MD, Cleveland, OH
Clare M. Rimnac, PhD, Cleveland, OH
The purpose of this study was to characterize the prevalence and severity of fretting and corrosion at head-neck modular interfaces retrieved conventional and HXLPE THA systems.

Poster No. P054
Modular Neck Femoral Components in Total Hip Arthroplasty: Outcome Assessment and Metal Ion Analysis
Jeffrey W. Devitt Jr, MD, Detroit, MI
Craig Silverton, DO, Detroit, MI
Ashraf Elbanna, MD, Fraser, MI
We assessed outcomes and metal ion levels 103 patients with the Profemur modular neck femoral component. We found frequent metal ion elevation and rates of revision surgery.

Poster No. P055
Are Large Heads an Unqualified Benefit for Metal-on-Metal Total Hip Replacement? Stability vs. “Trunnionosis” Wear
Jacob Elkins, M.S., Iowa City, IA
John J. Callaghan, MD, Iowa City, IA
Thomas D. Brown, PhD, Iowa City, IA
Although there were marginal additional improvements in construct stability, the propensity for trunnionosis-inducing wear increased substantially for head diameters greater than about 40mm.

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**Poster No. P056**
Fixation of Periprosthetic Femoral Fractures Using a New Generation Cable Plate System

**Alternate Paper: Adult Reconstruction Hip III: Revision Total Hip Arthroplasty**
Mathias Nagy, MD, Macclesfield, United Kingdom
Radha Raman Bobra, Warrington, United Kingdom
Geraint Williams, MBBS, Crewe, United Kingdom

Treatment of periprosthetic femoral fractures using a new generation cable plate system offers a safe method of fixation.

**Poster No. P057**
Modular Femoral Stem Failures: A Cause for Concern
Ritesh Shah, MD, Chicago, IL
Alexander C. Gordon, MD, Prospect Heights, IL
Wayne M. Goldstein, MD, Morton Grove, IL

With the characteristic failure pattern at the stem-sleeve modular interface, further biomechanics testing of this femoral stem needs to be performed and is a cause for concern.

**Poster No. P058**
Clinical and Radiographic Outcomes of Revision Hip Arthroplasty with a Modular Stem Design
Geoffrey H. Westrich, MD, New York, NY
Alyssa Yeager, New York, NY
Alejandro M. Gonzalez Della Valle, MD, New York, NY
Friedrich Boettner, MD, Larchmont, New York

In this large patient cohort who had revision THA with a modular stem, clinical and radiographic outcomes were excellent at minimum 2 year follow-up. The revision rate at latest follow-up was 3.6%.

**Poster No. P059**
Femoral Component Revision with Use of Impaction Bone-grafting and a Cemented Polished Stem
Martijn A.J. te Stroet, MD, Nijmegen, Netherlands
Nico Verdonck, MSc, Nijmegen, Netherlands
Jean W.M. Gardeniers, MD, MX Nijmegen, Netherlands
Wim H. Rijnen, Nijmegen, Netherlands
B. Willem Schreurs, MD, Malden, Netherlands

The use of a cemented polished stem and impaction bone-grafting to restore bone stock quantity and quality in femoral revision arthroplasties with bone loss resulted in excellent survival at 17 years.

**Poster No. P060**
Fixation Strength of a Dual-Mobility Cup Cemented into a Well-Fixed Metal-Back During Revision THA
Julien Wegzryn, MD, PhD, Lyon, France
Andrew Thoreson, MD
Olivier Guyen, MD, Lyon, France
Kai-Nan An, PhD, Rochester, MN
David G. Lewallen, MD, Rochester, MN

Although dual-mobility cups dramatically reduce hip instability risk during revision THA, no study to date evaluated the fixation strength of a dual-mobility cup cemented into a well-fixed metal-back.

**Poster No. P061**
The Use of a Dual Mobility Implant to Manage Unstable Total Hip Arthroplasty: 3.5 To 11.1 Year Follow Up
Olivier Guyen, MD, Lyon, France
Christophe J. Chevillotte, MD, Lyon, France
Julien Wegzryn, MD, PhD, Lyon, France
Jean-Paul Carret, MD, Lyon, France
Jacques Bejui-Hugues, MD, Paris, France

The use of dual mobility implants to manage unstable total hip arthroplasty provided reliable restoration of stability at mid-to long-term follow-up.

**Poster No. P062**
Early Failure Patterns of a Modern Constrained Acetabular Liner Design
Diren Arsoy, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
David G. Lewallen, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN

The authors report a high premature failure rate of of a Modern Constraining Acetabular Liner.

**Poster No. P063**
Cementation of Cross-linked Polyethylene Liner into Well-fixed Acetabular Shells - A Mean Follow Up of Eight Years
Ta-I Wang Sr, MD, Taipei, Taiwan
Jung-Pan Wang Sr, MD, Taipei, Taiwan
Wei-Ming Chen, MD, Taipei, Taiwan
Po-Kuei Wu, MD, Taichung, Taiwan
Cheng-Fong Chen, MD, Taipei, Taiwan
Chao-Ching Chiang, MD, Taipei, Taiwan
Yu-ping Su, MD, Taipei City, Taiwan
Ching-Kuei Huang, MD, Taipei City, Taiwan
Tai-Hsiung H. Chen, MD, Taipei City, Taiwan

The results revealed that cementation of cross-linked PE liner into a well-fixed shell provided good midterm durability and satisfied clinical results.

**Poster No. P064**
Re-revision of Failed Revision Total Hip Arthroplasty Acetabular Cups
Youn-Soo Park, MD, Seoul, Republic of Korea
Young-Wan Moon, MD, Seoul, Republic of Korea
Seung-Jae Lim, MD, Seoul, Republic of Korea
Sang-Min Kim, MD, Seoul, Republic of Korea

Re-revision with contemporary uncemented cup or antiprotrusio cage for failed revision total hip arthroplasty acetabular cups shows encouraging outcomes for this technically challenging condition.
**Poster No. P065**
Revision Total Hip Arthroplasty using an Alumina-on-Alumina Bearing Surface in Patients with Osteolysis
Jeong J. Yoo, MD, Seoul, Republic of Korea
Pil Whan Yoon, MD, Seoul, Republic of Korea
Young-Kyun Lee, MD, Seongnam-Si, Republic of Korea
Kyoung-Hoi Koo, MD, Seongnam-Si, Republic of Korea
Kang Sup Yoon, MD, Seoul, Korea, Republic of Korea
Hee J. Kim, MD, Seoul, Korea, Republic of Korea

The alumina-on-alumina bearing surfaces used for revision THA in patients with osteolysis were found to produce encouraging clinical results and implant survival rates at a minimum of 7 years post-op.

**Poster No. P066**
Acetabular Component Revision without Augments in Patients with Paprosky 3A Defects Yields Positive 2-Year Results
Ivan M. Tomek, MD, Lebanon, NH
Kristin Given, MS, Mahwah, NJ
Kirby Hitt, MD, Temple, TX
Fredrick F. Jaffe, MD, New York, NY

Acetabular reconstruction with a hemispherical porous titanium shell without porous metal augments shows positive short-term results in cases with Paprosky IIIa acetabular defects.

**Poster No. P067**
Revision Total Hip Arthroplasty in Patients with Metallization Following Catastrophic Failure of Polyethylene Liner
Jeong J. Yoo, MD, Seoul, Republic of Korea
Pil Whan Yoon, MD, Seoul, Republic of Korea
Young-Kyun Lee, MD, Seongnam-Si, Republic of Korea
Kyoung-Hoi Koo, MD, Seongnam-Si, Republic of Korea
Kang Sup Yoon, MD, Seoul, Republic of Korea
Hee Joong J. Kim, MD, Seoul, Republic of Korea

The survival rate of revision THA in patients with metallization following a catastrophic failure of a PE liner was low.

**Poster No. P068**
Decrease in Dislocation Rates in Liner and Head Exchange when Head Size is Increased
Julian Costantini, MD, Curitiba, Brazil
Miguel E. Cabanela, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN

Increasing head size to the maximum head size allowable appears to be the safest treatment strategy to lower dislocation rate after isolated head and liner exchange.

**Poster No. P069**
Fixation, Survival and Dislocation of Jumbo Acetabular Components in Revision Hip Arthroplasty
Paul F. Lachiewicz, MD, Chapel Hill, NC
Elizabeth S. Soileau, RN, Chapel Hill, NC

Jumbo acetabular components have a low rate of infection and loosening at 15 years. Dislocation (10%) is associated with smaller head sizes. Reoperation is associated with younger patient age.

**Poster No. P070**
Risk Factors for Early Revision of Total Hip Arthroplasty
Christopher J. Dy, MD, New York, NY
Kevin J. Bozic, MD, MBA, San Francisco, CA
Douglas E. Padgett, MD, New York, NY
Robert G. Marx, MD, New York, NY
Timothy M. Wright, PhD, New York, NY
Ting-Jung Pan, MPH, New York, NY
Huong Do, MA, New York, NY
Stephen Lyman, PhD, New York, NY

Patient and hospital risk factors for early revision total hip arthroplasty were identified using a population based approach.

**Poster No. P071**
Early Failure in Total Hip Arthroplasty: A Changing Paradigm
James S. Melvin III, MD, Charlotte, NC
Thanun Karthikeyan, MD, Lexington, KY
Robert Cope, Charlotte, NC
Thomas K. Fehring, MD, Charlotte, NC

Early failure of total hip arthroplasty remains problematic especially with the advent of metallization failures.

**Poster No. P072**
Risk Factors for Early Revision Following Primary Total Hip Arthroplasty in Medicare Patients
Kevin J. Bozic, MD, MBA, San Francisco, CA
Edmund Lau, MS, Menlo Park, CA
Kevin Ong, Philadelphia, PA
Vanessa Chiu, MPH, San Francisco, CA
Steven M. Kurtz, PhD, Philadelphia, PA
Thomas P. Vail, MD, San Francisco, CA
Harry E. Rubash, MD, Boston, MA
Daniel J. Berry, MD, Rochester, MN

Depression, rheumatologic disease, psychoses, renal disease, urinary tract infection, and congestive heart failure were associated with an increased risk of early revision in Medicare THA patients.

**Poster No. P073**
Mid-Term Results of Periprosthetic Femur Fractures Treated with Modular Fluted, Tapered Stems
Altar Paper: Adult Reconstruction Hip IV: Revision THA/ Tapers
Matthew P. Abdel, MD, New York, NY
David G. Lewallen, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN

Modular fluted, tapered stems utilized for treatment of Vancouver B2 or B3 periprosthetic femoral fractures provided 100% union and 98% stem osteointegration in this large series.

**Poster No. P074**
Alternate Paper: Adult Reconstruction Hip V: Infection/Other Articulating Antibiotic Spacers for Septic Total Hip and Knee Arthroplasty; Longevity, Function and Economics
Scott Stanat, MD, Old Lyme, CT
Steven T. Lyons, MD, Tampa, FL

Metal-on-polyethylene articulating antibiotic cement spacers effectively clear joint sepsis and provide a good functional outcome if retained as a definitive procedure.

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*

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Poster No. P075
The Risk of Infection Following Intra-articular Injection Prior to Total Hip Arthroplasty
Chris Sambaziotis, MD, Brookline, MA
Mebran Aghazadeh, MD, Boston, MA
Addison G. Wilson Jr, MD, Portsmouth, VA
Clare E. Robbins, PT, DPT, Franklin, MA
Hussein Darwiche, MD, Dearborn, MI
James V. Bono, MD, Boston, MA
David A. Mattingly, MD, Chestnut Hill, MA

A retrospective study to examine the relation of timing and frequency of preoperative intra-articular steroid injections with infection rate following total hip arthroplasty (THA).

Poster No. P076
The Utility of Synovial C-Reactive Protein as Marker for Periprosthetic Joint Infection
Matthew Tetreault, BA, Pittsburgh, PA
Nathan Wetters, MD, Chicago, IL
Mario Moric, MS, Chicago, IL
Christopher E. Gross, MD, Chicago, IL
Craig J. Della Valle, MD, Chicago, IL

Measurement of CRP in synovial fluid rather than serum using assay equipment currently available at our hospital does not appear to offer a distinct advantage in detection of periprosthetic infection.

Poster No. P077
The Influence of Surgical Hoods and Togas on Airborne Particle Concentration at the Surgical Site
McGovern D. Paul, MBBS, Billericay, United Kingdom
Mark Albrecht, Minneapolis, MN
Sameer Khan, MD, MRCS, Gateshead, United Kingdom
Scott Muller, MBBS MD, Northumberland, United Kingdom
Mike R. Reed, MBBS MD, Northumberland, United Kingdom

This experimental study found a significant reduction in surgeon-originated airborne contaminants when the surgeon wore the all-in-one ‘toga’, compared to both the hood/gown ensemble and gowns alone.

Poster No. P078
Results of a Protocol of Screening for Clostridium difficile after Hip and Knee Arthroplasty
Anthony T. Tokarski, BS, Philadelphia, PA
Joseph Karam, MD, Philadelphia, PA
Benjamin Zmistowski, BS, Philadelphia, PA
Carl A. Deirmengian, MD, Wynnewood, PA
Gregory K. Deirmengian, MD, Philadelphia, PA

Given the potential severity of C. Diff and its high incidence in patients with postoperative diarrhea, we recommend testing all such patients to allow for immediate diagnosis and treatment.

Poster No. P079
Low Re-Infection Rate After Two-Stage Reimplant With Tapered, Modular Stems: Minimum Five-Year Follow Up
Kevin I. Perry, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN

Mid-term results of 2-stage reimplantation using a tapered fluted stem show favorable rates of reinfection and excellent improvements in clinical outcomes despite exhibiting high rates of reoperation.

Poster No. P080
Two-stage Revision Retaining of Well-fixed Cementless Stem in the Treatment of Infected Hip Arthroplasty
Jae-Hui Nbo, Dongnam-Gu, Cheonan, Republic of Korea
Kyung H. Koo, MD, Seoul, Republic of Korea
Young-Kyun Lee, MD, Seongnam-Si, Republic of Korea
You-Sung Suh, Yongsan-Gu, Seoul, Republic of Korea
Yong-chan Ha, Prof, Seoul, Republic of Korea

Two stage revision hip arthroplasty with retaining well fixed cementless stem appears to have a role in the treatment with an infected hip replacement.

Poster No. P081
Alternate Paper: Adult Reconstruction Hip VI: Bearings in Total Hip Arthroplasty/Non-Arthroplasty Acetabular Retroversion and Femoroacetabular Impingement: The Importance of Acetabular Retroversion Index
Babar Adeli, BA, Philadelphia, PA

Acetabular Retroversion and Femoroacetabular Impingement: The Importance of Acetabular Retroversion Index.

Poster No. P082
• Alumina-on-Highly Cross-linked Polyethylene for THAs in Pts. < 30 Years of Age: Minimum 10 Years Follow Up
Young-Hoo Kim, MD, Seoul, Republic of Korea
Jangwon Park, MD, Seoul, Republic of Korea

After a minimum 10 years follow-up of 100 patients, anatomical metaphyseal-fitting cementless THA with alumina-on-highly cross-linked PE provided stable fixation without osteolysis.

Poster No. P083
11-Year Outcome of Highly Cross Linked Polyethylene Bearing Surfaces in Primary Conventional Total Hip Replacement
Stephen Graves, MD, Adelaide, Australia
Richard De Steiger, MD, Richmond, Australia
David Davidson, MD, Adelaide, Australia
Kara Cashman, BSc (HONS), Adelaide, Australia
Yen-Liang Liu, Adelaide, Australia
Elizabeth C. Griffith, BA, Adelaide, Australia
Philip Ryan, FAFPHM, Adelaide, Australia

This study shows that cross linked has a significantly lower rate of revision compared to standard polyethylene and this is not affected by the type or size of femoral head used.
Posters

Poster No. P084
Clinical Results of PMPC-grafted Cross-linked Polyethylene Liner in Primary Total Hip Arthroplasty
Toru Moro, MD, Tokyo, Japan
Yoshio Takatori, MD, Tokyo, Japan
Hiromi Oda, Saitama, Japan
Shubei Morimoto, MD, Tokyo, Japan
Takashige Umezawa, MD, Tokyo, Japan
Morihide Kamogawa, MD, Tokyo, Japan
Masayuki Kyomoto, MD, Tokyo, Japan
Hiroshi Kawaguchi, MD, Tokyo, Japan
Kozo Nakamura, MD, Saitama, Japan

Results of a prospective cohort study clearly demonstrate clinical safety and wear-resistance of PMPC-grafted cross-linked polyethylene acetabular liner of the artificial hip joint.

Poster No. P085
A New Strategy to Extend the Functional Life of Crosslinked Polyethylenes through Vitamin E-Grafting
Alicia Ruffner, MSc, Warsaw, IN
Melinda Peiserich, BS, Warsaw, IN
Ming Guo, PhD, Warsaw, IN
Diego A. Orozco, MS, Warsaw, IN
Oludele Popoola, Warsaw, IN
Andrew A. Freiberg, MD, Boston, MA

Oxidative protection against lipids, strength retention and low wear is achieved via permanent grafting of Vitamin E, suggesting a polyethylene that can survive beyond the second decade.

Poster No. P086
A Novel Method for Assessment of Polyethylene Liner Wear in Radiopaque Tantalum Acetabular Components
Anders Troelsen, MD, PhD, Koge, Denmark
Dov Goldvasser, MSc, Boston, MA
Meredith E. Greene, Boston, MA
Charles R. Bragdon, PhD, Boston, MA
David C. Ayers, MD, Worcester, MA
Henrik Malchau, MD, Boston, MA

The use of tantalum acetabular shells is increasing. It is important to have a method for measuring polyethylene wear when a radiodense acetabular shell is used.

Poster No. P087
Pulmonary Embolism was More Frequent in Cemented Total Hip Arthroplasty than Cementless THA and TKA
Koh Shimizu, MD, Chiba, Japan
Sara Shimizu, MD, Chiba, Japan

The average decrease ratio of pulmonary circulation was 16% in cemented THA, much higher than 7% in cementless THA, 6% in cemented TKA, and 7% in cementless TKA.

Poster No. P088
Prolonged Surgical Time as a Predictor of Readmission after Total Hip and Knee Arthroplasty
Tyler R. Wanke, BS, Chicago, IL
Geoffrey Marecek, MD, Chicago, IL
James M. Saucedo, MD, Chicago, IL
Junguh B. Lee, PhD, MPH, Chicago, IL
S. David Stulberg, MD, Chicago, IL
Lalit Puri, MD, Glenview, IL

THA and TKA surgeries were reviewed; patients readmitted within 30,90 days had longer surgical times and a surgical time greater than or equal to 2 hours was an independent predictor of readmission.

Poster No. P089
Outcomes and Complications of Total Hip Arthroplasty in the Super-Obese: A Retrospective Analysis
Raghav Raigopal, MD, London, ON, Canada
Robin Martin, MD, Geneva, Switzerland
James Howard, MD, London, ON, Canada
Doug Naudie, MD, FRCS, London, ON, Canada
Richard W. McCallen, MD, London, ON, Canada
James P. McAuley, MD, London, ON, Canada
Steven J. MacDonald, MD, London, ON, Canada
Robert B. Bourne, MD, FACSC, London, ON, Canada

Super- obese patients had similar satisfaction outcomes as class I obesity and normal weight patients but had increased length of hospital stay, complication, re-admission and re-operation rate.

Poster No. P086
Economic Impact of Tranexamic Acid in Healthy Patients Undergoing Primary Total Hip and Knee Arthroplasty
Blake P. Gillette, MD, Rochester, MN
Lori J. Desimone, PA-C, Rochester, MN
Hilal Maradit-Kremers, MD, MSc, Rochester, MN
Christopher Duncan, MD, Rochester, MN
Hugh M. Smith, MD, PhD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
Mark W. Pagnano, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN

In healthy patients undergoing primary hip and knee arthroplasty, direct hospital costs with or without tranexamic acid perioperatively were compared.

Poster No. P089
Cost-analysis of the Use of Tranexamic Acid to Prevent Blood Transfusion in Hip and Knee Arthroplasty Surgery
James D. Slover, MD, New York, NY
Joseph A. Bosco III, MD, New York, NY

The decision analysis model demonstrates that the use of tranexamic acid to reduce blood transfusion needs with hip and knee arthroplasty may be cost saving, but not in all circumstances.
**Poster No. P092**
Topical Tranexamic Acid Reduces Blood Loss and Transfusion Rates in Total Hip Arthroplasty
Brian R. Hamlin, MD, Pittsburgh, PA
Gerhardt Konig, MD, Pittsburgh, PA
Jonathan Waters, MD, Pittsburgh, PA

The topical application of the antifibrinolytic tranexamic acid significantly decreased the blood loss and transfusion requirements in patients undergoing primary total hip arthroplasty.

**Poster No. P093**
The Effect of Topical Application of Tranexamic Acid in Total Hip Arthroplasty through the Direct Anterior Approach
Colette E. Van Elst, Bonheiden, Belgium
Jens Vanvierlen, Kortrijk, Belgium
Jean-Pierre Simon, MD, Pellenberg, Belgium
Kristoff Corten, MD, Pellenberg, Belgium

Topical application of 3g tranexamic acid for 2 hours prior to opening of the suction drain following a total hip replacement significantly decreased the post-operative blood loss by 30%.

**Poster No. P094**
Selective Chemoprophylaxis for Venous Thromboembolism Following Total Hip Arthroplasty
Yohei Yukizawa, MD, PhD, Yokohama, Japan
Yutaka Inaba, MD, Yokohama, Japan
Naomi Kobayashi, MD, Yokohama, Japan
Hyonmin Choe, MD, Yokohama, Japan
Hiroyuki Ike, MD, Yokohama Kanagawa, Japan
So Kubota, Yokohama, Japan
Tomoyuki Saito, MD, Yokohama, Japan

The plasma levels of SF and PAI-1 on the day after THA may be useful to see whether patients undergoing THA need postoperative chemoprophylaxis.

**Poster No. P095**
Fondaparinux Compared with Enoxaparin for the Prevention of Venous Thrombosis in Total Hip Arthroplasty
Taku Yoshida, MD, Osaka-city,Osaka, Japan
Hiroyoshi Iwaki, MD, Osaka, Japan
Mitsuhiko Ikebuchi, MD, Abeno-ku Osaka, Japan
Yukihide Minoda, MD, Osaka, Japan
Fumiaki Inori, MD, Osaka, Japan
Yuichiro Saya, MD, Osaka City, Japan
Junichi Saya, MD, Osaka City, Japan
Hiroaki Nakamura, MD, Osaka, Japan

We compared fondaparinux with enoxaparin for prevention of DVT and PE using enhanced multi-detector row CT postoperatively.

**Poster No. P096**
Is Requiring Hemoglobin A1c Control a Significant Barrier to Total Joint Arthroplasty?
Nicholas J. Giori, MD, Palo Alto, CA
Alexander H. Harris, PhD, MS

In diabetic candidates for joint arthroplasty, HbA1c of 7% is achievable for 94% of surgical candidates. 8.0% is an achievable goal for 98%.

**Poster No. P097**
The Levels of Mineralization, Carbonate Accumulation and Bone Remodeling in Osteoarthritic Subchondral Bone
Barian Mobin, London, United Kingdom
Panagiota Gikas, MBBS, Stanmore, Middlesex, United Kingdom
Jemma G. Kerns, PhD, Stanmore, United Kingdom
Helen L. Birch, PhD, Stanmore, United Kingdom
Jonathan Miles, FRCS, Stanmore, United Kingdom
Tim Briggs, FRCS, Middlesex, United Kingdom
Allen E. Goodship, PhD, Stanmore Middlesex, United Kingdom

The levels of mineralisation and bone remodelling decrease distally in osteoarthritic subchondral bone. Raman spectroscopy accurately detects differences between osteoarthritic specimens and controls.

**Poster No. P098**
The Uptake in 18F-fluoride Positron Emission Tomography can Predict the Progression of Osteoarthritis
Naomi Kobayashi, MD, Yokohama, Japan
Yutaka Inaba, MD, Yokohama, Japan
Yohei Yukizawa, MD, PhD, Yokohama, Japan
Hiroyuki Ike, MD, Yokohama Kanagawa, Japan
Kubota So, Yokohama, Japan
Yurika Ata, Yokohama City, Japan
Tomoyuki Saito, MD, Yokohama, Japan

We demonstrated that the uptake in 18F-fluoride PET can predict the progression of osteoarthritis of the hip. Relative risk for OA progression was 11.6 in case with certain uptake of fluoride PET.

**Poster No. P099**
Surgical Anatomy of the Medial Femoral Circumflex Artery Terminal Branches: Arterial Supply to the Femoral Head
Lionel E. Lazaro, MD, New York, NY
Craig Klinger, BS, New York, NY
Peter K. Sculco, MD, New York, NY
Nadine Pardee, BS, New York, NY
Edwin P. Su, MD, New York, NY
Bryan T. Kelly, MD, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorich, MD, New York, NY

Posterior femoral capsular attachment and the inferior capsule should be preserved as well as the medial and lateral Retinaculum of Weitbrecht in order to preserve the terminal branches of the MFCA.

**Poster No. P100**
The Current Treatment of Osteonecrosis of the Femoral Head in the U.S.: A 16-year Analysis of the NIS Sample
Aaron J. Johnson, MD, Baltimore, MD
Michael A. Mont, MD, Baltimore, MD
Audrey K. Tsao, MD, Litchfield Park, AZ
Lynne C. Jones, PhD, Baltimore, MD

The goal of the present study was to determine trends in the types and numbers of procedures performed for secondary osteonecrosis from 1992 through 2008 in the United States.
Poster No. P101
Long-term Results of Conventional Varus Half-wedge Osteotomy for Osteonecrosis of the Femoral Head
Hiroshi Ito, MD, Asahikawa, Japan
Hiromasa Tamino, MD, Asahikawa, Japan
Yasuhiko Yamanaka, MD, Asahikawa, Japan
Daisuke Takahashi, MD, Sapporo, Japan
Takeo Matuno, MD, Asahikawa, Japan

Conventional varus osteotomy provides favorable results at long-term follow-up for hips with less than two-thirds of postoperative medial necrotic location.

Poster No. P102
Non-enzymatic Glycation in the Hip: Cancellous Bone of Osteoporotic and Osteoarthritic Patients
Michael Flaherty, MD, Shrewsbury, MA
Michael T. Mulligan, MD, Slingerlands, NY
Richard Uhl, MD, Albany, New York
Deepak Vashishth, Troy, New York
Ondrej Nikel, BS, MS, Troy, New York

Cancellous bone from patients with a femoral neck fracture had elevated levels of advanced glycation end-products (AGEs) and lower post-yield toughness than did bone from osteoarthritic patients.

Poster No. P103
Barbed versus Traditional Sutures: Closure Time, Cost and Wound Related Outcomes in Total Joint Arthroplasty
Elizabeth G. Matzkin, MD, Boston, MA
Eric L. Smith, MD, Boston, MA
Pinak Y. Shukla, MD, Boston, MA
Steven Disegna, MS, BS, Brookline, MA

In this combination prospective/retrospective study, barbed sutures decreased time to wound closure and decreased the overall cost of THA and TKA, but generated more serious wound complications.

Poster No. P104
Impact of the Economic Downturn on TJR Demand in the US: Updated Projections for TJR Utilization through 2020
Steven M. Kurtz, PhD, Philadelphia, PA
Kevin Ong, Philadelphia, PA
Edmund Lau, MS, Menlo Park, CA
Heather Watson, PhD, Menlo Park, CA
Kevin J. Bozic, MD, MBA, San Francisco, CA

We asked whether the time period of the Great Recession (2008-2009) was associated with a drop in TJR utilization, and assessed the impact of a hypothetical plateau in the rate for joint arthroplasty on demand in the coming decade.

Poster No. P105
Total Hip Arthroplasty and Total Knee Arthroplasty Outcomes are Inferior Under State Mandated Healthcare
Viktor Hansen, MD, Boston, MA
Eric D. Schifman, MD, Columbus, OH
Hany Bedair, MD, Newton, MA
Meredith E. Greene, Boston, MA
Christopher J. Barr, BS, Boston, MA

Patients insured through state sponsored plans under mandated health care have inferior clinical outcomes following THA and TKA.

Poster No. P106
The Effect of Obesity on Direct Medical Costs in Total Hip Arthroplasty
Hilal Maradit-Kremers, MD, MSc, Rochester, MN
Sue L. Visscher, PhD, Rochester, MN
Walter K. Kremers, PhD, Rochester, MN
James Naessens, MPH, Rochester, MN
David G. Lewallen, MD, Rochester, MN

BMI and costs in THA.

Poster No. P107
Medical Device Regulation: Can the FDA Approval Process Predict Long-term Survivorship of THA and TKA Implants
Shawn E. Chandran, MD, Pls Vrds Pnsl, CA
Hany Bedair, MD, Newton, MA

The current FDA approval process through 510k or PMA approval processes may not be able to adequately identify the small changes in implant design that significantly affect orthopaedic implant performance.

Poster No. P108
Effect of Recalls, Lawsuits and Direct to Consumer Marketing on Patient’s Perception of Total Joint Arthroplasty
Robert Moore, Matthews, NC
Christopher W. Olcott, MD, Chapel Hill, NC
Daniel J. Del Gaizo, MD, Chapel Hill, NC

The aim of this study was to examine the impact, implant recalls, class action lawsuits, and direct to consumer marketing have had on total joint arthroplasty patients.

Poster No. P109
National Trends of Blood Transfusion in Patients Undergoing Total Joint Arthroplasty
Mitchell Maltenfort, PhD, Philadelphia, PA
Mohammad R. Rassouli, MD, Philadelphia, PA
Matthew Austin, MD, Philadelphia, PA
James J. Purtill, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

There is high rate of allogenic blood transfusion following TJA that might be explained by an increasing number of patients with multiple comorbidities such as anemia and cardiovascular disorders.
Poster No. P110
Deployments to Iraq and Afghanistan in Army Service Members after Total Hip Arthroplasty
Anton Y. Jorgensen, MD, El Paso, TX
Mark Hsiao, MD, El Paso, TX
Philip J. Belmont Jr, MD, El Paso, TX
The outcomes of total hip arthroplasty in Army service members are reviewed, rates of deployment after arthroplasty are analyzed.

Adult Reconstruction Knee

Poster No. P111
Arthroscopic Lysis of Adhesions after TKA: Overall Results and Gravity Flexion as a Prognostic Sign
Fotios T. Tjoumakaris, MD, Ocean View, NJ
Matthew D. Pepe, MD, Linwood, NJ
Bradford S. Tucker, MD, Ocean City, NJ
Zachary D. Post, MD, Egg Harbor Township, NJ
Fabio Orozco, MD, Egg Harbor Township, NJ
Alvin C. Ong, MD, Linwood, NJ
Using a systematic approach to lysis of adhesions after TKA, one can expect good results with minimal complications.

Poster No. P112
Topical Tranexamic Acid Reduces Blood Loss and Transfusion Rates in Total Knee Arthroplasty
Brian R. Hamlin, MD, Pittsburgh, PA
Gerhardt Konig, MD, Pittsburgh, PA
Jonathan Waters, MD, Pittsburgh, PA
The topical application of the antifibrinolytic tranexamic acid significantly decreased the blood loss and transfusion requirements in patients undergoing primary total knee arthroplasty.

Poster No. P113
Pulmonary Embolism in a Community Arthroplasty Registry with VTE Prophylaxis Utilizing ACCP Guidelines
Peter B. Hanson, MD, La Mesa, CA
Mary W. Elington, RN, El Cajon, CA
Astrid Letouzic, RN, El Cajon, CA
Kay E. O’Brien, RN, BS, Pocey, CA
Analysis of a TJA registry evaluating 5 years of VTE risks, a total of 27 PE’s occurred in 6564 patients (0.41%). Factors that increased the risks included female gender, BMI >/>= 32, and TKA (v. THA).

Poster No. P114
Contributions of Femoral, Tibial and Patellar Malposition to Patellar Maltracking in Total Knee Arthroplasty
Guo-Chin Lee, MD, Philadelphia, PA
Jonathan P. Garino, MD, Villanova, PA
Raymond H. Kim, MD, Denver, CO
Nathan Lenz, MS, Cordova, TN
At low flexion angles, femoral component rotation has the greatest impact on patellar tracking. In high flexion, femoral valgus/varus and patella position have the greatest impact on tracking.

Poster No. P115
Use of Knee Immobilizers for Primary Fall Prevention after Femoral Nerve Blockade in Total Knee Arthroplasty
Wendy Nowicoff, PhD, Charlottesville, VA
Matthew C. Kinney, MD, San Diego, CA
Laura Schapiro, BA, Cincinnati, OH
James A. Browne, MD, Charlottesville, VA
Thomas E. Brown, MD, Charlottesville, VA
Quanjun Gui, MD, Charlottesville, VA
We find that the use of knee immobilizers during the recovery period after TKA significantly decreased the incidence of falls.

Poster No. P116
Prospective Comparison of Mid-term Results Between High Flexion and Standard Designs in Cruciate Retaining TKA
Jong-Keun Seon, MD, Hwasungun, Republic of Korea
Eun K. Song, MD, Hwasung-Gun, Republic of Korea
Ji-Hyeon Yim, Jeonnam, Republic of Korea
Jae-Young Moon, MD, Hwasung-Gun, Republic of Korea
Kyung Soon Park, MD, Jeonnam, Republic of Korea
Taek R. Yoon, MD, PhD, Jeonnam, Republic of Korea
With a minimum of 5-year follow-up, the high flexion CR design was found to have no advantages over the standard CR design regarding clinical outcomes, radiolucent line or loosening of components.

Poster No. P117
Historical Analysis of Reasons for Retrieval of Short Duration Total Knee Arthroplasties (TKA)
Evan M. Carlson, MS, Hanover, NH
Douglas Van Citters, PhD, Hanover, NH
Meagan E. Tibbo, Atlanta, GA
Michael B. Mayor, MD, Hanover, NH
Rayna Levine, BA, Hanover, NH
Steven D. Reinitz, BA, Hanover, NH
John P. Collier, DE, Hanover, NH
Reasons for retrieval of TKA have changed over time. Polyethylene is no longer a primary cause of failure, and has been replaced by loosening, infection, and dislocation.

Poster No. P118
Peri-prosthetic Bone Mineral Density after Bilateral Total Knee Arthroplasty Under Oral Alendronate Therapy
Yukihide Minoda, MD, Osaka, Japan
Kenka Ra, MD, Osaka, Japan
Hiroyoshi Iwaki, MD, Osaka, Japan
Shigekazu Mizokawa, MD, PhD, Osaka, Japan
Taku Yoshida, MD, Osaka, Japan
Hiroaki Nakamura, MD, Osaka, Japan
We compared the postoperative BMD between a mobile-bearing TKA in one knee and a fixed-bearing TKA in other knee under oral alendronate therapy. There was no statistical difference in post operative B.
**Poster No. P119**
Can MRI-based and CT-based Patient Specific Instruments Deliver their Proposed Advantages?
Jerry Chen, MBBS, Singapore, Singapore
Siang Shen Leon Foo, MD, Singapore, Singapore
Alexander Yap, Singapore, Singapore
Andy Yew, PhD
Darren Tay, MBBS, FRCS, Singapore, Singapore
Shi-Lu Chia, MBBS, Singapore, Singapore
Ngai-Nung Lo, MD, Singapore, Singapore
Seng-Jin Yeo, FRCS, Singapore, Singapore
Pak Lin Chin, FRCSed, Singapore, Singapore

Patient Specific Instruments surgery reduces the duration of surgery but increases the number of outliers for both femoral and tibia implants placement.

**Poster No. P120**
Patient Specific Instrumentation versus Computer Navigated, Adjustable Cutting Blocks in Total Knee Arthroplasty
Denis Nam, MD, New York, NY
Patrick Maher, MS, BA, New York, NY
Brian Rebolledo, MD, New York, NY
Alexander S. McLawhorn, MD, MBA, New York, NY
Andrew D. Pearle, MD, Rye, New York

Magnetic resonance imaging based, patient specific instrumentation does not provide the same degree of alignment accuracy as imageless computer navigation in total knee arthroplasty.

**Poster No. P121**
The Length of Quadriceps Incision Affect Recovery of Isokinetic Quadriceps Strength after Total Knee Arthroplasty
Chaturoong Pormrattanamaneeveong, MD, Nonthaburi, Thailand
Kapeepat Narkbuuam, MD, Bangkok, Thailand
Keerati Chareancholvichak, Bangkok, Thailand

This study demonstrated that more than 4 cm of quadriceps incision caused the delayed recovery time of isokinetic quadriceps strength after minimally invasive total knee arthroplasty.

**Poster No. P122**
The Effects of Asymmetric Patellar Resurfacing and Overstuffing on the Extensor Mechanism in TKA
Guo-Chin Lee, MD, Philadelphia, PA
Jonathan P. Garino, MD, Villanova, PA
Nathan Lenz, MS, Cordova, TN

While small errors in patellar resurfacing may not result in patellar instability, they result in increased soft tissue tensions that could explain residual anterior knee pain following TKA.

**Poster No. P123**
Abnormal Axial Rotation Patterns Contributes to Reduced Weight-bearing Flexion
Alternate Paper: Adult Reconstruction Knee II: Non-Arthroplasty Approach
Richard D. Komistek, PhD, Knoxville, TN
Douglas A. Dennis, MD, Denver, CO
Adrija Sharma, Knoxville, TN
Bradley A. Meccia, BS, Knoxville, TN
Mohamed Mahfouz, PhD, Knoxville, TN
Matthew Anderle, Parker, Colorado

This study revealed that achieving a normal axial rotation pattern is essential to a patient having a TKA experiencing greater weight-bearing flexion.

**Poster No. P124**
90-Day Readmission Rate for Total Knee Arthroplasty
William W. Schairer, San Francisco, CA
Thomas P. Vail, MD, San Francisco, CA
Kevin J. Bozic, MD, MBA, San Francisco, CA

This study assessed all planned and unplanned hospital readmissions following total knee arthroplasty (TKA) procedures, and identified risk factors associated with unplanned hospital readmission.

**Poster No. P125**
Uncemented vs. Cemented Stems in Two-Stage Revision for Infected Total Knee Arthroplasty
Paul K. Edwards, MD, Little Rock, AR
Brett Perricelli, MD, Pittsburgh, PA
William G. Hamilton, MD, Alexandria, VA
Thomas K. Fehring, MD, Charlotte, NC
Susan M. Odum, Charlotte, NC
Anne C. Dennos, BS, Charlotte, NC
Walter B. Beaver, MD, Charlotte, NC

Cemented and uncemented stems provide acceptable results, 91.58% and 89.52% respectively, in revision total knee arthroplasty two-stage reimplantations for infection.

**Poster No. P126**
10-Year Prospective Matched-Pair Wear Analysis of Rotating Platform and Fixed-Bearing Designs
Morteza Meftah, MD, New York, NY
Hollis Potter, MD, New York, NY
Amar S. Ranawat, MD, New York, NY
Chitraranjan S. Ranawat, MD, New York, NY

Prospective matched-pair MRI shows that reactive synovitis was significantly less in rotating platform. More osteolysis was noted in FB-MB but did not reach statistical significance.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
**Poster No. P127**  
Medial Gastrocnemius Flap for Soft Tissue Defects After Knee Arthroplasty: Outcomes and Risk Factors for Failure  
Sameer J. Lodha, MD, Chapel Hill, NC  
Debdut Biswas, MD, Chicago, IL  
Matthew Tetreault, BA, Pittsburgh, PA  
Scott M. Sporer, MD, Wheaton, IL  
Craig J. Della Valle, MD, Chicago, IL  
Robert W. Wysocki Jr, MD, Chicago, IL  
The requirement of a gastrocnemius flap for treatment of PJIs was associated with a high risk of failure.

**Poster No. P128**  
Significant Decrease in Length of Stay & Significant Increase in Cost for TKA in the United States  
Thomas Myers, MD, Fort Wayne, Indiana  
Jesse Schold, PhD, Cleveland, OH  
Edward Soletz, MD, MPH, Cleveland, OH  
Wael K. Barsoum, MD, Bay Village, OH  
A significant decrease in LOS and a significant increase in cost accompanied the increase in the volume of TKAs being performed in the United States.

**Poster No. P129**  
Dental Clearance Prior to Elective Arthroplasty: Needed for Everyone?  
Gregory K. Deirmengian, MD, Broomall, PA  
Anthony T. Tokarski, BS, Philadelphia, PA  
Alexander J. Lampley, BS, Bryn Mauw, PA  
Shailee S. Shah, BS, Philadelphia, PA  
William J. Hozack, MD, Philadelphia, PA  
Javad Parvizi, MD, FRCS, Philadelphia, PA  
Our questionnaire can identify patients with active dental disease and those who require dental procedures. These will require dental evaluation prior to elective arthroplasty.

**Poster No. P130**  
Cost Comparison of Total vs. Unicompartmental Knee Arthroplasty  
Sheila Shankar, MS, Chicago, IL  
Matthew Tetreault, BA, Pittsburgh, PA  
Brian Jegier, PhD, Chicago, IL  
Gunnar B. Andersson, MD, Chicago, IL  
Craig J. Della Valle, MD, Chicago, IL  
UKA provides a cost-effective alternative to TKA that is both less expensive and utilizes fewer healthcare resources in appropriately selected patients.

**Poster No. P131**  
Young Total Knee Arthroplasty Patients: Are They Really Active?  
James A. Keeney, MD, St Louis, MO  
Ryan Nunnley, MD, Saint Louis, MO  
Rick W. Wright, MD, Saint Louis, MO  
Robert L. Barrack, MD, Saint Louis, MO  
John C. Clohisy, MD, Saint Louis, MO  
Retrospective analysis of 480 consecutive total knee arthroplasties performed for patients less than 55 years of age. The majority of younger patients are obese and less active than characterized.

**Poster No. P132**  
Risk Factors, Outcomes and Timing of Manipulation Under Anesthesia After Total Knee Arthroplasty  
Erik Newman, Durham, NC  
Thomas A. Herschmiller, MD, Durham, NC  
David E. Attarian, MD, Durham, NC  
Thomas P. Vail, MD, San Francisco, CA  
Michael P. Bolognesi, MD, Durham, NC  
Samuel S. Wellman, MD, Durham, NC  
TKA patients undergoing MUAs were younger, more likely to smoke, and more likely to have had prior knee surgery. Early, but not late, MUA patients achieved final flexion equal to matched controls.

**Poster No. P133**  
Mid-term Survival Following Primary Hinged TKR is Good Irrespective of the Indication for Surgery  
Paul Baker, MB, ChB, Newcastle Upon Tyne, United Kingdom  
Rebecca J. Critchley, MBBS, Newcastle Upon Tyne, United Kingdom  
Simon Jameson, Middlesbrough, United Kingdom  
Andrew C. Gray, Newcastle-upon-Tyne, United Kingdom  
David Deehan, MD FRCS, England, United Kingdom  
Implant survival and functional improvements after primary hinge knee replacement are comparable to those seen following conventional unconstrained knee replacement designs.

**Poster No. P134**  
Effect of Alignment on Polyethylene Wear in Unicompartmental Knee Arthroplasty  
Clint B. Blackwood, MD, Saint Helena, CA  
Laryssa Korduba-Rodriguez, Mahwah, NJ  
Aaron Essner, MS, Mahwah, NJ  
Thomas M. Coon, MD, Saint Helena, CA  
No significant difference in wear of UHMWPE in neutral and mal-aligned conditions.

**Poster No. P135**  
Patient Phenotype Allows for Prediction of Patient Reported Satisfaction Following Total Knee Replacement  
Paul Baker, MB, ChB, Newcastle Upon Tyne, United Kingdom  
Steve Rushton, Newcastle Upon Tyne, United Kingdom  
Simon Jameson, Middlesbrough, United Kingdom  
Mike R. Reed, MBBS MD, Northumberland, United Kingdom  
Paul J. Gregg, Cleveland, United Kingdom  
David Deehan, MD FRCS, England, United Kingdom  
The expected levels of patient satisfaction following total knee replacement can be reliably predicted based on pre-operative demographic and general health data.
Educational Programs

**Poster No. P136**
Thirty-Day Postoperative Morbidity and Mortality After Primary Total Knee Arthroplasty: A Study of 15,517 Patients
Philip J. Belmont Jr, MD, El Paso, TX
Gens P. Goodman, DO, El Paso, TX
Andrew J. Schoenfeld, MD, Canutillo, TX

Increased age, body mass index, albumin < 3.5 g/dL, ASA classification >2 and operative times >137 minutes were risk factors for postoperative complications after primary total knee arthroplasty.

**Poster No. P137**
Cost Effectiveness of One Stage and Two Stage Revision for Infected Total Knee Arthroplasty
Alternate Paper: Adult Reconstruction Knee VI: Revision Total Knee Arthroplasty
Kevin W. Dwyer, MD, Lebanon, NH
Margaret. R. Grove, MS, Hanover, NH
Anna Tosteson, ScD, Lebanon, NH
Karl Koenig, MD, Hanover, NH

A cost-effectiveness analysis comparing one stage and two stage revision for infected total knee arthroplasty. One stage total knee revision for infected total knee is more cost-effective.

**Poster No. P138**
Impact of Blood Transfusion on Acute Wound Infection Following Total Knee and Hip Arthroplasty
Erik Newman, Durham, NC
Tyler S. Watters, MD, Durham, NC
Jason M. Jennings, MD, Durham, NC
Samuel S. Wellman, MD, Durham, NC
David E. Attarian, MD, Durham, NC
Stuart Grant, MD, Durham, NC
Cynthia Green, PhD, Durham, NC
Thomas P. Vail, MD, San Francisco, CA
Michael P. Bolognesi, MD, Durham, NC

Allogeneic exposure was not found to be a significant predictor of reoperation for suspected infection after adjusting for total number of units transfused and high ASA score.

**Poster No. P139**
β-catenin: A Marker with High Specificity for Arthrofibrosis after Total Knee Arthroplasty
Daniel Kendoff, MD, Hamburg, Germany
Mustafa Catak, MD, Bochum, Germany
C Dierkes, MD, Trier, Germany
Carsten Theiss, Bochum, Germany
Thorsten Gebhre, MD, Hamburg, Germany
Veit Krenn, Trier, Germany

A histopathologic diagnosis of a arthrofibrosis after TKA can be defined as fibrotic synovial tissue with an increased cellularity of β-catenin staining fibroblasts.

**Poster No. P140**
Identifying Ideal Tibia Component Rotation in Knee Replacement
Referenced by Femoral trochlea groove
Sam Hakki, MD, Saint Petersburg, FL
Leo A. Whiteside, MD, Saint Louis, MO

Femoral trochlea groove (FTG) accurately identifies position of ideal tibia component rotation (ITCR) in Total Knee Arthroplasty(TKA) allowing maximum tibia rotation and knee range of motion (ROM).

**Poster No. P141**
Total Knee Arthroplasty for Severe Haemophilic Arthropathy: Long-Term Experience in Japan
Nobunori Takahashi, MD, PhD, Nagoya, Japan
Toshihisa Kojima, MD, PhD, Nagoya, Japan
Koji Funabashi, MD, PhD, Nagoya, Japan
Daizo Kato, MD, Nagoya, Japan
Hiroyuki Matsubara, MD, Nagoya, Japan
Yosuke Hattori, MD, Nagoya, Japan
Masahiro Hanabayashi, MD, Nagoya, Japan
Naoki Ishiguro, MD, Nagoya, Japan

The late infection rate was obviously higher than that in osteoarthritis population, although TKA was an effective method to gain better function in patients with haemophilic arthropathy of knee.

**Poster No. P142**
Total Joint Arthroplasty Can be Safe in the Super Morbidly Obese
Alternate Paper: Adult Reconstruction Knee VII: Complications
Ronald Huang, MD, Philadelphia, PA
Sarah M. Callinan, Blenheim, NJ
Michael J. Bercik, MD, Philadelphia, PA
Zachary D. Post, MD, Egg Harbor Township, NJ
Fabio Orozco, MD, Egg Hbr Twp, NJ
Alvin C. Ong, MD, Linwood, NJ

TJA in the super morbidly obese can be safe in otherwise healthy patients. However, extra effort may be necessary to prevent pulmonary complications and minimize blood loss.

**Poster No. P143**
Outcome of Total Knee Arthroplasty following Patellectomy
Reena Yao, MD, London, ON, Canada
Matt C. Lyons, MD, Mosman, Australia
James Howard, MD, London, ON, Canada
Doug Naudie, MD, FRCS, London, ON, Canada
Richard W. McCalden, MD, London, ON, Canada
Steven J. MacDonald, MD, London, ON, Canada
James P. McAuley, MD, London, ON, Canada

For the patellectomised patient with tibiofemoral arthrosis, TKA can provide marked improvements in pain and function.

**Poster No. P144**

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*

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Single Stage Versus Staggered Bilateral Total Knee Replacements in a Single Hospitalization
Chandrakeskar Chikkamuniriyappa, MS, DNB, Bangalore, India
A comparative study to evaluate 191 patients who underwent 382 bilateral total knee replacements. Stagerring in Bilateral Knee Replacements may reduce overall complication rate in older and obese patients.

Poster No. P145
Thromboembolism Prophylaxis: Is Very Low Fixed Dose Warfarin an Equivalent Postoperative Regime?
Murray Bern, MD, Boston, MA
Diane Wheaton, MPH, BS, Boston, MA
Daniel M. Ward, MD, Chestnut Hill, MA
Damon Spitz, MD, Boston, MA
David A. Mattingly, MD, Chestnut Hill, MA
Donald T. Reilly, MD, Brookline, MA
James V. Bono, MD, Boston, MA
Carl T. Talmo, MD, Boston, MA
Dorothy M. Adcock, MD, Englewood, Colorado
A prospective randomized study to examine three thromboembolic disease (TED) prophylaxis regimes following elective hip and knee arthroplasty surgery at one institution.

Poster No. P146
• Is the Function of Kinematically-Aligned TKA Better Than Mechanically-Aligned TKA? A Randomized Control Trial
Harold G. Dossett, MD, Scottsdale, AZ
Nicole Estrada, Salt Lake City, UT
George J. Swartz, MD, Phoenix, AZ
George W. LeFevre, MD, San Diego, CA
Kinematically aligned TKA provided better function, better flexion, similar limb and knee alignment, and an oblique joint line that was more anatomic than mechanically aligned TKA.

Poster No. P147
Survival Rate of Implant and Mode of Failure After Revision Total Knee Arthroplasty Using Modular Prosthesis
Dae K. Bae, MD, Seoul, Republic of Korea
Sang Jun Song, Seoul, Republic of Korea
Kyoung Ho Yoon, MD, Seoul, Republic of Korea
Dong Beom Heo, MD, Seoul, Republic of Korea
Dae Hyun Tak, MD, Seoul, Republic of Korea
This study analyzed the survival rate of implants and mode of failure after revision TKA. The 10-year survival rates were 86.3%. Infection and loosening were the most common two modes of failure.

Poster No. P148
The Dramatic Increase in Knee Replacement Utilization is not Primarily Attributable to Increases in Young Patients
Joseph Bernstein, MD, Haverford, PA
Peter Derman, MD, New York, NY
Increased utilization of knee replacements among patients 65+ remains the single largest source of growth. Forecasting models must consider whether manpower supply will be adequate to meet demand.
**Poster No. P153**
Treatment Failure Among Infected Periprosthetic Patients at a Highly Specialized Revision TKA Referral Practice
Ran Schwarzkopf, MD, Irvine, CA
Daniel J. Oh
Elizabeth A. Wright, PhD, Boston, MA
Jeffrey N. Katz, MD, Brookline, MA
Daniel M. Estok II, MD, Boston, MA

Patients inoculated by staphylococcus organism, and that have undergone multiple procedures prior to the two-stage revision may have a lower rate of a successful outcome.

**Poster No. P154**
Variability in the Distal Femoral Mechanical-Anatomic Angle in Patients Undergoing Total Knee Arthroplasty
Denis Nam, MD, New York, NY
Patrick Maher, MS, BA, New York, NY
Alex Robles, New York, NY
Alexander S. McLaughlin, MD, MBA, New York, NY
David J. Mayman, MD, New York, NY

The distal femoral mechanical-anatomical angle is highly variable in patients undergoing TKA. Therefore, use of a fixed angle, intramedullary distal femoral resection guide may lead to malalignment.

**Poster No. P155**
Racial Differences in Functional Outcomes in Asian Patients Undergoing Knee Arthroplasty
Siow Wei Ming, MD, Singapore, Singapore
Pak Lin Chin, FRCSEd, Singapore, Singapore
Shi-Lu Chia, MBBS, Singapore, Singapore
Ngai-Nung Lo, MD, Singapore, Singapore
Seng-Jin Yeo, FRCS, Singapore, Singapore

There are significant differences in demographics, health related quality of life and functional outcome scores in Chinese, Malay and Indian patients who have undergone a knee arthroplastic procedure.

**Poster No. P156**
A Cost-Minimization Analysis of Knee Arthroplasty Using Data from Two National Registries
Alternate Paper: Adult Reconstruction Knee IV: Total Knee Arthroplasty
Barry Andrews, MB ChB, London, United Kingdom
Charles Willis-Owen, FRCS (Ortho), MA, London, United Kingdom
Adel Agil, MBChB, MRCS Ed, Middlesex, London, United Kingdom
Justin P. Cobb, MD, London, United Kingdom

Decision tree analysis of registry data, including a comprehensive breakdown of revision subtypes, has shown that UKA costs less than TKA by $1270 despite the higher revision rate and equivalent revise.

**Poster No. P157**
Accuracy of Patient-specific Cutting Guide in Total Knee Arthroplasty
Keerati Chareancholvanich, Bangkok, Thailand
Rapeepat Narkbunnam, MD, Bangkok, Thailand
Chatterong Pornrattanamaneeuwong, MD, Nonthaburi, Thailand

The patient-specific cutting guides demonstrated subtle advantages over conventional instrumentation in terms of reducing the femoral component outliers, shortening bone-cutting and operative time.

**Poster No. P158**
The Effect of Periarticular Injection: Randomized, Controlled Comparison of Various Cocktail Regimens
Alternate Paper: Adult Reconstruction Knee V: Primary Total Knee Arthroplasty
Tae Woo Kim, MD, Seoul, Republic of Korea
Sahnghoon Lee, MD, Seoul, Republic of Korea
Joon Kyu Lee, MD, Seoul, Republic of Korea
Se H. Im, MD, Seoul, Republic of Korea
Sang J. Park, MD, Seoul, Republic of Korea
Sang C. Seong, MD, Seoul, Republic of Korea
Myung C. Lee, MD, Seoul, Republic of Korea

Periarticular injection composed of ropivacaine, ketorolac and morphine showed better pain management after TKA. Additional steroid reduced inflammation and improved functional recovery.
**Poster No. P161**  
Mortality Following Simultaneous Bilateral Total Knee Arthroplasty with and without Computer Assisted Surgery  
Stephen Graves, MD, Adelaide, Australia  
Richard De Steiger, MD, Richmond, Australia  
David Davidson, MD, Adelaide, Australia  
Kara Cashman, BSc (HONS), Adelaide, Australia  
Yen-Liang Liu, Adelaide, Australia  
Elizabeth C. Griffith, BA, Adelaide, Australia  
Philip Ryan, FAFPHM, Adelaide, Australia

Patients receiving simultaneous bilateral TKA have better longevity than those patients having a unilateral TKA but are at increased risk of early death. CAS does not affect mortality risk.

**Poster No. P162**  
Preservation of the PCL is not Recommended in Highly Conforming Mobile Bearing Total Knee Arthroplasty  
Tae Woo Kim, MD, Seoul, Republic of Korea  
Sahnghoon Lee, MD, Seoul, Republic of Korea  
Joon Kyu Lee, MD, Seoul, Republic of Korea  
Se H. Im, MD, Seoul, Republic of Korea  
Sang J. Park, MD, Seoul, Republic of Korea  
Sang C. Seong, MD, Seoul, Republic of Korea  
Myung C. Lee, MD, Seoul, Republic of Korea

PCL preservation in highly conforming mobile TKA is not recommended as it showed the significant deviation in kinematics as well as unpredictable complications.

**Poster No. P163**  
Total Knee Arthroplasty in Patients with Excessive External Tibial Torsion > 45° and Patella Instability  
Michael Drexler, MD, Toronto, ON, Canada  
Tim Dwyer, MBBS, Toronto, ON, Canada  
Meir T. Marmor, MD, San Francisco, CA  
Nikolaus Reischl, MD, Graz, Austria  
Fahad Attar, FRCS, Toronto, ON, Canada  
John C. Cameron, MD, Toronto, ON, Canada

Patients presenting with advanced knee osteoarthritis (OA), excessive external tibial torsion (EETT) and chronic patella subluxation pose a significant surgical challenge.

**Poster No. P164**  
Relationship Between Vascular Endothelial Growth Factor and Radiographic Severity in Primary Knee Osteoarthritis  
Sittisak Honawek, MD, PhD, Bangkok, Thailand  
Aree Tanavalee, MD, Bangkok, Thailand  
Pongsak Yuktanandana, MD, Bangkok, Thailand  
Srihatach G. Ngarmukos, MD, Bangkok, Thailand  
Saran Tantavisut, Bangkok, Thailand  
Thanathip Tanpoupong, Bangkok, Thailand

VEGF in both plasma and synovial fluid were positively correlated with the severity and play a role in pathophysiology of knee OA.

**Poster No. P165**  
Long-Leg Radiographs are Unnecessary for Follow Up of Total Knee Replacements  
David F. Dalury, MD, Baltimore, MD  
Kim K. Tucker, MD, Tucson, AZ  
Mary Jo Adams, BSN, Tucson, MD

Our hypothesis is that using standard 14 x 17 inch standing radiographs allows for similar accuracy when compared to the traditionally used long-leg films in measuring TKR alignment.

**Poster No. P166**  
Does Total Knee Replacement Lead to an Increase in Lateral Retinacular Strain with Flexion?  
Salm K. Durrani, MD, Houston, TX  
Sahir Ismaily, Houston, TX  
Dan J. Daylamani, San Antonio, TX  
Jon Gold, BS, Houston, TX  
James W. Pritchett, MD, Seattle, WA  
Richard F. Moore, MD, Boise, ID  
Philip C. Noble, PhD, Houston, TX

TKA generates higher retinacular strains than the intact knee during flexion, with the greatest increases in strain being observed in the distal and posterior regions.

**Poster No. P167**  
Efficacy, Timing and Clinical Outcomes of Manipulations Under Anesthesia Versus a Comparison Cohort  
Michael A. Mont, MD, Baltimore, MD  
Kimona Issa, MD, Santa Clarita, CA  
Aaron J. Johnson, MD, Baltimore, MD  
Mark A. Kester, PhD, Mahwah, NJ  
Qais Naziri, MD, Brooklyn, NY  
Harpal S. Khanuja, MD, Cockeysville, MD  
Ronald E. Delanois, MD, Baltimore, MD

A low threshold for performing manipulation under anesthesia can improve range-of-motion and achieve outcomes comparable to patients who do not develop knee stiffness.

**Poster No. P168**  
Is Midterm Follow Up Surveillance of Total Knee Arthroplasty Patients Necessary?  
James A. Keeney, MD, St Louis, MO  
Robert L. Barrack, MD, Saint Louis, MO  
Brall Ellison, MD, Midlothian, VA  
John C. Clohisy, MD, Saint Louis, MO

Interventions resulting from routine midterm follow-up visits for TKA surveillance are extremely uncommon in asymptomatic patients.
Poster No. P169  
Comparison of Infection, Revision and Surgical Interventions Between Unicondylar and Total Knee Arthroplasty  
Kevin Ong, Philadelphia, PA  
Heather Watson, PhD, Menlo Park, CA  
Michael T. Manley, PhD, Franklin Lakes, NJ  
Steven M. Kurtz, PhD, Philadelphia, PA  

Our study suggests mixed outcomes in the UKA cohort compared with the primary TKA cohort, after adjusting for differences in patient demographics.

Poster No. P170  
Pulmonary Findings in Asymptomatic Postoperative Total Joint Arthroplasty Patients  
Jonathan Vidorvick, MD, New York, NY  
Denis Lincoln, Southfield, MI  
David C. Markel, MD, Southfield, MI  

We examined asymptomatic patients with multi-detector CT scan to establish the baseline pulmonary findings after TJA. All asymptomatic patients had negative CT scans.

Poster No. P171  
Pulse Lavage is Inadequate at Removal of Biofilm from the Cobalt Chrome Surfaces in Total Knee Arthroplasty  
Kenneth Urish, MD, PhD, Hershey, PA  
Melissa Bent, MD, Hummelstown, PA  
Hani Haider, PhD, Omaha, NE  
David W. Craft, PhD, Hershey, PA  
Charles M. Davis III, MD, Hershey, PA  

The ability of irrigation to remove biofilm from arthroplasty components was quantified.

Poster No. P172  
Tranexamic Acid in Total Knee Arthroplasty Improves Clinical and Functional Outcomes  
William C. Schroer, MD, Saint Louis, MO  
Paul Diesfeld, PA-C, Saint Louis, MO  
Angela LeMar, RN, Saint Louis, MO  
Rachel R. Ingussa, RN, O Fallon, MO  
Diane Morton, MS, Saint Louis, MO  
Mary E. Reed, RN, Saint Louis, MO  

Tranexamic acid use after TKA improved outcomes by reducing blood loss, drop in Hgb, autologous blood transfusion, use of reinfusion drains, wound concerns, additional surgery, and prolonged therapy.

Poster No. P173  
Single Stage “Two in One” Revision for Infected Knee Replacement: A Report of the First 19 Cases  
Richard W. Parkinson, FRCS, Merseyside, United Kingdom  

2 stage revision for infected TKA is the gold standard. We report a method of single stage revision with good outcomes in 19 patients.

Poster No. P174  
Patella Kinematics in Total Knee Arthroplasty with Femoral Malrotation In Vitro  
Thomas J. Heyse, MD, Marburg, Germany  
Bikal El-Zayat, MD, Marburg, Germany  
Yan Chevalier, PhD, Munich, Germany  
Ronny De Corte, Leuven, Belgium  
Bernardo Innocenti, PhD, Brussels, Belgium  
Susanne Fuchs-Winkelmann, MD, Marburg, Germany  
Luc Labey, Leuven, Belgium  

Patellar kinematics but not contact pressure was affected by femoral component malrotation. Associated anterior knee pain may result more from soft tissue tension.

Poster No. P175  
Hospital Length of Stay after Primary Total Knee Arthroplasty: Data from the NIS  
Youssef El Bitar, MD, Willowbrook, IL  
Kenneth Illingworth, MD, Springfield, IL  
Steven L. Scaife, MS, Springfield, IL  
Khaled J. Saleh, MD, MSc, Springfield, IL  

It is important to recognize all factors that affect hospital length of stay to maximize the use of medical resources, optimize hospital length of stay and ultimately increase the care of our patients.

Poster No. P176  
The Effect of Fixation on Functional Outcome and Survival of a Cruciate Retaining Total Knee Replacement Up to 17 Years  
Jerome Davidson, MD, Kent, United Kingdom  
Nemandra A. Sandiford, MRCS, Kent, United Kingdom  
Shilpa Jha, MBBS, London, United Kingdom  
Kim Miles  
Debra J. East, St Leonards On Sea, United Kingdom  
Hugh Apteor, FRCS, Battle, United Kingdom  
Richard Goddard, MD, East Sussex, United Kingdom  
Adrian Butler-Manuel, FRCS, St Leonards On Sea, United Kingdom  

This prospective randomised control study comparing fixation type in total knee arthroplasty shows better survival of cemented than HAC designs. However there is no difference in functional outcome.

Poster No. P177  
Systematic Review of Static and Articulating Spacers for Infected Total Knee Arthroplasty Revision  
Jonathan R. Dattilo, BS, Baltimore, MD  
Christopher R. Costa, MD, Dallas, TX  
Qais Naziri, MD, Brooklyn, NY  
Aaron J. Johnson, MD, Baltimore, MD  
Michael A. Mont, MD, Baltimore, MD  

Articulating spacers demonstrated increased range of motion compared to static spacers, but should be used cautiously in complex cases of infection due to elevated complication and revision rates.
**Poster No. P178**  
Center and Surgeon Volume Influence Revision Rate Following Unicompartmental Knee Replacement  
Paul Baker, MB, ChB, Newcastle Upon Tyne, United Kingdom  
Simon Jameson, Middlesbrough, United Kingdom  
Rebecca J. Critchley, MBBS, Newcastle Upon Tyne, United Kingdom  
Mike R. Reed, MBBS MD, Northumberland, United Kingdom  
Paul J. Gregg, Cleveland, United Kingdom  
David Deehan, MD FRCS, England, United Kingdom  
Specialist, high volume centers and surgeons produce superior results after unicompartmental knee replacement when compared to their low volume counterparts.

**Poster No. P179**  
Is Adapted Measured Resection Superior Over Gap-balancing in Determining Femoral Component Rotation In TKA?  
Thomas Luyckx, MD, Bertem, Belgium  
Tom Peeters, MD, Berchem, Belgium  
Hilde Vandenneucker, MD, Pellenberg-Lubbeek, Belgium  
Jan MK M. Victor, MD, Gent, Belgium  
Johan Bellemans, MD, Langdorp, Belgium  
This study reports on the prospective comparison of an new ‘adapted’ measured resection technique vs gap balancing in determining femoral component rotation in TKA.

**Poster No. P180**  
Outcomes Following Total Knee Revision with Trabecular Metal Cones  
Ronald Huang, MD, Philadelphia, PA  
Gus Barrazaleta, BA, MS, Tampa, FL  
Fabio Orozco, MD, Egg Harbor Township, NJ  
Zachary D. Post, MD, Egg Harbor Township, NJ  
Alvin C. Ong, MD, Linwood, NJ  
Javad Parvez, MD, FRCS, Philadelphia, PA  
With moderate to severe bone loss, trabecular metal cones provide reliable fixation at short term follow-up.

**Poster No. P181**  
•Preliminary Data on Use of Tranexamic Acid in High Risk Patients Undergoing Primary Total Hip and Knee Arthroplasty  
Daniel Whitting, MD, Rochester, MN  
Blake P. Gillette, MD, Rochester, MN  
Christopher Duncan, MD, Rochester, MN  
Hugh M. Smith, MD, PhD, Rochester, MN  
Lori J. Desimone, PA-C, Rochester, MN  
Rafael J. Sierra, MD, Rochester, MN  
The thromboembolic complications in high risk patients undergoing primary total hip and knee arthroplasty with tranexamic acid warrants further study.

**Poster No. P182**  
Outcomes of Total Knee Arthroplasty after Fresh Osteochondral Allograft Transplantation  
Amy K. Steinboff, MD, San Diego, CA  
William Bugbee, MD, La Jolla, CA  
TKA after OCA does not present a technical challenge in the operating room, however, patients reported lower outcomes postoperatively compared to standard routine TKA patients.

**Poster No. P183**  
Low Urine Output During the First 24 Hours After Total Knee Arthroplasty  
Yutthana Khanasuk, MD, Bangkok, Thailand  
Aree Tanavalee, MD, Bangkok, Thailand  
Sarit Hongyuai, Bangkok, Thailand  
Sribatch G. Ngarunukos, MD, Bangkok, Thailand  
Saran Tantavisut, Bangkok, Thailand  
Yongsak Wangroongsub, MD, Bangkok, Thailand  
Sittisak Honsawek, MD, PhD, Bangkok, Thailand  
Low urine output during the first 24 hours after TKA related to limited volume of intraoperative IV fluid which was significantly less than that of calculated volume.

**Poster No. P184**  
Total Knee Arthroplasty in Patients with Juvenile Idiopathic Arthritis: A Multi Center Study  
Thomas J. Heyse, MD, Marburg, Germany  
Michael D. Ries, MD, San Francisco, CA  
Johan Bellemans, MD, Langdorp, Belgium  
Stuart B. Goodman, MD, Redwood City, CA  
Richard D. Scott, MD, Boston, MA  
Timothy M. Wright, PhD, New York, NY  
Joseph D. Lipman, MS, New York, NY  
Ran Schwarzkopf, MD, Irvine, CA  
Mark P. Figgie, MD, New York, NY  
Survivorship of TKA in a large cohort of JIA patients was lower than in patients with osteoarthritis and their functional outcomes were poorer. Further work must be done to improve durability.

**Poster No. P185**  
Patellofemoral Arthroplasty - Patient Profile and Early Outcomes  
Ashley A. Nord, MD, Grand Rapids, MI  
Julie Agel, Seattle, WA  
Elizabeth A. Arendt, MD, Minneapolis, MN  
PFA is a valid surgical option for patients with isolated end-stage PF arthritis.
Unicondylar Knee Arthroplasty in patients with severe deformity had good clinical outcomes at a minimum of 2 years with 100% survivorship at 5 years.

This study suggests that the use of a pre-admission cutaneous chlorhexidine preparation protocol is an effective method to prevent periprosthetic infections in total knee arthroplasty patients.

In men, gender-specific components provide less component overhang and similar patellar tracking compared to standard designs, but outcomes are not improved based on objective measurements.

This study evaluated the coverage and placement of the tibial component of seven contemporary knee systems using the same placement and sizing techniques for all implants across multiple populations.
**Poster No. P194**  
Effect of Bearing Design in Failed Unicompartmental Knee Arthroplasty on the Revision Procedure  
Kevin J. Bloom, BA, South Euclid, OH  
Rishi R. Gampa, MD, St Helena, CA  
Joseph W. Caravella, BA, Bay Village, OH  
Alison K. Klika, MS, Cleveland, OH  
Yoosef Shishani, MD, Cleveland, OH  
Wael K. Barsoum, MD, Bay Village, OH  
Patients with failed mobile-bearing unicompartmental knee arthroplasty (UKA) required more tibial augments during revision procedures than patients with failed fixed-bearing UKA (p=0.008).

**Poster No. P195**  
Total Knee Arthroplasty in Osteonecrosis: Mid-term Results with a New Implant Design  
Qais Naziri, MD, Brooklyn, NY  
Vijay J. Rasquinha, MD, New Hyde Park, NY  
Aditya V. Maheshwari, MD, Brooklyn, NY  
Kimona Issa, MD, Santa Clarita, CA  
Lynne C. Jones, PhD, Baltimore, MD  
Michael A. Mont, MD, Baltimore, MD  
The purpose of this study was to assess the clinical and radiographic outcomes of total knee arthroplasties in all patients with osteonecrosis.

**Poster No. P196**  
Outcomes of Manipulation Under Anesthesia Stratified by Pre-Manipulation Range-of-Motion after Primary TKA  
Kimona Issa, MD, Santa Clarita, CA  
Bhaveen Kapadia, MD, Baltimore, MD  
Aaron J. Johnson, MD, Baltimore, MD  
Mark A. Kester, PhD, Mahwah, NJ  
Swetha Dhanireddy, Naperville, IL  
Ronald E. Delanois, MD, Baltimore, MD  
Harpal S. Khumja, MD, Cockeysville, MD  
Michael A. Mont, MD, Baltimore, MD  
The authors believe orthopaedic surgeons should inform their patients regarding their potential to improve in flexion arc based on their pre-manipulation range-of-motion.

**Poster No. P197**  
Comparison of In Vivo Wear Particles Between Sequentially Annealed HXLPE and Conventional PE in TKA  
Yukihide Minoda, MD, Osaka, Japan  
Kanako Hata, BS, Osaka, Japan  
Hiroyoshi Iwaki, MD, Osaka, Japan  
Mitsuhiko Ikekuchi, MD, Osaka, Japan  
Taku Yoshida, MD, Osaka, Japan  
Shigekazu Mizokawa, MD, PhD, Osaka, Japan  
Hiroaki Nakamura, MD, Osaka, Japan  
We compared the characteristics of in vivo wear particles between sequentially annealed highly cross linked and conventional polyethylene in TKA. There was no statistical difference between two groups.

**Poster No. P198**  
The Role of Surgical dressings in Total Knee Arthroplasty: A Randomized Clinical Trial  
Bryan D. Springer, MD, Charlotte, NC  
Walter B. Beaves, MD, Charlotte, NC  
William L. Griffin, MD, Charlotte, NC  
J. Bohannon Mason, MD, Charlotte, NC  
Anne C. Dennos, BS, Charlotte, NC  
Susan M. Odum, Charlotte, NC  
An occlusive antimicrobial surgical dressing showed significant reduction in wound complications, number of dressing changes/exposure and patient satisfaction compared to standard gauze dressing.

**Poster No. P199**  
The Outcome of Total Knee Arthroplasty in Patients Aged 80 Years and Older: A Study of 479 Patients  
Bo-Hyun Huang, MD, Seoul, Republic of Korea  
Chang Hyun Nam, MD, PhD, Yangleon-G, Republic of Korea  
Kwang Am Jung, MD, Seoul, Republic of Korea  
Su-Chan Lee, MD, Seoul, Republic of Korea  
With greater awareness of careful patient selection and the patient’s comorbidities in order to reduce perioperative complications, primary TKA can provide safety and reliability for the octogenarian.

**Poster No. P200**  
Rotational Mismatch Between Femoral and Tibial Components after TKA for Varus Osteoarthritis of the Knee  
Takashi Tsujimoto, MD, Sakai City, Japan  
Kazumasa Yamamura, MD, Sakai City Osaka, Japan  
Tessyu Ikawa, MD, Sakai, Japan  
Kim Mitsunari, MD, Takarazuka City, Japan  
Yoshinori Kadoya, MD, Sakai, Japan  
Certain amount of rotational mismatch is inevitable even when both the femoral and tibial component were rotationally aligned to the widely-used reference lines.

**Poster No. P201**  
Fewer and Older Patients with Rheumatoid Arthritis Need Total Knee Replacement  
Eerik T. Skytta, MD, PhD, Tampere, Finland  
Pirjo Honkanen, MD, Ylojarvo, Finland  
Antti Eskelinen, MD, PhD, Tampere, Finland  
Heini Huhtala, MSc, University of Tampere, Finland  
Ville M. Remes, MD, Helsinki, Finland  
Despite the increasing resources, the need for TKR in rheumatoid arthritis is decreasing and replacements are performed at an older age indicating improving long-term outcome in RA.
Poster No. P202
The Effect of Femoral Component Design on the Incidence of Patellar Crepitus Following Total Knee Arthroplasty
Raymond H. Kim, MD, Denver, CO
Douglas A. Dennis, MD, Denver, CO
Derek R. Johnson, MD, Parker, CO
Michael R. Cahill, MS, Highlands Ranch, CO

Design of the trochlear region of the femoral component affects the incidence and severity of patellofemoral crepitus following total knee arthroplasty.

Poster No. P203
Patient Specific Instrumentation Does Not Shorten Surgical Time: A Prospective, Randomized Trial
William G. Hamilton, MD, Alexandria, VA
Nancy L. Parks, Alexandria, VA
Arjun Saxena, MD, Langhorne, PA

Custom instruments did not shorten surgical time or improve alignment compared with traditional instruments in this prospective, randomized trial. Fewer surgical trays were needed for custom cases.

Poster No. P204
Risk Factors for Early Revision Following Primary Total Knee Arthroplasty in Medicare Patients
Kevin J. Bozic, MD, MBA, San Francisco, CA
Edmund Lau, MS, Menlo Park, CA
Kevin Ong, Philadelphia, PA
Vanessa Chiu, MPH, San Francisco, CA
Steven M. Kurtz, PhD, Philadelphia, PA
Harry E. Rubash, MD, Boston, MA
Daniel J. Berry, MD, Rochester, MN

Chronic pulmonary disease, depression, alcohol abuse, drug abuse, renal disease, hemiplegia/paraplegia, and obesity were associated with an increased risk of early revision in Medicare TKA patients.

Poster No. P205
Preoperative Pain Location is a Poor Predictor of Outcome after Unicompartmental Knee Arthroplasty
Alexander D. Liddle, MBBS, Headington, Oxford, United Kingdom
Heman G. Pandit, FRCS, Oxford, United Kingdom
Cathy Jenkins, MA, Oxford, United Kingdom
Andrew J. Price, FRCS, Oxford, United Kingdom
Christopher A. Dodd, FRCS, Oxford, United Kingdom
Harinderjit Gill, PhD, Oxford/Oxon, United Kingdom
David W. Murray, MD, Oxford, United Kingdom

A study of 406 knees demonstrating that pre-operative location of pain (medial, anterior, lateral) has no bearing on outcome after UKA.

Foot and Ankle
Poster No. P206
Return to Duty of Special Operations Personnel after Limb Salvage for High Energy Lower Extremity Trauma
Jeanne C. Patzkowski, MD, San Antonio, TX
Johnny Owens, San Antonio, TX
Ryan Blanck, Fort Sam Houston, TX
Joseph R. Hsu, MD, San Antonio, TX

Return to military duty following high energy lower extremity trauma is challenging. A novel bracing and rehabilitation program helped thirteen of fourteen special operations personnel return to duty.

Poster No. P207
The Most Common Patient Safety Problems in Orthopaedic Surgery of the Foot and Ankle
Joshua Hunter, MD, Rochester, NY
Joshua Olsen, MD, Rochester, NY
Christopher W. DiGiovanni, MD, Providence, RI
Jeffrey Anglen, MD, FACS, Indianapolis, IN
Judith F. Baumbauer, MD, MPH, Rochester, NY

Patient safety requires an accurate picture of complications after individual procedures. Analysis of the ABOS database is a valuable tool to enhance practice performance and improve preventive care.

Poster No. P208
Use of a Mobile Phone for Radiographic Assessment of Ankle Injuries: A Randomized Agreement Study
Joshua N. Tennant, MD, Iowa City, IA
Viswanathan Shankar, Bronx, NY
Dirschl R. Douglas, MD, Chapel Hill, NC

This randomized study shows excellent intraobserver and equivalent interobserver reliability for clinical decision making for ankle fracture images viewed on a mobile device and a computer monitor.

Poster No. P209
Abnormal Findings in Magnetic Resonance Imaging of Asymptomatic Ankles
Eric W. Lloyd, MD, New York, NY
Michael Zlatkin, MD, Weston, FL
Timothy G. Sanders, MD, Keswick, VA
David C. Landy, MPH, Miami, FL
Steven D. Steflauf, MD, Weston, FL
Christopher Wong, MD, Miami, FL

As the utilization of ankle Magnetic Resonance Imaging (MRI) increases, we need to know that image interpretations may identify abnormalities that are asymptomatic, and not true pathology.
Poster No. P210
The Tripod Index Part 1: New Radiographic Parameter Assessing Foot Alignment
Marut Arunakul, MD, Iowa City, IA
Phmit Phisitkul, MD, Iowa City, IA
Jessica Goetz, PhD, Iowa City, IA
John E. Femino, MD, Iowa City, IA
Annunziato Amendola, MD, Iowa City, IA

The Tripod Index was demonstrated to be a valid and reliable radiographic measurement to quantify the magnitude of complex foot deformities when evaluating flatfoot and cavovarus foot.

Poster No. P211
Current Trends in Prophylactic Antibiotic Use Following Elective Outpatient Foot and Ankle Surgery
David Ruta, MD, Ann Arbor, MI
Todd A. Irwin, MD, Mount Clemens, MI
Anish R. Kadakia, MD, Glenview, IL

Prophylactic antibiotic use after elective outpatient foot and ankle surgery is common among AOFAS members, with survey results suggesting that use does not decrease rates of postoperative infection.

Poster No. P212
Operative vs. Non-operative Treatment of Acute Achilles Tendon Rupture: A Meta-analysis
Hongmou Zhao, MD, Xi’An, China
Yu Guangrong, Prof, Shanghai, China
Yunfeng Yang, MD, Shanghai, China
Jiaqian Zhou, Shanghai, China

The purpose of this meta-analysis was to identify and summarize the randomized controlled trials comparing the operative and non-operative lines of treatment of acute Achilles tendon ruptures.

Poster No. P213
Visualization of the Talar Dome by Anterior versus Posterior Ankle Arthroscopy: A Cadaver Study
Alexej Barg, MD, Liestal, Switzerland
Florian Nickisch, MD, Salt Lake City, UT
Timothy C. Beals, MD, Salt Lake City, UT
Kent N. Bachus, PhD, Salt Lake City, UT
Annunziato Amendola, MD, Iowa City, IA
Charles L. Saltzman, MD, Salt Lake City, UT

Visualization of the talar dome by anterior and posterior ankle arthroscopy using two different distraction methods was assessed in this cadaver study.

Poster No. P214
Biomechanical Strength of Fixation of the Anterior Talofibular Ligament with Suture versus Suture Anchor
Norman Waldrop III, MD, Mountain Brook, AL
Kyle Jansson, Vail, CO
Coen A. Wijdicks, PhD, Vail, CO
Robert E. LaPrade, MD, PhD, Vail, CO
Thomas O. Clanton, MD, Vail, CO

Suture anchor and the suture repair of the ATFL provide similar strength and stiffness. Unfortunately, these methods provide less than half the strength and stiffness of the native ATFL.

Poster No. P215
Arthroscopic ACI in Talar Osteochondral Lesions: 7 Year Results and T2-mapping Capability in Outcome Prediction
Sandro Giannini, MD, Bologna, Italy
Mila Battaglia, MD, Bologna, Italy
Roberto Ruda, Bologna, Italy
Alberto Ruffilli, MD, Bologna, Italy
Alessandro Parma, MD, Bologna, Italy
Bulzamini Maria Chiara, Bologna, Italy
Giovanna Desando, PhD, Bologna, Italy
Francesca Vannini, MD, Bologna, Italy

Clinical and qualitative results of a series of patients who underwent ACI of the talus at 7 years follow-up.

Poster No. P216
Swiss Multi-Center Achilles Tendon Rupture Trial: Calf Muscle Volume at 7.5 Years Follow Up
Claudio Rosso, MD, MSc, Binningen, Switzerland
Patrick Vankens, MD, Boston, MA
Caroline Polzer, Dornach, Switzerland
Ueli Studler, Basel, Switzerland
Lukas Weiskopf, MD, Pratteln, Switzerland
Andreas Marc A. Mueller, MD, Basel, Switzerland
Victor Valderrabano, MD, Basel, Switzerland

SMART: Swiss Multi-Center Achilles Tendon Rupture Trial - Clinical and Radiological Outcomes at 7.5 Years and greater Follow-Up: Muscles and Tendons Partially Recover.

Poster No. P217
Pain Dominates Foot and Ankle Scoring Outcomes
Paul Tornetta III, MD, Boston, MA
Rabah Qadir, MD, Metairie, LA
Roy W. Sanders, MD, Tampa, FL

Pain accounts for the vast majority of variation in the scores of hindfoot injuries.

Poster No. P218
Does Modified Footwear Improve Gait after Ankle Arthrodesis?
Daniel A. Jones, MD, Saint Louis, MO
Berton R. Moed, MD, Saint Louis, MO
David Karges, DO, Saint Louis, MO

An investigation to determine if the rocker bottom sole modification to shoes can improve the mechanical gait in patients who have undergone an ankle arthrodesis.

Poster No. P219
The Treatment of Ankle Stiffness Using a Static Progressive Stretch Orthosis
Mark J. McElroy, BS, MS, Baltimore, MD
Bradley M. Lamm, DPM, Lutherville Timonium, MD
Michael A. Mont, MD, Baltimore, MD

This study demonstrates that using a static progressive stretch orthosis may be a useful therapeutic modality for helping patients improve their gait and mobility following ankle stiffness.
Poster No. P220
Anatomic Variations of the Flexor Hallucis Longus and Flexor Digitorum Longus Cross-links in the Chiasma Plantare
Christian Plass, MD, Hanover, Germany
Ghassan Abuharbid, Hanover, Germany
Haz浒ullah Wazir, Hanover, Germany
Leif Claassen, Hanover, Germany
Matthias Ochs, MD, Hanover, Germany
Christina M. Stukenborg-Colsman, MD, PhD, Hanover, Germany
Andreas Schmiedl, Hanover, Germany

This anatomical study shows, that the flexor hallucis longus has in >95% of the specimens interconnections to the flexor digitorum longus. This is relevant for tendon harvesting and transfer.

Poster No. P221
Lateral Dorsal Cutaneous Branch of the Sural Nerve: Importance of the Surgical Approach to Jones Fracture Fixation
Alternate Paper: Foot and Ankle IV: Working Our Way Down: Forefoot and Midfoot
Ashraf Fansa, New York, NY
Niall A. Smyth, MD, New York, NY
Christopher D. Murawski, New York, NY
John G. Kennedy, MD, New York, NY

We describe the lateral dorsal cutaneous branch of the sural nerve and its relation to the surgical approach for proximal fifth metatarsal fixation in ten fresh frozen cadaveric specimens.

Poster No. P222
Ankle Instability in Young Adult Population and Association to Gender, Body Mass Index and Body Height
Hershkovitch Oded, MD, Kefar - Haoranim, Israel
Shay A. Tenenbaum, MD, Herzliya, Israel

Prevalence of CAI in the young adult general population is higher in males than in females. CAI is associated to increased body mass index and body height throughout all instability severity grades.

Poster No. P223
Bilateral Differences in Gait Mechanics Following Total Ankle Replacement: A Two-Year Longitudinal Study
Alternate Paper: Foot and Ankle II: Ankle Arthritis: Arthroplasty, Osteotomy, and Arthrodesis
Robin M. Queen, PhD, Durham, NC
Robert J. Butler, DPT, PhD, PT, Durham, NC
Samuel B. Adams Jr, MD, Durham, NC
James K. DeOrio, MD, Durham, NC
Mark E. Eastley, MD, Durham, NC
James A. Nunley II, MD, Durham, NC

This study examines differences across time (pre-op, 1yr, 2yr post-op) and between the surgical and non-surgical sides with respect to gait mechanics, patient reported function and functional ability.

Poster No. P224
Hindfoot Arthroscopy: A Systematic Surgical Approach for Identifying Anatomy and Hindfoot Pathology
Niall A. Smyth, MD, New York, NY
Christopher D. Murawski, New York, NY
David S. Levine, MD, Bedford, NY
John G. Kennedy, MD, New York, NY

We describe a systematic surgical approach for performing hindfoot arthroscopy as well as the clinical results of a case series of 22 patients utilizing this approach.

Poster No. P225
dGEMRIC of Cartilage After AMIC - Aided Reconstruction of Osteochondral Lesions of the Talus
Alternate Paper: Foot and Ankle I: In the Beginning: Basic Science, Trauma, and Diabetes
Martin Wiewiorski, MD, Hedingen, Switzerland
Matthias Miska, MD, 4031, Switzerland
Ueli Studler, Basel, Switzerland
Oliver Bieri, PhD, Basel, Switzerland
Victor Valderrabano, MD, Basel, Switzerland

Cartilage quality after AMIC repair of osteochondral lesions of the talus is comparable to other established cartilage repair techniques.

Hand and Wrist

Poster No. P226
Development and Implementation of a Computer Based Hand Outcomes Registry in a Busy Hand Clinic
Marci D. Jones, MD, Shrewsbury, MA
Patricia Franklin, MD, MBA, MPH, Worcester, MA
Thomas F. Breen, MD, Shrewsbury, MA
Edward R. Calkins, Westborough, MA
Janel E. Milner, BS, Worcester, MA
David C. Ayers, MD, Worcester, MA

Patient reported symptom data is important for clinical management and outcomes research. We demonstrated proof of concept and feasibility of a Hand Clinic Patient Registry in an ambulatory setting.

Poster No. P227
Premenopausal Women with Distal Radius Fractures have Deteriorated Bony Architecture Compared to Controls
Alternate Paper: Hand and Wrist II: Wrist
Tamara D. Rozental, MD, Boston, MA
Laura N. Deschamps, BA, Boston, MA
Alexander Taylor, BA, Boston, MA
Brandon E. Earp, MD, Boston, MA
David Zurakowski, PhD, Boston, MA
Charles S. Day, MD, MBA, Boston, MA
Mary L. Bouxsein, PhD, Boston, MA

Premenopausal women with distal radius fractures exhibit deteriorated trabecular bone microarchitecture compared to non-fracture controls of similar age and race.
**Poster No. P228**
Uncultured Adipose-Derived Regenerative Cells Promote Peripheral Nerve Regeneration at an Early Stage  
Seigo Suganuma, MD, Kanazawa, Japan  
Kaoru Tada, MD, Kanazawa, Japan  
Katsuhiko Hayashi, MD, Nagoya, Japan  
Naotoshi Sugimoto, PhD  
Akihiko Takeuchi, MD, Kanazawa, Japan  
Hiroyuki Tsukiya, MD, Kanazawa, Japan  
ADRCs promote peripheral nerve regeneration at an early stage. The mechanism does not involve differentiation of ADRCs into Schwann cells but involves secretion of humoral factors.

**Poster No. P229**
Ultrasound as a First Line Test in the Diagnosis of Carpal Tunnel Syndrome: A Cost-effectiveness Analysis  
John R. Fowler, MD, Gibsonia, PA  
Mitchell Maltenfort, PhD, Philadelphia, PA  
Asif M. Ilyas, MD, Wayne, PA  
The AAOS recommends confirmatory testing prior to carpal tunnel surgery. The cost-benefit analysis of EMG versus Ultrasound is performed.

**Poster No. P230**
Extremity Flap Coverage and Identified Trends Over the Last Decade of War Reconstruction Experience  
Scott M. Tintle, MD, Fairfax, VA  
Reed Heckert, MD, Bethesda, MD  
Jennifer Sabino, MD, Rockville, MD  
Mark Fleming, DO, Clarksburg, MD  
Ian L. Valerio, MD, MS, MBA, Bethesda, MD  
This study will outline the current standards of care the blast-injured patient and the newly identified trends in the numbers and types of flap coverage and limb salvage procedures that have emerged.

**Poster No. P231**
Analyzing Trapezial Trabecular Microstructure using Flat-panel Volume Computed Tomography  
Michael Pouliot, MD, Portola Valley, CA  
Amy L. Ladd, MD, Palo Alto, CA  
Cameron Barr, MD, Stanford, CA  
Rebecca Fabrig, MD, Palo Alto, CA  
Robert Cheng, MS, Stanford, CA  
Jang-Hwan Choi, Stanford, CA  
Flat-panel volume CT is an imaging modality with the capacity for in vivo analysis of trabecular microstructure of the trapezium, with potential utility in understanding and treating CMC arthritis.

**Poster No. P232**
A Comparison of Two Pyrolytic Carbon Hemiarthroplasty Implants in the Treatment of Trapezial-metacarpal Arthritis  
Mark A. Vitale, MD, Brooklyn, NY  
Marco Rizzo, MD, Rochester, MN  
Steven L. Moran, MD, Rochester, MN  
This study compares two different pyrolytic carbon hemiarthroplasty implants in the treatment of trapezial-metacarpal arthritis, with emphasis on motion, strength, complication and revision rates.

**Poster No. P233**
Intra-Osseous Lunate Cysts: An Incidental Finding or a Surgical Indication?  
Brian Henry H. Mahon, BS, Charlottesville, VA  
John H. Mahon, MD, South Bend, Indiana  
The incidence of lunate cysts in a patient population complaining of wrist pain is equivalent to that in a control group. The presence of a lunate cyst should be considered an incidental finding.

**Poster No. P234**
American Association of Hand Surgery Complications and Outcomes of Hook-of-Hamate Excision  
Jeremy Molligan, MD, Newark, DE  
Sidney M. Jacoby, MD, Philadelphia, PA  
Abdo Bachoura, MD, Philadelphia, PA  
Randall W. Culp, MD, King Of Prussia, PA  
A. Lee Osterman, MD, Villanova, PA  
Hook-of-Hamate excision is a safe and effective treatment for fracture or non-union of the hamulus. Complications are minimal and patients are expected to return to near complete activity.

**Poster No. P235**
Association of Ulnar Variance with Lunate Morphology; A Postmortem Specimen Study of 630 Human Cadaveric Wrists  
Navkirat Bajwa, Medical Student, Garfield Heights, OH  
Nicholas U. Ahn, MD, Shaker Heights, OH  
There is significant association between negative ulnar variance and type 1 lunate shape.

**Poster No. P236**
New Technique for Anatomic Reconstruction of the Scapholunate Ligament with SwiveLock Anchor Fixation  
Timothy V. McGrath, MD, Amherst, NY  
Nikola Zivaljevic, MD, Buffalo, NY  
This new technique for anatomic reconstruction of the dorsal band of the SL-ligament may provide secure enough bone tunnel fixation and obviate the need for prolonged pin fixation and immobilization.
Poster No. P237
Tenotomy of the Central Extensor Tendon for Extrinsic Tightness of the Hand: Surgical Technique
Christopher Stevens, MD, Alachua, FL
Paul C. Dell, MD, Gainesville, FL

A novel surgical treatment for patients with extrinsic tightness of the hand is to uncouple the intrinsic and extrinsic extensor mechanisms with a central extensor tenotomy.

Poster No. P238
Is There a Relationship Between Radiographic Parameters and a Good Functional Outcome in Distal Radius Fractures?
Alternate Paper: Hand and Wrist I: Hand and Tendon
Dario Perugia, MD, Roma, Italy
Matteo Guazzini, MD, Rome, Italy
Carolina Cisentini, MD, Rome, Italy
Marco Guidi, MD, Capena, Italy
Giudiano Esposito, MD, Roma, Italy
Andrea Ferretti, MD, Rome, Italy

Variations of normal radiographic parameters range, except ulnar variance and volar tilt, don’t influence the final functional outcome in distal radius fractures.

Poster No. P239
“Wrist Rhythm” During Wrist Joint Motion Evaluated by Dynamic Radiography
Koaru Tada, MD, Kanazawa, Japan
Hiroki Kawashima, MS, Kanazawa, Japan
Seigo Suganuma, MD, Kanazawa, Japan
Takeshi Segawa, Kanazawa, Ishikawa, Japan
Shigeru Sanada, PhD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We evaluated the ratio of motion of radiolunate (RL) and capitulunate (CL) joints during wrist joint motion. In volar flexion, the ratio of the RL and CL motions was approximately 1:4, and in dorsal flexion 2:1.

Poster No. P240
Osteochondral Autograft Transplantation for Articular Defects in the Hand and Wrist
Paul Sibley, DO, Harleysville, PA
Randall W. Culp, MD, King Of Prussia, PA
Sidney M. Jacoby, MD, Philadelphia, PA
Peter F. DeLuca, MD, Philadelphia, PA
Abdo Bachoura, MD, Philadelphia, PA

The osteochondral autograft transfer system (OATS) is an acceptable procedure for focal articular defects in the hand and wrist of high demand patients.

Pediatrics

Poster No. P241
Normal Parameters of Skeletally Immature Knees: Developmental Changes on Magnetic Resonance Imaging
Mary Baethen
Tracey Bastrom, MA, San Diego, CA
Eric W. Edmonds, MD, San Diego, CA

A MRI study of normal development finding that the patella height is not normal until age 10; and that, the MPFL insertion is below the physis until age 7 when it inserts at or above the physis.

Poster No. P242
Can Patients Expect to Have the Same Activity Level following a Periacetabular Osteotomy?
Henry B. Ellis Jr, MD, Dallas, TX
Adriana De La Rocha, MS, Dallas, TX
Philip L. Wilson, MD, Plano, TX
David A. Podeszwa, MD, Dallas, TX
Daniel J. Sucato, MD, Dallas, TX

A Ganz periacetabular osteotomy for hip dysplasia can be performed with improved symptoms and a majority of patients returning to the same or improved level of activity.

Poster No. P243
Is There a Significant Increase in Thoracic Height after Growing Rod Surgery for Early Onset Scoliosis?
Behrooz A. Akbarnia, MD, La Jolla, CA
Nina Kabirian, MD, San Diego, CA
Jeff Pawelek, La Jolla, CA
Daniel Zhang, BS, Rockville, MD
Gregory Redding, MD, Seattle, WA
John B. Emans, MD, Boston, MA
Suken A. Shah, MD, Wilmington, DE
Charles E. Johnston II, MD, Dallas, TX

Growing rod surgery has been shown to significantly increase thoracic height. The majority of patients reached an adequate thoracic height based on their age after a minimum of three lengthenings.

Poster No. P244
Assessment of Rib Hump Deformity Correction in Adolescent Idiopathic Scoliosis with or without Costoplasty
Alternate Paper: Pediatrics III: Spine
Marios Lykissas, MD, Cincinnati, OH
Alvin H. Crawford, MD, Cincinnati, OH
Alvin H. Crawford, MD, Cincinnati, OH
Vivek Sharma, MD, Hays, Kansas

Costoplasty combined with pedicle screws and vertebral derotation may significantly improve rib hump deformity as measured with the rib index and the double rib contour sign.

Poster No. P245
Thromboembolic Complications in Children with Spinal Fusion Surgery
Amit Jain, MD, Baltimore, MD
Paul D. Sponseller, MD, Baltimore, MD

The incidence of developing thromboembolic complications after pediatric spinal fusion surgery is about 0.19%.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P246
Short Leg Casting for Isolated Fractures of the Pediatric Tibial Shaft
Drew Brown IV, MD, Honolulu, HI
Nicholas Scarcella, MD, Honolulu, HI
Byron H. Izuka, MD, Aiea, HI
We found that short leg casting is a safe and effective option that resulted in universal bony healing without any fracture displacement during treatment.

Poster No. P247
Health Disparities in Patients Undergoing Treatment for Idiopathic Clubfoot
Alternate Paper: Pediatrics IV: Foot-Lower Extremity-Miscellaneous
Rachel Y. Goldstein, MD, Los Angeles, CA
Suezie Kim, MD, San Clemente, CA
Debra A. Sala, PT, New York, NY
Wallace B. Lehman, MD, New York, NY
Alice Chu, MD, Livingston, NJ
Patients with public insurance have poorer clubfoot severity scores than those with private insurance after treatment of idiopathic clubfoot by the Ponsetti method.

Poster No. P248
The Etiology of Childhood Limp Presenting to an Urban Pediatric Hospital Emergency Department
Alternate Paper: Pediatrics I: Hip-Lower Extremity
John R. Fowler, MD, Gibsonia, PA
Chris Williamson, MD, Wyndmoor, PA
Matthew Kleiner, MD, Philadelphia, PA
Christopher Klifto, MD, New York, NY
Giacomo Cappelletti, MD, Brooklyn, NY
Martin J. Herman, MD, Philadelphia, PA
The child who presents with a limp or inability to bear weight is a diagnostic dilemma for the evaluating physician often requiring a costly diagnostic work-up.

Poster No. P249
• What is the Effect of Growing Rod Lengthening on the Sagittal Profile and Pelvic Parameters in Early Onset Scoliosis?
Sukin A. Shab, MD, Wilmington, DE
Ali F. Karatas, MD, Wilmington, DE
Arjun Dhawan, MD, South Miami, FL
Oguz Dede, MD, Pittsburgh, PA
Laurens Holnes, PhD, Wilmington, DE
Petya Yorgova, MS, Wilmington, DE
Geraldine Neiss, PhD, Wilmington, DE
Gregory M. Mundis, MD, San Diego, CA
Jeff Pacelek, La Jolla, CA
Serial lengthening of growing rods resulted in a decrease in thoracic kyphosis, increase in lumbar lordosis and improved sagittal without an appreciable incidence of PJK.

Poster No. P250
Use of Incisional Wound-vac Following Major Hip Surgery in Pediatric Patients with High Body Mass Index
Krishnamoorthy Venkatadass, MBBS, MS, San Diego, CA
Bernd Bittersohl, MD, Dusseldorf, Germany
Eric D. Fornari, MD, New York, NY
Harish S. Hosalkar, MD, San Diego, CA
The use of incisional wound-vac in obese pediatric patients after major hip surgery resulted in a significantly lower risk of infection and a lower incidence of abnormal hypertrophic scar formation.

Poster No. P251
The Trend of Pediatric Sports and Recreational Injuries in the U.S. in the Last Decade
Alternate Paper: Pediatrics II: Trauma-Infection-Miscellaneous
Shital Parikh, MD, Cincinnati, OH
A query of the National Electronic Injury Surveillance System was conducted to examine the incidence rate of injuries related to the top 8 injury-causing sports according to the CDC.

Poster No. P252
Increased Tibial Torsion and its Implications on the Patellofemoral Joint
Gustavo Valenzuela, MD, Taylor, MI
Neil Patel, MD, Taylor, MI
Rakesh Ramakrishnan, MD, Taylor, MI
Richard Valenzuela, MD, Plymouth, MI
Robert A. Teitge, MD, Dearborn, MI
Abnormal tibial torsion is a very important factor in the development of patellofemoral dysfunction.

Poster No. P253
Acetabular Morphology in Slipped Capital Femoral Epiphysis: A Computed Tomography Study
Shafagh Monazzam, MD, San Diego, CA
Venkatadass Krishnamoorthy, MBBS, MS, San Diego, CA
Bernd Bittersohl, MD, Dusseldorf, Germany
James D. Bomar, San Diego, CA
Harish S. Hosalkar, MD, San Diego, CA
This study demonstrated superior acetabular retroversion in SCFE affected hip and overall increase in lateral center-edge angle in both hips in patients with SCFE.

Poster No. P254
Stretched Sarcomeres May Contribute to Contracture in Cerebral Palsy
Margie Matthewson, MS, San Diego, CA
Samuel R. Ward, PhD, La Jolla, CA
Henry G. Chambers, MD, San Diego, CA
Richard L. Lieber, PhD, La Jolla, CA
In muscle fibers of similar length, serial sarcomere number in cerebral palsy was nearly half that of typically developing fibers, suggesting that CP contractures may be related to deforming forces.
Posters

**Poster No. P255**
Narrowing of the Regenerate as a Sign of Impending Fracture after Distraction Osteogenesis  
Kacey Perkins Tift, MD, Fountain Valley, CA  
Robert H. Cho, MD, Los Angeles, CA  
Anna V. Cuomo, MD, Los Angeles, CA  
Colin F. Moseley, MD, Los Angeles, CA  
Fracture risk after distraction osteogenesis is significantly higher if the regenerate width is less than 80% of the adjacent bone-weight bearing precautions should be observed after device removal.

**Poster No. P256**
Imaging Overestimates Screw Tip-Subchondral Distance in Slipped Capital Femoral Epiphysis Fixation  
Michael J. Heffernan, MD, Worcester, MA  
Benjamin M. Snyder, MD, Worcester, MA  
Hanbing Zhou, MD, Worcester, MA  
Errol S. Mortimer, MD, Worcester, MA  
CT provided a more accurate measurement of screw tip to subchondral bone distance compared to fluoroscopy, however both studies overestimated the true anatomic distance in this cadaveric SCFE model.

**Poster No. P257**
Plastic Surgery-Assisted Management of Spinal Surgical Site Infection Reduces Risk of Implant Removal by 45%  
Karen S. Myung, MD, Indianapolis, IN  
Kent Yamaguchi, Los Angeles, CA  
Jeffrey A. Hammoudeh, DDS, MD, Los Angeles, CA  
Vernon T. Tolo, MD, Los Angeles, CA  
David L. Skaggs, MD, Los Angeles, CA  
Retrospective, single-center study showing spinal implants can be retained in delayed and acute spinal surgical site infection and a new management protocol almost doubles implant retention rate.

**Poster No. P258**
Management of Sternoclavicular Dislocations and Medial Clavicular Fractures in Adolescents  
Michal L. Taylor, MD, Highlands Ranch, CO  
Patrick Carney, Aurora, CO  
Courtney A. Holland, MD, El Paso, TX  
Frances Tepolt, Greenwood Village, CO  
Nancy H. Miller, MD, Aurora, CO  
Among adolescents, sternoclavicular joint injuries are more frequently displaced in a posterior than anterior direction and are more likely to be a medial clavicular physeal fracture than a true stern.

**Poster No. P259**
Operative Idiopathic Early Onset Scoliosis (IEOS) and AIS Curves Have Different Characteristics  
Mark J. McElroy, BS, MS, Baltimore, MD  
Paul D. Sponseller, MD, Baltimore, MD  
Sara K. Fuhrhop, BS, Baltimore, MD  
Peter O. Newton, MD, San Diego, CA  
Michelle Marks, NMD, Tucson, AZ  
James O. Sanders, MD, Rochester, NY  
Behrooz Akharnia, La Jolla, CA  
Curve characteristics were compared in patients with IEOS and AIS. They differed in kyphosis, stable vertebra, and primary curve parameters. With a modified Lenke system, curve distribution differed.

**Poster No. P260**
Physeal Gene Expression and Structure from Different Anatomic Regions in Two Species  
Steven A. Widmer, MD, Wadsworth, OH  
Robin Jacquet, Akron, OH  
Mark Shasti, BS, Akron, OH  
William J. Landis, Akron, OH  
Mark J. Adamczyk, MD, Akron, OH  
Melanie Morscher, Akron, OH  
Richard Steiner, PhD, Akron, OH  
Dennis S. Weiner, MD, Akron, OH  
No significant gene expression differences (aggrecan, type II collagen) were found in physes from 3 different anatomic regions in 2 species, supporting the use of these physes as equivalent controls.

Practice Management and Rehabilitation

**Poster No. P261**
Optimizing Orthopaedic Surgical Start Times - Using Lean Manufacturing Principles to Create Value  
Naven Duggal, MD, Boston, MA  
Elena G. Canacari, RN, Boston, MA  
Ross W. Simon, BA, Boston, MA  
Optimizing orthopaedic surgical times using Lean manufacturing principles has been shown to not only improve overall operating room efficiency but also minimize delays and improve patient safety.

**Poster No. P262**
Changes of the Incidence of Falls in Patients with Rheumatoid Arthritis after Orthopaedic Lower Limb Surgery  
Kengo Harigane, MD, Yokohama, Japan  
Yuichi Mochida, MD, Zushi, Kanagawa, Japan  
Katsushi Ishii, MD  
Naoto Mitsugi, MD, Yokohama, Japan  
Tomoyuki Saito, MD, Yokohama, Japan  
The rate of falls was decreased in 30% of the patients after surgery. The history of lower limb surgery was negative risk factor.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
**Poster No. P263**
Effectiveness of the WHO Surgical Safety Checklist in High-risk Patients in a High Income Country
Alternate Paper: Practice Management/ Rehabilitation III: Education
Anne Lubbeke-Wolff, MD, DSc, Geneva, Switzerland
Pierre J. Hoffmeyer, MD, Geneve, Switzerland
Bernhard Walder, MD, Geneva, Switzerland
Reduced reoperations for SSI were observed after checklist implementation; however, its use did not reduce unplanned return to OR, unplanned admission to ICU and 30-day mortality in high risk patients.

**Poster No. P264**
Compliance with AAOS Clinical Practice Guidelines: An Analysis of ASSH Members
Alternate Paper: Practice Management/Rehabilitation II: Risk Management and Health Care Policy
Jonas L. Matzon, MD, Philadelphia, PA
Michael Maloney, BA, Philadelphia, PA
Pedro K. Beredjiklian, MD, Philadelphia, PA
ASSH members are not universally adhering to the AAOS clinical practice guidelines involving upper extremity conditions.

**Poster No. P265**
PedsQL Correlates to PODCI in Pediatric Orthopaedic Outpatient Clinic
Alternate Paper: Practice Management/Rehabilitation I: Quality Improvement
Susan T. Mahan, MD, Boston, MA
Leslie A. Kalish, ScD, Boston, MA
Patricia L. Connell, MPh, Boston, MA
Marie Harris, MPH, Boston, MA
Zainab Abdul-Rahim, BA, Worcester, MA
Peter M. Waters, MD, Boston, MA
In the pediatric orthopedic outpatient clinic we found the PedsQL correlated to the PODCI in patients with fractures and brachial plexus palsy.

**Poster No. P266**
Constant Score and Simple Shoulder Test Correlate with Meeting of Expectations in Shoulder Surgery
Joan Miquel, Barcelona, Spain
Sara Martinez-Martos, Barcelona, Spain
Fernando Santana Perez SR, MD, Barcelona, Spain
Lluis Puig, Barcelona, Spain
Carlos Torrens, MD, Castelldefels, Spain
The improvement of Constant Score and Simple Shoulder Test can be used to reflect patient satisfaction and meeting of preoperative expectations in patients undergoing shoulder surgery.

**Poster No. P267**
Diagnostic and Triage Concordance Between an Advanced Practice Physiotherapist and Orthopedic Surgeons
Panagiota Toliopoulos, BS, Montreal, QC, Canada
Francois Desmeules, PT, PhD, Montreal, QC, Canada
Julio C. Fernandes, MD, Montreal, QC, Canada
Marc Lacelle, Laval, QC, Canada
Manon Leroux, Pierrefonds, QC, Canada
Steven Girard, MSc, PT, Montreal, QC, Canada
Jean Sébastien Roy, PhD, PT, Quebec, QC, Canada
Linda June J. Woodhouse, PT, PhD, Edmonton, AB, Canada
Orthopedic surgeons and advanced practice physiotherapists have similar diagnostic and triage capabilities; a new model where these two professionals work together to reduce waiting times is feasible.

**Poster No. P268**
Personal Protection Helmet Systems - The Surgical Greenhouse Effect
Simon Chambers, MBBS, Newcastle, United Kingdom
Daniel J. Dowen, MBBS, Newcastle Upon Tyne, United Kingdom
Andrew McHutchon, MB, ChB, North Shields, United Kingdom
Derek J. Kramer, MD, Morpeth, United Kingdom
Personal protection helmet systems can lead to rebreathing of carbon dioxide by the surgeon. Inspired carbon dioxide levels can exceed workplace safety limits.

**Poster No. P269**
Bundled Payments in TJA: Targeting Opportunities for Quality Improvement and Cost Reduction
Kevin J. Bozic, MD, MBA, San Francisco, CA
Lorrayne Ward, MBA, San Francisco, CA
Thomas P. Vad, MD, San Francisco, CA
Mercyn Maze, MB, ChB, San Francisco, CA
Episode of care payments for TJA procedures vary widely depending on the type of procedure (e.g., primary vs. revision), patient comorbidities, discharge disposition, and readmission rates.

**Poster No. P270**
Implant Problems and Recalls in Devices Approved Through the 510K Process: Analysis of the Online FDA Database
Stephen Y. Liu, MD, Philadelphia, PA
Jason Hsu, MD, Philadelphia, PA
Tristan Wibbey, Philadelphia, PA
Gwo-Chin Lee, MD, Philadelphia, PA
Substantial number of recalls of implantable orthopedic devices in the FDA 510K database are related to manufacturing flaws resulting in inferior packaging, instrumentation, trials or devices.
Poster No. P271
Business and Practice Management Knowledge Deficiencies in Graduating Orthopaedic Residents
Doyle J. Miller, MD, Memphis, TN
Thomas W. Throckmorton, MD, Germantown, TN
Frederick M. Azar, MD, Memphis, TN
James H. Beatty, MD, Memphis, TN
S. Terry Canale, MD, Germantown, TN
David R. Richardson, MD, Memphis, TN

Orthopaedic surgeons report a large deficit in business and practice management knowledge at the time of residency completion.

Poster No. P272
Changes of Body Balance before and after Total Knee Arthroplasty in Patients with Bilateral Knee Osteoarthritis
Yoshimori Ishii, MD, Gyoda Saitama, Japan
Hideo Noguchi, MD, Gyoda-Shi, Japan
Mitsuhiro Takeda, MD, Gyoda, Saitama, Japan
Junco Sato, PhD, Gyoda, Saitama, Japan

This study evaluated the changes of body balance using a gravicorder before and after TKA in bilateral knee osteoarthritis patients and clarified the difference of recovery of balance between uni- and

Poster No. P273
The Economic Conundrum of Private Practice Orthopaedic Surgery
Alberto D. Cuellar, MD, Houston, TX

The deteriorating financial trend of the orthopaedic group may be leveling off primarily due to the effects of ancillary services; however, net income from professional services continues to decline.

Poster No. P274
Paperwork and Patient Care: A Nationwide Survey of Orthopedic Surgeons
Melissa A. Christino, MD, Providence, RI
Andrew P. Matson, BA, Coventry, RI
Steven E. Reitert, MSc, Providence, RI
Christopher W. DiGiovanni, MD, Providence, RI
Paul Fadale, MD, Providence, RI

In a survey of Orthopedic Surgeons, documentation requirements were reported as excessive with perceived negative effects on patient care, surgeon well-being, time for teaching, and resident education.

Poster No. P275
Internet-based Outpatient Telerehabilitation for Patients Following Total Hip Arthroplasty - A Case Control Study
Wojciech Glinkowski, MD, PhD, Warszawa, Poland
Karolina Krawczak, PT, Warszawa, Poland
Dominika Gąbaj, Warszawa, Poland
Katarzyna Waledzik, Warszawa, Poland
Anna Czyżewska, MPH, Warszawa, Poland
Andrzej Gorecki, PhD, Warszawa, Poland

Thirty nine patients who have had a total hip replacement received an Internet-based telerehabilitation program of physical therapy. The results confirmed effectiveness of telerehabilitation.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.*

Poster No. P276
Physiotherapist Support in Fracture Clinics - An Effective Solution for Better Service?
Karthik S. Swasankaran, MBBS, MRCS, Sheffield, United Kingdom
Kim Atkinson, Hull, United Kingdom
Nagarajan Muthukumar, FRCS, East Yorkshire, United Kingdom

Introduction: Considerable strain is felt among the fracture clinic staff due to increasing patient referrals. With limited number of specialist doctors, physiotherapists can play an important role in managing soft tissue injuries.

Poster No. P277
Race, Insurance Status and Ethnicity are Predictors of Morbidity and Mortality Following Spine Trauma
Andrew J. Schoenfeld, MD, Canutillo, TX
Aaron A. See, DO, El Paso, TX
Philip J. Belmont Jr, MD, El Paso, TX
Christopher M. Bono, MD, Boston, MA

This is the first study to postulate predictors of morbidity and mortality after spinal trauma in a national model. Race/ethnicity and insurance status appear to exert adverse influence on outcomes.

Poster No. P278
Making the 22 Modifier Work: A Matter of Education?
Patrick F. Bergin, MD, Madison, MS
Christopher J. Kneip, MD, Flowood, MS
Christine W. Pierce, MD, Jackson, MS
Steven T. Hendrix, MD, Jackson, MS
Scott E. Porter, MD, Greenville, SC
Matthew L. Graves, MD, Jackson, MS
George V. Russell Jr, MD, Jackson, MS

Using the 22 modifier in morbidly obese acetabular fractures resulted in increased reimbursement when combined with an effort to educate our largest insurer on the increased time and effort needed.

Poster No. P279
Factors Influencing Patient Willingness to Pay for New Technologies in Hip and Knee Implants
Ran Schwarzkopf, MD, Irvine, CA
Fabio M. Sagelbon, BS, New York, NY
Raj Karna, MPH, New York, NY
Karl Koenig, MD, Hanover, NH
Joseph A. Bosco III, MD, New York, NY
James D. Slover, MD, New York, NY

The study demonstrated that patients, regardless of their socio-economic status, are not satisfied with standard of care implants when newer technologies are available, and they may be willing to share.
**Educational Programs**

**Poster No. P280**

**Correlation between High- and Low-sensitivity C-Reactive Protein after Total Joint Arthroplasty**

Atul F. Kamath, MD, Rochester, MN
Michael T. Malone, Philadelphia, PA
Craig L. Israelite, MD, Philadelphia, PA

Although Hs-CRP is likely an equivalent marker to Ls-CRP in the assessment of infection after total joint arthroplasty, the additional cost and influence of co-morbidities must be further defined.

**Poster No. P281**

**An Economic Analysis of a Sustainable Approach to Orthopedic Trauma Care Education in Developing Countries**

Lucas C. Carlson, BA, Cockeysville, MD
Gerard Slobogean, MD, MPH, Toronto, ON, Canada
Andrew N. Pollak, MD, Baltimore, MD

Economic analysis of an orthopedic surgery training program developed for Haiti suggests it to be a highly cost-effective intervention to strengthen orthopedic care in low and middle income settings.

**Poster No. P282**

**Revision Hip Replacement in 55 Years of Age and Younger**

Sujith Konan, MRCS, London, United Kingdom
Fares S. Haddad, FRCS, London, United Kingdom

Revision of hip arthroplasty in patients below 55 years is associated with improvement in function and patient satisfaction.

**Poster No. P283**

**Medical Provider Impressions of Surgeon Reimbursement for Common Orthopedic Procedures**

Kristina Linnea Welton, MD, Ann Arbor, MI
M. Mustafa Gomberawalla, MD, Ann Arbor, MI
Gregory Graziano, MD, Ann Arbor, MI
Rakesh Patel, MD, Ann Arbor, MI

Knowledge is lacking among medical providers regarding orthopedic surgeon reimbursement and global billing periods. Despite over-estimating payment, most felt orthopedists are properly compensated.

**Poster No. P284**

**The AAOS Political Action Committee: How Do We Compare to the Trial Lawyers?**

Michael W. Aversano, MD, East Northport, NY
Rohan P. Shah, MD, JD, Philadelphia, PA
John M. Froelich, MD, Denver, CO
Stuart L. Weinstein, MD, New York, NY

The AAOS Political Action Committee is stronger in some aspects and weaker in others, when compared to the trial lawyer PAC. The AAOS PAC membership is smaller but gets a larger donation per member.

**Poster No. P285**

**The Value of Using the Risk Assessment and Prediction Tool in Planning Care after Total Hip and Knee Arthroplasty**

Viktor Hansen, MD, Boston, MA
Marc A. Bragdon, Boston, MA
Pamela Tobichuk, Boston, MA
Lauren M. Lebrun, MPH, Boston, MA
Robert Dormian, Boston, MA
Janet Dorrwachter, MSN, ANP, Boston, MA
Charles R. Bragdon, PhD, Boston, MA
Henrik Malchau, MD, Boston, MA
Andrew A. Freiberg, MD, Boston, MA

3,973 THA and TKA patients with RAPT Scores were analyzed to assess validity of the score, and correlation to LOS.

**Shoulder and Elbow**

**Poster No. P286**

**Cost Analysis of Hemiarthroplasty versus Reverse Shoulder Arthroplasty for Fractures in the Elderly**

Jason Solomon, MD, Cleveland Heights, OH
Benjamin Szerlip, DO, Lyndhurst, OH
Stephanie Mub, MD, Birmingham, MI
John Paul Wanner, BS, Watertown, WI
John H. Wilber, MD, Cleveland, OH
Brian N. Victoroff, MD, Cleveland, OH
Reuben Gobeze, MD, Cleveland, OH
Robert J. Gillespie, MD, Shaker Heights, OH

Reverse total shoulder arthroplasty restores function to the same level as hemiarthroplasty for complex 3 or 4-part proximal humerus fractures despite an increase in cost to the patient and hospital.

**Poster No. P287**

**Strength Recovery and Repair Integrity after Arthroscopic Repair for Full-thickness Subscapularis Tendon Tear**

Nobuki Kawan, MD, Funabashi, Japan
Hiroyuki Sugaya, MD, Chiba, Japan
Norimasa Takahashi, MD, Funabashi, Japan
Tanaka Motoki, Funabashi, Japan
Wataru Iwamoto, MD, Tokyo, Japan
Saschiro Kitayama, Funabashi, Japan

Strength recovery and repair integrity after arthroscopic standard footprint reconstruction for full-thickness subscapularis tendon tears was investigated and their relationship was analyzed.

**Poster No. P288**

**Risk Factors for Infection After Rotator Cuff Repair: A Case Controlled Study**

Byung J. Lee, MD, Providence, RI
Patrick Kane, MD, Providence, RI
Bryan G. Vopat, MD, Providence, RI
Stacey E. Gallacher, MD, Providence, RI
Sherilyn DeStefano, Evanston, IL
Andrew Green, MD, Providence, RI

The results of this case control study suggest that open or mini open surgical technique, worker’s compensation insurance claim, and male gender are risk factors for infection after rotator cuff repair.
Poster No. P289
Biochemical Characterization of an All-Polyethylene Pegged Bone In-Growth Glenoid: Is Cementation Necessary?
James E. Moravek Jr, MD, Palos Hills, IL
Brett P. Wiater, MD, Birmingham, MI
Michael Kurzdziel, MS, Royal Oak, MI
Kevin Baker, PhD, Royal Oak, MI
J. Michael Wiater, MD, Beverly Hills, MI
Cemented fixation of an in-growth all-polyethylene glenoid component provides greater initial fixation compared to press-fit glenoids in a biomechanical model.

Poster No. P290
Evaluation of Suture Slippage with Knotless Suture Anchors in Rotator Cuff Repair
Alternate Paper: Shoulder and Elbow II: Rotator Cuff II
David Paller, MS, Providence, RI
Anthony Avery, MD, Mc Lean, VA
Bryan G. Vopat, MD, Providence, RI
Sarat C. Korsiprolu, MS, Providence, RI
Paul Fadale, MD, Providence, RI
Knotless suture anchors using an internal ratcheting locking mechanism reported significantly less suture slippage compared to anchors using an interference fit locking technique in a dynamic model.

Poster No. P291
Glenoid Far Cortex Perforation by Most Inferior Anchor in Arthroscopic Bankart Repair; A Cadaveric Study
Alternate Paper: Shoulder and Elbow V: Instability, Fractures, and Shoulder Stiffness
Tae Kang Lim, MD, Gunpo, Republic of Korea
Kyoung-Huen Koo, MD, Seoul, Republic of Korea
Min Soo Shin, MD, Seoul, Republic of Korea
Young Eun Park, Seoul, Republic of Korea
Jae-Chul Yoo, MD, Seoul, Republic of Korea
The most inferior anchor in arthroscopic Bankart repair with standard technique has a high risk of perforating the inferior far cortex of the glenoid neck.

Poster No. P292
Effect of Head Shape on Joint Kinematics and Translation with a Conforming and Non-Conforming Glenoid Component
Bong-Jae Jun, MS, Cleveland, OH
Joseph P. Iannotti, MD, PhD, Cleveland, OH
Ryan Quigley, BS, Long Beach, CA
Sang-Jun Shin, MD, Seoul, Korea, Republic of
Michelle H. McGarry, MD, Long Beach, CA
Thay Q. Lee, PhD, Long Beach, CA
The use of the non-spherical head with a conforming glenoid component could allow the natural translation motion with improved stability and may further decrease the risk of rim loading.

Poster No. P293
Effect of Adipose-derived Stem Cell for Improvement of Fatty Degeneration and Rotator Cuff Healing in Rabbit Model
Oh Joo Han, MD, Seongnam, Republic of Korea
Seok Won Chung, MD, Seongnam, Republic of Korea
Sae Hoon Kim, MD, Seoul, Republic of Korea
Jong Pil Yoon, MD, Daegu, Republic of Korea
Hye Yong Choi, Seongnam-Si, Republic of Korea
Nam Yoon Chung, Seongnam-Si, Republic of Korea
The local administration of adipose-derived stem cells might have the possibility to improve tendon healing and decrease muscle atrophy and fatty degeneration after cuff repair.

Poster No. P294
Infected Total Elbow Arthroplasty: Outcomes of a Staged Surgical Protocol for Component Retention
Alternate Paper: Shoulder and Elbow VI: Elbow Disorders
Philipp N. Streubel, MD, Rochester, MN
Juan P. Simone, MD, Buenos Aires, Argentina
Bernard F. Morrey, MD, San Antonio, TX
Joaquin Sanchez-Sotelo, MD, Rochester, MN
A staged protocol in the management of infected linked total elbow arthroplasties can be successful in retaining stable implants in approximately 80% of the cases.

Poster No. P295
The Four-year Cost and Clinical Outcomes of Reverse Shoulder Arthroplasty for Treatment of Rotator Cuff Deficiency
Nazeem Virani, MD, MPH, Tampa, FL
Christopher Williams, Temple Terrace, FL
Rachel Clark, BA, Tampa, FL
John Polikandriotis, Tampa, FL
Katherine Downes, MPH, Tampa, FL
Mark A. Frankle, MD, Temple Terrace, FL
After 4-years follow-up, treatment with Reverse Shoulder Arthroplasty allowed greater than 5-fold pain reduction and almost double functional improvement with a small risk of harm at a cost of $24,661.

Poster No. P296
Persistent Bicipital Groove Pain After Tenotomy: Is a Retained Long Head Tendon the Source of Pain?
Michael Knesek, MD, Ann Arbor, MI
Elizabeth R. Sibilsky Enselman, MEd, ATC, Ann Arbor, MI
Robert Coale, MD, Rocky River, OH
Yoav Morag, MD, Ann Arbor, MI
Joshua Dines, MD, Great Neck, NY
Bruce S. Miller, MD, MS, Ann Arbor, MI
Asheesh Bedi, MD, Ann Arbor, MI
The long head of the biceps tendon is a well-known cause of pain within the shoulder; the location of the tendon stump within the groove is a possible cause of persistent pain following tenotomy.

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Poster No. P297
Multiple and Prolonged Cultures During Shoulder and Elbow Revision Arthroplasty: Impact on Antibiotic Treatment
Alexander DeHaan, MD, Portland, OR
Zachary Domont, MD, Portland, OR
Michael Kubne, MD, Portland, OR
Adam Mirarchi, MD, Lake Oswego, OR
Penelope Barnes, MBBS, PhD, Portland, OR
Robert M. Orfaly, MD, Portland, OR

5 or more biopsies held for 10 day incubation altered antibiotic management in 27% of shoulder and elbow revision arthroplasty cases, while predicting joint sterility 93% of the time.

Poster No. P298
Corrective Osteotomy with Anterior Transposition of Ulnar Nerve for Cubitus Valgus with Tardy Ulnar Nerve Palsy
Yun-Rak Choi, MD, PhD, Seoul, Republic of Korea
Hojung Kang, Seoul, Republic of Korea
Il-Hyun Koh, Gyenggi-Do, Republic of Korea
Yong-Min Chun, MD, Seoul, Republic of Korea
We investigated the clinical and radiologic results after the combined surgery in adult patients with traumatic cubitus valgus deformity and tardy ulnar nerve palsy.

Poster No. P299
Target Range of Motion at Three Months after Rotator Cuff Repair and Its Effect on the Final Outcome
Hisabori Tonotsuka, MD, Hadano City, Kanagawa, Japan
Hiroyuki Sugaya, MD, Chiba, Japan
Norimasa Takabashi, MD, Funabashi, Japan
Nobuaki Kawai, MD, Funabashi, Japan
Keishi Marumo, MD, Tokyo, Japan

ROM at 3 months after arthroscopic rotator cuff repair significantly affects final shoulder function. We set minimum acceptable forward flexion and external rotation at 3 months as the target ROM.

Poster No. P300
Durability of Partial Humeral Head Resurfacing
Alternate Paper: Shoulder and Elbow IV: Shoulder Arthritis and Anatomic Shoulder Arthroplasty
Ruth A. Delaney, MD, Boston, MA
Michael T. Freehill, MD, Winston-Salem, NC
Laurence D. Higgins, MD, Boston, MA
Jon JP Warner, MD, Boston, MA

Although statistically significant improvements were found in some patients at latest follow-up after partial resurfacing 25.6% had failed and either required revision or a revision had been performed.

Poster No. P301
Heterotopic Ossification in Open Periarticular Combat-related Elbow Fractures
Kevin Wilson, MD, Bethesda, MD
Jonathaw F. Dickens, MD, Bethesda, MD
Scott M. Tinkle, MD, Fairfax, VA
Reed Heckert, MD, Bethesda, MD
John J. Keeling, MD, Chevy Chase, MD
Romney C. Andersen, MD, Stafford, VA
Benjamin K. Potter, MD, Bethesda, MD

High rates of heterotopic ossification present in combat related elbow fractures despite prophylaxis.

Poster No. P302
Radial Head Instability Following Malalignment of the Proximal Ulna: A Biomechanical Study
Emilie Sandman, MD, Outremont, QC, Canada
Fanny Canet, Montreal, QC, Canada
Yvan Petit, PhD, Montreal, QC, Canada
George Y. Laflamme, MD, Montreal, QC, Canada
George S. Athwal, MD, London, ON, Canada
Dominique Rouleau, MD, Montreal, QC, Canada

This study demonstrates the importance of anatomic reconstruction of the proximal ulna for each individual’s unique proximal ulna dorsal angulation, since malalignment leads to radial head instability.

Poster No. P303
Biomechanical Comparison of the Trapezius Transfer and Latissimus Transfer for Irreparable Massive Cuff Tears
Reza Omid, MD, Los Angeles, CA
Nathanael D. Heckmann, Long Beach, CA
Lawrence C. Wang, Orange, CA
Michelle H. McGarry, MD, Long Beach, CA
C. Thomas Vangsness Jr, MD, Los Angeles, CA
Thay Q. Lee, PhD, Long Beach, CA

Trapezius transfer for massive cuff tear restores native glenohumeral forces better than the latissimus transfer by recruiting an exogenous force across the glenohumeral joint.

Poster No. P304
Influence of Preoperative Musculotendinous Junction Position on Rotator Cuff Healing
Robert Z. Tashjian, MD, Salt Lake City, UT
Man Hung, PhD, Salt Lake City, UT
Robert T. Burks, MD, Salt Lake City, UT
Patrick Greis, MD, Salt Lake City, UT

Preoperative rotator cuff musculotendinous junction position is predictive of postoperative cuff healing.
Poster No. P305
Low Transcondylar Fractures of the Distal Humerus: Results of Open Reduction and Internal Fixation
Juan P. Simone, MD, Buenos Aires, Argentina
Philipp N. Streubel, MD, Rochester, MN
Bernard F. Morrey, MD, San Antonio, TX
Joaquin Sanchez-Sotelo, MD, Rochester, MN

The results of our study indicate that internal fixation of low transcondylar fractures of the distal humerus is associated with a high union rate and satisfactory clinical results.

Poster No. P306
Scapular and Clavicular Kinematics in the Acromioclavicular Joint Injury Model: A Whole Cadaver Study
Satoshi Oki, Tokyo, Japan
Noboru Matsumura, MD, Tokyo, Japan
Wataru Iwamoto, MD, Tokyo, Japan
Hiroyasu Ikegami, MD, PhD, Tokyo, Japan
Toshiyasu Nakamura, MD, Tokyo, Japan
Yoshimi Kiyama, MD, Tokyo, Japan
Yoshiaki Toyama, Tokyo, Japan
Takeo Nagura, MD, Tokyo, Japan

We revealed that disruption of the acromioclavicular and coracoclavicular ligaments affected kinematics of the shoulder girdle in the whole cadaver models.

Poster No. P307
Response and Results of Patients with Symptomatic Chronic Massive Rotator Cuff Tears to Non-Operative Management
Gordon I. Groh, MD, Asheville, NC
Griffin M. Groh, Fairview, NC

Non-operative management of symptomatic massive rotator cuff tears yielded patient satisfaction in 52% of the study group. Further study is indicated to delineate variables which afford success.

Poster No. P308
• Does Reverse Shoulder Need a Stem? Two to Seven Years Follow Up with Stemless Reversed Shoulder Prosthesis
Ofer Levy, MD, Henley-On-Thames, United Kingdom
Ehud Atouman, MD, Kookh Michael, Israel
Ali Narwani, MB BS, London, United Kingdom
Ruben Abraham, MD, FRCS, Reading, United Kingdom
Nir Hous, MD
Tirza Eizen, MD, Reading, United Kingdom
Jai Kelwan, MD, West Malling, Kent, United Kingdom
Stephen A. Copeland, FRCS, Reading, United Kingdom
Giuseppe Storza, MD, Reading, United Kingdom

2-7 years excellent mid-term results with a different reversed prosthesis: A stemless prosthesis with metaphyseal fixation. It seem that there is no need for a stem in reverse shoulder replacement.

Poster No. P309
Four-part Fracture Dislocations of the Proximal Humerus in Young Adults: Results of Fixation
Mohamed Omar A. Soliman, Prof., Cairo, Egypt
Wael Koptan, MD, Cairo, Egypt
Yasser H. El Miligui, MD, FRCS, Cairo, Egypt
Mohammad M. El-Sharkawi, MD, Assuit, Egypt

In 39 patients younger than 40 years of age with four-part fracture dislocations treated with open reduction and fixation, anatomical reduction and rigid fixation can lead to satisfactory results.

Poster No. P310
• Hyaluronic Acid Accelerates Tendon-to-bone Healing at the Repaired Site in Rabbits
Yasuhiro Mitsui, Kurume, Japan
Masafumi Gotoh, MD, PhD, Kurume, Japan
Hideaki Shibata, MD, Fukuoka, Japan
Tonomoshibi Kanazawa, MD, PhD, Kurume, Japan
Hidehiro Nakamura, MD, Kurume Fukuoka, Japan
Takahiro Okawa, Dr, Fukuoka, Japan
Fujio Higuchi, MD, Kurume Fukuoka, Japan

From biomechanical and histological points of view, hyaluronic acid injection significantly accelerated the tendon-to-bone healing after rotator cuff repair, compared to saline injection as controls.

Poster No. P311
Semiconstrained Total Elbow Arthroplasty for Acute Distal Humerus Fractures: A Minimum 5-Year Follow-Up Study
Philipp N. Streubel, MD, Rochester, MN
Juan P. Simone, MD, Buenos Aires, Argentina
Bernard F. Morrey, MD, San Antonio, TX
Joaquin Sanchez-Sotelo, MD, Rochester, MN

Twelve percent of implants that are stable at 5 years after surgery required revision due to mechanical failure. A high mortality rate can be expected in this patient setting.

Poster No. P312
Does Anteroinferior Fixation of Midshaft Clavicle Fractures have Lower Rates of Hardware Removal or Complications?
Peter A. Cole, MD, Saint Paul, MN
Clifford B. Jones, MD, FACS, Grand Rapids, MI
Aaron Jacobson, DC, Saint Paul, MN
Alex Gilde, BS, Grand Rapids, MI
Jerald Westberg, BA, Minneapolis, MN
Andrew H. Schmidt, MD, Minneapolis, MN

This study was to compares hardware removal rates and complications with plates positioned superiorly to those positioned anteroinferiorly. Various plate sizes and types were also compared.

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Poster No. P313
Short-Term Reoperations and Complications Following Operative Management of Proximal Humerus Fractures
Frank Petrigliano, MD, Santa Monica, CA
Nikita Bezrukov, MD, Santa Monica, CA
Seth C. Gamradt, MD, Los Angeles, CA
David Zingmond, MD, PhD, Los Angeles, CA
Nelson F. SooHoo, MD, Los Angeles, CA

Our research presents analysis of risk factors for short-term re-operations and complications following proximal humerus fractures in a large population database.

Poster No. P314
Long-Term Complications and Reoperations Following Operative Management of Proximal Humerus Fractures
Frank Petrigliano, MD, Santa Monica, CA
Nikita Bezrukov, MD, Santa Monica, CA
Seth C. Gamradt, MD, Los Angeles, CA
David Zingmond, MD, PhD, Los Angeles, CA
Nelson F. SooHoo, MD, Los Angeles, CA

Our research presents analysis of long-term re-operations and complications following surgical fixation of proximal humerus fractures.

Poster No. P315
The Long-term Outcome of Distal Humeral Fractures Treated by Elbow Hemiarthroplasty
Geoff Smith, MBChB, MRCS, Bristol, United Kingdom
Jeffrey S. Hughes, MBBS, FRACS, Chatswood, Australia

Distal humeral hemiarthroplasty for unreconstructable distal humeral fractures yields good long term outcomes.

Poster No. P316
Reconstruction of the Coronoid Process Using the Tip of the Ipsilateral Olecranon
Bashar Alolabi, MD, Westlake, OH
Alia Gray, MSc, Belleville, ON, Canada
Louis Ferreira, MSc, London, ON, Canada
George S. Athwal, MD, London, ON, Canada
James A. Johnson, PhD, London, ON, Canada
Graham J. King, MD, London, ON, Canada

Reconstruction of the coronoid using the tip of the ipsilateral olecranon is an effective method for restoring stability and kinematics to an elbow with a 40% coronoid deficiency.

Poster No. P317
Assessment of the Relationship Between Humeral Head Alignment and Glenoid Retroversion in Shoulder Osteoarthritis
Vani J. Sabesan, MD, Kalamazoo, MI
Mark C. Callanan, MA, Grand Rapids, MI
Ari Youdarian, MD, Deerfield, IL
Joseph P. Iannotti, MD, PhD, Cleveland, OH

The two measures of humeral head alignment in relation to the plane of the scapula and to the glenoid plane appear to be different and independent from one another in cases of shoulder osteoarthritis.

Poster No. P318
Platelet Rich Plasma Injection as an Alternative Treatment for Rotator Cuff Tendinitis of Shoulder
Aamir H. Shaikh, MSc, MRCS, Dublin, Ireland
Turlough O’Donnell, MD, Dublin, Ireland

PRP is an effective pain controlling agent in patients with rotator cuff tendinitis along with improving functional parameters and CONSTANT shoulder scores, when chosen for right patients.

Poster No. P319
Use of Serum and Synovial Fluid IL-6 Levels in Diagnosis of Prosthetic Joint Infections of the Shoulder
Salvatore I. Frangiamore, MD, MS, Cleveland, OH
Matthew Grosso, BS, Roslyn, New York
Eric T. Rocchetti, MD, Cleveland, OH
Meng Xu, Cleveland, OH
Geraldine Hall, Cleveland, OH
Marion Tiohy, MT(ASCP), Cleveland, OH
Thomas W. Bauer, MD, PhD, Cleveland, OH
Joseph P. Iannotti, MD, PhD, Cleveland, OH

Synovial fluid IL-6 levels were found to be significantly higher in the infected group compared to the non infected individuals who underwent revision total shoulder surgery.

Poster No. P320
Alternate Paper: Shoulder and Elbow I: Rotator Cuff I
A Prospective, Randomized Study of Ultrasling vs. Abduction Pillow Following Arthroscopic Rotator Cuff Repair
Allen A. Deutsch, MD, Bellaire, TX
Noah Jaffee, MD, Houston, TX

The use of an abduction pillow following arthroscopic cuff repair reduced the incidence of early postoperative stiffness. Final ROM, function, pain and cuff integrity were not significantly effected.

Poster No. P321
Prevalence of Labral Tears in the Elderly
Nick D. Pappas, MD, Greenville, SC
Donald H. Lee, MD, Nashville, TN

The prevalence of SLAP tears in the elderly is very low. However, there are a significant number of normal anatomic labral variants (e.g. sublabral foramina, Buford complexes), which can resemble SLA.

Poster No. P322
Operative versus Non-operative Treatment of Acute Dislocations of the Acromio-clavicular Joint
Michael D. McKee, MD, Toronto, ON, Canada
Stephane Pelet, MD, PhD, QC, Canada
Jean Lamontagne, MD, Saint-ferreol-les-Neiges, QC, Canada
Luc Bedard, MD, Quebec, QC, Canada
Emil H. Schenitsch, MD, Toronto, ON, Canada
Jeremy Hall, MD, FRCS, Toronto, ON, Canada
Milena Vicente, RN, Toronto, ON, Canada

Operative versus Non-operative Treatment of Acute Dislocations of the Acromio-clavicular Joint: Results of a Multi-centre Randomized, Prospective Clinical Trial.
258  EDUCATIONAL PROGRAMS

Poster No. P323
Restoring Anatomic Position of the Greater Tubercle and Glenohumeral Range of Motion in Reverse Shoulder Prosthesis
Andres E. Cabezas, BS, Tampa, FL
Brandon G. Santoni, PhD, Tampa, FL
Sergio Gutierrez, PhD, Tampa, FL
Mark A. Frankle, MD, Temple Terrace, FL

Using virtual models we determined if appropriate prosthetic selection and surgical technique can restore the greater tuberosity’s anatomic position and the possible range of motion of each construct.

Poster No. P324
The Four-year Cost and Clinical Outcomes of Total Shoulder Arthroplasty for the Treatment of Glenohumeral Arthritis
Nazeem Virani, MD, MPH, Tampa, FL
Christopher Williams, Temple Terrace, FL
Rachel Clark, BA, Tampa, FL
John Polikandriotis, Tampa, FL
Katheryne Douenes, MPH, Tampa, FL
Mark A. Frankle, MD, Temple Terrace, FL

After 4-years follow-up, treatment with Total Shoulder Arthroplasty allowed greater than 5-fold pain reduction and almost double functional improvement with a small risk of harm at a cost of $17,587.

Poster No. P325
Thirty and Ninety Day Reoperation Rates After Shoulder Arthroplasty
Philipp N. Streubel, MD, Rochester, MN
Juan P. Simone, MD, Buenos Aires, Argentina
John W. Sperling, MD, MBA, Rochester, MN
Robert H. Cofield, MD, Rochester, MN

Short term reoperation after shoulder arthroplasty is an infrequently occurring event. Wound complications and shoulder instability are the most frequent causes for reoperation.

Poster No. P326
Shoulder Stabilization for Traumatic Anterior Shoulder Instability: Contact Athletes Versus Noncontact Athletes
Nobuyuki Yamamoto, MD, Sendai, Japan
Eiji Itoi, MD, Sendai, Japan

Clinical outcomes of open or arthroscopic anterior shoulder stabilization in 100 athletes were analyzed and the results between contact and noncontact athletes were compared.

Poster No. P327
Outcome of the Modified Eden-Lange Tendon Transfer for Management of Symptomatic Trapezius Paralysis
Eric R. Wagner, MD, Rochester, MN
Bassem T. Elhassan, MD, Rochester, MN

The purpose of this study is to evaluate the outcome of multiple tendon transfers to the scapula for management of symptomatic trapezius paralysis.

Poster No. P328
Outcomes of Lesser Tuberosity Osteotomy vs. Subscapularis Tenotomy in Total Shoulder Arthroplasty
Taylor Buckley, MD, Rochester, NY
Richard A. Lewis, MD, Pittsford, NY
Ilya Voloshin, MD, Rochester, NY

Lesser tuberosity osteotomy in shoulder arthroplasty trends better outcome compared to subscapularis tenotomy. Abnormal subscapularis tendon image on ultrasound is linked with poorer functional result.

Poster No. P329
Axial Migration of the Radius through a Full Arc of Elbow Flexion/Extension and Forearm Supination/Pronation
Grant W. Robicheaux, MD, Orange, CA
Ryan Quigley, BS, Long Beach, CA
Michelle H. McGarry, MD, Long Beach, CA
Thay Q. Lee, PhD, Long Beach, CA

Two radial migration patterns, distal and proximal, were observed with forearm supination. This should be appreciated clinically particularly in the setting of surgical correction of the ulna/radius.

Poster No. P330
Suprascapular Notch Injection as a Predictor for Suprascapular Nerve Decompression
Lewis L. Shi, MD, Chicago, IL
Michael T. Freehill, MD, Winston-Salem, NC
Eugene Ek, MBBS, PhD, New York, NY
Jeffrey D. Tompson, BA, Boston, MA
Laurence D. Higgins, MD, Boston, MA
Jon JP Warner, MD, Boston, MA

Fluoroscopic-guided suprascapular notch injection is an alternative method of detecting suprascapular neuropathy. It is highly predictive of the outcome from suprascapular nerve decompression.

Poster No. P331
Functional Outcome After Total Shoulder Arthroplasty in the Obese Patient Population
Xinning Li, MD, Lexington, MA
Phillip Williams, MD, New York, NY
Andromahi Trivellas, BS, Chadds Ford, PA
Joseph Nguyen, MPH, New York, NY
Edward V. Craig, MD, New York, NY
Russell F. Warren, MD, New York, NY
Lawrence Gulotta, MD, New York, NY

Shoulder arthroplasty were associated with significant improvements in ASES scores and decrease in pain. Obese and overweight patients had less overall physical function improvements after TSA.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
**Poster No. P332**
A Simple Method for Estimating Anterior Glenoid Bone Loss
Sang-Jun Shin, MD, Seoul
Bong-Jae Jun, MS, Cleveland, OH
Kyung-Chul Chung, MD, Irvine, CA
Michelle H. McGarry, MD, Long Beach, CA
Thay Q. Lee, PhD, Long Beach, CA

Percent of anterior glenoid bone loss can be estimated using the ratio of bone defect length and distance from posterior glenoid rim.

**Poster No. P333**
Traumatic Rotator Cuff Tears in Patients Under the Age of 25
Matthew F. Dilisio, MD, Stow, OH
Curtis R. Noel, MD, Copley, OH
Jeffrey S. Noble, MD, Akron, OH
Robert H. Bell, MD, Akron, OH

Even with advanced imaging, the diagnosis of a rotator cuff tear can often be missed in this patient population. Clinical outcomes can be excellent if appropriately diagnosed and treated.

**Poster No. P334**
Clinical Results Following Arthroscopic and Open Repair of Anterosuperior Rotator Cuff Tears
Christoph Bartl, MD, Ulm, Germany
Florian Gebhard, MD, Ulm, Germany
Michael Kramer, MD, Ulm, Germany

Open and arthroscopic repair of combined subscapularis and supraspinatus tears show comparable clinical and radiographic results at the short term follow up.

**Poster No. P335**
Comparison of External Rotation in the Upright and Supine Positions in Young, Healthy Shoulders
Christopher Stevens, MD, Alachua, FL
Thomas W. Wright, MD, Gainesville, FL

Significant differences exist in shoulder external rotation depending on the position of measurement (upright versus supine), hand dominance, and gender.

**Poster No. P336**
Can Surgeons Predict What Makes a Good Hemiarthroplasty for Fracture?
Pascal Boileau, MD, Nice, France
Matthias Winter, MD
Alec Cikes, MD, Lausanne, Switzerland
Hervé Quintard, MD, Nice, France
Michel Carles, Nice, France
Gilles Walch, MD, Lyon, France
Daniel G. Schwartz, MD, Chicago, IL

The risk factors associated with poor functional results and anatomical failures after HA for fractures are: patient’s age (over 75 years), patient's gender (female) and use of a conventional stem.

**Poster No. P337**
The Relationship of Preoperative ASA Score to Complications Following Total Shoulder Arthroplasty
Christine C. Johnson, Touson, MD
Sonal Sodha, Potomac, MD
Juan Garzon-Muñoz, MD, Lutherville, MD
Steve A. Petersen, MD, Lutherville, MD
Edward G. McFarland, MD, Lutherville, MD

This study demonstrates that the ASA score is strongly associated with surgical, but not medical, complications following total shoulder arthroplasty and reverse total shoulder arthroplasty.

**Poster No. P338**
Factors Affecting Stability of Reverse Shoulder Arthroplasty
Allison Clouthier, MSc, Kingston, ON, Canada
Markus A. Hetzler, Stouffville, ON, Canada
Graham Fedorak, MD, Kingston, ON, Canada
Timothy Bryant, Kingston, ON, Canada
Kevin Deluzio, PhD, Kingston, ON, Canada
Ryan T. Bicknell, MD, Kingston, ON, Canada

Factors affecting stability of reverse shoulder arthroplasty were investigated in a kinematic shoulder simulator. Abduction, glenosphere eccentricity and socket depth affect stability.

**Poster No. P339**
Fractures of the Greater Tuberosity of the Humerus: A Study of Function, Muscular Atrophy and Fracture Morphology
Jennifer Mutch, MD, Montreal, QC, Canada
Luofun Wang, Montreal, QC, Canada
G Yves Y. Laflamme, MD, Montreal, QC, Canada
Nicola Hagemeister, PhD, Montréal, Canada
Dominique Rouleau, MD, Montreal, QC, Canada

We describe three types of isolated greater tuberosity fractures of the proximal humerus. These types help predict functional outcome and rotator cuff pathology and may assist in surgical planning.

**Poster No. P340**
The Critical Shoulder Angle
Beat K. Moor, MD, Zurich, Switzerland
Samy Bouaicha, MD, Vancouver, BC, Canada
Dominique A. Rothenfluh, MD, PhD, Nottingham, United Kingdom
Atul Sukthankar, MD, Volketswil Zurich, Switzerland
Christian Gerber, MD, Zurich, Switzerland

The Critical Shoulder Angle: A New Radiological Tool in the Assessment of Patients with Degenerative Shoulder Pathologies.

**Poster No. P341**
Total Shoulder Arthroplasty in Young Adults with Primary Glenohumeral Arthritis: Minimum Five-Year Follow Up
Patrick J. Denard, MD, Medford, OR
Patric Raiss, MD, Heidelberg, Germany
Boris Sowa, Heidelberg, Germany
Gilles Walch, MD, Lyon, France

While the 5 year results of total shoulder arthroplasty in young adults are satisfactory, implant survival markedly decreases by 10 years postoperatively.

An alphabetical faculty financial disclosure list can be found starting on page 292.
**Educational Programs**

**Poster No. P342**
A Meta-Analysis of Joint Preservation versus Arthroplasty for Displaced Proximal Humerus Fractures
M. Mustafa Gomberawalla, MD, Ann Arbor, MI
Bruce S. Miller, MD, MS, Ann Arbor, MI
Robert Coale, MD, Rocky River, OH
Ashesh Bedi, MD, Ann Arbor, MI
Joel J. Gagnier, PhD, Ann Arbor, MI
Displaced proximal humerus fractures demonstrated improved Constant scores after joint preserving treatments. Patient age, fracture pattern, and rate of osteonecrosis contributed to the final outcome.

**Poster No. P343**
Identifying Outcomes of Humeral Windows and Longitudinal Splits in Patients with Revision Shoulder Arthroplasty
Shawn Sabota, Rochester, MN
John W. Sperling, MD, MBA, Rochester, MN
Robert H. Cofield, MD, Rochester, MN
Humeral windows and longitudinal splits can facilitate controlled removal of well-fixed humeral components with high rate of union and low rate of intraoperative or postoperative complications.

**Poster No. P344**
Complications and Revisions after Total Elbow Arthroplasty
Pierre Mansat, MD, PhD, Toulouse, France
Nicolas Bommerielle, MD, Toulouse Cedex, France
Michel Rongieres, MD, Blagnac, France
Michel F. Mansat, MD, Toulouse Cedex, France
Paul Bommerielle, MD, Toulouse, France
Total elbow arthroplasty stays a difficult procedure with sometimes a high rate of complications necessitating revision procedures.

**Poster No. P345**
Proximal Humeral Fractures Treated with Hemiarthroplasty: Does Tenodesis of the Long Head of Biceps Improve Results
Mohamed Omar A. Soliman, Prof., Cairo, Egypt
Wael Koptan, MD, Cairo, Egypt
Yasser H. El Miligui, MD, FRCS, Cairo, Egypt
Mohammad M. El-Sharkawi, MD, Assat, Egypt
In a prospective randomised study of 37 patients with proximal humeral fractures treated with shoulder hemiarthroplasty, the LHB was a source of pain and its tenodesis can significantly improve results.

**Posters**

**Poster No. P346**
Modeling of Cost-Effectiveness of Adult Spinal Deformity Surgery at Five Years Follow Up
Brian J. McHugh, MD, Stamford, CT
Jamie S. Terran, BS, New York, NY
Charla R. Fischer, MD, New York, NY
Baron Lonner, MD, New York, NY
Steven D. Glassman, MD, Louisville, KY
Keith H. Bridwell, MD, Saint Louis, MO
Frank J. Schwab, MD, New York, NY
Virginie Lafage, PhD, New York, NY
Cost-effectiveness modeling for 5 years follow up was performed on 499 adult spinal deformity patients and the average cost/QALY was $179,002. Risk factors for cost-effectiveness were identified.

**Poster No. P347**
Thromboembolic Disease after Cervical Spine Surgery: A Review of 7,926 Surgical Procedures
Arjun Sebastian, MD, Rochester, MN
Ahmad Nassr, MD, Rochester, MN
Mark B. Dekutoski, MD, Rochester, MN
Paul M. Huddleston, MD, Rochester, MN
Michael J. Yaszemski, MD, PhD, Rochester, MN
Peter S. Rose, MD, Rochester, MN
Bradford L. Currier, MD, Rochester, MN
Retrospective study of 7926 patients who underwent cervical spine surgery to determine the incidence and risk factors of venous thromboembolism.

**Poster No. P348**
Midline T-saw Laminoplasty and Pedicle Screw Fixation for Cervical Myelopathy Associated with Cerebral Palsy
Satoru Demura, MD, Kanazawa, Japan
Hideki Murakami, MD, Kanazawa, Japan
Satoshi Kato, MD, Kanazawa, Japan
Katsuhito Yoshioka, MD, Kanazawa, Japan
Takashi Ota, MD, Kanazawa, Ishikawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
We performed T-saw laminoplasty and posterior arthrodesis utilizing pedicle screws in patients with aretoid cerebral palsy. The procedure maintained strong internal fixation and improved neurological.

**Poster No. P349**
Tapping Insertional Torque Predicts Better Pedicle Screw Fixation and Optimal Screw Size Selection
Melvin D. Helgeson, MD, North Potomac, MD
Daniel Kang, MD, Bethesda, MD
Ronald A. Lehman, MD, Potomac, MD
Anton E. Dmitriev, Fort Belvoir, VA
Scott J. Lubmann, MD, Saint Louis, MO
Tapping IT directly correlates with pedicle screw IT, pedicle screw pullout strength, and optimal pedicle screw size, and may allow maximum fixation strength and pedicle “fit and fill”.

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Poster No. P350
Causes of Postoperative Cerebrospinal Fluid Leakage Associated with Total En Bloc Spondylectomy
Noriaki Yokogawa, MD, Ishikawa, Japan
Hideki Murakami, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Satoshi Kato, MD, Kanazawa, Japan
Katsuhito Yoshioka, MD, Kanazawa, Japan
Takashi Ota, MD, Kanazawa, Ishikawa, Japan
Kazuya Shimmura, MD, Ishikawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

The incidence of postoperative CSF leakage associated with TES was 26.0%. Among patients with a history of radiation therapy to the surgical site, the incidence was particularly high (47.1%).

Poster No. P351
Allogenic and Autogenous Bone Graft is Affected by Historical Donor Environmental Exposure
Caleb J. Behrend, MD, Rochester, NY
Lauren M. Ritter, Pittsford, New York
Robert J. Thorsness, MD, Rochester, NY
Paul T. Rubery Jr, MD, Honeoye Falls, NY
J Edward Puzas, PhD, Rochester, NY

Commercially available bone graft materials and autogenous bone graft composition is affected by historical environmental exposure of the donor to inorganic materials such as lead or cadmium.

Poster No. P352
Return to OR Affects Long Term Outcomes in Adult Spinal Deformity Patients Undergoing Long Fusions to the Sacrum
Michael Faloon, MD, Hoboken, NJ
David Essig, MD, Long Island City, NY
Woojin Cho, MD, PhD, New York, NY
Gbolabo O. Sokunbi, MD, Bethlehem, PA
Matthew E. Cunningham, MD, PhD, New York, NY
Bernard A. Rawlins, MD, New York, NY
Oheneba Boachie-Adjei, MD, New York, NY

Unplanned return to the OR following long fusions to the sacrum for adult spinal deformity had significant detrimental residual effects on pts’ ODI & SRS-22 at 5 yr f/u.

Poster No. P353
Surface Characteristics of the Subaxial Cervical Vertebral Endplates
Shaobai Wang, PhD, Boston, MA
Yao Qi, MD, Boston, MA
Thomas D. Cha, MD, Boston, MA
Tsung-Yuan Tsai, PhD, Boston, MA
Jae Hyuk Shin, MD, Boston, MA
Guoan Li, PhD, Boston, MA
Kirkham B. Wood, MD, Boston, MA

The study quantified the thickness and curvature distribution of the cervical endplates. Thus 3D guidelines can be made regarding the amount of endplate removal during surgery.

Poster No. P354
In Vivo Biocompatibility of a Synthetic Resorbable Polymer Nanocomposite Bone Graft Substitute
Kevin Baker, PhD, Royal Oak, MI
Hussein A. Sarid, MD, Royal Oak, MI
Tristan Maerz, MS, Royal Oak, MI
Phillip J. Shabeen, BS, MS, Troy, MI
Harry N. Herbortz, MD, Royal Oak, MI
Rangaramanujam Kannan, PhD, Baltimore, MD

Polymer-clay nanocomposites synthesized by supercritical carbon dioxide processing are biocompatible and capable of supporting rhBMP-2-induced bone formation in vivo.

Poster No. P355
The Effect of Posterior Decompression on Segmental Range of Motion Following Cervical Disc Arthroplasty
Alternate Paper: Spine I: Cervical
Michael J. Brody, MD, Maywood, IL
Alpesh A. Patel, MD, Maywood, IL
Alexander J. Ghanayem, MD, Maywood, IL
Georgos Vastardis, Hinsdale, IL
Leonard Voronov, PhD, Hines, IL
Robert Havey, Hines, IL
Tejasury Potturi, MS, Hines, IL
Gerard Carandang, Hines, IL
Avnish G. Pattwardhan, PhD, Maywood, IL

Segmental range of motion (ROM) was quantified following cervical total disc arthroplasty and progressive posterior decompressions. Results demonstrated increased ROM with each decompression.

Poster No. P356
Sex and the Sacrum - An Analysis of the Effects of Long Fusion to the Sacrum on Sexual Function
Michael O. LaGrone, MD, Amarillo, TX
Amanda Coffman, PA-C, Amarillo, TX

We show there are significant limitations and modifications in sexual activity specifically related to long fusion to the sacrum compared to a control group with fusions ending short of sacrum.

Poster No. P357
Laminoplasty versus Laminectomy with Fusion for the Treatment of Spondylotic Cervical Myelopathy
Adam M. Caputo, MD, Durham, NC
Jordan F. Schaefter, MD, Durham, NC
Todd M. Chapman, MD, MSc, Durham, NC
Gene M. Maisey, MD, Myrtle Beach, SC
Keith W. Michael, MD, Durham, NC
Christopher R. Brown, MD, Durham, NC

Laminoplasty and laminectomy with fusion are the most commonly performed surgeries for cervical myelopathy. This study compares these techniques using a panel of clinical and radiographic measures.
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Poster No. P358
Low-Energy Extracorporeal Shock Wave Therapy Improves Motor Palsy after Spinal Cord Injury

Alternate Paper: Spine IV: Trauma/Tumor
Seiji Yamaya, MD, Sendai, Japan
Hiroshi Ozawa, MD, Sendai, Japan
Haruo Kanno, MD, Sendai, Japan
Akira Sekiguchi, Sendai, Japan
Eiji Itoi, MD, Sendai, Japan

The low-energy extracorporeal shock wave induced better recovery after spinal cord injury. The significant increases in mRNA expression of VEGF and BDNF were observed in acute phase.

Poster No. P359
Potential Risk of Adjacent Disc Degeneration After Lumbar Total Disc Replacement in Biomechanical Perspective

Wen-Chuan Chen, PhD, Taipei, Taiwan
Hsiang-Ho Chen, PhD, Taipei, Taiwan
Yu-Shu Lai, Taipei, Taiwan
Yang-Hwei Tsuang, MD, PhD, Taipei City, Taiwan
Cheng-kung Cheng, PhD, Taipei, Taiwan

Biomechanical evaluation by finite element method was performed to find out and explain the mechanism of potential risk to adjacent disc degeneration after lumbar total disc replacement.

Poster No. P360
Comparison of Image Quality and Radiation Exposure from C-arm Flouroscopes when Used for Imaging the Spine

Mark L. Prasarn, MD, Bellaire, TX
Ellen Coyne, MS, Fairport, New York
Michael J. Schreck, MD, Rochester, NY
Glenn R. Rechtine II, MD, Pinellas Park, FL

Upon comparison of commonly used C-arm machines, the GE OEC was ranked the best, produced the best quality images, and had the least amount of radiation.

Poster No. P361
Instability of Posterior Vertebral Wall Causes Canal Encroachment in the Elderly with Vertebral Pseudoarthrosis

Tetsuo Hayashi, MD, Fukouka, Japan
Takeshi Maeda, Iizuka, Japan
Osamu Kawanou, MD
Tsuneaki Takao, MD, Iizuka, Japan
Yuichiro Morishita, MD, PhD, Iizuka, Japan
Keichiro Shiba, MD, Iizuka, Japan

Our study demonstrated collapse of the non-united posterior vertebral wall and intracanal protrusion of vertebral fragments would occur simultaneously with axial loading, causing canal encroachment.

Poster No. P362
Crossing the Cervico-Thoracic Junction in Long Posterior Cervical Fusions Reduces Adjacent Segment Breakdown

Woojin Cho, MD, PhD, New York, NY
Joshua D. Auerbach, MD, Chappaqua, New York
Jennifer Sohn, MD
Andrew H. Milby, MD, Philadelphia, PA
Charles H. Crawford III, MD, Louisville, KY
Brian A. O’Shaughnessy, MD, Nashville, TN
Michael S. Chang, MD, Phoenix, AZ
K D. Riew, MD, Saint Louis, MO

Long posterior cervical fusions that cross the C-T junction have superior clinical outcomes and reduced rates of cranial and caudal breakdown, at the expense of longer fusions and higher EBL.

Poster No. P363
Long Adult Spinal Deformity Fusion to Sacrum Using Low Dose rhBMP-2

Joshua E. Heller, MD, Philadelphia, PA
Justin S. Smith, MD, Charlottesville, VA
Woojin Cho, MD, PhD, New York, NY
Kaiming G. Fu, MD, PhD, Charlottesville, VA
Christopher I. Shaffrey, MD, Charlottesville, VA

We report our experience in long adult spinal deformity fusion to sacrum using rhBMP-2 at a lower dose (38.3mg). Our pseudarthrosis rate (31.3%) was similar to that reported for ICBG (28.1%).

Poster No. P364
Development and Testing of a Patient Cervical Spine Surgery Expectations Survey

Carol A. Mancuso, MD, New York, NY
Frank P. Cammisa Jr, MD, New York, NY
Andrew A. Sama, MD, New York, NY
Alexander P. Hughes, MD, New York, NY
Federico P. Girardi, MD, New York, NY

A 21-item patient-derived survey was developed that is valid and reliable and addresses patients’ physical and psychological expectations of cervical spine surgery.

Poster No. P365
Staged vs. Same Day Anterior Posterior Cervical Decompression and Fusion Crossing the Cervico-Thoracic Junction

Krzysztof B. Siemionow, MD, Chicago, IL
Luis C. Grau, BS, Chicago, IL
Serger Neckrystb, MD, Chicago, IL

Staging of multilevel A/P cervical fusion crossing the CT junction may result in higher rates of transfusion and longer LOS. Complications are frequent and staging does not appear to be advantageous.
**Poster No. P366**
Correlations between the EQ-5D, the Oswestry Disability Index and Pain Numeric Rating Scales
Benjamin Mueller, MD, Saint Paul, MN
Leah Y. Carreon, MD, Louisville, KY
Lauren Burke, MPH, Louisville, KY
Chelsea Canan, MPH, Louisville, KY
Steven D. Glassman, MD, Louisville, KY

Data on 8385 patients showed strong to moderate correlations between EQ-5D and ODI and Back and Leg pain scores. EQ-5D is an effective measure of clinical outcome and economic impact.

**Poster No. P367**
C2 Vertical Axis is Associated with Outcome of Cervical Laminection and Fusion
Kristen E. Radcliff, MD, Egg Harbor, NJ
Robert Stewart, MD, Chicago, IL
Loukas Koyonos, MD, Philadelphia, PA
Corey Clyde, Philadelphia, PA
Gursukhman Sidhu, MBBS, Philadelphia, PA
Todd J. Albert, MD, Philadelphia, PA
Christopher Kepler, MD, Philadelphia, PA
Alan S. Hildbrand, MD, Philadelphia, PA
Alexander Vaccaro, MD, PhD, Gladwyne, PA

Cervical sagittal balance factors in lumbar deformity reconstruction, such as paraspinous muscle attachment or C23 facet joint preservation, should be considered to improve patient outcome post-PCDF.

**Poster No. P368**
Biomechanical Study of Sublaminar Polyester Bands versus Pedicle Screws in Adolescent Idiopathic Scoliosis Model
Vu H. Le, MD, Orange, CA
Afshin Aminian, MD, Orange, CA
Nathanael D. Heckmann, Long Beach, CA
Laurence C. Wang, Orange, CA
Nitin N. Bhatra, MD, Orange, CA
Thay Q. Lee, PhD, Long Beach, CA

Sublaminar polyester bands provide equivalent spinal triplanar corrections compared to pedicle screws.

**Poster No. P369**
In Mature Patients with Primary Thoracolumbar AIS, Does the 50 Degree Operative Threshold Apply?
Burt Yazay, MD, San Diego, CA
Tracey Bastrom, MA, San Diego, CA
Carrie Bartley, MA, San Diego, CA
Peter O. Newton, MD, San Diego, CA

Surgically treated patients with thoracicolumbar curves <50° were compared to those with 50-60° curves and found to have larger preop trunk shift, less balanced curves, and lower self-image scores.

**Poster No. P370**
Preoperative Hounsfield Unit Measurements are Associated with Adjacent Segment Fracture After Spinal Fusion
Dennis Meredith, MD, New York, NY
Joseph Schreiber, MD, New York, NY
Fadi Taher, MD, New York, NY
Frank P. Cammisa Jr, MD, New York, NY
Federico P. Girardi, MD, New York, NY

Lower local and global preoperative Hounsfield unit measurements are associated with adjacent segment fracture following spinal fusion.

**Poster No. P371**
Does the Addition of a Non-Physician Provider Increase the Productivity of an Orthopaedic Spine Surgeon?
Gabriella Broccardo, BS, Springfield, IL
Brooke Robinson, MPH, Springfield, IL
Wendy Novicoff, PhD, Charlottesville, VA
Per Freitag, MD, Springfield, IL

There is a positive impact of adding an orthopaedic spine non-physician provider to an orthopaedic surgery practice in regards to improving productivity.

**Poster No. P372**
Perioperative Complications of Pedicle Subtraction Osteotomy
Michael D. Daubs, MD, Santa Monica, CA
Prokopis Annis, MD, Salt Lake City, UT
Brandon Lawrence, MD, Salt Lake City, UT
Darrel S. Brodke, MD, Salt Lake City, UT

We reviewed all 65 patients (47 females and 18 males, mean age of 60 years (range(r) 24-80)) that underwent a PSO at our institution to evaluate the perioperative complications associated with PSO.

**Poster No. P373**
Primary Versus Revision Surgery: Multi-Center Analysis of Outcomes Following Surgery for Adult Spinal Deformity
Khaled M. Kebaish, MD, Baltimore, MD
Eric O. Klineberg, MD, Sacramento, CA
Mostafa H. El Daifrawy, MD, Baltimore, MD
Christopher Ames, MD, San Francisco, CA
Shay S. Bess, MD, Castle Rock, Colorado
Vedat Deviren, MD, San Francisco, CA
Robert A. Hart, MD, Portland, OR
Munish C. Gupta, MD, Sacramento, CA

We compare functional outcome and complications for patients undergoing 1yr and revision surgery for the treatment of ASD. Both groups improved their 1yr HRQoL scores, the final scores were better pre.
264  Educational Programs

Poster No. P374
Micro-CT Analysis of Porcine Scoliosis Model Induced by Unilateral Tendon Tethering
Richard E. McCarthy, MD, Little Rock, AR
Michael McCarthy, Little Rock, AR
Dong Sun, MD, Little Rock, AR
Scoliosis was produced in a porcine model using a unique tendon tethering technique with vertebral remodeling noted at the apex. Analysis these vertebrae with micro-CT and noted increased volume of bone density.

Poster No. P375
Is Anterior Cervical Approach on the Right Side Safe? Frequency of Nonrecurrent Inferior Laryngeal Nerve
Yuichiro Abe, MD, PhD, Eniwa, Hokkaido, Japan
Shunichi Abe, MD, PhD, Sapporo, Japan
Shigenobu Sato, MD, Hokkaido, Japan
Takahiko Hyakumachi, MD, Hokkaido, Japan
Yasushi Yanagibashi, MD, Eniwa, Japan
Hiroyuki Yasuda, MD, Eniwa, Japan
Keiko Kazui, MD, Sapporo, Hokkaido, Japan
Takeshi Masuda, MD, Sapporo, Japan
Review of 1671 cases showed frequency of right nonrecurrent inferior laryngeal nerve (NRLN) was 0.79%, and NRLN is a risk factor for laryngeal nerve injury by right sided anterior cervical approach.

Poster No. P376
Bony Anatomic Age Changes in Thoracic Spine Do Not Predispose to Thoracic Stenosis: A Postmortem Specimen Study
Navkirat Bajwa, Medical Student, Garfield Heights, OH
Ernest Young, MS, Cleveland Heights, OH
Nicholas U. Ahn, MD, Shaker Heights, OH
Anatomical changes in thoracic spinal canal with age do not predispose to thoracic stenosis.

Poster No. P377
Comparative Radiographic Analysis Between Pedicle Subtraction Osteotomy and Vertebral Column Resection
Mostafa H. El Dafrasawy, MD, Baltimore, MD
Hamid Hassanzadeh, MD, Baltimore, MD
Amir Jain, MD, Baltimore, MD
Philip R. Neubauer, MD, White Hall, MD
David B. Cohen, MD, Cockeysville, MD
Khaled M. Kebash, MD, Baltimore, MD
Similar focal and global correction of sagittal lumbar deformities can be achieved using either PSO or VCR; VCR should be reserved for the more severe focal kyphotic deformities.

Poster No. P378
Standardization of SRS-22 Scores
Man Hung, PhD, Salt Lake City, UT
Shirley Hon, Salt Lake City, UT
Philip Tang, BS, Salt Lake City, UT
Darrel S. Brodke, MD, Salt Lake City, UT
John T. Smith, MD, Salt Lake City, UT
Brandon Lawrence, MD, Salt Lake Cty, UT
Michael D. Daubs, MD, Santa Monica, CA
Using standardized SRS-22 scores allow researchers to conduct meaningful statistical analysis and understand where a particular score lies within the context of the scores of the others.

Poster No. P379
Impact of Fluoroscopist Awareness on Radiation Exposure in Localizing Films for Lumbar Spine Surgery
Amy Wasterlain, Menlo Park, CA
Chad Tang, MD, Houston, TX
David Campbell, MD, Jupiter, FL
Gaetano J. Scuderi, MD, Jupiter, FL
Fluoroscopy technologists who understand the specific imaging task are able to obtain an accurate lateral lumbar localizing image with less fluoroscopy exposure time and fewer images.

Poster No. P380
Complications of Minimally Invasive Spinal Surgery for Correction of Spinal Deformity: A Five-year Experience
Neel Anand, MD, Los Angeles, CA
Babak Khanehroo, MD, Los Angeles, CA
Sheila Kahuayty, PA-C, Valencia, CA
Eli M. Baron, MD, Los Angeles, CA
MISS procedures are intended to reduce approach related complications. However, the novelty of the approach and the potential for complications has been a big concern in adopting these new techniques.

Poster No. P381
A Prospective Clinical Trial of Iodine-supported Spinal Instruments for Preventing and Treating Spinal Infection
Hideki Murakami, MD, Kanazawa, Japan
Toshiharu Shirai, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Satoshi Kato, MD, Kanazawa, Japan
Katsuhito Yoshioka, MD, Kanazawa, Japan
Hiroyuki Hayashi, MD, Kanazawa, Japan
Takashi Ota, MD, Kanazawa, Ishikawa, Japan
Kazuya Shinmura, MD, Ishikawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
We newly developed iodine-supported spinal instruments. The iodine instruments are effective and promising for preventing and treating spinal infection. Strategy of spinal infections will be changed.
**Poster No. P382**  
Etiology of Traumatic Cervical Spinal Cord Injury without Major Fracture or Dislocation  
Yuichiro Morishita, MD, PhD, Iizuka, Japan  
Takeshi Maeda, Iizuka, Japan  
Eiji Mori, MD, Fukuoka, Japan  
Itaru Yague, MD, Iizuka Fukuoka, Japan  
Osamu Kawanoto, MD  
Tatsuki Takao, MD, Iizuka, Japan  
Hiroaki Sakai, MD  
Tetsuo Hayashi, MD, Fukuoka, Japan  
Keiichiro Shiba, MD, Iizuka, Japan

We measured the pinched diameter of cervical cord during cervical spine extension, and investigated the effect of the pincer mechanism on the etiology of traumatic cervical spinal cord injury without major fracture or dislocation.

**Poster No. P383**  
The Effect of Sagittal Plane Correction on Cervical Spine Alignment  
Jayme Hiratzka, MD, Portland, OR  
Michael D. Daubs, MD, Santa Monica, CA  
Prokopis Annis, MD, Salt Lake City, UT  
Justin Hobi, MD, Sandy, UT  
Brandon Lawrence, MD, Salt Lake City, UT  
Darrel S. Brodke, MD, Salt Lake City, UT

Pedicle subtraction osteotomy results in an improvement in translational deformity but not in T1 tilt or cervical lordosis. This is the first study to examine the effects of PSO on cervical alignment.

**Poster No. P384**  
Spinal Shortening is a Key to Provide a Stiffer Construct in Reconstruction after Total En Bloc Spondylectomy  
Satoshi Kato, MD, Kanazawa, Japan  
Hiide Murakami, MD, Kanazawa, Japan  
Satoru Demura, MD, Kanazawa, Japan  
Katsumi Yoshioka, MD, Kanazawa, Japan  
Takashi Ota, MD, Kanazawa, Ishikawa, Japan  
Kazuya Shimmura, MD, Ishikawa, Japan  
Noriki Yokogawa, MD, Ishikawa, Japan  
Katsuro Tomita, MD, Kanazawa, Japan  
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

The reconstruction using a 10-mm spinal shortening was stiffer than the reconstruction without shortening after total en bloc spondylectomy of two consecutive vertebrae in a human cadaveric thoracic model.

**Poster No. P385**  
Enhancing Pedicle Screw Fixation in the Lumbar Spine Using an Allograft Bone Plug: A Biomechanical Study  
Harsha Sree Malempati, MD, Vancouver, BC, Canada  
Jacques H. Hazquebord, MD, Seattle, WA  
Amit P. Patel, MD, York, PA  
Jens R. Chapman, MD, Seattle, WA  
Michael J. Lee, MD, Seattle, WA

Pedicle screw fixation in the osteoporotic spine remains one of the most difficult hurdles in spine surgery and this preliminary study offers a new technique to enhance fixation.

**Poster No. P386**  
Intervertebral Disc Repair and Regeneration Using Neonatal Human Dermal Fibroblasts in the Rabbit Model  
Ana Chee, Chicago, IL  
Peng Shi, PhD, Chicago, IL  
Thomas D. Cha, MD, Boston, MA  
Ting-Hsien Kao, Taichung, Taiwan  
Shu-Hua Yang, MD, PhD, Taipei, Taiwan  
Yeja Zhang, MD, PhD, Chicago, IL  
Howard S. An, MD, Chicago, IL

An in vivo study was conducted in the established rabbit disc injury model to determine the effects of injecting nHDFs in degenerating intervertebral discs.

**Poster No. P387**  
Age, Sagittal Balance and Operative Correction are Risk Factors for Proximal Junctional Failure in Adult Deformity  
Robert A. Hart, MD, Portland, OR  
Richard A. Hostin, MD, Plano, TX  
Robert S. Bess, MD, Castle Rock, CO  
Frank J. Schub, MD, New York, NY  
Virginie Lafage, PhD, New York, NY  
Praveen V. Mummaneni, San Francisco, CA  
Christopher Ames, MD, San Francisco, CA  
Justin S. Smith, MD, Charlottesville, VA  
Obeneba Boachie-Adjei, MD, New York, NY

Age, sagittal deformity, and extent of sagittal correction were risk factors for PJF in ASD surgical patients. A pedicle subtraction osteotomy (PSO) and upper thoracic fusion increased this risk.

**Poster No. P388**  
Off-label Use of Cervical Disc Arthroplasty in the USA  
Sergiy Nesterenko, MD, Baltimore, MD  
Lee H. Riley III, MD, Baltimore, MD  
Richard L. Skolasky Jr, ScD, Baltimore, MD

Nearly one quarter (22.7%) of all CDA cases are performed off-label including anterior cervical discectomy and fusion and cervical disc replacement in the same patient.

**Poster No. P389**  
Effect of Lumbar Spinal Canal Stenosis on a Fall-experience and Health Related Quality of Life  
Eiji Takasawa, MD, Gunma, Japan

LSS had great effect on falls and a decline in the EuroQoL score. Early diagnosis and treatment of LSS may reduce the risk of falls and improve health-related quality of life in the aged population.
Poster No. P390
Rib Anchors as an Alternative to Spine Anchors in an Immature Porcine Model: Can They Withstand Similar Loads?
Bebrooz A. Akbarnia, MD, La Jolla, CA
Burt Vassay, MD, San Diego, CA
Muharrem Yavuzu, MD, Ankara, Turkey
Nima Kahriani, MD, San Diego, CA
Kevin Strauss, MS, Leesburg, VA
Diana A. Glaser, PhD, San Diego, CA
A study of four different upper foundations showed Rib Hooks and Spine Screws failed at the highest ultimate loads. Spine Hook anchors showed lower ultimate loads but with a less variable results.

Poster No. P391
Surface Characteristics of the Subaxial Cervical Vertebral Endplates
Jing-Sheng Li, PT, MS, Boston, MA
The bony endplate is thinner in the middle and thicker at the outer rim, ranging from 0.8 to 1.6 mm for a typical disc.

Poster No. P392
Spontaneous Reduction of Low-Grade Spondylolisthesis by Positioning on the Operating Table: Does it Really Occur?
Mostafa H. El Daftawy, MD, Baltimore, MD
Philip R. Neuhauser, MD, White Hall, MD
Hamid Hassanzadeh, MD, Baltimore, MD
Amit Jain, MD, Baltimore, MD
Michael Alapatt, MD, Demarest, NJ
Khaled M. Kebaish, MD, Baltimore, MD
We compared the effect of intra-operative prone positioning on change in radiographic parameter in 52 patients with low grade Spondylolisthesis.

Poster No. P393
Postoperative Spino-pelvic Alignment and Adjacent Segment Degeneration: A 16-year Follow-up Study
Tetsuya Kobayashi, Asahikawa, Japan
Kiyoshi Aono, MD, Asahikawa Hokkaido, Japan
Shizuo Jimbo, Asahikawa, Hokkaido, Japan
Issei Seno, MD, Chicago, IL
A mean 16-year follow-up study of lumbar arthrodesis was conducted, and adjacent segment degeneration (ASD) was found in 43.6% of patients.

Poster No. P394
Smoking Cessation and the Aging Spine Patient
Caleb J. Behrend, MD, Rochester, NY
Lauren M. Ritter, Pittsford, New York
Joshua Hunter, MD, Rochester, NY
Ellen Coyne, MS, Fairport, New York
Glenn R. Rechtine II, MD, Pinellas Park, FL
Older patients are less likely to smoke and equally likely to quit smoking. Smokers report greater pain and less improvement during treatment. Smoking cessation is associated with improved pain.

Poster No. P395
Surgical Treatment of Adolescent Idiopathic Scoliosis: A Prospective Ten-Year Follow-up Study
Krishna R. Cidambi, MD, San Diego, CA
Tracey Bastrom, MA, San Diego, CA
Carrie Bartley, MA, San Diego, CA
David H. Clements III, MD, Camden, NJ
Randal R. Betz, MD, Philadelphia, PA
Lawrence G. Lenke, MD, Saint Louis, MO
Peter O. Newton, MD, San Diego, CA
Ten-year outcomes in patients with surgically treated adolescent idiopathic scoliosis.

Poster No. P396
The Reversibility of Swan Neck Deformity in Chronic Atlantoaxial Dislocations
Peter G. Passias, MD, New York, NY
Shenglin Wang, MD, Beijing, China
Deng Zhao, Beijing, China
Shaobai Wang, MD, Beijing, China
Michal Kozanek, MD, Cambridge, MA
Andy Chang, BS, New York, NY
Chao Wang, MD, Beijing, China
This study reports that correction of upper cervical kyphosis results in secondary auto-correction of subaxial alignment, thus demonstrating the novel finding that swan neck deformity is reversible.

Poster No. P397
Outcomes of Cervical Spine Surgery in Teaching and Non-Teaching Hospitals
Miguel Pelton, BS, Chicago, IL
Kern Singh, MD, Chicago, IL
Patients treated in teaching hospitals for cervical spine surgery demonstrate longer hospitalizations, increased costs, increased venous thrombotic events, and increased mortality.

Poster No. P398
Laminar Screw Placement in the Subaxial Spine: A Feasibility Study
Sang Ik Shin, MD, Seoul, Republic of Korea
Jun-Sup Yeom, MD, Sungnam, Republic of Korea
Ho-Joong Kim, Sungnam, Republic of Korea
Bong-Soon Chang, MD, Seoul, Republic of Korea
Choon-Ki Lee, Seoul, Republic of Korea
K. Daniel Riew, MD, Saint Louis, MO
Laminar screws appear to be a viable fixation method at C7. At C3 and C6, careful patient selection and evaluation of CT scan is recommended. At C4 and C5, laminar screws are rarely possible.
Poster No. P399
Determining Optimal Post-operative Coronal Parameters for Selective Thoracic Fusions
Burt Yaszay, MD, San Diego, CA
Jahangir Aqghar, MD, Coral Gables, FL
Tracey Bastrom, MA, San Diego, CA
Amer Samdani, MD, Philadelphia, PA
Peter F. Stearn, MD, Cincinnati, OH
Randal R. Betz, MD, Philadelphia, PA
Harry L. Shuffleltarger, MD, Miami, FL
Peter O. Newton, MD, San Diego, CA
Optimal postop parameters for selective thoracic fusions were derived from data and surgeon query: lumbar Cobb 37% and trunk shift within 1.5cm.

Poster No. P400
Effects of Sequential Unilateral Facetectomy on Cervical Spinal Stability
Mageswaram Prasath, MS, Cleveland, OH
Robb Colbrunn, MSc, Cleveland, OH
Tara F. Bomer, BS, MSc, Cleveland, OH
Stephen R. Tolhurst, MD, Coppell, TX
Fernando Techy, MD, Chicago, IL
Robert F. McLain, MD, Cleveland, OH
To compare the kinematics of cervical spine and its stability following sequential unilateral resection of the facet joint.

Poster No. P401
Integrated Interbody Device Versus Anterior Locking Plate in a Single-Level Cervical Spine Fusion Construct
Matthew I. Stein, MD, Tampa, FL
Aniruddh Nayak, MS, Tampa, FL
Roger B. Gaskins, MD, Tampa, FL
Andres F. Cabezas, BS, Tampa, FL
Brandon G. Santoni, PhD, Tampa, FL
Antonio E. Castellvi, MD, Temple Terrace, FL
Integrated interbody fusion device offers comparable stability in all planes of motion when compared to standard anterior locking plate in single-level cervical fusion constructs.

Poster No. P402
Old Distractive Flexion Injuries of the Subaxial Cervical Spine
Osamu Kawano, MD
Takeshi Maeda, Iizuka, Japan
Eiji Mori, MD, Fukuoka, Japan
Itaru Yagoe, MD, Iizuka Fukuoka, Japan
Tsuneki Takao, MD, Iizuka, Japan
Hiroaki Sakai, MD
Tetsuo Hayashi, MD, Fukuoka, Japan
Yuichiro Morishita, MD, PhD, Iizuka, Japan
Keiichiro Shiba, MD, Iizuka, Japan
The classic anterior-posterior-anterior approach is thus considered to be a safe and effective surgical approach for old distractive flexion injuries of the subaxial cervical spine.

Poster No. P403
Miguel Pelton, BS, Chicago, IL
Kern Singh, MD, Chicago, IL
The present findings demonstrate that laminoplasty procedures have had an increasing trend of post-operative complications including pulmonary embolus, surgical site infections and hematomas.

Poster No. P404
Can Inflammatory Profiles Predict Outcomes from Lumbar Discoscopy for Disc Herniation?
Micah Smith, MD, Salt Lake City, UT
Ma Agnes 4th, Redwood City, CA
S. Raymond Golish, MD, PhD, Longview, WA
Ivan Cheng, MD, Redwood City, CA
Todd Alamin, MD, Redwood City, CA
Gaetano J. Scuderi, MD, Jupiter, FL
Eugene Carragee, MD, Redwood City, CA
Matthew Smuck, MD, Redwood City, CA
The purpose of this investigation was to determine if the presence of FAC from a lavage of disc herniation tissue from the epidural space bath correlates with clinical outcomes after discoscopy.

Poster No. P405
Imaging Characteristics of “Dynamic” versus “Static” Spondylolisthesis
Jesse L. Even, MD, Arlington, TX
Antonia Chen, MD, Pittsburgh, PA
Joon Y. Lee, MD, Pittsburgh, PA
There are distinguishing characteristics notable on Magnetic Resonance Imaging (MRI) to determine if a spondylolisthesis is static or dynamic.

Sports Medicine and Arthroscopy
Poster No. P406
Matrix Metalloproteinase Content and Activity in PRP and Biologic Response to PRP by Human Ligament Fibroblasts
Matthew A. Pifer, MD, Royal Oak, MI
Tristan Maerz, MS, Royal Oak, MI
Kevin Baker, PhD, Royal Oak, MI
Kyle Anderson, MD, West Bloomfield, MI
PRP contains significant concentrations of active MMPs and ligament fibroblasts respond differentially to two commercial PRP systems.

Poster No. P407
Decreased Local Anesthetic Chondrocyte Toxicity with Reduction in Temperature
Tarrk S. Omur, BA, San Francisco, CA
Alexis Dang, MD, San Francisco, CA
Decreasing culture conditions leads to increased chondrocyte viability after treatment with the local anesthetics lidocaine and bupivacaine.
Educational Programs

Poster No. P408
Importance of AMB to ACL Function in Resisting Lachman and Pivot-Shift Tests: A Robotic Cadaveric Study
Eric J. Gardner, MD, Scottsbluff, NE
Andrew W. Jetter, BS, Cincinnati, OH
Frank R. Noyes, MD, Cincinnati, OH
Edward S. Grood, PhD, Sarasota, FL

The AM and PL bundle play a synergistic role in restraining anterior tibial compartment translation at low flexion. Sectioning of either bundle alone did not produce a pivot shift phenomenon.

Poster No. P409
Treatment of Full-thickness Chondral Defects with High Molecular Weight Hyaluronic Acid
Maximiliano Espinosa, MD, Santiago, Chile
David Figueroa, MD, Santiago, Chile
Rafael Calvo, MD, Santiago, Chile
Alex Vaisman, MD, Santiago, Chile
Maximiliano Scheu, MD, Santiago, Chile
Juan José Valderrama, MD, Santiago, Chile
Marcela P. Gallegos, MD, Santiago, Chile
Paulette Conget, PhD, Santiago, Chile

Our hypothesis was that HMWHA in monodosis or three doses improve the regeneration of full-thickness chondral defects. No differences between these regimens was observed.

Poster No. P410
Successful Phenotype Rescue of Monolayer-expanded Osteoarthritic Human Chondrocytes using Pellet Culture
Yohei Ono, MD, Greenville, NC
Tadahiro Sakai, Nagoya, Japan
Hideki Hiraiwa, MD, PhD, Nagoya, Japan
Takashi Hamada, Nagoya City, Japan
Motoshige Nakashima, Nagoya, Japan
Shinya Ishizuka, MD, Syouwaku Nagoya City, Japan
Warren Knudson, PhD, Greenville, NC
Cheryl B. Knudson, PhD, Greenville, NC
Naoki Ishiguro, MD, Nagoya, Japan

Osteoarthritic chondrocytes readily dedifferentiate upon expansion in monolayer culture. A pellet culture technique was used to determine the limit of re-differentiation capacity of these cells.

Poster No. P411
Tribological Study of Bovine Cartilage Sliding Against Polyurethane, Polyethylene and Cobalt-chrome
Joseph A. Gil, MD, Providence, RI
Kimberly A. Bartosiak, BS, Forest Park, IL
Robert Erck, PhD, Lemont, IL
Steven C. Chudik, MD, Westmont, IL

This study compares the tribological behavior of bovine cartilage sliding against polyurethane, polyethylene, and cobalt-chrome.

Poster No. P412
Fifth Metatarsal Fractures: Associated Radiographic Factors and Effect on Participation in the NFL
Dominic S. Carreira, MD, Fort Lauderdale, FL
Scott M. Sandilands, BS, Fort Lauderdale, FL

Fifth metatarsal fractures not statistically significant for decreased participation in NFL. Radiographic abnormalities noted in coronal plane with varus alignment.

Poster No. P413
Adolescent Runners: The Effect of Training Shoes upon Running Kinematics
Scott M. Mullen, MD, Kansas City, KS
E. Bruce Toby, MD, Kansas City, KS

Modern running shoes feature a large cushioned heel, intended to dissipate the energy transmitted to the knees and hips. Adolescents wearing running shoes landed on their heels strike 70% of the time.

Poster No. P414
Platelet-Derived Growth Factor-BB, Platelet-Rich Plasma and Corticosteroids in a Tendinopathy Model
Joshua Dines, MD, Great Neck, NY
Vivek R. Shah, PhD, Hanover Park, IL
Luis A. Solchaga, PhD, Franklin, TN
Alison M. Beneiste, PhD, Boulder, CO
Jack Ratliff, BA, Franklin, TN
Patricia A. Ward, MS, Franklin, TN
Hans Kestler, Franklin, TN
Christopher Hee, Phd, Franklin, TN

Treatment with recombinant human platelet-derived growth factor-BB results in improved biomechanical properties compared to platelet-rich plasma or corticosteroids in a rat Achilles tendinopathy model.

Poster No. P415
Osteochondral Lesion of Talus: Is There a Critical Factor in Three-Dimensional Profile of Defect for Poor Outcome?
Chayanin Angthong, MD, Pathum Thani, Thailand
Ichiro Yoshimura, MD, Fukuoka, Japan
Kazuki Kanazawa, MD, Fukuoka, Japan
Takahiro Ida, MD, Fukuoka, Japan
Masatoshi Naito, MD, Fukuoka, Japan

Defect depth is an essential factor in OLT and may assist as a basis for preoperative decisions. A cutoff value exists concerning the risk of poor outcome at a defect depth of 6 mm as measured via MRI.

Poster No. P416
Epidemiology and Outcomes of Concussions in Major League Baseball
Vincent M. Moretti, MD, Chicago, IL
Leslie E. Schwindel, MD, Chicago, IL
Jonathan Watson, MD, Chicago, IL
Mark R. Hutchinson, MD, Chicago, IL

The impact of concussion injuries to professional baseball players can be significant. They can result in lengthy time on the injured list, temporary performance decreases, and the end of careers.
**Poster No. P417**  
Comparison of Four Cartilage Repair Techniques in the Human Cadaveric Hip Joint: A Biomechanical Study  
Adrian J. Cassar Gheiti, MD, MRCSEd, Dublin, Ireland  
Daniel Byrne, PhD, Santry Demse, Ireland  
Kevin J. Mulhall, MD, Dublin, Ireland  

In this study, four techniques of chondral repair on the acetabular articular surface were biomechanically compared by simulating a walking cycle in the hip joint at 25% weight bearing.

**Poster No. P418**  
Five to Seven Year Survivorship Following Hip Arthroscopy  
Marc J. Philippon, MD, Vail, CO  
Mackenzie M. Herzog, BA, Vail, CO  
Karen K. Briggs, MPH, Vail, CO  

The purpose of this study was to determine the survivorship (not requiring total hip replacement) following hip arthroscopy at 5 to 7 years.

**Poster No. P419**  
Gender Differences in Acetabular Morphology: Implications in Femoroacetabular Impingement  
Joseph Maratt, MD, Ann Arbor, MI  
M. Mustafa Gonnerawalla, MD, Ann Arbor, MI  
Sven Holcombe, BS, Ann Arbor, MI  
Stewart C. Wang, Ann Arbor, MI  
James A. Goulet, MD, Ann Arbor, MI  

Identified gender differences in acetabular morphology including focal and global femoral head coverage, acetabular version and quantified the prevalence of acetabular retroversion in the population.

**Poster No. P420**  
Sports Activities after Total Hip Arthroplasty - A Questionnaire Study for 607 Patients  
Hirohito Abe, MD, Osaka, Japan  
Takashi Sakai, MD, Suita, Japan  
Takashi Nishii, MD, Osaka, Japan  
Masaki Takao, MD, Suita, Japan  
Nobuo Nakamura, MD, Osaka, Japan  
Nobusiko Sugano, MD, Suita, Japan  

88% of the patients have postoperatively participated in the sports activities after total hip arthroplasty. The most common reason why they did not participate in the sports activities was anxiety.

**Poster No. P421**  
Endoscopic Release of the Iliotibial Band for External Snapping Hip Syndrome  
Victor M. Ilizaliturri Sanchez Jr, MD, Mexico City, Mexico  

Two year follow-up results of 45 patients treated with endoscopic release of the iliotibial band for external snapping hip syndrome. Results of this procedure were similar to those of open surgery.

**Poster No. P422**  
The Accuracy of Magnetic Resonance Arthrography after Hip Arthroscopic Labral Surgery  
Alessandro Aprato, MD, Torino, Italy  
Narulaka Jayasekera, FRCS (Ortho), Cambridge, United Kingdom  
Richard N. Villar, MD, Cambridge, United Kingdom  

When a labral tear has been repaired or partial labral excision has been performed, a post-operative MRA may inaccurately diagnose the presence of a persistent, recurrent, or unhealed tear.

**Poster No. P423**  
Midterm Comparison of Clinical Results in Simultaneous Open Wedge HTO and ACL Reconstruction  
Jae-Young Moon, MD, Huasun-Gun, Republic of Korea  
Jong-Keun Seon, MD, Huasun-Gun, Republic of Korea  
Eun K. Song, MD, Huasun-Gun, Republic of Korea  
Ji-Hyeon Yim, Jeonnam, Republic of Korea  
Kyujin Cho, MD, Gwangju, Republic of Korea  

Simultaneous open wedge HTO and ACL reconstruction showed satisfactory correction angle and improved knee joint function.

**Poster No. P424**  
Systemic Performance-Enhancing Effects of Platelet-Rich Plasma (PRP) Injection  
Amy Wasterlain, Menlo Park, CA  
Hillary Braun, BA, Redwood City, CA  
Alex H. Harris, PhD, MS  
Hyeon Joo Kim, PhD  
Jason L. Dragoo, MD, Redwood City, CA  

Serum IGF-1, VEGF and bFGF increase after PRP treatment, suggesting that PRP may enhance athletic performance, and providing a molecular profile that could detect athletes who have been treated.

**Poster No. P425**  
Biomechanical Evaluation of Pediatric Anterior Cruciate Ligament Reconstruction Techniques  
Moira M. McCarthy, MD, New York, NY  
Scott M. Tucker, MS, BS, New York, NY  
Joseph Nguyen, MPH, New York, NY  
Daniel W. Green, MD, New York, NY  
Carl W. Imhauser, PhD, New York, NY  
Frank A. Cordasco, MD, New York, NY  

Pediatric ACL reconstruction techniques including the all-epiphyseal technique restore stability to the ACL deficient knee.

**Poster No. P426**  
Midterm Results of Double Bundle ACL Reconstruction Using Soft Tissue Allograft  
Jong-Keun Seon, MD, Huasun-Gun, Republic of Korea  
Eun K. Song, MD, Huasun-Gun, Republic of Korea  
Ji-Hyeon Yim, Jeonnam, Republic of Korea  
Jae-Young Moon, MD, Huasun-Gun, Republic of Korea  

The double-bundle ACL reconstruction technique showed satisfactory clinical and stability results, but not regarding the progression of osteoarthritis and graft healing.
**Poster No. P427**

**Intraarticular Injections of Adipose-derived Stem Cells Improved Clinical Results in Knee Osteoarthritis**

Yun-Jin Choi, Seoul, Republic of Korea
Yong-Geon Koh, Seoul, Republic of Korea
Oh-Ryong Kwon, MD, Seoul, Republic of Korea
Seung-Bae Jo, MD, Seoul, Republic of Korea
Dongsuk Seo, Seoul, Republic of Korea

Intra-articular injections of buttock subcutaneous adipose-derived stem cells improved clinical results in patients with knee osteoarthritis.

**Poster No. P428**

**Lateral Compartment Cartilage Pressure: Implications for Cartilage Procedures**

Carmen E. Quatman, MD, Columbus, OH
Ata Kiapour, MS, Toledo, OH
Vijay Goel, PhD, Toledo, OH
Richard Dutto, MS, Van Wert, OH
Samuel C. Wordeman, BS, Columbus, OH
Jason W. Levine, PhD, Columbus, OH
Constantine Demetropoulos, PhD, Toledo, OH

This study evaluated intra-articular pressure distribution patterns during a simulated squat. Avoidance of tibial abduction and internal rotation during rehabilitation may be important for lateral tibia.

**Poster No. P429**

**Evaluation of the Rates of Arthroscopy for Osteoarthritis**

Robert E. Holmes, Wilder, Vermont
Wayne E. Moschetti, MD, Lebanon, NH
Brook I. Martin, Lebanon, NH
Ivan M. Tomek, MD, Lebanon, NH
Samuel Finlyson, MD, MPH, Boston, MA

Evidence of the ineffectiveness of arthroscopy as a treatment for knee osteoarthritis, along with changes in reimbursement, preceded a significant decline in the rate of this procedure from 2002-2008.

**Poster No. P430**

**Cost-Effectiveness Analysis of ACI: A Comparison of Periosteal Patch Versus Type I/III Collagen Membrane**

Eric M. Samuelsion, MD, Omaha, NE
David E. Brown, MD, Omaha, NE

This analysis revealed that, while both autologous chondrocyte implantation with periosteum (ACI-P) and a collagen patch (ACI-C) are cost-effective, ACI-C is slightly more cost-effective than ACI-P.

**Poster No. P431**

**Biomechanical Analysis of Posterior Cruciate Ligament Reconstruction Using Aperture Femoral Fixation**

Amar Matnal, MD, Cleveland, OH
Luis Vargas, MD, Coral Gables, FL
John W. Urdhe, MD, Coral Gables, FL
Robb Colbrunn, MSc, Cleveland, OH
Robert S. Butler, BSMSMS, Cleveland, OH
Brian M. Leo, MD, Weston, FL

Using a novel femoral fixation device, single-bundle PCL reconstruction better restored native knee kinematics than single-tunnel–double-bundle reconstruction in this 3-D robotic testing model.

**Poster No. P432**

**Day Case Knee Arthroscopy in Methicillin Resistant Staphylococcus Aureus Positive Patients**

Jane Campbell, Galway, Ireland
Paraic A. Murray, MD, Galway City, Ireland

A report on the incidences of positive Methicillin Resistant Staphylococcus Aureus (MRSA) results of a cohort of knee arthroscopy patients, screened on admission.

**Poster No. P433**

**Factors Related to Meniscal Extrusion and Cartilage Lesions after Medial Meniscus Root Tears**

Sung-Hwan Kim, MD, Seoul, Republic of Korea
Sung-Jae Kim, MD, Seoul, Republic of Korea
Yong-Min Chun, MD, Seoul, Republic of Korea
Seong H. Kim, MD, Seoul, Republic of Korea
Min Jung, MD, Seoul, Republic of Korea
Su Keon A. Lee, MD, Seoul, Republic of Korea
Jae-Hoo Lee, MD, Seoul, Republic of Korea

The risk of medial extrusion of the meniscus and severity of articular cartilage lesion increased with time after injury. It could be suggested that a 2 month period after MRT is a critical time for intervention.

**Poster No. P434**

**Incidence of Deep Venous Thrombosis after Tibial Tubercle Osteotomy: A Case Series Study**

Mibo J. Tanaka, MD, New York, NY
Joseph Nguyen, MPH, New York, NY
Beth E. Shubin Stein, MD, New York, NY

We report the incidence of deep venous thrombosis after tibial tubercle osteotomy in a case series of a single-surgeon cohort.

**Poster No. P435**

**Platelet Rich Plasma in Accelerated Achilles Tendon Regeneration: A Randomized Controlled Trial -Pilot Phase**

Joseph Alsousou, MD, Oxford United Kingdom

Our preliminary findings show that PRP application in Achilles tendon rupture may lead to faster regeneration and return to function as supported by a combination of objective and subjective outcome measures.
**Poster No. P436**

Are Medicaid Patients at Greater Risk of Infection after Arthroscopy?
Joseph L. Finstein, MD, New Orleans, LA
Aaron K. Black, MD, Boston, MA
Steven B. Cohen, MD, Media, PA

A PA Medicaid Database review found an arthroscopy infection rate significantly higher than reported in the literature illustrating a population at risk & weakness of “Pay for Performance” policy.

**Poster No. P437**

Minimum Two-year Follow Up of Arthroscopic Direct Removal of Popliteal Cyst by Posteromedial Portal
Jinho Cho, MD, PhD, Goyang-Si, Republic of Korea
Jae Gwang Song, MD, Go-Yang City, Republic of Korea
Dong-Hyun Seo, Goyang, Republic of Korea

we propose a new arthroscopic technique, that is, direct excision of popliteal cyst without additional skin incision, using 70 degree arthroscopy and posteromedial portal.

**Poster No. P438**

Clinical Utility of Magnetic Resonance Imaging in the Evaluation of Knee Pain in Patients 40 and Older
Marybat A. Adelani, MD, Saint Louis, MO
Nathan A. Mall, MD, Chesterfield, MO
Robert H. Brophy, MD, Chesterfield, MO
Mark Halstead, MD, Chesterfield, MO
Matthew V. Smith, MD, Town and Country, MO
Rick W. Wright, MD, Saint Louis, MO

Magnetic resonance imaging has limited clinical utility in the evaluation of patients 40 years and older with knee pain.

**Poster No. P439**

An Alternative Endoscopic Portal for Suprascapular Nerve Approach: An Anatomic Study
Akin Uzumcuğil, Ankara, Turkey
Gazi Huri, Ankara, Turkey
Omer S. Bicer, Adana, Turkey
Mahmut N. Doral, MD, Ankara, Turkey

Endoscopic portal for suprascapular nerve approach.

**Poster No. P440**

Simultaneous Reconstruction of Acromioclavicular and Coracoclavicular Ligaments using a Single Tendon Graft
Sang-Jun Shin, MD, Seoul, Republic of Korea
Sean Campbell, BS, Long Beach, CA
Jonathan H. Scott, Irvine, CA
Michelle H. McGarry, MD, Long Beach, CA
Thay Q. Lee, PhD, Long Beach, CA

A single tendon AC-CC reconstruction technique using a single free tendon graft provided an anatomic provided greater stability and stronger load to failure characteristics than a CC reconstruction.

**Poster No. P441**

Coracoclavicular Stabilization with Endobuttons and Suture Anchor for Acute Acromioclavicular Joint Dislocation
Yohsiyasu Uchiyama, MD, PhD, Kanagawa, Japan
Akitoshi Handa, MD, PhD, Isehara, Kanagawa, Japan
Eiji Shimpuiku, DMed, Tokyo, Japan
Hiroko Om, Isehara, Japan
Joji Mochida, MD, PhD, Isehara, Kanagawa, Japan

Coracoclavicular ligament reconstruction using suture anchor and endobuttons is a reliable technique for restoring the stability of the AC joint in cases of type V AC joint dislocation.

**Poster No. P442**

Reconstruction of a Bony Bankart Lesion: Best Fit Based on Radius of Curvature
Alexander DeHaan, MD, Portland, OR
Jacqueline Munch, MD, Portland, OR
Michael Durkan, BS, Portland, OR
Jung U. Yoo, MD, Portland, OR
Dennis C. Crawford, MD, Portland, OR

Based on cadaveric measurements of the glenoid radius of curvature, the most ideal augmentation would be either an inferior coracoid autograft or lateral distal tibia osteochondral allograft.

**Poster No. P443**

Why the Tenodesis? A Comparison of Large Hill-Sachs Lesions Treated by Remplissage or Isolated Bankart Repair
Grant Garcia, MD, New York, NY
Min J. Park, MD, MSc, Philadelphia, PA
Clare Zhang, MD, Philadelphia, PA
John D. Kelly IV, MD, Newtown Square, PA
G. Russell Huffman, MD, Philadelphia, PA

In comparison to isolated Bankart repair, Remplissage is a superior option for recurrent instability patients with large Hill-Sachs lesions as seen by improved failure rates and outcome scores.

**Poster No. P444**

In Bankart Repair, Inclusion of the Middle Glenohumeral Ligament does not Affect Shoulder Kinematics
Alexander C. Garber, MD, Honolulu, HI
Sang-Jun Shin, MD, Seoul, Republic of Korea
Michelle H. McGarry, MD, Long Beach, CA
Evan H. Argintar, MD, Washington, DC
James E. Tibone, MD, Los Angeles, CA
Thay Q. Lee, PhD, Long Beach, CA

Inclusion of the MGHL in a Bankart repair may result in a stronger repair while not significantly limiting range of motion or over-constraining the glenohumeral joint.

An alphabetical faculty financial disclosure list can be found starting on page 292.
Poster No. P445  
Outcome of a Partial Cap Resurfacing Implant for Humeral Head Defects in Patients with Shoulder Instability  
Nicholas C. Frisch, MD, Shaker Heights, OH  
Pradeep Kodali, MD, Bellaire, TX  
Morgan H. Jones, MD, Cleveland Heights, OH  
Anthony Miniaci, MD, FRCSC, Garfield Hts, OH  

In 21 shoulders with instability receiving a HemiCAP resurfacing implant for a humeral bony defect, none have suffered a re-dislocation and self reported outcomes scores have statistically improved.

Poster No. P446  
Suspensory Fixation for Subpectoral Biceps Tenodesis: A Cadaveric Study  
Anshuman Singh, MD, San Diego, CA  
Amarpal S. Arora, MD, San Diego, CA  
James P. Tasto, MD, San Diego, CA  

With its technical simplicity, favorable biomechanical properties and small stress riser, suspensory unicortical fixation is a safe and practical option for subpectoral biceps tenodesis.

Poster No. P447  
A Comparison of Glenoid Bone Loss Measurement Methods in Patients with Shoulder Instability  
Neil Bakshi, BA, Canton, MI  
Omar Jameel, MD, Royal Oak, MI  
Jon A. Jacobson, MD, Ann Arbor, MI  
Richard E. Debski, PhD, Pittsburgh, PA  
Jon K. Sekiya, MD, Ann Arbor, MI  

This study proposes a new method to measure glenoid bone loss and compares it to two other established methods to arthroscopic estimation.

Poster No. P448  
The “Bony Bankart Bridge” Technique for Restoration of Anterior Shoulder Stability  
Frank Martetschlagr, MD, Vail, CO  
Marilee P. Horan, MPH, Vail, CO  
Daniel Rios, MD, Aron, Colorado  
Peter J. Millett, MD, MSc, Vail, CO  

Arthroscopic Bony Bankart Bridge technique for anterior instability with glenoid rim fractures can restore shoulder stability, yield successful clinical outcomes and provide high patient satisfaction.

Poster No. P449  
Characterization of Symptomatic Hip Impingement in Butterfly Ice Hockey Goalies  
Asheesh Bedi, MD, Ann Arbor, MI  
Rebecca M. Stone, ATC, Edina, MN  
Elizabeth R. Sibilsky Enselman, MEd, ATC, Ann Arbor, MI  
Bryan T. Kelly, MD, New York, NY  
Christopher Larson, MD, Edina, MN  

FAI with predominately femoral sided deformity is frequently observed in butterfly hockey goalies with symptomatic hip and groin pain. Arthroscopic osteoplasty can successfully address the deformity.

Poster No. P450  
Results of Open Osteochondroplasty for Femoroacetabular Impingement with Minimum Two-year Follow Up  
Brian M. Curtin, MD, Richmond, VA  
Susan M. Odum, Charlotte, NC  
John L. Masonis, MD, Charlotte, NC  

Just over one third of patients treated surgically with open osteochondroplasty for femoroacetabular impingement have gone on to require additional surgery or showed signs of arthritic progression.

Poster No. P451  
Lateral vs. Beach Chair Shoulder Arthroscopy Position: Is There Really a Vital Signs Difference During Positioning?  
Alternate Paper: Sports Medicine/Arthroscopy VI: Shoulder (RC), Elbow  
Joseph L. Finstein, MD, New Orleans, LA  
Lawrence S. Miller, MD, Camden, NJ  
John P. Salvo Jr, MD, Voorhees, NJ  

We compared the change in vital signs between beach chair vs lateral decubitus positioning during shoulder arthroscopy and found no statistical difference.

Poster No. P452  
Arthroscopic Hip Revision Surgery for Residual Femoroacetabular Impingement: Surgical Outcomes  
Christopher Larson, MD, Edina, MN  
Marc Russell Giveans, PhD, Eden Prairie, MN  
Asheesh Bedi, MD, Ann Arbor, MI  
Kathryn Samuelson, BS, Edina, MN  
Rebecca M. Stone, ATC, Edina, MN  

Arthroscopic hip revision surgery for residual FAI led to significantly improved outcome measures. Outcomes, however, were inferior to those after primary arthroscopic FAI corrective surgery.

Poster No. P453  
Quantifying the Influence of Flow Rate on the Safety Profile of Radiofrequency Ablation in Hip Arthroscopy  
Frank McCormick, MD, Chicago, IL  
Kyle Alpaugh, MS, Boston, MA  
Benedict U. Nwachukwu, Boston, MA  
Scott D. Martin, MD, Boston, MA  

Use of Radiofrequency ablation in hip arthroscopy is safe with minimal risk to chondrocytes provided 5 second pulsed irrigation is performed.

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Poster No. P454
Management of Common Peroneal Nerve Injuries - Our Experiences at Royal National Orthopaedic Hospital
Alternate Paper: Sports Medicine/Arthroscopy V: ACL, PCL, Multiligament
Anna Panagiotidou, MBBS, London, United Kingdom
Jagwant Singh, MRCS, Colchester, United Kingdom
Michael Fox, FRCS (Ortho), Middlesex, United Kingdom
Marco M. Sinisi, London, United Kingdom

There is still a controversy regarding the management of Common peroneal nerve (CPN) injuries Is neurolysis of CPN enough in terms of surgical intervention or do we need nerve grafting?

Poster No. P455
Pelvic Incidence and Femoroacetabular Impingement - A Novel Relationship
Michael D. Hellman, MD, Chicago, IL
Bryan Haugboom, MD, Chicago, IL
Nicholas M. Brown, MD, Chicago, IL
Yale Fillingham, MD, Chicago, IL
Shane J. Nho, MD, Chicago, IL

Pelvic Incidence (PI) is lower in patients with labral tears due to femoroacetabular impingement (FAI), particularly those with pincer FAI. PI may affect aberrant hip development such as FAI.

Poster No. P456
Complete Proximal Hamstring Insertion Avulsion: Functional Outcomes after Conservative Treatment
Kurt J. Hofmann, MD, Norwood, MA
Daniel M. Connors, DPT, Natick, MA
Adam Paggi, DPT, PT, Boston, MA
Suzanne L. Miller, MD, Wayland, MA

Nonsurgical management after a complete proximal hamstring avulsion yields significant subjective and strength deficits.

Poster No. P457
Elevated Biomarkers of Cartilage Catabolism and Inflammation in Athletes with Femoroacetabular Impingement
Asheesh Bedi, MD, Ann Arbor, MI
Evan B. Lynch, BS, Ann Arbor, MI
Elizabeth R. Sibilsby Enselman, MEd, ATC, Ann Arbor, MI
Max Davis, BA, Ann Arbor, MI
Tarek Makki, BS, Ann Arbor, MI
Paul DeWolf, BS, Ann Arbor, MI
Bryan T. Kelly, MD, New York, NY
Phillip T. Heming, DO, Ann Arbor, MI
Christopher L. Mendias, PhD, ATC, Ann Arbor, MI

Subjects with femoroacetabular impingement had significantly higher levels of biomarkers of cartilage catabolism and inflammation, and decreases in SF-12 and HOOS scores compared to control subjects.

Poster No. P458
Three-Dimensional Mapping of Cartilage and Labral Pathology in Femoroacetabular Impingement
Antony Palmer, MA, BMBCh, Oxford, United Kingdom
Scott J. Fernquest, BA, Oxford, United Kingdom
Gerald E. Thomas, MA, MBBS, Oxford, United Kingdom
Cameron Griffiths, Surrey, United Kingdom
Lydia Buchanan, London, United Kingdom
Adrian Taylor, MBBS, FRCS, Oxford, United Kingdom
Andrew J. Carr, FRCS, Headington Oxford, United Kingdom
Sion Glyn-Jones, MA MBBS, Oxford, United Kingdom

Cam lesion are most frequently positioned at between 1 and 2 O’Clock on the femoral neck, however, damage to acetabular cartilage and labrum is more superior at between 11 and 1 O’Clock.

Poster No. P459
CT and MRI Measurements of Tibial Tubercle to Trochlear Groove Distances are Not Equivalent
Christopher L. Camp, MD, Rochester, MN
Jeffrey A. Bond, MD, Rochester, MN
Mark Collins, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Aaron J. Krych, MD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
Diane L. Dahm, MD, Rochester, MN

In patients with patellar instability, TTTG by magnetic resonance imaging (MRI) tended to be lower than that measured by computed tomography (CT) with decreased reliability between the two modalities.

Poster No. P460
The Results for PCL of Single Bundle Versus Double Bundle Reconstruction for More Than 10 Years Follow Up
Masataka Deie, MD, Hiroshima, Japan
Mitsuo Ochi, MD, PhD, Hiroshima, Japan
Nobuo Adachi, MD, Hiroshima, Japan
Atsuo Nakamae, MD, PhD, Hiroshima, Japan
Kobuo Takazawa, Hiroshima, Japan

No significant clinical differences were between PCL single bundle reconstruction and double bundle reconstruction after more than 10 years. While almost of both cases had good results, some cases have.

Poster No. P461
Clinical Outcomes of Surgical Treatment of Multi-ligamentous Knee Injury with Associated Peroneal Nerve Palsy
Steven A. Giuseffi, MD, Rochester, MN
Joshua L. Hudgens, MD, Ann Arbor, MI
Michael J. Stuart, MD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN

Outcomes after surgical treatment of multi-ligamentous knee injury with concomitant peroneal nerve palsy are worse than those previously reported for isolated ligamentous injury.

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Educational Programs

**Poster No. P462**
The Postoperative Vascular Risk Associated with Multiple-Ligament Knee Reconstruction Under Tourniquet Control
Kyle F. Chun, MD, Edmonds, Lauren Meyer, BS, Seattle, WA
Alex W. Earnest, BA, Seattle, WA
Christopher J. Wahl, MD, La Jolla, CA
During the treatment of multiligament knee injured patients, risk stratification may minimize but not eliminate the risk of vascular injury associated with the use of a tourniquet.

**Poster No. P463**
Platelet-Rich Plasma as a Treatment for Patellar Tendinopathy: A Double-Blind Randomized Controlled Trial
Jason L. Dragoo, MD, Redwood City, CA
Amy Wasterlain, Menlo Park, CA
Hillary Braun, BA, Redwood City, CA
A therapeutic regimen of eccentric exercise and dry needling with PRP is significantly better than exercises and dry needling alone at 12 weeks.

**Poster No. P464**
Anterior Cruciate Ligament Reconstruction in Patients Over 50 Years Old
Tyler T. Steubs, BS, Minneapolis, MN
Sabrina K. Sikka, North Oaks, MN
Keshav Kohli, North Oaks, MN
Robby S. Sikka, MD, Minneapolis, MN
Madan Mohan G. Reddy, MBBS, MS, Bloomington, MN
Gary B. Fetzer, MD, Minneapolis, MN
Joel L. Boyd, MD, Minneapolis, MN
CL Reconstruction in carefully-selected patients over 50 years old can result in return to sport and substantial improvement in quality of life and activities of daily living.

**Poster No. P465**
Deformation of Two Anterior Cruciate Ligament Femoral Anchoring Systems Following Cyclical-Loading
Harvey E. Montijo, MD, Charlotte, NC
Nahir A. Habet, MSc, Charlotte, NC
Scott B. O’Neal, MD, Waxhaw, NC
James E. Fleischli, MD, Charlotte, NC
Richard D. Peindl, PhD, Charlotte, NC
Two fairly new suspensory femoral anchoring devices (TR and ZL) see deformation during cyclical loading. These values are important when considering graft placement.

**Poster No. P466**
Dedicated Clearance Protocols Affect Length of Stay and Complications in Hip Fracture Patients
Ronald Huang, MD, Philadelphia, PA
Michael J. Bercik, MD, Philadelphia, PA
Zachary D. Post, MD, Egg Harbor Township, NJ
Fabio Orozco, MD, Egg Harbor Township, NJ
Alvin C. Ong, MD, Linwood, NJ
Protocol-driven clearance and postoperative medical management of hip fracture patients by a team of dedicated medical specialist led to fewer wound infections and shorter lengths of stay.

**Poster No. P467**
The New Strategy for Fracture Healing by Ex-vivo Expanded Bone Marrow CD34 Positive Progenitor Cells
Yohei Kawakami, MD, Hyogo, Japan
Masaaki Ii, MD, PhD, Takatsuki, Osaka, Japan
Tomoyuki Matsumoto, MD, PhD, Kobe, Japan
Yutaka Mifune, MD, Kobe, Japan
Tomoki Fukui, Kobe, Japan
Ryosuke Kuroda, MD, Kobe, Japan
Masahiro Kurosaka, MD, Kobe, Japan
Takayuki Asahara, Isehara, Japan
Autologous culture expanded BM CD34+ cell transplantation therapy would be not only a simple but also powerful therapeutic strategy for unhealing fracture.

**Poster No. P468**
A Biomechanical Study Comparing Polyaxial Locking Screw Mechanisms
Jonah Hebert-Davies, MD, Montreal, QC, Canada
Fanny Canet, Montreal, QC, Canada
Emilie Sandman, MD, Outremont, QC, Canada
Li Ang, BS, Montréal, QC, Canada
Dominique Rouleau, MD, Montreal, QC, Canada
George Y. Laflamme, MD, Montreal, QC, Canada
Several types of polyaxial screws experience significant loss in strength of up to 45% when inserted at maximal angulation. The effective total freedom of motion is reduced to 20 degrees.

**Poster No. P469**
Transfection of NF-κB Decoy Oligodeoxynucleotide Protects Against Ischemia/reperfusion Injury in Rat Skin Flap
Takeshi Uemura, MD, Tsu City, Japan
Masaya Tsuji, MD, PhD
Koji Akeda, MD, PhD, Tsu, Japan
Haruhiko Satonaka, MD, PhD, Tsu, Japan
Kazuhiro Hori, MD, Nagoya, Japan
Akihiro Sudo, Prof., Tsu City, Mie, Japan
Naked NF-κB decoy ODN was distributed over the entire flap. Transfection of the ODN significantly protected rat skin flap against I/R injury and decreased inflammation and expression of iNOS.

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an off-label use). For full information refer to page 17.*
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**Poster No. P470**  
Pelvic Recoil and Anterior Sacroiliac Ligament Integrity Related to Rapid Separation of the Symphysis Pubis  
*Alternate Paper: Trauma III: Pelvis and Acetabulum*  
Hans Joseph, DO, Erie, PA  
Steven F. Habusta, DO, Erie, PA

This study examines the anterior sacroiliac ligament integrity in open book pelvic ring injuries, as well as graphs the pelvis’ ability to recoil from various amounts of opening.

**Poster No. P471**  
**• Prevention of Pin Tract Infection with Iodine-supported Titanium Pin**  
Toshiharu Shirai, MD, Kanazawa, Japan  
Koji Watanabe, Kanazawa, Japan  
Hidenori Matsubara, MD, Kanazawa, Japan  
Issei Nomura, Kanazawa, Japan  
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Antibacterial iodine-supported pins (i-pins) which we have developed were able to significantly decrease pin tract infection rate and had no cytotoxicity. I-pins are next-generation materials.

**Poster No. P472**  
Comparison of Image Quality and Radiation Exposure from C-arm Fluoroscopes when Used for Imaging the Pelvis  
Mark L. Prasarn, MD, Bellaire, TX  
David B. Doherty JR, MS, BA, Houston, TX  
Timothy S. Achor, MD, Houston, TX  
Joshua L. Gary, MD, Houston, TX  
John W. Munz, MD, Houston, TX  
Milan Sen, MD, Houston, TX  
Glenn R. Rechtine II, MD, Pinellas Park, FL

Upon evaluation of commonly used C-arm fluoroscopes, the GE OEC produced the best quality images and ranked the highest, while emitting the least amount of radiation.

**Poster No. P473**  
**• Fluoroscopic Radiation to the Orthopedic Traumatologist’s Hand & Efficacy of a Novel Radiation Attenuation Product**  
Evan Dougherty, MD, Maywood, IL  
Erika J. Mitchell, MD, Maywood, IL  
Michael D. Stover, MD, Chicago, IL  
Hobie D. Summers, MD, Chicago, IL  
Adam S. Hintz, BS, Oak Park, IL

The orthopedic traumatologist’s hand is routinely exposed to fluoroscopic radiation scatter. This study outlines that risk and introduces a novel product that reduces radiation exposure to the hand.

**Poster No. P474**  
Inflammatory Response Following Tibial Plateau Fracture  
Justin Haller, MD, Salt Lake City, UT  
Thomas F. Higgins, MD, Salt Lake City, UT  
Erik Kubiak, MD, Salt Lake City, UT

Inflammatory response following intra-articular fracture is elevated and there is a time-dependent response with cytokines.

**Poster No. P475**  
Locking Plate Fixation of the Proximal Humerus with Fracture Impaction to Restore the Medial Column  
Colleen Weeks, MD, Edmonton, AB, Canada  
Farkhana Begum, BScEng, Edmonton, AB, Canada  
Samer Adeeb, PhD, Edmonton, AB, Canada  
Lauren A. Beaupre, PhD, Edmonton, AB, Canada  
Jason P. Carey, PhD, Edmonton, AB, Canada  
Martin J. Bouljiane, MD, Edmonton, AB, Canada

Proximal humerus fixation with shaft medialization and impaction to restore the medial column was shown to be a biomechanically superior construct when compared to traditional locking plate fixation.

**Poster No. P476**  
Sacroiliac Screw Placement in Dysmorphic Sacrum is More Accurate with 3D Navigation than 2D or Fluoroscopy  
Amir Matityahu, MD, San Francisco, CA  
David M. Kahler, MD, Earlysville, VA  
Christian Krettek, MD, Hannover, Germany  
Ulrich Stöckle, MD, Tuebingen, Germany  
Peter Messmer, MD, Dubai, United Arab Emirates  
Jan Ljungqvist, Duebendorf, Switzerland  
Florian Gebhard, MD, Ulm, Germany

Placement of Iliosacral screws utilizing intraoperative 3D navigation significantly increases accuracy in the dysmorphic and typical sacrum relative to fluoroscopy and 2D navigation.

**Poster No. P477**  
Comparison of Titanium Elastic Nail and Plate Fixation of Pediatric Subtrochanteric Femur Fractures  
G. Ying Y. Li, MD, Ann Arbor, MI  
Benton E. Heyworth, MD, Boston, MA  
Michael P. Glotzbecker, MD, Waban, MA  
Mark Seeley, MD, Ann Arbor, MI  
Joel J. Gagnier, PhD, Ann Arbor, MI  
Kelly L. Vanderhave, MD, Ann Arbor, MI  
Michelle S. Caird, MD, Ann Arbor, MI  
Frances A. Farley, MD, Ann Arbor, MI  
Daniel J. Hedequist, MD, Boston, MA

A multicenter retrospective study showed that plating of pediatric subtrochanteric femur fractures was associated with better outcome scores and a lower complication rate than titanium elastic nailing.

**Poster No. P478**  
Vitamin D Insufficiency in Patients with Acute Hip Fractures of all Ages and both Sexes in a Sunny Climate  
Amanda L. Johnson, MD, San Jose, CA  
Joel J. Smith, MD, San Diego, CA  
Jeffrey M. Smith, MD, San Jose, CA  
Anthony G. Sanzone, MD, Encinitas, CA

Patients aged 18 and older of both sexes with hip fractures had insufficient levels of Vitamin D, and those aged 71+ had significantly lower levels than a control group of total joint patients.
Poster No. P479
The Effects of “Old” Red Blood Cells Transfusion on Mortality and Morbidity in Hip Fracture Patients
Assaf Kadar, MD, Gvastayim, Israel
Ofir Chechik, MD, Ramat Hasharon, Israel
Ely L. Steinberg, MD, Rishon LeZion, Israel
Moshe Salai, MD, Tel-Aviv, Israel
Amir Sternheim, Toronto, ON, Canada
The study assess the influence of the number and age of blood units transfused on mortality. We conclude that both the number of ABT’s and the age of the units were related to increased mortality.

Poster No. P480
Notch Signaling in Mesenchymal Stem Cells (MSCs) and Tibial Fracture Callus Harvested from Geriatric Mice
Nicole S. Belkin, MD, Philadelphia, PA
Lorraine L. Mutyaba, BS, Philadelphia, PA
Allison E. Williams, Philadelphia, PA
Lee McDaniel Jr, MS, Philadelphia, PA
Derek L. Dopkin, BA, Philadelphia, PA
Kiert D. Hankenson, DVM, Philadelphia, PA
Jaimo Ahn, MD, PhD, Philadelphia, PA
MSCs and fracture callus from geriatric mice show alterations in notch signaling pathways, suggesting a potential therapeutic target to improve geriatric fracture healing.

Poster No. P481
Laser Targeting with C-arm Fluoroscopy: Effect on Image Acquisition and Radiation Exposure
Franklin D. Shuler, MD, Huntington, WV
Justin Daigre, MD, Morgantown, WV
Danh Pham, BS, Morgantown, WV
Laser targeting helped with imaging knees and ankles with statistically significant reductions in fluoroscopy time and a statistically significant improvement of image quality.

Poster No. P482
• CAM Walkers Only Diminish Lower-Extremity Loading in a Clinically Meaningful Way During Dynamic Loading
Kylee North, MS, Bountiful, UT
Ami Stuart, Salt Lake City, UT
Thomas F. Higgins, MD, Salt Lake City, UT
Robert W. Hitchcock, Salt Lake City, UT
Erik Kubiaik, MD, Salt Lake City, UT
Previous literature demonstrates that CAM walkers decrease peak loading by 30-37%. Our findings show that the amount of decrease is dependent on the use of the CAM walker’s strapping mechanism.

Poster No. P483
Minimally Displaced Clavicle Fracture After High Energy Injury: Are They Likely to Displace?
Alternate Paper: Trauma V: Lower Extremity: Knee and Tibia
John Riehl, MD, Orlando, FL
William Aths, MD, Orlando, FL
Mark W. Munro, MD, Windermere, FL
George J. Haidukewych, MD, Orlando, FL
Stanley J. Kupiszewski, MD, Orlando, FL
Joshua Langford, MD, Orlando, FL
Kenneth J. Koval, MD, Orlando, FL
Clavicle fractures in patients who sustain a high energy injury have a high propensity to displace on follow-up x-rays, even when initially minimally displaced.

Poster No. P484
An In Vitro Fibroproliferative Model to Investigate Cellular Precursors of Heterotopic Ossification
Emily Shin, MD, Bethesda, MD
Ji Youngmi, Bethesda, MD
Gregory T. Christopherson, Bethesda, MD
Husam Bharrai, MD, Silver Spring, MD
Wesley M. Jackson, Albany, CA
Leon Nesti, MD, PhD, Crownsville, MD
We propose that an in vitro cellular model of fibrotic nodule formation is representative of TGFβ1-induced fibrosis, which plays a role in wound healing and subsequent formation of HO.

Poster No. P485
SDF-1/CXCR4 Axis Regulate Both Vasculogenesis and Osteogenesis for Bone Fracture Healing
Yohei Kawakami, MD, Hyogo, Japan
Tomoyuki Matsumoto, MD., PhD, Kobe, Japan
Yutaka Mifune, MD, Kobe, Japan
Tomoaki Fukui, Kobe, Japan
Ryosuke Kuroda, MD, Kobe, Japan
Masahiro Kurosaka, MD, Kobe, Japan
Takayuki Asahara, Isehara, Japan
The promotion of CXCR4/SDF-1 signal on EPCs lead to the acceleration of bone fracture healing for new therapeutic strategies to fracture repair.

Poster No. P486
The Impact of Multiple Cultures on Antibiotic Usage: A Protocol for Nonunion and Hardware Infections
Michael Kuhne, MD, Portland, OR
Joseph Volpi, BS, Portland, OR
Penelope Barnes, MBBS, PhD, Portland, OR
Darin M. Friess, MD, Portland, OR
In comparison to 1-2 biopsies, 5 or more biopsies improved diagnostic accuracy of septic nonunion or hardware infection and altered post-operative antibiotic management in nearly one quarter of cases.
Poster No. P487
Osteoporosis Treatment Reduces Mortality Risk after Hip Fracture Surgery in Elderly Women
Alternate Paper: Trauma II: Geriatric Fractures
Young-Soo Park, MD, Seoul, Republic of Korea
Young-Wan Moon, MD, Seoul, Republic of Korea
Seung-Jae Lim, MD, Seoul, Republic of Korea
Sang-Min Kim, MD, Seoul, Republic of Korea
Osteoporosis treatment appears to reduce mortality risk in elderly women after hip fracture surgery.

Poster No. P488
Displaced Supracondylar Humerus Fractures in Toddlers: Are They Different?
Camila B. De Mattos, MD, Portland, OR
David Ramski, Washington, DC
Bernard D. Horn, MD, Philadelphia, PA
Toddlers differ from older children regarding type 3 fractures especially concerning the location where the injury occurs, higher rate of suspected child abuse and the number of pins used in surgery.

Poster No. P489
Length of Stay and American Society of Anesthesiologists (ASA) Status in the Orthopaedic Trauma Patient
Zachary Yoneda, BA, Nashville, TN
Amir A. Jabangr, MD, Nashville, TN
Jesse Ehrenfeld, MD, MPH, Nashville, TN
Mallory Powell, Nashville, TN
William T. Obrenskkey, MD, MPH, Nashville, TN
Manish K. Sethi, MD, Nashville, TN
ASA status was shown to have strong predictive value in estimation of length of stay following procedures across orthopedic trauma surgeries in a retrospective study at a major trauma center.

Poster No. P490
A Small Interfering RNA Targeting Lnk is Effective in Treatment of Bone Fracture via Early Neovascularization
Yohei Kawakami, MD, Hyogo, Japan
Tomoyuki Matsumoto, MD., PhD, Kobe, Japan
Ryosuke Kuroda, MD, Kobe, Japan
Masaaki Ii, MD, PhD, Takatsuki, Osaka, Japan
Yutaka Mifune, MD, Kobe, Japan
Tomoharu Fuku, Kobe, Japan
Masahiro Kurosaka, MD, Kobe, Japan
Takayuki Asahara, Isahara, Japan
We clarified that negatively controlled Lnk system contributed to a favorable environment for fracture healing by enhancing vasculogenesis and osteogenesis.

Poster No. P491
Reliability of Qualitative Radiographic Characteristics of Upper Sacral Segment Dysmorphism
Scott Kaiser, MD, San Francisco, CA
Joseph Liu, MD, New York, NY
Michael J. Gardner, MD, Saint Louis, MO
Milton L. Routt Jr, MD, Seattle, WA
Saam Morshed, MD, San Francisco, CA
From 100 pelves, a cluster was defined with a short safe sacral osseous corridor. Findings of dysmorphism were present with significantly greater frequency. Kappa reliability was fair to moderate.

Poster No. P492
Does Surgical Management Reduce the Risk of Premature Physeal Closure in Salter-Harris II Distal Tibia Fractures?
Franco Russo, BS, San Diego, CA
Molly Moor, Hallandale Beach, FL
Scott J. Mubarak, MD, San Diego, CA
Andrew T. Pennock, MD, San Diego, CA
We recommend all displaced SH type II fractures of the distal tibia be treated with closed reduction unless gross deformity, secondary to interposed tissue, prevents anatomic alignment.

Poster No. P493
Total Hip Arthroplasty for Failed Treatment of Acetabular Fractures with Prior Open Reduction and Internal Fixation
Kyle Hiebler, DO, State College, PA
Jerald Westberg, BA, Minneapolis, MN
Patrick Yoon, MD, Minneapolis, MN
David C. Templeman, MD, Minneapolis, MN
Andrew H. Schmidt, MD, Minneapolis, MN
Richard F. Kyle, MD, Minneapolis, MN
Identifying a subset of acetabular fractures that have a high incidence of secondary THA.

Poster No. P494
Progressive Displacement After Clavicle Fracture; An Observational Study
Erich M. Gauger, MD, St Paul, MN
Aaron Jacobson, DC, St Paul, MN
Ryan E. Will, MD, Tacoma, Washington
Peter A. Cole, MD, Saint Paul, MN
This study is to describes the incidence of progressive displacement; compares inter-observer reliability of measurements; analyzes if patient positioning effects displacement measurements.

Poster No. P495
Mortality of the 100-year-old with Hip Fracture
Eric B. Smith, MD, Merion Station, PA
Mohammad R. Rasouli, MD, Philadelphia, PA
Kyle J. Dolan, Havertown, PA
T. David Tarity, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA
One hundred year-old patients with hip fractures should not be denied surgery based on age alone. Surgical fixation or hemiarthroplasty are reasonable approaches.
Educational Programs

Poster No. P496

Return to Duty After Integrated Orthotic and Rehabilitation Initiative
James A. Blair, MD, San Antonio, TX
Jeanne C. Patzkowski, MD, San Antonio, TX
Ryan Blane, Fort Sam Houston, TX
Johnny Owens, San Antonio, TX
Joseph R. Hsu, MD, San Antonio, TX

After completion of the Return To Run rehabilitation pathway, more than 50% of wounded servicemembers returned to duty.

Poster No. P497

Intramedullary Hip Screw: A 10-year Review in a Level 1 Trauma Center
Aseer Shafqat, MBBS, MRCS, Bishopstown, Ireland
Leo Carroll, Vancouver, BC, Canada
James A. Harty, MD, Cork, Ireland

A single-centre, 10-year retrospective review of postoperative complications of the intramedullary hip screw after proximal femoral fracture stabilization.

Poster No. P498

Comparing Length of Stay after Isolated Femoral and Tibial Fractures at Two Level 1 Trauma Centers
Syed H. Hussami, BS, Saint Louis, MO
James M. Jackman, DO, Clackamas, OR
Lisa K. Camnada, MD, Clayton, MO

The purpose was to determine length of stay (LOS) after isolated femoral and tibial shaft fractures at 2 Level 1 hospitals in a metropolitan area and identify differences and factors affecting LOS.

Poster No. P499

Osteoclast Activation and Bone Remodeling Following Administration of Osteoinductive Agents
Scott A. Wingert, MD, PhD, St Louis, MO
Tracye Lawyer, MD, Jackson, MS
Hamed Benghuzzi, Jackson, MS
Michelle Tucci, Jackson, MS

Bone remodeling in fracture healing is dependent on osteoclast activation. Based on immunohistochemical results, treatment with OP-1 does not appear to provide the activation signal for osteoclasts.

Poster No. P500

Placenta Derived Mesenchymal-like Adherent Stromal Cells for the Treatment of Skeletal Muscle Injury in Rats
Philipp Von Roth, MD, Berlin, Germany
Tobias Winkler, MD, Berlin, Germany
Christoph Paul, Berlin, Germany
Ayelet Chajut, PhD, Haifa, Israel
Lena Pinzon, Haifa, Israel
Georg Duda, Dr Ing, Berlin, Germany
Carsten Perka, MD, Berlin, Germany

Our data demonstrate the potential of PLX cells given as a local cell therapy for improvement of muscle function after skeletal muscle trauma.

Poster No. P501

Systemic Proteomic Profiles Associated with Healing of Mid-shaft Femur Fractures
Melissa N. Zamel, MD, Royal Oak, MI
Denise Koueiter, Royal Oak, MI
Timothy Geddes, BS, Royal Oak, MI
Kevin Baker, PhD, Royal Oak, MI
Kevin D. Grant, MD, Royal Oak, MI

Biomarkers known to play a role in osteogenesis demonstrated differential systemic expression in an osteotomy group versus a control group at 3, 7, 14, and 28 days postoperatively.

Poster No. P502

Extra-articular Distal Humerus Fractures: Is One Plate Enough?
Brett D Crist, MD, Columbia, MO
Kevin C. Paisley, DO, Columbia, MO
Alan G. Anz, MD, Columbia, MO
Ferris Pfeiffer, PhD, Boonville, MO
Gregory J. Della Rocca, MD, PhD, Columbia, MO

A single metaphyseal locking plate is significantly stiffer in the sagittal plane when compared to traditional two plate constructs for extra-articular distal humerus fractures.

Poster No. P503

Prospective Randomized Evaluation of Outcomes with Different Tibial Nail Entry Ports
Michael McClincy, MD, Pittsburgh, PA
Dana J. Farrell, BS, Pittsburgh, PA
Peter Siska, MD, Pittsburgh, PA
Gary S. Gruen, MD, Pittsburgh, PA
James J. Irrgang, PhD, Pittsburgh, PA
Ivan S. Tarkin, MD, Pittsburgh, PA

This prospective randomized trial examined outcomes comparing traditional high intracapsular and low extracapsular starting points for tibial shaft nailing finding that both had similar results.

Poster No. P504

Validity of the Patient Satisfaction Questionnaire-18 for Orthopaedic Trauma
Renan C. Castillo, MD, Baltimore, MD
Ebrahim Paryavi, MD, MPH, Baltimore, MD
Elisa J. Knutsen, MD, Saint Louis, MO
Eric Belin, MD, Baltimore, MD
Sara E. Heins, BA, Baltimore, MD
Robert V. O'Toole, MD, Baltimore, MD

This analysis is a validation of this widely used instrument in an orthopedic trauma setting, and identifies the domains of patient satisfaction being captured in this population.

The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
**Poster No. P505**

Ultrasound as a Screening Test for Occult Hip Fracture: A Safe Alternative to MRI?
Joshua Schroeder, MD
Konstantin Kotsou, MD, Jerusalem, Israel
Rami Mosheiff, MD, Jerusalem, Israel
Yoram A. Weil, MD, Jerusalem, Israel
Meir Liebergall, MD, Jerusalem, Israel
Amal Khoury, MD, Jerusalem, Israel

Occult hip fractures are hard to image, sonography is highly sensitive for detection of the fractures and can serve as an effective screening tool.

**Poster No. P506**

Staged Treatment of High Energy Midfoot Fracture/Dislocations
Mollie Manley, MD, Pittsburgh, PA
Peter Siska, MD, Pittsburgh, PA
Andrew R. Evans, MD, Pittsburgh, PA
Ivan S. Tarkin, MD, Pittsburgh, PA

Staged care is safe and effective management of selected complex midfoot fracture dislocations. Delayed definitive reconstruction can achieve optimal alignment without wound or septic complication.

**Poster No. P507**

Quantification of Anterior Cortical Bone Removal and Intermensial Ligament Damage at the Tibial Nail Entry Zone
Jesse E. Bible, MD, MHS, Nashville, TN
Ankeet Choxi, BS, Nashville, TN
Srvan Dhabhpal, Atlanta, GA
Jason M. Evans, MD, Franklin, TN
Hassan R. Mir, MD, Nashville, TN

The results suggest that a substantial amount of anterior tibial bone is removed during nail entry portal creation and IM ligament damage occurs adjacent to the majority of tibial nail entry zones.

**Poster No. P508**

Angle Stable Locking Screws Reduce Malalignment in Distal Tibia Fractures Treated with Intramedullary Nails
Alternate Paper: Trauma I: Ankle and Pilon
John D. Adams Jr, MD, Greenville, SC
Stephanie L. Tanner, MS, Greenville, SC
Kyle J. Jeray, MD, Greenville, SC

Angle stable locking screws may reduce the incidence of final malalignment in fractures of the distal tibia that undergo IMN.

**Poster No. P509**

Comparison of Outcomes After Triceps Split vs. Sparing Surgery for Extra-Articular Distal Humeral Fracture
Ivan S. Tarkin, MD, Pittsburgh, PA
Andrew R. Evans, MD, Pittsburgh, PA
Peter Siska, MD, Pittsburgh, PA

Triceps strength and elbow ROM are optimized after ORIF distal humeral fracture when triceps sparing approach is chosen over the more traditional triceps splitting technique.

**Poster No. P510**

Femoral Neck Fracture After Removal of the Compression Hip Screw
Pil Whan Yoon, MD, Seoul, Republic of Korea
Kim Dong Oh, MD, Jeonju-Si, Republic of Korea
Jeong Joon Yoo, MD, Seoul, Republic of Korea
Hee Joong Kim, MD, Seoul, Republic of Korea
Kang Sup Yoon, MD, Seoul, Republic of Korea

The incidence of femoral neck fracture after removal of the compression hip screw was relatively high (9.1%), therefore it should not be removed unless for good reason.

**Poster No. P511**

Morphological Characteristics of Transient Osteoporosis of the Hip
Ryosuke Yamaguchi, MD, Fukuoka Higashi-Ku, Japan
Takuaki Yamamoto, MD, Fukuoka, Japan
Goro Motomura, MD, Fukuoka, Japan
Yasuhiro Nakashima, MD, Fukuoka, Japan
Satoshi Ikemura, MD, Fukuoka, Japan
Kenju Iwasaki, MD, PhD, Fukuoka, Japan
Garida Zhao, Fukuoka, Japan
Yukisato Iwamoto, MD, Fukuoka, Japan

This radiographic morphological study indicates that a focal biomechanical stress between the acetabulum and the femoral head may contribute to the pathophysiology of TOH.

**Poster No. P512**

The Good, the Bad and the Ugly: Recognizing and Treating Pediatric Radial Neck Fractures
Camila B. De Mattos, MD, Portland, OR
David Ramski, Washington, DC
Chanika Angsanuntsuk, MD, Iowa City, IA
John M. Flynn, MD, Philadelphia, PA

18% of pediatric radial neck fractures require surgery, of which over two-thirds do well, but 21% experience fair or poor outcomes.

**Poster No. P513**

Indomethacin does not Prevent Heterotopic Ossification After Operative Fixation of Acetabular Fractures
Charles J. Jordan, MD, Coral Gables, FL
Katheryn Downes, MPH, Tampa, FL
Henry C. Sagi, MD, Tampa, FL

Indomethacin does not affect the incidence of clinically significant HO after operatively treated acetabular fractures, and may increase the incidence of posterior wall non-union.

**Poster No. P514**

Biomechanical Mechanisms Underlying Peroneal Nerve Injury Following Acetabular Fracture and Surgery
Kanu Goyal, MD, Pittsburgh, PA
Michael R. Hill, PhD, Austin, TX
Hans Christoph Tappe, MD, Aachen, Germany
John Mooszy, Pittsburgh, PA
Ivan S. Tarkin, MD, Pittsburgh, PA

A biomechanical study was performed to determine whether the peroneal division of the sciatic nerve is stiff (compared to the tibial division) and thus more vulnerable to retraction injury.

An alphabetical faculty financial disclosure list can be found starting on page 292.
**Poster No. P515**
The Orthopaedic Trauma Patient: Risk Factors Influencing Follow Up
Vignesh Alamanda, BS, Nashville, TN
Barry Kang, Nashville, TN
Jesse Ehrenfeld, MD, MPH, Nashville, TN
William T. Obrensky, MD, MPH, Nashville, TN
Zachary Yoneda, BA, Nashville, TN
Manish K. Sethi, MD, Nashville, TN
Amir A. Jahangir, MD, Nashville, TN

A study of 11463 clinic visits identified tobacco use, insurance status, ASA score, and distance from clinic play a crucial role in influencing compliance with follow up appointments.

**Poster No. P516**
Outcomes After Operative Management of Symptomatic Rib Nonunion
Erich M. Gauger, MD, St Paul, MN
Brian W. Hill, MD, St Paul, MN
Peter A. Cole, MD, St Paul, MN

Successful treatment of symptomatic rib nonunion is possible with good functional outcomes and a low complication rate.

**Poster No. P517**
Use of the Multiple Listing Service to Obtain Surrogate Socioeconomic Data in Orthopaedic Trauma Patients
Ebrahim Paryavi, MD, MPH, Baltimore, MD
Renan C. Castillo, MD, Baltimore, MD

Median property value proximate to trauma patients’ home addresses obtained from an MLS database can be a reliable surrogate for income and education level.

**Poster No. P518**
Upright Compared to Supine Radiographs of Clavicle Fractures: Does Patient Positioning affect Displacement?
Jonathan D. Backus, MD, Saint Louis, MO
Mark J. Jo, MD, Montrose, CA
David J. Merriman, MD, Springfield, MO
Christopher McAndrew, MD, St Louis, MO
Michael J. Gardner, MD, Saint Louis, MO
William M. Ricci, MD, St Louis, MO

Both upright and supine radiographs are recommended to most accurately determine the extent of clavicle fracture displacement.

**Poster No. P519**
Defining the Lateral and Accessory Views of the Patella: An Anatomic and Radiographic Study
Marshall B. Berkes, MD, New York, NY
Milton T. Little, MD, New York, NY
Lionel E. Lazaro, MD, New York, NY
Nadine Pardee, BS, New York, NY
Craig Klinger, BS, New York, NY
David L. Helfet, MD, New York, NY
Dean G. Lorig, MD, New York, NY

Described here is a comprehensive description of the true lateral radiographic view of the patella and accessory views, with implications for patella fracture osteosynthesis.

**Poster No. P520**
Transcutaneous Application of CO2 Accelerates Fracture Repair in Rat
Takaaki Koga, MD, Kobe, Japan
Takahiro Niihara, MD, PhD, Kobe, Japan
Sang Y. Lee, MD, Kobe, Japan
Yoshihiro Dogaki, Kobe City, Hyogo, Japan
Etsuko Okumachi, MD, Kobe, Japan
Takahiro Waki, Kobe, Japan
Kakusui Ueda, Hyogo, Japan
Yoshitada Sakai, MD, PhD, Kobe, Japan
Masahiro Kuwatsuka, MD, Kobe, Japan

Transcutaneous application of CO2 accelerates fracture repair via acceleration of endochondral ossification and vascularization, and may become a novel and useful therapy for promoting fracture repair.

**Poster No. P521**
Accumulation of Fibrin Impairs Fracture Vascularity and Healing
Masato Yuasa, PhD, Nashville, TN
Jonathan G. Schoenecker, MD, Nashville, TN

We refute this belief demonstrating that a clot is not essential for fracture repair and that accumulation of fibrin causes nonunion.

**Poster No. P522**
Tissue Engineering Scaffold Regularity Affects Extent of Bone Regeneration: A Rabbit Pelvis Model
Gazi Huri, Ankara, Turkey
Yurdanur Uçar, Balcalı, Sariçam, Adana, Turkey
Pınar Yıldırım Huri, PhD, Adana, Turkey
Mahmut N. Doral, MD, Ankara, Turkey

3-D scaffold architecture is influential on bone regeneration.

**Poster No. P523**
Three-dimensional Corrective Osteotomy of Cubitus Varus Deformity Based on Computer Simulation
Tsuyoshi Murase, MD, Saitama, Japan
Yukari Takeyasu, Kawanishi, Japan
Toshiyuki Kataoka, Saitama, Japan
Junichi Miyake, MD, Saitama, Japan
Shinsuke Omori, MD, Saitama, Japan
Yohei Kawamishi, Osaka-Hu, Japan
Hiroyuki Tanaka, MD, PhD, Saitama, Japan
Hisao Moritomo, MD, PhD, Osaka, Japan
Hideki Yoshikawa, MD, Osaka, Japan

Cubitus varus deformity is a complex three-dimensional deformity. 3-D corrective osteotomy using a custom-made surgical template designed based on computer simulation is a useful treatment option for cubitus varus deformity.
Poster No. P524
Risk of Hospital Readmission in Orthopaedic Trauma: Using Electronic Medical Records to Improve Quality of Care
Holman Chan, MD, Vancouver, BC, Canada
Sarah Waldman, BA, Rochester, NY
John P. Ketz, MD, Pittsford, New York
Jonathan M. Gross, MD, Rochester, NY
John T. Gorczyca, MD, Rochester, NY
Catherine A. Humphrey, MD, Rochester, NY
Orthopaedic trauma patients have specific comorbidities and injuries, such as tobacco use and open tibia fractures, that predispose them to a greater risk for hospital readmission.

Poster No. P525
Accurate Screw Placement for Displaced Intraarticular Calcaneus Fracture
Jaron P. Sullivan, MD, Iowa City, IA
Phinit Phisitkul, MD, Iowa City, IA
John L. Marsh, MD, Iowa City, IA
This study identifies a safe starting zone, screw length, and trajectory for screws placed from the posterolateral facet into the center of the sustentaculum without violating the subtalar joint.

Tumor and Metabolic Disease
Poster No. P526
Prognostic Value of Expression of ERCC1, MDR1 and GSTP1 for Cisplatin Based Chemotherapy in Osteosarcoma
Kentaro Igarashi, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan
Hidei Nishida, MD, Kanazawa City, Japan
Hiroaki Kimura, MD, PhD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Shingo Shimozaki, MD, Kanazawa, Japan
Takashi Kato, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Immunohistochemical studies for ERCC1 may be useful in prediction of the clinical outcome in osteosarcoma patients treated with cisplatin-based chemotherapy.

Poster No. P527
Local Caffeine Potentiated Chemotherapy Using Calcium Phosphate Cement Containing Cisplatin and Caffeine
Yoshikazu Tanazawa, PhD, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan
Toshiharu Shirai, MD, Kanazawa, Japan
Katsuhito Hayashi, MD, Nagoya, Japan
Hidei Nishida, MD, Kanazawa City, Japan
Hiroaki Kimura, MD, PhD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Introduction: New drug delivery systems have been developed that incorporate anticancer drugs into calcium phosphate cement (CPC) to maintain high concentrations of anticancer drugs at local sites.

Poster No. P528
Paley’s Multiplier Method for Height Prediction in Patients with Osteosarcoma and Ewing’s Sarcoma
Magdalena M. Gigl, Graz, Austria
Dumosthenis Andreou, MD, Berlin, Germany
Patrick Sadoghi, Graz, Austria
Christine Wibmer, Graz, Austria
Per-Ulf Tunn, Berlin, Germany
Alexander Avan, PhD, Graz, Austria
Petra Sovinz, MD, Graz, Austria
Andreas Leithner, MD, Graz, Austria
Paley’s multiplier method for height prediction in patients with osteosarcoma and Ewing’s sarcoma - the long-term effect of polychemotherapy on final height.

Poster No. P529
Surgical Outcome of Soft Tissue Sarcoma in Elderly Patients Aged Over 70 Years
Toshiyuki Kunisada, MD, Okayama, Japan
Toshifumi Ozaki, MD, Okayama, Japan
Complete resection should be indicated and can lead to optimal treatment outcome for elderly patients, who may be managed with less intensive treatment due to some factors such as comorbidities.

Poster No. P530
C-reactive Protein Level May be a Marker of Tumor Aggressiveness in Soft Tissue Sarcoma Patients
Tomoki Nakamura, MD, PhD, Tsu-City, Mie, Japan
Akihiko Matsumine, MD, PhD, Tsu City, Mie, Japan
Takao Matsubara, MD, Tsu-City, Japan
Kenichiro Asanuma, MD, Tsu, Japan
Akihiro Sudo, Prof., Tsu City, Mie, Japan
CRP levels may be a marker of tumor aggressiveness in soft tissue sarcoma patients. CRP levels were found to be a poor prognostic factor for overall survival in a univariate analysis and for event free survival.

Poster No. P531
Long-term Results of Intralesional Curettage and Cryosurgery for Treatment of Low-grade Chondrosarcoma
Morteza Meftah, MD, New York, NY
Robert M. Henshaw, MD, Washington, DC
Intral esional curettage and cryosurgery for low-grade chondrosarcoma in selected patients is safe and effective. Indications include lesions without significant soft-tissue expansion.

Poster No. P532
Sarcoma Care in an Urban Healthcare System: Which Factors Lead to Variance of Care?
Alan T. Blank, MD, MS, New York, NY
Richelle C. Takemoto, MD, Pittsburgh, PA
Neeraj M. Patel, MD, MPH, MBS, New York, NY
Daniel M. Lerman, MD, New York, NY
Timothy Rapp, MD, New York, NY
Race, insurance and hospital type were associated with variations in sarcoma care in a retrospective review of our large urban healthcare system.
Poster No. P533
Osteosarcoma in Young Adults: A Single Institution Retrospective Review of Presentation, Therapy and Outcome
Gerald E. Alexander, MD, Tampa, FL
G. Douglas Letson, MD, Tampa, FL
David Cheong, MD, Tampa, FL
Leon Anijar, BS, Tampa, FL
Anthony P. Conley, MD, Wesley Chapel, FL
Damon Reed, MD, MD, Tampa, FL
Children with osteosarcoma have a significantly better prognosis and overall survival than young adult patients.

Poster No. P534
Inhibitory Effect of Bone Morphogenetic Protein-2 in the Growth of Human Breast Cancer Cell
Alternate Paper: Tumor/Metabolic Disease II: Pre-Clinical and Clinical Research in Orthopaedic Oncology
Kwang-Bok Lee, MD, Jeonju, Republic of Korea
Kyung-Jin J. Song, MD, Jeonju, Republic of Korea
Jong-Han H. Lim III, Jeonju, Republic of Korea
Do-Yeon Kim, Jeonju, Republic of Korea
Shuai Ye, MD, Jeonju, Republic of Korea
There is a cross talk on the response of various tumors including those of breast origin, to BMPs. In this model rhBMP-2 was an effective in vivo antineoplastic agent.

Poster No. P535
Real-time Molecular Imaging of αv Integrin GFP-expression in Osteosarcoma in vitro and in vivo
Yasunori Tome, MD, Okinawa, Japan
Hiroki Maehara, PhD, Nishihara, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Robert M. Hoffman, PhD, San Diego, CA
Fuminori Kanaya, MD, Okinawa-Ken, Japan
The linkage of αv integrin to GFP enabled molecular dynamics imaging of integrin behavior during osteosarcoma progression in a nude-mouse model as well as in 3-dimensional culture.

Poster No. P536
Percutaneous Cementoplasty for Pelvic Bone Metastasis in Patients with Advanced Cancer
Hyun-Guy Kang, MD, Goyang-Si, Republic of Korea
Min Wook Joo, MD, Goyang, Republic of Korea
JUNE HUN KIM, MD, Goyang-Si, Republic of Korea
Patrick P. Lin, MD, Houston, TX
Han-Soo Kim, MD, PhD, Seoul, Republic of Korea
Purpose To show the clinical results of percutaneous cementoplasty(PC) by consistent surgical technique for the pelvic bone metastases in the patients of advanced cancer.

Poster No. P537
Biomechanical Analysis of Percutaneous Cement Augmentation of Osteolytic Lesions
Brian Palumbo, MD, Boston, MA
Charles C. Nalley, MD, Tampa, FL
Roger B. Gaskins, MD, Tampa, FL
Sergio Gutierrez, PhD, Tampa, FL
Gerald E. Alexander, MD, Tampa, FL
David Cheong, MD, Tampa, FL
Brandon G. Santoni, PhD, Tampa, FL
In this biomechanical analysis, osteolytic femoral neck lesions augmented with cement in a bicortical column fashion achieved greater stiffness and load to failure than with internal fixation alone.

Poster No. P538
Antibacterial Iodine-supported Titanium Megaprostheses: A Clinical Trial
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Toshiharu Shirai, MD, Kanazawa, Japan
Hideji Nishida, MD, Kanazawa City, Japan
Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan
Katsuhiko Hayashi, MD, Nagoya, Japan
Koji Watanabe, Kanazawa, Japan
Junsuke Nakase, MD, Kanazawa, Japan
Hiroaki Kimura, MD, PhD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Iodine-supported titanium megaprostheses can be effective and promising in the prevention and treatment of infections for large bone defect. There were no cytotoxicity and adverse effects detected.

Poster No. P539
Radiosensitization Effects of Hyaluronan Synthesis Inhibitor on Bone Metastasis of Lung Cancer
Naohisa Futamura, MD, Aichi, Japan
Yoshihiro Nishida, Nagoya, Japan
Hiroshi Urakawa, Nagoya, Japan
Eisuke Arai, Nagoya, Japan
Eiji Kozawa, MD, Nagoya, Japan
Kunihiro Ikuta, Nagoya, Japan
Shunsuke Hamada, Nagoya City, Japan
Naoki Ishiguro, MD, Nagoya, Japan
Investigating effects of 4-methylumbelliferone as a radiosensitizer on bone metastasis of lung cancer.
**Poster No. P540**  
Application of Tumor-induced Cryoimmunology to Total En Bloc Spondylectomy for Spinal Metastasis  
Hideki Murakami, MD, Kanazawa, Japan  
Satoru Demura, MD, Kanazawa, Japan  
Hidei Nishida, MD, Kanazawa City, Japan  
Satoshi Kato, MD, Kanazawa, Japan  
Katsuhiro Yoshioka, MD, Kanazawa, Japan  
Hiroyuki Hayashi, MD, Kanazawa, Japan  
Takashi Ota, MD, Kanazawa, Ishikawa, Japan  
Kazuya Shimura, MD, Ishikawa, Japan  
Hiroyuki Tsuchiya, MD, Kanazawa, Japan  

We newly developed “second-generation TES” enhancing antitumor immunity for spinal metastasis. Further prolonged survival is promising by antitumor effect against disseminated tumor cells.

**Poster No. P541**  
Does the Addition of Cement Reduce the Risk of Local Recurrence after Curettage of Giant Cell Tumor of Bone?  
Costantino Errani, MD, Bagheria, Italy  
Francesco Traina, MD, Bologna, Italy  
Angelo Toscano, MD, Mori (TN), Italy  
Matteo Nanni, MD, Bagheria, Italy  
Alice Bondi, MD, Cesnatico, Italy  
Davide Donati, MD, Bologna, Italy  
Cesare Faldini, MD, Bologna, Italy  
Sandro Giannini, MD, Bologna, Italy  

The purpose of our study was to retrospectively review the outcome after the treatment of giant cell tumour of bone either with curettage and bone grafts or with curettage and cementation.

**Poster No. P542**  
Musculoskeletal Tumors and Tumor-Like Conditions Presenting to the Sports Medicine Clinic  
Bailee Williams, BS, Temple Terrace, FL  
Derek Papello, Tampa, FL  
Seth J. Gasser, MD, Tampa, FL  

This was a retrospective study on patients presenting to the sports medicine clinic with either pain (later diagnosed with a tumor or tumor-like condition) or an existing tumor-like condition.

**Poster No. P543**  
Thrombomodulin and Tissue Factor mRNA Expression in 62 Soft Tissue Sarcoma Patients  
Kunihiro Asanuma, MD, Tsu, Japan  
Akihiko Matsumine, MD, PhD, Tsu City, Mie, Japan  
Takao Matsubara, MD, Tsu-City, Japan  
Tomoki Nakamura, MD, PhD, Tsu-City, Mie, Japan  
Tomoaki Yoshikawa, MD, Tsu, Mie, Japan  
Akihiko Sudo, Prof., Tsu City, Mie, Japan  

Analysis of mRNA expression in 62 soft tissue sarcoma patients

**Poster No. P544**  
Oncologic and Functional Outcomes of an Endoprosthetic (Osteobridge) for Intercaleary Resections for Bone Tumor  
Joseph Benevenia, MD, Newark, NJ  
Kathleen S. Beebe, MD, Montclair, NJ  
Francis R. Patterson, MD, Newark, NJ  
Mark J. Palma, BA, Montclair, NJ  

The Osteobridge intercalary prosthesis was used in 11 reconstructions following resection of diaphyseal tumors with results equivalent to custom implants and plate-cement constructs.

**Poster No. P545**  
Clinical Outcome of En Bloc Lumbopelvic Resection for Osteosarcoma and Chondrosarcoma  
Yu-Min Lin, MD, Taichung, Taiwan  
Peter S. Rose, MD, Rochester, MN  
Michael J. Yaszemski, MD, PhD, Rochester, MN  
Franklin H. Sim, MD, Rochester, MN  

Introduction: En bloc lumbopelvic resection for malignancies in the sacrum and lower lumbar spine is challenging and technique demanding. We present the outcomes of lumbopelvic resection for osteosarcoma.

**Orthopaedic Research Society**

**Poster No. P556**  
Anterior Acetabular Rim Morphology in an Asymptomatic Population  
Michael D. Hellman, MD, Chicago, IL  
Christopher Gross, Chicago, IL  
Michael Hart, Chicago, IL  
Ryan Freedman, MS, Chicago, IL  
Michael Salata, MD, Cleveland, OH  
Charles Busb-Joseph, MD, Chicago, IL  
Shane Nbo, MD, Chicago, IL  

This study reports anterior rim angle, anterior will angle and anterior margin ratio within an asymptomatic sample.

**Poster No. P557**  
Association of Radiographic Knee Osteoarthritis and Pain with Gait Asymmetry: The Multicenter Osteoarthritis Study  
Rajshree Mootanah, PhD, Chelmsford, Essex, UK  
Howard Hillstrom, PhD, New York, NY  
Douglas Gross, ScD, Boston, MA  
Jingbo Niu, DSc, Boston, MA  
Michael C. Nevitt, PhD, San Francisco, CA  
Cori E. Lewis, MD, Birmingham, AL  
James Torner, PhD, Iowa City, IA  
Jean Hietpas, MSW, San Francisco, CA  
David Felson, PhD, Boston, MA  

Asymmetry indices for single support and stance times can differentiate between subjects with unilateral knee osteoarthritis and no knee osteoarthritis.
The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

**Poster No. P558**
The Effect of Hindfoot Alignment on Frontal Plane Mechanics Following Total Ankle Replacement
Robin M Queen, PhD, Durham, NC
Robert J. Butler, DPT, PhD, Durham, NC
Samuel B Adams, Jr., MD, Durham, NC
Mark E Easley, MD, Durham, NC
James K DeOrio, MD, Durham, NC
James A Nunley, II, MD, Durham, NC
Michael W Krzyzewski, Durham, NC

Patients with extreme coronal plane malalignment respond differently to TAR than those with less severe deformity.

**Poster No. P559**
Does SL Ligament Injury Adversely Alter In Vivo Wrist Joint Mechanics? An MRI-based Modeling Study
Joshua E Johnson, Lawrence, KS
Phil Lee, Kansas City, KS
Terence E. McIff, PhD, Kansas City, KS
Bruce Toby, MD, Kansas City, KS
Kenneth J Fischer, PhD, Lawrence, KS

This study provides novel in vivo data quantifying the detrimental effects of scapholunate ligament injury on radiocarpal joint mechanics.

**Poster No. P560**
Determination of Humeral Head Size for Anatomic Shoulder Replacement in Glenohumeral Osteoarthritis
Ari Yonderian, MD, Morton Grove, IL
Eric T Ricchetti, MD, Cleveland, OH
Meghan Drews, Cleveland, OH
Joseph P Iannotti, MD, PhD, Cleveland, OH

We demonstrate using a sphere superimposed upon preserved landmarks of the proximal humerus to determine head size and height preoperatively.

**Poster No. P561**
Transverse Process Hooks at Upper Instrumented Vertebra Provide a More Gradual Transition to Normal Motion Compared to Pedicle Screws in Long Posterior Spinal Fusion Constructs
David Glos, BS, Cincinnati, OH
Dinesh Thawrani, MD, Cincinnati, OH
Matthew Coombs, MS, Cincinnati, OH
Kevin Louis, Cincinnati, OH
Donita Bylski-Austrin, PhD, Cincinnati, OH
Peter Sturm, Cincinnati, OH

Transverse process hooks at upper instrumented vertebra provided more gradual motion transition than pedicle screws in long posterior spinal constructs.

**Poster No. P562**
In Vivo Tibial Compression Decreases Tumor Formation and Osteolysis in a Model of Human Breast Cancer Metastasis
Maureen Lynch, PhD, Ithaca, NY
Suneel Mohanan, DVM, Ithaca, NY
Kelsey Dent, BS, Ithaca, NY
Marjolein van der Meulen, PhD, Ithaca, NY
Claudia Fischbach, PhD, Ithaca, NY

Tibial compression inhibited tumor-driven osteolysis and subsequent tumorigenesis in a mouse model of human metastatic breast cancer.

**Guest Nation Canada**

**Poster No. P563**
Trial to Evaluate Ultrasound in the Treatment of Tibial Fractures (TRUST): A Pilot Study
Mohit Bhandari, MD, FRSC, ON, Canada
Jason Buse, DC, PhD/Assistant Professor, ON, Canada

Our pilot study supports the feasibility of a definitive trial. A pivotal trial of 500 patients to resolve uncertainty around our pilot trial estimates of function gains, radiographic fracture healing and reoperations is currently underway.

**Poster No. P564**
Early Mobilization Following Mini-open Rotator Cuff Repair
Matthew Souster, MD, Edmonton, AB, Canada
Robert Balyk, MD, FRSC, Sherwood Park, AB, Canada
Lauren Beauspre, PhD, Edmonton, AB, Canada
Martin Bouliane, MD, Edmonton, AB, Canada
Jeff Bury, MD, Edmonton, AB, Canada
Robert Glasgow, MD, Edmonton, AB, Canada
Charlene Luciak-Corea, BScPT, Edmonton, AB, Canada
Fiona Styles-Trapp, PT, BSc, Edmonton, AB, Canada

Patients who performed painfree active ROM for ADLs had no significant difference in power, ROM, HRQL or pain at six months compared to those who were immobilized for six weeks following MORCR.

**Poster No. P565**
Osteotomy vs. Subscapularis Peel in Shoulder Arthroplasty: Healing Rates and Fatty Infiltration
Peter Lapner, MD, Ottawa, ON, Canada
George Athwal, MD, London, ON, Canada
Kimberly Bell, BA, Ottawa, ON, Canada
Kawan Rakhra, MD, Ottawa, ON, Canada

The purpose of this study was to compare healing rates and subscapularis fatty infiltration in patients undergoing a lesser tuberosity osteotomy (LTO) versus subscapularis peel for exposure during arthroplasty.
**Poster No. P566**  
Intra- and Inter-Rater Reliability of the Detection of Full-Thickness Tears of the Supraspinatus Central Tendon  
Bruce S. Miller, MD, Ann Arbor, MI  
James Carpenter, MD, Ann Arbor, MI  
John Grant, PhD, MD, Saint John, NB, Canada  
Jon Jacobson, MD, Ann Arbor, MI  
Yoav Morag, MD, Ann Arbor, MI  

The purpose of the current study was to determine the intra- and inter-rater reliability of detecting a full tear of the supraspinatus central tendon on MRI by orthopaedic shoulder surgeons.

**Poster No. P567**  
A Randomized Controlled Trial Comparing Web-Based to Clinic Follow-Up: Are Routine Clinic Visits Necessary?  
Jackie Marsh, MSc, London, ON, Canada  
Dianne Bryant, PhD, London, ON, Canada  
James Howard, MD, London, ON, Canada  
Steven MacDonald, MD, London, ON, Canada  
James McAuley, MD, London, ON, Canada  
Richard McCalden, MD, London, ON, Canada  
Douglas Naudie, MD, FRCS, London, ON, Canada  

The purpose of this study was to measure the feasibility and costs associated with web-based assessment compared to the usual methods of follow up.

**Poster No. P568**  
No Orthosis is Equivalent to TLSO for the Treatment of Thoracolumbar Burst Fractures Without Neurologic Injury  
Christopher Bailey, MD, MSc, London, ON, Canada  
Stewart Bailey, MD, FRCS, London, ON, Canada  
Marcel Dvorak, MD, FRCS, Vancouver, BC, Canada  
Charles Fisher, MD, Prof, Vancouver, BC, Canada  
Kevin Gurr, MD, London, ON, Canada  
Melissa Nadeau, MD, FRCS, Vancouver, BC, Canada  
Kenneth Thomas, MD, MHSc, Calgary, AB, Canada  

The purpose of this study was to compare the functional outcome of patients with AO type A3 burst fractures randomly treated with a thoracic lumbosacral orthosis (TLSO) versus no orthosis (NO).

**Poster No. P569**  
Vacuum Assisted Closure Device Effects on Skeletal Muscle after Experimental Compartment Syndrome  
Geoffrey Wilkin, MD, Ottawa, ON, Canada  
Shenaz Khogali, Ottawa, ON, Canada  
Shawn Garbedian, MD, Toronto, ON, Canada  
Wade Gofton, BScCh, MD, Ottawa, ON, Canada  
Allan Lieu, MD, FRCS, Ottawa, ON, Canada  
Bradley Slagel, MD, Sault Ste. Marie, ON, Canada  
Jean-Marc Renaud, PhD, Ottawa, ON, Canada  
Steven Papp, MD, Ottawa, ON, Canada  

A Vacuum Assisted Closure (V.A.C.™) device can improve wound closure after fasciectomy for compartment syndrome, however, the effects on the underlying muscle are unknown. Our purpose was to evaluate V.A.C.™

**Poster No. P570**  
Thromboembolic and Bleeding Events following Elective Hip and Knee Arthroplasty using Oral Factor Xa Inhibitor  
John J. Murnaghan, MD, Toronto, ON, Canada  
Vikas Bansal, Toronto, ON, Canada  
Andrew Donovan, MD, Toronto, ON, Canada  
Jeffrey Gollish, MD, Toronto, ON, Canada  
Deborah Murnaghan, RN, CRC, Toronto, ON, Canada  
Helen Razmjou, PhD, Toronto, ON, Canada  

The aim was to prospectively document the incidence and timing of thromboembolic and bleeding events in patients who received this drug as thromboprophylaxis.

**Poster No. P571**  
A Prospective Randomized Multicenter Evaluation of a “New” MIS Approach to THA: Stem Subsidence an Issue?  
Nelson Greidanus, MD, MPH, Vancouver, BC, Canada  
Samir Chhabhb, MD, Trier, Germany  
Clive Duncan, MD, BC, Vancouver, BC, Canada  
Donald Garbus, MD, MHSc, Vancouver, BC, Canada  
Allan Gross, MD, FRCS, Toronto, ON, Canada  
Bassam Masri, MD, FRCS, Vancouver, BC, Canada  
Michael Tanzer, MD, Montreal, Quebec, Canada  

The purpose of this study is to examine the potential superiority of a “new” intermuscular surgical approach to limited incision total hip replacement.

**Poster No. P572**  
Evaluation of the use of Spinal Epimorph in Total Hip Arthroplasty: A Prospective Double-Blinded Randomized Control Trial  
Rajrishi Sharma, MD, Burlington, ON, Canada  
Aaron Bigham, MD, FRCS, Woodstock, ON, Canada  
Robert Bourne, CM, MD, FRCS, London, ON, Canada  
Sugantha Ganapathby, MBBS, FRCA, London, ON, Canada  
James Howard, MD, London, ON, Canada  
Steven MacDonald, MD, London, ON, Canada  
James McAuley, MD, London, ON, Canada  
Douglas Naudie, MD, London, ON, Canada  

The purpose of our study was to determine in patients undergoing total hip arthroplasty whether spinal with epimorph versus spinal without epimorph resulted in better pain control and fewer complications.

**BOS Societies**

**Poster No. P573**  
Preoperative Lactate Does Not Predict Pulmonary Complications in Multiple Trauma Patients  
Justin Richards, MD, Nashville, TN  
Sean Griffin, Louisville, KY  
Daniel Koehler, MD, Iowa City, IA  
Michael Bosse, MD, Charlotte, NC  
William Obremsky, MD, Nashville, TN  
Jason Evans, MD, Nashville, TN  

The purpose of this study was to evaluate the relationship of preoperative serum lactate and pulmonary complications in multiple trauma patients.
Poster No. P574
Drug Induced Bone Loss - The Influence of Ethnicity and Gender
Raymond O. Pierce Jr, MD, Indianapolis, IN
Alan Crawford, MD, Cincinnati, OH
Elby Washington, MD, Los Angeles
Melvin Harrington, MD, Houston, TX

A clinical review of medication that effect bone loss will be reviewed in reference to ethnicity and gender.

Poster No. P575
AOSSM BOS Poster: Changes in Serum Biomarkers of Cartilage Turnover Following Anterior Cruciate Ligament Injury
Steven J. Srobona, MD, West Point, NY
Travis Harvey, PhD, Columbus, GA
Brett D Owens, MD, West Point, NY
William E. Brechuce, PhD, West Point, NY
Patrick Tarwater, PhD, El Paso, TX
Kenneth L. Cameron, PhD, West Point, NY

Biomarkers of cartilage turnover are affected by ACL injury and may be precursors to osteoarthritis.

Poster No. P576
Efficacy of Conservative Treatment for Ulnar-Sided Wrist Pain
Aleksey Dvorzhinskiy, BA, New York, NY
Alison Kitay, MD, New York, NY
Matthew Grosso, BS, Roslyn, New York
Aaron Daluiski, MD, New York, NY

This study reviewed the efficacy of conservative treatment for ulnar-sided wrist pain.

Poster No. P577
American Fracture Association
Diana D. Carr, MD, Sebring, FL
Judy L. Wright, MD, Bloomington, IL
Alfonso E. Pino, MD, Dublin, TX
Jose G. Ramon, MD, Belleville, IL
Geoffrey M. Miller, MD, El Segundo, CA

The American Fracture Association was founded in 1938 to further knowledge of fracture care.

Poster No. P578
American Society of Orthopaedic Physician’s Assistant (ASOPA)
Jason S. Mazza, OPA-C, Trinity, FL
Frank E. Greaves, OPA-C, OTC, Houston, TX
Tammy D. Dreger, OPA, Humble, TX
Evilio Prendes, OPA-C, RMA, Hialeah, FL
Paul Trevino, OPA, Mc Allen, TX
Bridget L. Brecheen, OPA-C, Amarillo, TX

ASOPA is an organization for physician extenders who specialize in orthopaedic Board-certified surgery.

Poster No. P579
National Association of Orthopaedic Technologists
Cynthia Henderson, Indianapolis, IN
Sean B. Conkle, OTC, Bethlehem, PA
Nicole T. Williams, OTC, Aurora, CO
Robyn Masseth, OTC, Indianapolis, IN
Kristie M. Woolems, OTC, Noble, OK

To familiarize orthopaedic surgeons with the value of orthopaedic technologists in their practice.

Nth Dimensions
Poster No. P580
Autologous Chondrocyte Implantation and High Tibial Osteotomy: Patient Reported Outcomes
Michael E. Trice, MD, Baltimore, MD
Sean Spence, MS, Tampa, FL

We studied clinical outcomes after ACI and corrective high tibial osteotomy (HTO) for medial femoral condylar lesions in varus knees.
Nursing and Allied Health Program Continuing Education

Nurses
A total of 32 contact hours are being offered through NAON; 4.0 contact hours for each NUR course and for the CAST1 and CAST2 courses. Each session is provider approved by the California Board of Registered Nursing, Provider Number CEP3432, for 4.00 contact hours for each NUR course and 8.00 contact hours each for the CAST1 and CAST2 courses.

The National Association of Orthopaedic Nurses is accredited as a provider of continuing nursing education by the American Nurses’ Credentialing Center’s Commission on Accreditation.

Orthopaedic Technologists
Applying to the National Board for Certification of Orthopaedic Technologists for approval of a total of 32 contact hours or 4 contact hours for each NUR session and 8 contact hours each for the CAST1 and CAST2 courses.

Physician Assistants
Applying to the American Academy of Physician Assistants (AAPA) for Category 1 CME credit from the AOA Council on Continuing Medical Education, Prescribed credit from the AAFP and AMA Category 1 CME credit for the PRA from organizations accredited by the ACCME. Total number of contact hours: 32.

Orthopaedic Physician Assistants
Applying to the National Board for Certification of Orthopaedic Physician Assistants for approval of a total of 32 contact hours for orthopaedic physician assistants or 4 contact hours for each NUR session and 8 contact hours each for the CAST1 and CAST2 courses.

General
Certificates for sessions will be available online once a participant completes a session evaluation. A link to the evaluation will be distributed to participants via email following each session. Please be sure to give your correct e-mail address when registering for the courses. Once participants complete the evaluation, a contact hour certificate will be available to print. To receive any certificate other than nursing, please visit the table outside of the session room. For credit that may be acceptable to state medical associations, specialty societies or state boards of medical licensure, please contact those organizations. NAON and the AAOS make every effort to have the course approved for credit prior to the course dates. It is not always possible to obtain approval in advance of a program.

NUR1 – Non-surgical Approaches to Orthopaedic Conditions

Tuesday, March 19
7:30 AM – 12:00 PM
McCormick Place, Lakeside, Room E450a
Course Co-Chairs: Lynn D. Burkett, RN, BSN, MBA, ONC
Gary C. Canner, MD

Overview
Some orthopaedic conditions call for conservative management prior to surgical consideration. Others may justify treatment by non-surgical methods and surgery, or by non-surgical methods alone. This session will focus on some of the current non-surgical approaches to provide high quality care for orthopaedic patients.

Program
7:30 AM Welcome
Jan Foecke, MS, RN, ONC, NAON Director of Programs
Harpal S. Khanuja, MD, AAOS Allied Health Program Director
Christy Oakes, MSN, RN, ONC, 2012-2013 NAON President

Introduction
Lynn D. Burkett, RN, BSN, MBA, ONC
Gary C. Canner, MD

7:45 AM Cartilage Restoration: Overview of Treatment Options
Brian J. Cole, MD, MBA

8:25 AM Nursing Care of the Postoperative Shoulder Patient
Frederick M. Brown, Jr., DNP, RN, ONC

9:05 AM Orthopaedic Braces for Office & Operating Room (OR) Application
Glade Pauley, MA, AT

9:45 AM Break

10:00 AM Evaluation and Treatment of the Knee
Gary C. Canner, MD

10:40 AM Osteoporosis Management: Now Is the Time to Take Action!
Debra L. Sietsema, PhD, RN

11:20 AM Nutrition and Its Impact on the Musculoskeletal System
Pamela Chlad, BSN, M.Ed, RN, LAT

12:00 PM Adjournment
**NUR2 – Surgical Approaches to Orthopaedic Conditions**

**Tuesday, March 19**
1:30 – 6:00 PM
**McCormick Place, Lakeside, Room E450a**

**Course Co-Chairs:**
- Cheryl Grove, RN, BSN, ONC
- Thomas S. Thornhill, MD

**Overview**
Surgery is definitely an important management option for orthopaedic conditions. A variety of treatments will be addressed, including arthroplasty, robotics, arthroscopy, and bracing for various orthopaedic conditions.

**Program**

1:30 PM  
**Welcome**  
Jan Foecke, MS, RN, ONC  
NAON Director of Programs  
Harpal S. Khanuja, MD  
AAOS Allied Health Program Director  
Christy Oakes, MSN, RN, ONC  
2012-2013, NAON President  

**Introduction**  
Cheryl Grove, RN, BSN, ONC  
Thomas S. Thornhill, MD

1:45 PM  
**Shoulder Arthroplasty: Indications and Complications**  
Courtney Dawson, MD

2:30 PM  
**The A.R.T. (Advanced Robotic Technology) of TKR (Total Knee Replacement)**  
Jan Albert Koenig, MD

3:25 PM  
**Break**

3:40 PM  
**Shoulder Arthroscopy: Rotator Cuff and Labral Repair**  
Abigail Hamilton, MD

4:25 PM  
**Total Knee Arthroplasty**  
Thomas S. Thornhill, MD

5:15 PM  
**Pediatric Spine**  
Angela M. Strader, RN  
Maureen Grady, RN

6:00 PM  
**Adjournment**

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**NUR3 – Unusual Orthopaedic Conditions**

**Wednesday, March 20**
7:30 AM – 12:00 PM
**McCormick Place, Lakeside, Room E450a**

**Course Co-Chairs:**
- Cheryl Grove, RN, BSN, ONC  
- Courtney Dawson, MD

**Overview**
A wide range of orthopaedic conditions and procedures may not be seen with any frequency in clinical practice. Discussions will include treatment options for failed back, pediatric club foot and leg length discrepancy, hemorrhagic anemia, and orthopaedic oncology.

**Program**

7:30 AM  
**Welcome**  
Jan Foecke, MS, RN, ONC  
NAON Director of Programs  
Harpal S. Khanuja, MD  
AAOS Allied Health Program Director  
Christy Oakes, MSN, RN, ONC, 2012-2013 NAON President

**Introduction**  
Cheryl Grove, RN, BSN, ONC  
Courtney Dawson, MD

7:45 AM  
**Physical Therapy for Lower Back Pain Using Treatment-based Classification**  
Peter Oldenburg, PT, DPT, OCS, Cert. MDT

8:30 AM  
**Pediatric Club Foot in Third World Countries**  
Garen Koloyan, MD

9:15 AM  
**Break**

9:30 AM  
**Leg Length Discrepancy in Children**  
Yi-Meng Yen, MD, PhD

10:15 AM  
**The Influence of Hemorrhagic Anemia on Fracture Healing**  
Thomas F. Varecka, MD

11:05 AM  
**Orthopaedic Oncology and the Megaprosthesis**  
John E. Ready, MD

12:00 PM  
**Adjournment**

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*

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NUR4 – Pharmacology Related to Orthopaedics

Wednesday, March 20
1:30 – 6:00 PM
McCormick Place, Lakeside, Room E450a

Course Co-Chairs:
Lynn D. Burkett, RN, BSN, MBA, ONC
Gary C. Canner, MD

Overview
Pharmacology is often part of the treatment plan for patients with orthopaedic conditions and medical co-morbidities. This session will illustrate the benefits and risks of anticoagulants, bisphosphonates, antimicrobials, anti-inflammatories, analgesics, anticonvulsants, and medications to manage cardiopulmonary complications.

Program
1:30PM  Welcome
Jan Foecke, MS, RN, ONC
NAON Director of Programs
Harpal S. Khanuja, MD
AAOS Allied Health Program Director
Christy Oakes, MSN, RN, ONC
2012-2013 NAON President

Introduction
Lynn D. Burkett, RN, BSN, MBA, ONC
Gary C. Canner, MD

1:45 PM  Anticoagulants
Nina S. Huynh, PharmD, BCPS

2:25 PM  Bisphosphonates
Erika J. Mitchell, MD

3:05 PM  Bugs and Biofilms – Why Orthopaedic Infections Are so Resistant to Treatment
Andrew H. Schmidt, MD

3:45 PM  Break

4:00 PM  Multidisciplinary Management of the Post-Orthopaedic Surgical Patient
Erin Caldwell, RN, ANOP, MSN
Asokumar Buvanendran, MD

5:20 PM  Postoperative Cardio-pulmonary Management of the Orthopaedic Patient
Deana M. Ruby, APN, ACNP-BC

6:00 PM  Adjournment

CAST 1 – Casting and Splinting – Fundamentals

Thursday, March 21
8:15 AM – 5:45 PM
McCormick Place, Lakeside, Room E451b

Course Co-Chairs:
Cynthia Henderson, OTC, CO
President, National Association of Orthopaedic Technologists
Harpal S. Khanuja, MD
AAOS Allied Health Program Director

Overview
This course will feature presentations about innovations in immobilization, casting complication causes and solutions, and the casting procedure. Demonstration and return demonstration will include application and removal of a short arm cast, thumb-splinc cast, short leg cast, and a sugar tong splint.

Program
8:15 AM  Historical Events and Innovations in Immobilization
Cynthia Henderson, OTC, CO

8:45 AM  Casting Complications
Sean Conkle, OTC

9:15 AM  Casting Supplies
Nicole Williams, OTC, MBA

9:45 AM  Break

10:00 AM  The Casting Procedure
Robyn Masseth, OTC

12:30 PM  Lunch break (lunch not provided)

1:30 PM  Casting Demonstration and Return Demonstration
Sean Conkle, OTC
Cynthia Henderson, OTC, CO
Robin Masseth, OTC
Nicole Williams, OTC, MBA
Kristie Woolems, OTC

3:30 PM  Break

3:45 PM  Casting Demonstration and Return Demonstration
Sean Conkle, OTC
Cynthia Henderson, OTC, CO
Robin Masseth, OTC
Nicole Williams, OTC, MBA
Kristie Woolems, OTC

5:30 PM  Questions & Answers/Evaluations

5:45 PM  Adjournment

An alphabetical faculty financial disclosure list can be found starting on page 292.
CAST 2 – Casting and Splinting – Advanced
Friday, March 22
8:15 AM – 5:45 PM
McCormick Place, Lakeside, Room E451b
Course Co-Chairs:
Cynthia Henderson, OTC, CO
President, National Association of Orthopaedic Technologists
Harpal S. Khanuja, MD
AAOS Allied Health Program Director

Overview
This course will feature presentations about necessary supplies and procedures for advanced casting. Demonstration and return demonstration will include Meunster, PTB, Pediatric Hip Spica, and Ponsetti Serial Casts.

Program
8:15 AM  Advanced Casting Supplies  
Cynthia Henderson, OTC, CO
8:45 AM  The Advanced Casting Procedure  
Sean Conkle, OTC
10:30 AM  Break
10:45 AM  Advanced Cast Application Demonstration  
Nicole Williams, OTC, MBA
12:30 PM  Lunch break (lunch not provided)
1:30 PM  Advanced Casting Demonstration and Return Demonstration  
Sean Conkle, OTC  
Cynthia Henderson, OTC, CO  
Robyn Masseth, OTC  
Nicole Williams, OTC, MBA  
Kristie Woolems, OTC
3:30 PM  Break
3:45 PM  Advanced Casting Demonstration and Return Demonstration  
Sean Conkle, OTC  
Cynthia Henderson, OTC, CO  
Robyn Masseth, OTC  
Nicole Williams, OTC, MBA  
Kristie Woolems, OTC
5:30 PM  Questions & Answers/Evaluations
5:45 PM  Adjournment

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
**Why Disclosure?**

As an accredited provider of continuing medical education (CME), the Academy is required by the Accreditation Council for Continuing Medical Education (ACCPME) to obtain and share with participants of any AAOE CME activity any potential conflicts of interest by faculty, program developers, and CME planners.

The ACCME Standards of Commercial Support, Standard 2 states the requirements:

- 2.1 The provider must be able to show that everyone who is in a position to control the content of an educational activity has disclosed all relevant financial relationships with any commercial interest to the provider.
- 2.2 An individual who refuses to disclose relevant financial relationships will be disqualified from being a planning committee member, a teacher, or an author of CME, and cannot have control of, or responsibility for, the development, management, presentation or evaluation of the CME activity.

The AAOS Mandatory Disclosure Policy for Governance Groups (except Board of Directors), Continuing Medical Education Contributors, Senior Management Team Members, and Others requires that faculty submit all financial relationships with industry occurring within the past 12 months.

Each participant in the Annual Meeting has been asked to disclose if he or she has received something of value from a commercial company, which relates directly or indirectly to the subject of their presentation.

The Academy has identified the options to disclose as follows:

1. Royalties
2. – Speakers Bureau/paid presentations
3a. – Employee
3b. – Paid consultant
3c. – Unpaid consultant
4. – Stock or stock options
5. Research or institutional support as a principal investigator has been received
6. – Other financial or material support
7. – Royalties, financial or material support from publishers
n. – No conflicts to disclose

These codes reflect the numbers used in a series of questions answered by all persons participating in the AAOE Orthopaedic Disclosure Program, which is available at www.aaos.org/disclosure.

The Academy does not view the existence of these disclosed interests or commitments as necessarily implying bias or decreasing the value of the author’s participation in the meeting; however, these data are offered to the audience as additional information that may be helpful in evaluating the educational presentations. In accordance with ACCME guidelines, all participants in the Annual Meeting must have disclosed on or after April 1, 2012. The disclosures in this list are in compliance and current with the AAOE Orthopaedic Disclosure Program as of November 15, 2012.

In an effort to increase transparency and to protect both AAOE and its members, the Board of Directors recently adopted two additional policies relating to disclosure:

- AAOS Policy for a Fellow or Member Who Fails to Disclose Conflicts of Interest When Required
- AAOS Policy for a Fellow or Member Who Fails to Disclose Conflict of Interests Accurately and Completely

These policies will help appropriate individuals to address specific conflict of interest issues that may arise during Annual Meeting educational programs and activities.

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329

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Kristie M. Woolens, OTC: 3A - Oklahoma Sports and Orthopedics Institute

Steven T. Woolson, MD: 2, 3B - Medical Compression Systems, Johnson & Johnson; 4 - Medical Compression Systems; 5 - Johnson & Johnson

Spencer Woolwine, CS...
EXPERIENCE

The very best in orthopaedic education, research, and technology

2014 Annual Meeting
March 11 – 15
New Orleans, LA

2015 Annual Meeting
March 24 – 28
Las Vegas, NV

All Academy members will automatically receive an Annual Meeting registration packet in mid-October.
Technical Exhibits
Visit the Technical Exhibits
McCormick Place Hall A
Wednesday and Thursday, 9:00 AM – 5:00 PM
Friday, 9:00 AM – 4:00 PM

The American Academy of Orthopaedic Surgeons invites you to visit the technical exhibits as a part of your educational experience at the annual meeting. The products displayed in the technical exhibits area and the uses suggested by the manufacturer do not represent an endorsement nor imply that the products have been evaluated or approved by the American Academy of Orthopaedic Surgeons.

AAOS is the sole provider of Continuing Medical Education (CME) credits at the annual meeting between the hours of 7:30 AM to 6:00 PM. CME credit is not provided for presentations in the exhibit hall or time spent viewing the technical exhibits.

- Over 600 companies will be featured
- Over 100 first-time exhibitors will be participating
- Specialty Areas:
  - Allied Organization Displays ............. Booths 404-706
  - Diagnostic Equipment..................... Booths 4029-4739
  - First-Time Exhibitors .................Booths 4446-5262
  - Practice Productivity Exhibits ..........Aisles 4800-5400
  - Publishers and Educators Row ..........Booths 765-1574
- Unopposed Exhibit Time daily from 12:30 to 1:30 PM

While in the Exhibit Hall
AAOS Redemption Centers
Booths 365, 3275, and 5409
Check your registration packet for special coupons, redeemable exclusively in the Exhibit Hall. Be sure to pick up your complimentary tote bag. Drop off your tickets on Thursday and Friday for special prize drawings of airline tickets, hotel room for next year’s Annual Meeting, and iPads.

Beverage Breaks
Booths 262, 3475, and 4604
Complimentary beverages are served in the exhibit hall on Wednesday and Thursday from 3:30 to 4:00 PM between scientific sessions, and on Friday at 10:00 AM.

Food Service
Enjoy complimentary food and beverage items supplied by many of the exhibitors in their booth. Food service areas located throughout the exhibit hall will offer a variety of food and beverage options for purchase.

NEW! AAOS Bistro
New this year, the AAOS Bistro provides a comfortable setting for exhibitors and attendees to eat, meet and network. Located directly on the show floor with an all-inclusive buffet lunch and available table reservations, Wednesday through Friday from 11:00 AM to 2:30 PM.

NEW! Ice Cream Social
Booths 262, 3475, and 4604
Friday, 2:00-3:30 PM
Complimentary, make-your-own sundae or other treat. Your ticket to attend is in your on-site registration bag.

NEW! Photo Shoot
Create a memory of the AAOS 2013 Annual Meeting with a complimentary photo taken for you by a professional photographer against a backdrop of the AAOS logo in the exhibit hall on Friday from 10:00 AM to 2:00 PM.

Seating Areas
Park benches are placed throughout the exhibit hall and additional seating is available at the food service areas and in the Academy Lounge at the main entrance to the exhibit hall.

Navigating the Exhibit Hall
- Stop at an Exhibitor Directory kiosk located at the entrance to Hall A and South Level 1 Lobby to view a listing of all exhibitors, their contact and product information, and create and print your personal My Expo Plan.
- Pick up an updated floor plan and exhibitor listing at the You Are Here signs located in the lobby and in the exhibit hall. These signs and maps are color coded to help you find your way around the exhibit hall.
- Booth numbers are located on the aisle carpet and aisle numbers are on signs hanging overhead.
- Present your badge to exhibitors whose literature you want to receive. After scanning the bar code, exhibitors will be able to mail materials directly to you after the meeting, enabling you to spend more time in face-to-face discussions with vendors.

ANNUAL MEETING SPONSORS
The American Academy of Orthopaedic Surgeons wishes to thank the following companies for their financial support of the 2013 Annual Meeting.

Arthrex, Inc.
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Medtronic
Orthofix
RTI Biologics, Inc.
Smith & Nephew Inc.
SRSsoft
Stryker Orthopaedics

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AAOS EXHIBITS COMMITTEE

The Exhibits Committee is responsible for evaluating the companies that exhibit at the annual meeting. The committee also reviews the exhibits on-site for content, presentation and compliance with FDA guidelines. During the annual meeting, William H. Seitz, Jr., chair of the committee, can be reached at the AAOS Exhibits Office located in Room S400b of McCormick Place.

William H. Seitz Jr, MD, Cleveland, OH, Chair
George W. Balfour, MD, Van Nuys, CA
Dennis B. Brooks, MD, Pepper Pike, OH
Benjamin Goldberg, MD, Chicago, IL
Steven M. Kurtz, PhD, Philadelphia, PA
Donald H. Lee, MD, Nashville, TN
Pekka A. Mooar, MD, Philadelphia, PA
Joseph T. Moskal, MD, Roanoke, VA
James V. Nepola, MD, Iowa City, IA
Rick F. Papandrea, MD, Waukesha, WI
John R. Tenny, MD, Dallas, TX
Scott D. Weiner, MD, Akron, OH

EXHIBITORS’ ADVISORY COUNCIL

A Technical Exhibitors’ Advisory Council has been established to serve in an advisory capacity to the Academy on issues affecting exhibitors. You are encouraged to contact the Council members with your concerns.

Jill Best, Zimmer
Marie Bukowski, BioMimetic Therapeutics
Denise Cyr, Aesculap Implant Systems, Chair
Janet Gensinger, Symmetry Medical, Inc.
Bonnie Kerrigan, Covidien
Michael Librot, Medin Corporation
Brent Mellecker, FusionOne, Inc.
Brenda Roby, DePuy Synthes Joint Reconstruction
Barbara Sharpe, Stryker Instruments, Vice-Chair
Linda A. Smith, Medartis, Inc.
Alissa Stokes, Exactech, Inc.

EXHIBITOR LISTINGS

AdvaMed and PhRMA

The product code PhRMA following an exhibit company listing indicates that the exhibitor is a member of the Pharmaceutical Research and Manufacturers of America. PhRMA represents the country's leading research-based pharmaceutical and biotechnology companies. Its members develop and market new medicines to enable patients to live longer, healthier and more productive lives. The PhRMA Code of Ethics on Interactions with Health Care Professionals went into effect in July 2002. The PhRMA Code of Ethics may be found www.aaos.org/IndustryRelationships or http://www5.aaos.org/industryrelationships/standards.cfm

PRODUCT LISTINGS

For your convenience, the technical exhibiting companies are listed alphabetically and the products/services they offer are identified by the following codes.

ADVA  AdvaMed Member
AM  Anatomical Model
AO  Allied Organization
AS  Arthroscopic Systems
BLD  Blood Products
BNE  Bone Products
BB  Business to Business/OEM
CS  Casting Supplies & Equipment
COM  Computer Hardware/Software
DEV  Devices
DI  Diagnostic Equipment
DE  Diagnostic Equipment Aisles
EDU  Education – Patient and Physician
EMR  Electronic Medical Records
FPD  Facility Planning & Design
FIN  Financial Planning/Investments
FRST  First-Time Exhibitor
IMG  Image Guiding/Navigation Systems
I  Implants
MKT  Market Research Services
MS  Medical Supplies
MRI  MRI
O  Orthoses
OTH  Other
PH  Pharmaceuticals
PHRM  PhRMA Member
PR  Physician Recruitment
PM  Practice/Office Management
PP  Practice Productivity Aisles
P  Prostheses
PUB  Publishers
PE  Publishers/Educators Aisles
REHB  Rehabilitation/Exercise Equipment
SF  Shoes & Foot Supplies
SG  Soft Goods (Supports)
SURG  Surgical Equipment
SI  Surgical Instruments
T  Tissue Products
XRAY  X-Ray
**Electronic Skills Pavilion – Booth 5236**

<table>
<thead>
<tr>
<th>TIME</th>
<th>PRESENTATION TITLE</th>
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<tbody>
<tr>
<td>Wednesday, March 20</td>
<td></td>
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<tr>
<td>9:30 AM-10:15 AM</td>
<td><strong>Killer Apps</strong></td>
<td>Ira H. Kirschenbaum, MD</td>
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<tr>
<td>10:30 AM-11:15 AM</td>
<td><strong>Cloud Tracking to Convert Surgical Indications to Surgery</strong></td>
<td>Ira H. Kirschenbaum, MD</td>
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<td>11:30 AM-12:15 PM</td>
<td><strong>Implementation and Utilization of Voice Recognition Software</strong></td>
<td>Michael A. Rauh, MD</td>
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<td>1:30 PM-2:15 PM</td>
<td><strong>Defending Your Internet Reputation</strong></td>
<td>David L. Nelson, MD</td>
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<td>2:30 PM-3:15 PM</td>
<td><strong>Advanced PowerPoint Presentations</strong></td>
<td>David L. Nelson, MD</td>
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<tr>
<td>3:30 PM-4:15 PM</td>
<td><strong>EHR and Meaningful Use for the Small Orthopaedic Office</strong></td>
<td>A. Herbert Alexander, MD</td>
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<td>Thursday, March 21</td>
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<tr>
<td>9:30 AM-10:15 AM</td>
<td><strong>Five Secrets to Getting New Patients With Your Website</strong></td>
<td>C. Noel Henley, MD</td>
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<tr>
<td>10:30 AM-11:15 AM</td>
<td><strong>Coding Macros in Dragon - Integration With EMR</strong></td>
<td>Steven J. Leibovic, MD</td>
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<td>11:30 AM-12:15 PM</td>
<td><strong>Leveraging Social Media for Your Orthopaedic Practice</strong></td>
<td>Raymond B. Raven, MD</td>
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<td><strong>Managing Your Internet Reputation</strong></td>
<td>Christian Veillette, MD</td>
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<td><strong>Video for PowerPoint Presentations</strong></td>
<td>Randy R. Bindra, MD</td>
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<td><strong>Five Secrets to Getting New Patients With Your Website</strong></td>
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<td>Friday, March 22</td>
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<td>9:30 AM-10:15 AM</td>
<td><strong>Government and EMR</strong></td>
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<td>10:30 AM-11:15 AM</td>
<td><strong>Search Engine Marketing for Your Practice</strong></td>
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<td>11:30 AM-12:15 PM</td>
<td><strong>Social Media for the Orthopaedic Surgeon</strong></td>
<td>Christian Veillette, MD</td>
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<td>1:30 PM-2:15 PM</td>
<td><strong>Utilizing iPhone and iPad Apps in an Orthopaedic Surgery Practice</strong></td>
<td>Scott F. M. Duncan, MD</td>
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<td>2:30 PM-3:15 PM</td>
<td><strong>Office Websites: How to Save Time and Money</strong></td>
<td>David L. Nelson, MD</td>
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</tbody>
</table>

It is totally free, no ticket needed! Presentations that showcase current technology products and applications developed for the orthopaedic surgeon take place in the Electronic Skills Pavilion.
Take this opportunity to present a perplexing case to an expert in orthopaedics. We invite you to bring your HIPAA compliant case challenges on a flash drive 10 minutes prior to the start of the session and present them for diagnosis and recommendation. We encourage audience participation to complement the exchange of ideas. Pick a session and participate.
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<tr>
<th>COMPANY</th>
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<tr>
<td>3-Point Products Inc.</td>
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<td>Alliance Surgical Distributors</td>
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**COMPANY**

| 3-Point Products Inc.         | 3009      |
| Accell, Inc.                  | 112       |
| ACIGI Relaxation/Fujiyoki      | 4006      |
| Active Implants Corporation   | 1900      |
| Acumed                        | 3446      |
| Advanced Arm Dynamics         | 3002      |
| Advanced Biologics            | 143       |
| Advanced Endoscopy Devices, Inc. | 1907    |
| Advanced Orthopaedic Solutions, Inc. | 824    |
| Aesculap Implant Systems      | 1024      |

**COMPANY**

| Aesculap, Inc.                | 124       |
| Ageless Regenerative Institute| 3975      |
| Ai-Medic, Ltd.                | 4849      |
| AIP                            | 3606      |
| Algea Therapies               | 5162      |
| Aligned Medical Systems       | 1020      |
| Alliance Surgical Distributors| 5418      |

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<tr>
<td>151 Lafayette Drive</td>
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<td>Suite 401</td>
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</tr>
<tr>
<td>Oak Ridge, TN 37830</td>
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<tr>
<td>Phone: (888)343-6337</td>
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<tr>
<td>Web: <a href="http://www.allmeds.com">www.allmeds.com</a></td>
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<td>6278 S Troy Cir</td>
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<tr>
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<td>Phone: (720)873-0213</td>
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<tr>
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<tr>
<td>Phone: (305)662-2855</td>
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<td>1885 West 2100 South</td>
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<tr>
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<tr>
<td>Phone: (855)839-3600</td>
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<td>Phone: (800)621-8335</td>
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<tr>
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<tr>
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<tr>
<td>Taipei, 11491</td>
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<td>Taiwan</td>
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<tr>
<td>Phone: 886236274366</td>
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<tr>
<td>Web: <a href="http://www.biomech-spine.com">www.biomech-spine.com</a></td>
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<td>Product Codes: DEV, I</td>
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<tr>
<td>Biomet</td>
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<tr>
<td>56 E. Bell Dr.</td>
<td></td>
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<tr>
<td>Warsaw, IN 46581</td>
<td></td>
</tr>
<tr>
<td>Phone: (574)267-6639</td>
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<tr>
<td>Web: <a href="http://www.biomet.com">www.biomet.com</a></td>
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<td>BioMimetic Therapeutics</td>
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<tr>
<td>389 Nichol Mill Lane</td>
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<tr>
<td>Franklin, TN 37067</td>
<td></td>
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<tr>
<td>Phone: (615)844-1280</td>
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</tr>
<tr>
<td>Web: <a href="http://www.biomimetics.com">www.biomimetics.com</a></td>
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<tr>
<td>Bio-Oil</td>
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<tr>
<td>73 Enterprise</td>
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<tr>
<td>Suite 300</td>
<td></td>
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<tr>
<td>Aliso Viejo, CA 92656</td>
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</tr>
<tr>
<td>Phone: (949)297-9032</td>
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<tr>
<td>Web: <a href="http://www.bio-oilusa.com">www.bio-oilusa.com</a></td>
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<td>2929 Lapeer Road</td>
<td></td>
</tr>
<tr>
<td>Port Huron, MI 48060</td>
<td></td>
</tr>
<tr>
<td>Phone: (810) 982-7777</td>
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<td>Bioretec Ltd</td>
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<tr>
<td>Tampere, 33720</td>
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<tr>
<td>Phone: 358207789500</td>
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<td>Web: <a href="http://www.bioretec.com">www.bioretec.com</a></td>
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<td>BIOTECK S.p.A.</td>
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<td>Via Enrico Fermi, 49</td>
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<td>Arcugnano, VI 36057</td>
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<td>Italy</td>
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<tr>
<td>Phone: 39-0444289366</td>
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<td>Web: <a href="http://www.bioteck.com">www.bioteck.com</a></td>
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<tr>
<td>Durham, NC 27703</td>
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<tr>
<td>Phone: (800)396-4325</td>
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<td>Bird &amp; Cronin Inc.</td>
<td>2209</td>
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<tr>
<td>1200 Trapp Road</td>
<td></td>
</tr>
<tr>
<td>Eagan, MN 55121</td>
<td></td>
</tr>
<tr>
<td>Phone: (651)683-8089</td>
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<tr>
<td>Web: <a href="http://www.birdcronin.com">www.birdcronin.com</a></td>
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<td>Product Codes: O, REHB, SF, SG, SI</td>
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<tr>
<td>BK Meditech Co., Ltd.</td>
<td>2707</td>
</tr>
<tr>
<td>#607 Instopia Building Dogok-Dong, Kangnam-Gu, Seoul, 467-23</td>
<td></td>
</tr>
<tr>
<td>Phone: 8225712300</td>
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<td>Bledsoe Brace Systems</td>
<td>1220</td>
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<tr>
<td>2601 Pinewood Drive</td>
<td></td>
</tr>
<tr>
<td>Grand Prairie, TX 75051</td>
<td></td>
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<tr>
<td>Phone: (972) 647-0884</td>
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<tr>
<td>Web: <a href="http://www.bledsoebrace.com">www.bledsoebrace.com</a></td>
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<tr>
<td>Blue Belt Technologies</td>
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<tr>
<td>2828 Liberty Avenue</td>
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<tr>
<td>Suite 100</td>
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<tr>
<td>Pittsburgh, PA 15222</td>
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<tr>
<td>Phone: (412)683-3844</td>
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<tr>
<td>Blue Star Radiology</td>
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<tr>
<td>1 Cowboys Parkway</td>
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<tr>
<td>Irving, TX 75063</td>
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<tr>
<td>Phone: (214)647-6161</td>
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<td>Web: <a href="http://www.bluestarimaging.com">www.bluestarimaging.com</a></td>
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<td>BME</td>
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<tr>
<td>14785 Omicron Drive #205</td>
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<tr>
<td>San Antonio, TX 78245</td>
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<tr>
<td>Phone: (210)677-0354</td>
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<tr>
<td>Web: <a href="http://www.bmedbho.com">www.bmedbho.com</a></td>
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<td>COMPANY</td>
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<tr>
<td>Bone Clones, Inc.</td>
<td>5059</td>
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<tr>
<td>21416 Chase Street #1</td>
<td></td>
</tr>
<tr>
<td>Canoga Park, CA 91304</td>
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<tr>
<td>Phone: (800)914-0091</td>
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<tr>
<td>Web: <a href="http://www.boneclones.com">www.boneclones.com</a></td>
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<tr>
<td>Bone Foam Inc.</td>
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<tr>
<td>3650 Annapolis Lane</td>
<td></td>
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<tr>
<td>Suite 105</td>
<td></td>
</tr>
<tr>
<td>Plymouth, MN 55447</td>
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<tr>
<td>Phone: (763)539-1830</td>
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<tr>
<td>Web: <a href="http://www.bonefoam.com">www.bonefoam.com</a></td>
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<tr>
<td>P O Box 1367</td>
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<tr>
<td>Effingham, IL 62401</td>
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<tr>
<td>Phone: (217)342-3412</td>
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<tr>
<td>Web: <a href="http://www.bonuttiotechnologies.com">www.bonuttiotechnologies.com</a></td>
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<td>2422 N. Hwy 81</td>
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<tr>
<td>Anderson, SC 29621</td>
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<tr>
<td>Phone: (864)760-0364</td>
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<tr>
<td>Web: <a href="http://www.bort-swissotho.com">www.bort-swissotho.com</a></td>
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<td>1146 Barnum Avenue</td>
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<tr>
<td>Bridgeport, CT 06610</td>
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<tr>
<td>Phone: (203)336-6479</td>
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<tr>
<td>10525 58th Place</td>
<td></td>
</tr>
<tr>
<td>Kenosha, WI 53144</td>
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<tr>
<td>Phone: (262)925-1374</td>
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<td>Web: <a href="http://www.bradshaw-medical.com">www.bradshaw-medical.com</a></td>
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<td>Brainlab</td>
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<tr>
<td>3 Westbrook Corporate Center</td>
<td>Suite 400</td>
</tr>
<tr>
<td>Westchester, IL 60154</td>
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<tr>
<td>Phone: (708)409-1343</td>
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<td>Branch Medical Group</td>
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<tr>
<td>200 Schell Lane</td>
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<tr>
<td>Phoeniixville, PA 19460</td>
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<tr>
<td>Phone: (484)921-3000</td>
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<tr>
<td>Savannah, GA 31419</td>
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<tr>
<td>Phone: (800) 569-6738</td>
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<tr>
<td>15621 W 87th Street</td>
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<td>Suite 211</td>
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<tr>
<td>Lenexa, KS 66219</td>
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<tr>
<td>Phone: (855)388-7867</td>
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<td>Web: <a href="http://www.boneandjointsurgery.org">www.boneandjointsurgery.org</a></td>
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<tr>
<td>22 Buckingham Street</td>
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<tr>
<td>London, WC2N 6ET</td>
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<td>Brownmed</td>
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<tr>
<td>1300 Lundberg Drive W</td>
<td></td>
</tr>
<tr>
<td>Spirit Lake, IA 51360-7246</td>
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<tr>
<td>Phone: (816)581-7001</td>
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<td>Phone: (800)352-1157</td>
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<td>Buxton BioMedical, Inc.</td>
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<tr>
<td>15A Melanie Lane</td>
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<tr>
<td>East Hanover, NJ 07936</td>
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</tr>
<tr>
<td>Phone: (973)560-4848</td>
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<tr>
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<td>Z.I. Rue Lavoisier - BP 10</td>
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<td>Nogent, 52800</td>
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<tr>
<td>France</td>
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<tr>
<td>Cannuflow, Inc.</td>
<td>910</td>
</tr>
<tr>
<td>1190 Coleman Ave</td>
<td></td>
</tr>
<tr>
<td>Suite 250</td>
<td></td>
</tr>
<tr>
<td>San Jose, CA 95110</td>
<td></td>
</tr>
<tr>
<td>Phone: (408)764-0220</td>
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<td>Captiva Spine, Inc.</td>
<td>2801</td>
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<tr>
<td>967 Alternate A1A</td>
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</tr>
<tr>
<td>Suite 1</td>
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<tr>
<td>Jupiter, FL 33477</td>
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<tr>
<td>Phone: (877)772-5571</td>
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<td>CarboFix Orthopedics Ltd.</td>
<td>1051</td>
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<tr>
<td>3362 Big Pine Trl Ste C</td>
<td></td>
</tr>
<tr>
<td>Champaign, IL 61822-1409</td>
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</tr>
<tr>
<td>Phone: (217)331-3288</td>
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<tr>
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<tr>
<td>CARE</td>
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<tr>
<td>P.O Box 90082</td>
<td></td>
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<tr>
<td>San Diego, CA 92169</td>
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<tr>
<td>Phone: (888)936-7227</td>
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<tr>
<td>Web: <a href="http://www.careforpatients.com">www.careforpatients.com</a></td>
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<td>CareFusion</td>
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<tr>
<td>3750 Torrey View Ct</td>
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<tr>
<td>San Diego, CA 92130</td>
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<td>Phone: (888)876-4287</td>
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<td>Phone: (201)313-1999</td>
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<tr>
<td>Cases By Source, Inc.</td>
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<td>215 Island Road</td>
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<tr>
<td>Phone: (480)302-3661</td>
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<tr>
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<td>Phone: (512)775-4752</td>
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<td>Westminster, CO 80021</td>
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<tr>
<td>Phone: (303)974-6275</td>
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<tr>
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<tr>
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<tr>
<td>Phone: (801)365-1820</td>
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<tr>
<td>Phone: (877)747-9016</td>
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<td>Maple Grove, MN 55369</td>
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<tr>
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<td>Warsaw, IN 46581</td>
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<td>Phone: (630)815-4818 Web: <a href="http://www.fusiononeinc.com">www.fusiononeinc.com</a></td>
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<td>Concord, CA 94520</td>
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<td>Group Health Physicians</td>
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<td>America, Inc.</td>
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<tr>
<td>Deerfield, IL 60015-5633</td>
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<tr>
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<tr>
<td>Hospital For Joint Diseases at NYU Langone Medical Center</td>
<td>1373</td>
</tr>
<tr>
<td>301 East 17th Street</td>
<td></td>
</tr>
<tr>
<td>New York, NY 10003</td>
<td></td>
</tr>
<tr>
<td>Phone: (212)598-6000</td>
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<tr>
<td>Web: <a href="http://www.orthosurgery.med.nyu.edu/">www.orthosurgery.med.nyu.edu/</a></td>
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<td>Hospital for Special Surgery</td>
<td>1475</td>
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<td>Extern Affairs Dept., Hospital for Special Surgery</td>
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<tr>
<td>335 E 70th St.</td>
<td></td>
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<tr>
<td>New York, NY 10021</td>
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<tr>
<td>Phone: (212)608-1000</td>
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<td>Web: <a href="http://www.hss.edu">www.hss.edu</a></td>
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<td>HRA Healthcare Research &amp; Analytics</td>
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<tr>
<td>L.T.S. GmbH/L.T.S. USA</td>
<td>3248</td>
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<tr>
<td>1778 Park Avenue North</td>
<td></td>
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<tr>
<td>Suite 200</td>
<td></td>
</tr>
<tr>
<td>Maitland, FL 32751</td>
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</tr>
<tr>
<td>Phone: (407)971-8054</td>
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<tr>
<td>Web: <a href="http://www.ltsimplantusa.com">www.ltsimplantusa.com</a></td>
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<td>Product Codes: I</td>
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<td>Iconacy Orthopedic Implants</td>
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<td>4130 Corridor Drive</td>
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<tr>
<td>Warsaw, IN 46582</td>
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<tr>
<td>Phone: (574)269-4266</td>
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<td>iCRco, Inc.</td>
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<tr>
<td>2580 West 237th Street</td>
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<tr>
<td>Torrance, CA 90303</td>
<td></td>
</tr>
<tr>
<td>Phone: (310)921-9559</td>
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<tr>
<td>Web: <a href="http://www.icrcompany.com">www.icrcompany.com</a></td>
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<td>iData Research Inc.</td>
<td>4206</td>
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<tr>
<td>850 - 777 West Broadway</td>
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<tr>
<td>Vancouver, BC V5Z 4J7</td>
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<tr>
<td>Canada</td>
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<tr>
<td>Phone: (604)266-6933</td>
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<td>Web: <a href="http://www.idatavt.net">www.idatavt.net</a></td>
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<tr>
<td>20202 Windrow Drive</td>
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<tr>
<td>Lake Forest, CA 92630</td>
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</tr>
<tr>
<td>Phone: (800)448-3569</td>
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<tr>
<td>Web: <a href="http://www.myON-Q.com">www.myON-Q.com</a></td>
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<td>13600 Heritage Parkway, Suite 170 Ft Worth, TX 76177 Phone: (407)770-0272 Web: <a href="http://www.imds.net">www.imds.net</a> Product Codes: AS, BB, CS, DEV, I, SI, SURG, T</td>
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<td>IMEDI.COM Co., Ltd</td>
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<td>612 Hanlim Human Tower 1-40 Guemjung-dong, Gunpo Gyeonggi, 435-824 Korea, Republic of Phone: 82314791156 Web: <a href="http://www.imedicom.co.kr">www.imedicom.co.kr</a> Product Codes: SI</td>
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<td>I-Ming Sanitary Materials Co., Ltd.</td>
<td>3207</td>
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<td>101-10, Datu Lane, Er Hsi Road Peishih Li, Hsihua Changhua, 51446 Taiwan Phone: 886-48819638 Web: <a href="http://www.imedicom.co.kr">www.imedicom.co.kr</a> Product Codes: SI</td>
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<td>IMEX Surgical Inc.</td>
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<td>5731 W Howard St Niles, IL 60714 Phone: (847)764-2595 Web: <a href="http://www.imexsurgical.com">www.imexsurgical.com</a> Product Codes: AS, DEV, DI, O, SI, SURG</td>
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<td>Infinite Therapeutics</td>
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<td>2800 Glades Cir Suite 138 Weston, FL 33327 Phone: (954)639-9224 Web: <a href="http://www.infinitytherapeutics.com">www.infinitytherapeutics.com</a> Product Codes: FRST, I, OTH, REHB</td>
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<td>Innomed, Inc.</td>
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<td>103 Estrus Drive Savannah, GA 31404 Phone: (912)236-0000 Web: <a href="http://www.innomed.net">www.innomed.net</a> Product Codes: CS, SI, SURG</td>
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<td>Innovasis Inc.</td>
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<td>614 East 3900 South Salt Lake City, UT 84107 Phone: 801263-2236 Web: <a href="http://www.innovasis.com">www.innovasis.com</a> Product Codes: BNE, FRST, I, SI, SURG, T</td>
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<td>Innovative Medical Products</td>
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<td>87 Spring Lane Plaistville, VT 06062 Phone: (800)467-4944 Web: <a href="http://www.immedical.com">www.immedical.com</a> Product Codes: DEV, MS, SG, SI, SURG</td>
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<td>Innovative Orthopedic Technologies</td>
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<td>1140 Business Center Drive Suite 101 Houston, TX 77043 Phone: (409)658-1017 Web: <a href="http://www.iotiot.com">www.iotiot.com</a> Product Codes: FRST, I, SURG</td>
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<td>Innovision, Inc.</td>
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<td>1975 Noncornah Blvd Memphis, TN 38132 Phone: (901)370-5700 Web: <a href="http://www.innovisionus.com">www.innovisionus.com</a> Product Codes: DEV, I, SURG</td>
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<td>Instratek, Inc.</td>
<td>1618</td>
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<td>4141 Directors Row Suite #H Houston, TX 77092 Phone: (800)892-8020 Web: <a href="http://www.instratek.com">www.instratek.com</a> Product Codes: DEV, I, SI, SURG</td>
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<td>Insurgical Powered Instruments</td>
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<td>9600 Great Hills Trail Suite 150W Austin, TX 78759 Phone: (512)318-2980 Web: <a href="http://www.insurgical.com">www.insurgical.com</a> Product Codes: FRST, I, SURG</td>
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<td>Intech Medical</td>
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<td>2851 Lamb Place #15 Memphis, TN 38103 Phone: (901)375-1109 Web: <a href="http://www.intech-medical.com">www.intech-medical.com</a> Product Codes: BB, DEV, I, SI, SURG</td>
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<td>Integra</td>
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<td>311 Enterprise Drive Plainsboro, NJ 08536 Phone: (609)275-0500 Web: <a href="http://www.integra-life.com">www.integra-life.com</a> Product Codes: ADVA, BNE, DEV, I, SI, SURG, T</td>
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<td>Integrated Medical Systems (IMS)</td>
<td>4654</td>
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<td>1823 27th Avenue S Birmingham, AL 35209 Phone: (205)335-1669 Web: <a href="http://www.imsready.com">www.imsready.com</a> Product Codes: DEV, FRST, I, SURG</td>
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<tr>
<td>Inter Equipement</td>
<td>3775</td>
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<tr>
<td>7 Rue Pierre Et Marie Curie Blanquefort, 33290 France Phone: 33-56332398 Web: <a href="http://www.inter-equipement.com">www.inter-equipement.com</a> Product Codes: FRST, I, SURG</td>
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<td><strong>International Cartilage Repair Society - ICRS</strong></td>
<td>606</td>
<td>Spitalstrasse 190, Haus 3 Wetzikon, ZH-8623 Switzerland</td>
<td>Phone: 41 44 503 73 70 Web: <a href="http://www.cartilage.org">www.cartilage.org</a></td>
<td>AO</td>
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<tr>
<td><strong>International Congress for Joint Reconstruction</strong></td>
<td>406</td>
<td>2033 San Eljo Ave., #351 Cardiff, CA 92007 Phone: 707-981-7958 Web: <a href="http://www.icjr.net">www.icjr.net</a></td>
<td>Product Codes: AO</td>
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<td><strong>Intruma SRL</strong></td>
<td>4609</td>
<td>Via Rovigo, 4 Rivoli, TO 10098 Italy</td>
<td>Phone: 39-119539496 Web: <a href="http://www.intrauma.com">www.intrauma.com</a></td>
<td>AO</td>
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<tr>
<td><strong>Invibio Inc</strong></td>
<td>3109</td>
<td>300 Conshohocken State Road Suite 120 Conshohocken, PA 19428 Phone: (484)342-6004 Web: <a href="http://www.invibio.com">www.invibio.com</a></td>
<td>Product Codes: I, SI</td>
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<td><strong>InVivoLink</strong></td>
<td>5415</td>
<td>1905 21st Ave. Nashville, TN 37212 Phone: (866)478-8981 Web: <a href="http://www.invivolink.com">www.invivolink.com</a></td>
<td>Product Codes: COM, FRST, PP</td>
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<td><strong>Invuity</strong></td>
<td>455</td>
<td>39 Stillman St. San Francisco, CA 94107 Phone: (866)711-7768 Web: <a href="http://www.invuity.com">www.invuity.com</a></td>
<td>Product Codes: COM, FRST, PP</td>
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<td><strong>Ionbond</strong></td>
<td>4455</td>
<td>1823 E. Whitcomb Ave. Madison Heights, MI 48071 Phone: (248)586-4751 Web: <a href="http://www.ionbond.com">www.ionbond.com</a></td>
<td>Product Codes: AS, RLD, BNE, DEV, FRST, I, SURG, T</td>
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<tr>
<td><strong>IrriMax Corporation</strong></td>
<td>4754</td>
<td>1665 Lakes Parkway, Suite 102 Lawrenceville, GA 30043 Phone: (770)807-3355 Web: <a href="http://www.irrisept.com">www.irrisept.com</a></td>
<td>Product Codes: DEV, FRST, MS, OTH</td>
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<td><strong>ISAKOS</strong></td>
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<td>2678 Bishop Drive Suite 250 San Ramon, CA 94583 Phone: (925)807-1197 Web: <a href="http://www.isakos.com">www.isakos.com</a></td>
<td>Product Codes: EDU, FRST, PE</td>
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<td><strong>JAAOS</strong></td>
<td>1265</td>
<td>6300 N River Road Rosemont, IL 60018 Phone: 847-384-4145 Web: <a href="http://www.aaos.org">www.aaos.org</a></td>
<td>Product Codes: PUB</td>
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<td><strong>Jackson &amp; Coker</strong></td>
<td>5217</td>
<td>3000 Old Alabama Road Suite 119-608 Alpharetta, GA 30022 Phone: (800)272-2707 Web: <a href="http://www.jacksoncoker.com">www.jacksoncoker.com</a></td>
<td>Product Codes: PUB, PR</td>
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<td><strong>Janssen Pharmaceuticals, Inc.</strong></td>
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<td>1000 Route 202 Raritan, NJ 08869 Phone: (908)218-6000 Web: <a href="http://www.janssenpharmaceuticalsinc.com">www.janssenpharmaceuticalsinc.com</a></td>
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<td><strong>Jaypee Brothers Medical Publishers</strong></td>
<td>769</td>
<td>PO Box 0818-00848 Panama City, 0818 Panama</td>
<td>Phone: 5073010496 Web: <a href="http://www.jphmedical.com">www.jphmedical.com</a></td>
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<td><strong>JBJSJobs</strong></td>
<td>5120</td>
<td>20 Pickering St Needham, MA 02492 Phone: (781)449-9780 Web: <a href="http://www.jbjs.org">www.jbjs.org</a></td>
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<td><strong>JRI Orthopaedics Ltd</strong></td>
<td>4756</td>
<td>18 Churchill Way 35A Business Park Sheffield, South Yorkshire, S3 2PY United Kingdom Phone: 44-114257320000 Web: <a href="http://www.jri-ltd.co.uk">www.jri-ltd.co.uk</a></td>
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<td><strong>Juno Inc.</strong></td>
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<td>1220 Land Blvd Anoka, MN 55303-1092 Phone: (763)427-4161 Web: <a href="http://www.junonc.com">www.junonc.com</a></td>
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<td><strong>K2M, Inc.</strong></td>
<td>3650</td>
<td>751 Miller Dr SE Ste E2 Leesburg, VA 20175-8993 Phone: (703)777-3155 Web: <a href="http://www.k2m.com">www.k2m.com</a></td>
<td>Product Codes: ADVA, BNE, DEV, I, SI, SURG</td>
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<td><strong>Kao Chen Enterprise Co., Ltd.</strong></td>
<td>4955</td>
<td>No. 68, Lane 326, Sangand Road Longin Taichung, 434 Taiwan</td>
<td>Phone: 886-426308728 Web: <a href="http://www.softguards.com">www.softguards.com</a></td>
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<td>Kapp Surgical Instrument Inc.</td>
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<td>4919 Warrensville Center Rd.</td>
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<td>Cleveland, OH 44128</td>
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<td>Phone: (800)282-5277</td>
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<td>Web: <a href="http://www.kappsururgical.com">www.kappsururgical.com</a></td>
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<td>800 Aspen Circle</td>
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<td>Little Canada, MN 55109</td>
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<td>Phone: (612)354-8484</td>
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<td>Karl Storz Endoscopy-America, Inc.</td>
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<td>El Segundo, CA 90245-2838</td>
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<td>456 Parkway</td>
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<td>Phone: (610)353-4350</td>
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<td>Plot 19, Phase 4, Free Industrial Zone Bayan Lepas Penang, 11900 Malaysia Phone: 60-4616136 Web: <a href="http://www.kensfinemedtech.com">www.kensfinemedtech.com</a> Product Codes: DEV, SI</td>
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<td>Kensey Nash Corporation</td>
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<td>Camarillo, CA 93012-8701</td>
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<td>Phone: (805)384-2748</td>
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<td>Suite No. 9, South Terrace Medical Centre Infirmary Road Cork, Ireland Phone: 353-870508529 Web: <a href="http://www.imeddoc.com">www.imeddoc.com</a> Product Codes: COM, EMR, FRST, PP</td>
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<td>West Chester, PA 19380</td>
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<td>Noblesville, IN 46060</td>
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<td>Phone: (866)756-3706</td>
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<td>615 Yeonje-ri Gengoe-myoen, Cheongwon-gun Chung-Buk, 363-450 Korea, Republic of Phone: 82221138696 Web: <a href="http://www.kyungwonmedical.com">www.kyungwonmedical.com</a> Product Codes: DEV, BNE, I</td>
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<td>Phone: (260)432-5670</td>
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<td>Room 1804, 18/F, Cheuk Nang Centre No. 9 Hillwood Road, Tsim Sha Tsui, Kowloon 0000 Hong Kong Phone: 852-23746238 Web: <a href="http://www.aquilamedical.com">www.aquilamedical.com</a> Product Codes: BNE, FRST, SURG</td>
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<td>Phone: (800)683-2400</td>
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<td>504 Saw Mill River Rd.</td>
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<td>Kalamazoo, MI 49007-5842</td>
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<td>Phone: (800)519-2122</td>
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<td>Taiwan</td>
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<td>Phone: (800)327-5830</td>
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<tr>
<td>Suite 2900</td>
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<td>Draper, UT 84020</td>
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<tr>
<td>Seattle, WA 98101</td>
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<td>Web: <a href="http://www.medmix.ch">www.medmix.ch</a></td>
<td>Merete Medical, Inc.</td>
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<tr>
<td>360 San Miguel Drive #502</td>
<td>Product Codes: BB, DEV, MS, PH, SI, T</td>
<td>4 Croton Lane - Suite 118</td>
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<tr>
<td>Newport Beach, CA 92660</td>
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<td>New York International Plaza - SWF</td>
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<tr>
<td>Phone: (850)830-1331</td>
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<td>New Windsor, NY 12553</td>
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<tr>
<td>Phone: (888) 273-5344</td>
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<td>Phone: (914) 967-1532</td>
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<td>Web: <a href="http://www.medicalmarketing.com">www.medicalmarketing.com</a></td>
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<td>Web: <a href="http://www.merete-medical.com">www.merete-medical.com</a></td>
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<td>Medical Modeling Inc.</td>
<td>MedNet Technologies</td>
<td>Merge Healthcare</td>
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<tr>
<td>17301 West Colfax Ave Suite 300</td>
<td>5322</td>
<td>200 E Randolph Street</td>
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<tr>
<td>Golden, CO 80401</td>
<td>115 Broadhollow Rd Ste 225</td>
<td>24th Floor</td>
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<td>Phone: (888) 273-5344</td>
<td>Melville, NY 11747-4989</td>
<td>Chicago, IL 60601</td>
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<tr>
<td>Web: <a href="http://www.medicalmarketing.com">www.medicalmarketing.com</a></td>
<td>Phone: (516)285-2200</td>
<td>Phone: (312) 565-6868</td>
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<td>Web: <a href="http://www.mednet-tech.com">www.mednet-tech.com</a></td>
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<td>1166 East Cliff Road</td>
<td>MedShape, Inc.</td>
<td>Merge Healthcare</td>
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<tr>
<td>Burnsville, MN 55337</td>
<td>4056</td>
<td>250 E Randolph St</td>
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<tr>
<td>Phone: (952)277-1259</td>
<td>Suite 440</td>
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<tr>
<td>Web: <a href="http://www.m-p-r.com">www.m-p-r.com</a></td>
<td>1575 Northside Drive</td>
<td>Chicago, IL 60601</td>
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<td>Product Codes: SG, SI, SURG</td>
<td>Atlanta, GA 30318</td>
<td>Phone: (434) 975-8000</td>
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<td>Medicmicro</td>
<td>Phone: (404)249-915</td>
<td>Web: <a href="http://www.merge.com">www.merge.com</a></td>
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<td>Web: <a href="http://www.medshape.com">www.medshape.com</a></td>
<td>Product Codes: COM, DI, EMR, IMG, PM, PP</td>
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<td>Switzerland</td>
<td>Medstrat, Inc.</td>
<td>MicroAire Surgical Instruments</td>
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<tr>
<td>Web: <a href="http://www.medicmicro.ch">www.medicmicro.ch</a></td>
<td>1901 Butterfield Rd</td>
<td>3590 Grand Forks Blvd.</td>
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<td>Product Codes: DEV, I</td>
<td>Suite 600</td>
<td>Charlotte, VA 22911</td>
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<td></td>
<td>Downers Grove, IL 60515</td>
<td>Phone: (434) 975-8000</td>
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<td></td>
<td>Phone: (630) 965-8700</td>
<td>Web: <a href="http://www.microaire.com">www.microaire.com</a></td>
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<td>Medstreaming, LLC</td>
<td>25 Sawyer Passway</td>
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<td>5209</td>
<td>Fitchburg, MA 01420</td>
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<td></td>
<td>8514 154th Ave. NE</td>
<td>Phone: (978)602-1482</td>
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<td>Redmond, WA 98052</td>
<td>Web: <a href="http://www.micronproducts.com">www.micronproducts.com</a></td>
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<td></td>
<td>Phone: (800)633-7876</td>
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<td>Web: <a href="http://www.medstreaming.com">www.medstreaming.com</a></td>
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<td>Microport Orthopedics</td>
<td>5158</td>
<td>Modernizing Medicine, Inc.</td>
<td>5219</td>
<td>Neoligaments (a Division of Xiros)</td>
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<tr>
<td>No. 23 Building, Lane 588 Tianxiang Rd. Shanghai, 201318 China</td>
<td></td>
<td>3600 FAU Blvd. Suite 202 Boca Raton, FL 33431 Phone: (561)880-2998 Web: <a href="http://www.modmed.com">www.modmed.com</a> Product Codes: COM, EMR, FRST, PP</td>
<td></td>
<td>Springfield House, Whitehouse Lane Leeds West Yorkshire, LS19 7UE United Kingdom Phone: 44-1132387200 Web: <a href="http://www.neoligaments.com">www.neoligaments.com</a> Product Codes: P</td>
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<td>2700 Patriot Blvd Ste 150 Glenview, IL 60026-8063 Phone: (847)201-3626 Web: <a href="http://www.gomoji.com">www.gomoji.com</a> Product Codes: BB, FRST, REHB, SG</td>
<td></td>
<td>2 rue Robert Schuman Reze, 44408 France Phone: 33-0236569670 Web: <a href="http://www.neosteo.com">www.neosteo.com</a> Product Codes: FRST, I</td>
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<tr>
<td>Microsurgery Instruments, Inc.</td>
<td>2010</td>
<td>MTF</td>
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<td>NeuMed</td>
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<td>PO Box 1378 Bellaire, TX 77402 Phone: (713) 664-4707 Web: <a href="http://www.microsurgeryusa.com">www.microsurgeryusa.com</a> Product Codes: SI, SURG</td>
<td></td>
<td>125 May St Ste 300 Edson, NJ 08837-3264 Phone: (800) 433-6576 Web: <a href="http://www.mtf.org">www.mtf.org</a> Product Codes: BNE, I, T</td>
<td></td>
<td>800 Silvia Street West Trenton, NJ 08628 Phone: (609) 896-3444 Web: <a href="http://www.neumedinc.com">www.neumedinc.com</a> Product Codes: DEV, O</td>
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<tr>
<td>Millennium Research Group</td>
<td>2710</td>
<td>Musculoskeletal Clinical Regulatory Advisers, LLC</td>
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<td>Neuro Resource Group</td>
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<tr>
<td>175 Bloor St E South Tower, Suite 400 Toronto, ON M4W 3R8 Canada</td>
<td></td>
<td>14th Floor 505 Park Avenue New York, NY 10022 Phone: (212)583-9700 Web: <a href="http://www.msktelersads.com">www.msktelersads.com</a> Product Codes: OTH</td>
<td></td>
<td>1100 Jupiter Road Suite 190 Plano, TX 75074 Phone: (972)665-1810 Web: <a href="http://www.interx.com">www.interx.com</a> Product Codes: DEV, REHB</td>
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<tr>
<td>Millstone Medical Outsourcing</td>
<td>4551</td>
<td>Musculoskeletal Imaging Consultants, LLC</td>
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<td>Neurotech</td>
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<tr>
<td>580 Commerce Drive Fall River, MA 02720</td>
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<td>101 Brevett Court San Antonio, TX 78230 Phone: (866)690-0008 Web: <a href="http://www.msktelersads.com">www.msktelersads.com</a> Product Codes: BB, FRST, MRI, OTH</td>
<td></td>
<td>12400 Whittier Drive Suite 2010 Minnetonka, MN 55343 Phone: (952)382-6719 Web: <a href="http://www.neurotech.us">www.neurotech.us</a> Product Codes: O, REHB</td>
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<td>Mimedx Group, Inc.</td>
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<td>60 Chastain Center Blvd. Suite 60 Kennesaw, GA 30144 Phone: (404)663-3161 Web: <a href="http://www.mimedx.com">www.mimedx.com</a> Product Codes: T</td>
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<td>1000 Hampton Center Suite C Morgantown, WV 26505 Phone: (304)368-9848 Web: <a href="http://www.upexco.com">www.upexco.com</a> Product Codes: DEV, I</td>
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<td>Mizuho OSI</td>
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<td>Nadia International, Inc.</td>
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<td>Nextech</td>
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<td>30031 Ahern Avenue Union City, CA 94587 Phone: (800) 777-4674 Web: <a href="http://www.mizuhosi.com">www.mizuhosi.com</a> Product Codes: B, BNE, COM, OTH, SI, T</td>
<td></td>
<td>4301 William Cannon Drive Suite 150-B, #295 Austin, TX 78749 Phone: (512) 301-3888 Web: <a href="http://www.ronadro.com">www.ronadro.com</a> Product Codes: OTH</td>
<td></td>
<td>5550 W Executive Drive Suite 350 Tampa, FL 33609 Phone: (813)425-9200 Web: <a href="http://www.nextech.com">www.nextech.com</a> Product Codes: COM, EMR, FRST, PP</td>
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<td>Mobi LLC</td>
<td>3202</td>
<td>National Association of Orthopaedic Nurses</td>
<td>1372</td>
<td>NextGen Healthcare Information Systems, Inc.</td>
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<tr>
<td>3500 American Blvd West Suite 640 Minneapolis, MN 55431 Phone: (952)562-5580 Web: <a href="http://www.mobilegs.com">www.mobilegs.com</a> Product Codes: CS, DEV, MS</td>
<td></td>
<td>330 N Wabash Ave Suite 1900 Chicago, IL 60611 Phone: (800) 289-6266 Web: <a href="http://www.orthonurse.org">www.orthonurse.org</a> Product Codes: EDU, PE</td>
<td></td>
<td>795 Horsham Rd. Horsham, PA 19044 Phone: (215) 657-7010 Web: <a href="http://www.nextgen.com">www.nextgen.com</a> Product Codes: COM, EMR, PM, PP</td>
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<td>Models Plus LLC</td>
<td>4475</td>
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<tr>
<td>605 Grayton Road Kingsford Heights, IN 46346 Phone: (800)522-4044 Web: <a href="http://www.mydentalmodels.com">www.mydentalmodels.com</a> Product Codes: AM, FRST</td>
<td></td>
<td>8365 Keystone Crossing, Suite 107 Indianapolis, IN 46240 Phone: 317-205-9484 Web: <a href="http://www.naot.org">www.naot.org</a> Product Codes: AO</td>
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<td>NHD, Inc.</td>
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<td>8251 Mayfield Rd Ste 101</td>
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<td>Chesterland, OH 44026-2569</td>
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<td>Phone: (888)643-2677</td>
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<td>NIH Osteoporosis &amp; Related Bone Diseases</td>
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<td>2 Ams Circle</td>
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<td>Bethesda, MD 20892-3676</td>
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<td>Phone: (800)624-2663</td>
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<td>Web: <a href="http://www.bones.nih.gov">www.bones.nih.gov</a></td>
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<td>90 Icon Street</td>
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<td>Foothill Ranch, CA 92610</td>
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<td>Phone: (949)380-1355</td>
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<td>Web: <a href="http://www.nkusa.com">www.nkusa.com</a></td>
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<td>Web: <a href="http://www.normed-online.com">www.normed-online.com</a></td>
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<td>North American Spine Society</td>
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<td>7075 Veterans Blvd.</td>
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<td>Burr Ridge, IL 60527</td>
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<td>Phone: (630)230-3600</td>
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<td>Web: <a href="http://www.spine.org">www.spine.org</a></td>
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<td>13631 Progress Blvd</td>
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<td>Alachua, FL 32615</td>
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<td>Phone: (386)363-7660</td>
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<td>752 E. 1180 S.</td>
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<td>Suite 200</td>
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<td>American Fork, UT 84003</td>
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<td>Phone: (801)642-1001</td>
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<td>Orthosensor, Inc.</td>
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<tr>
<td>1560 Sawgrass Corporate Pkwy</td>
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<tr>
<td>4th Floor</td>
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<tr>
<td>Sunrise, FL 33323</td>
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</tr>
<tr>
<td>Phone: (954)577-7770</td>
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<tr>
<td>Jacksonville, FL 32256</td>
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<tr>
<td>Phone: (800)318-0923</td>
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<td>ORTHOWORLD Inc.</td>
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<tr>
<td>8401 Chagrin Road</td>
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<tr>
<td>Suite 18</td>
<td></td>
</tr>
<tr>
<td>Chagrin Falls, OH 44023</td>
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</tr>
<tr>
<td>Phone: (440)543-2101</td>
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<td>7015 Albert Einstein Drive</td>
<td></td>
</tr>
<tr>
<td>Columbia, MD 21046</td>
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</tr>
<tr>
<td>Phone: (443)545-1800</td>
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<tr>
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<tr>
<td>Phone: (800)233-6263</td>
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<tr>
<td>Addison, TX 75001</td>
<td></td>
</tr>
<tr>
<td>Phone: (972)677-4600</td>
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<tr>
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<td>3502</td>
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<tr>
<td>#514, Siwha Industrial Complex 2Ba</td>
<td></td>
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<tr>
<td>Jungswang-dong</td>
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<tr>
<td>Siheung Sri, Gyeonggi-Do 429-926</td>
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<td>Phone: 82-313190406</td>
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<tr>
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<tr>
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<tr>
<td>Phone: (610)240-4918</td>
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<td>30 S Satellite Road</td>
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<tr>
<td>Phone: (860)698-9300</td>
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<td>26300 Northwestern Highway</td>
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<tr>
<td>Southfield, MI 48076</td>
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<tr>
<td>Phone: (248)223-3300</td>
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<td>5286 Eastgate Mall</td>
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<tr>
<td>San Diego, CA 92121-2835</td>
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<tr>
<td>Phone: (866)943-4589</td>
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<tr>
<td>Web: <a href="http://www.lifesciencelearningcenter.com">www.lifesciencelearningcenter.com</a></td>
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### Technical Exhibits

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<tr>
<td>438 Hobron Lane, Suite 204, Honolulu, HI 96815</td>
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</tr>
<tr>
<td>Phone: (808)941-8880</td>
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<td>Web: <a href="http://www.pacificinstruments.biz">www.pacificinstruments.biz</a></td>
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<td>Panasonic</td>
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<tr>
<td>One Panasonic Way, Secaucus, NJ 07094</td>
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<tr>
<td>Phone: (201)392-6907</td>
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<tr>
<td>Web: <a href="http://www.panasonic.com/healthcare">www.panasonic.com/healthcare</a></td>
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<tr>
<td>P.O. Box 518, Norwell, MA 02061</td>
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<tr>
<td>Phone: (877)937-7366</td>
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<tr>
<td>8 Matchett Industrial Pk Dr., Pierceton, IN 46562</td>
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<tr>
<td>Phone: (574)594-2140</td>
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<tr>
<td>6204 W. Oakton St., Morton Grove, IL 60053</td>
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<tr>
<td>Phone: (866)327-5853</td>
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<tr>
<td>6423 Parkland Drive, Sarasota, FL 34243</td>
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<tr>
<td>Phone: (941)755-7965</td>
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<tr>
<td>4600 SE Harney Drive, Portland, OR 97206</td>
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<td>Phone: (503)632-4649</td>
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<tr>
<td>1111 Autoroute Chomedey Laval, QC H7W 5J8, Canada</td>
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<td>Phone: (450)688-5144</td>
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<td>3400 Spruce Street, Philadelphia, PA 19104</td>
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<td>Phone: (215)746-7366</td>
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<tr>
<td>8317 Marsh Creek Rd, Woodbury, MN 55125</td>
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<td>Phone: (949)366-3333</td>
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<td>Peter Brehm GmbH</td>
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<tr>
<td>Am Muhlberg 30, Wiesendorf, Bavaria, 91085 Germany</td>
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<tr>
<td>7 Paul Kohner Place, 50 Bushes Lane, Elmwood Park, NJ 07407</td>
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<td>Phone: (201)797-8820</td>
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<td>Phone: (800)843-8179</td>
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<tr>
<td>P O Box 10781, Glendale, AZ 85318</td>
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<td>Phone: (800)804-7267</td>
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<td>Physicians’ Capital Investments, LLC</td>
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<td>8117 Preston Road, Suite 400, Dallas, TX 75225</td>
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<td>12123 Shelbyville Road, Louisville, KY 40243</td>
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<td>Phone: (270)307-9427</td>
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<td>375 River Park Grce Marquette, MI 49855</td>
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<td>Planned, Inc.</td>
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<tr>
<td>100 North Gary Avenue Suite A Roselle, IL 60172</td>
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<td>Phone: (630)894-2200</td>
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<tr>
<td>7742 Spalding Drive Suite 368 Norcross, GA 30092</td>
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<td>Suite 200 1 Chase Corporate Drive Birmingham, AL 35244</td>
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<td>415 Second Ave. Hinton, WV 25951</td>
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<td>Primal Pictures LTD</td>
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<tr>
<td>159-165 Great Portland St London, W1W 5PA United Kingdom</td>
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<td>Pro-Dex Inc.</td>
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<tr>
<td>2361 McGaw Ave., Irvine, CA 92614</td>
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<tr>
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<td>Professional Data Systems, Inc.</td>
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<tr>
<td>10 New King Street</td>
<td></td>
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<tr>
<td>Suite 215</td>
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<tr>
<td>White Plains, NY 10604</td>
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<tr>
<td>Phone: (888)816-3819</td>
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<td>Web: <a href="http://www.goprodata.com">www.goprodata.com</a></td>
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<tr>
<td>8 Stony Brook Street</td>
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<tr>
<td>Ludlow, MA 01056</td>
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<tr>
<td>Phone: (413)589-0851</td>
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<td>Uppsala, 752 29</td>
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<tr>
<td>Phone: 46-18555505</td>
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<td>3020 Cypress</td>
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<tr>
<td>Wichita, KS 67226</td>
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<tr>
<td>Phone: (316)636-5900</td>
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<tr>
<td>111 Barclay Blvd, Suite 100</td>
<td></td>
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<tr>
<td>Lincolnshire Corporate Center</td>
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<tr>
<td>Lincolnshire, IL 60069</td>
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<tr>
<td>Phone: (847)634-6330</td>
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<td>1050 Cross Keys Dr</td>
<td></td>
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<tr>
<td>Doylestown, PA 18902</td>
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<tr>
<td>Phone: (215)230-7307</td>
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<td>3000 Woleske Road</td>
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<tr>
<td>Marinetts, WI 54143</td>
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<tr>
<td>Phone: (888)430-1625</td>
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<td>Plastic Products</td>
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<td>2120 Fairmont Ave</td>
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<tr>
<td>PO Box 14235</td>
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<tr>
<td>Reading, PA 19612</td>
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<tr>
<td>Phone: (610)320-6600</td>
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<td>6920 Hall Street</td>
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<tr>
<td>Holland, OH 43528</td>
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<tr>
<td>Phone: (800)337-8606</td>
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<td>2002 Orville Dr N</td>
<td></td>
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<tr>
<td>Ronkonkoma, NY 11779-7661</td>
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<tr>
<td>Phone: (631)567-5800</td>
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<tr>
<td>684 Industrial Drive</td>
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<tr>
<td>Camp Verde, AZ 86322</td>
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<tr>
<td>Phone: (928)567-3383</td>
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<tr>
<td>1415 W 178th St</td>
<td></td>
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<tr>
<td>Gardena, CA 90248-3201</td>
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</tr>
<tr>
<td>Phone: (310)808-6586</td>
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<tr>
<td>440 Sylvan Ave</td>
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<td>Suite 220</td>
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</tr>
<tr>
<td>Englewood Cliffs, NJ 07712</td>
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</tr>
<tr>
<td>Phone: (201)569-0445</td>
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<td>Raymond Fox &amp; Associates</td>
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<tr>
<td>1660 Hotel Circle North</td>
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</tr>
<tr>
<td>San Diego, CA 92108</td>
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<tr>
<td>Phone: (619)296-4595</td>
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<td>Rua Ernesto Goncalves Rosa Junior, 437</td>
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<td>Sao Carlos, SP 13570-460</td>
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<tr>
<td>Brazil</td>
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<tr>
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<td>543 Country Club Drive</td>
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<tr>
<td>Suite B-51</td>
<td></td>
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<tr>
<td>Simi Valley, CA 93065</td>
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<tr>
<td>Phone: (310)576-0929</td>
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<td>Phone: 41-218640111</td>
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<tr>
<td>119 S. Weber Dr</td>
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<tr>
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<td>Phone: (480)940-1310</td>
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<td>Vernon Hills, IL 60061-5110</td>
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<td>Phone: (800)323-9653</td>
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<tr>
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<td>Phone: (704)884-3506</td>
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<tr>
<td>Ramsey, NJ 07446-1150</td>
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<td>4105 Seneca Street</td>
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<tr>
<td>West Seneca, NY 14224</td>
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<td>Phone: (716)608-0009</td>
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<tr>
<td>San Diego, CA 92109-1266</td>
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<td>RTI Biologics, Inc.</td>
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<tr>
<td>11621 Research Circle</td>
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<tr>
<td>Alachua, FL 32615</td>
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<td>Phone: (386)418-8888</td>
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<td>SAGE</td>
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<tr>
<td>Thousand Oaks, CA 91320</td>
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<tr>
<td>Phone: (805)410-7239</td>
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<tr>
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<td>Phone: (617) 494-8484</td>
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<td>10221 SW 188th St</td>
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<tr>
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<td>Phone: (206) 463-5551</td>
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<tr>
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<tr>
<td>Schaerer Mayfield USA</td>
<td>4203</td>
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<tr>
<td>675 Wilmer Ave</td>
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<td>Cincinnati, OH 45226</td>
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<td>Phone: (513)561-2241</td>
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<tr>
<td>ScribeAmerica</td>
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<tr>
<td>20900 NE 30th Ave</td>
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<tr>
<td>Suite 200-16</td>
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<tr>
<td>Aventura, FL 33180</td>
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<tr>
<td>Phone: (877)488-5479</td>
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<td>Sentio, LLC</td>
<td>5049</td>
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<tr>
<td>21520 Bridge Street</td>
<td></td>
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<tr>
<td>Southfield, MI 48033</td>
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</tr>
<tr>
<td>Phone: (248)595-0438</td>
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<tr>
<td>5281 Zenith Parkway</td>
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<tr>
<td>Loves Park, IL 61111</td>
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<tr>
<td>Phone: (815)636-2780</td>
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<td>SH Medical Corp.</td>
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<td>3061 NW 82 Ave</td>
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<tr>
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<tr>
<td>Shanghai Bojin Electric Instrument &amp; Device Co., Ltd.</td>
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<tr>
<td>Room 1220, No. 18, Jiangchang 1 Road</td>
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<tr>
<td>Shanghai, 200436</td>
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<tr>
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<tr>
<td>Phone: 86-2166308078</td>
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<td>Shanghai Xinheng Photoelectric Technology Co., Ltd.</td>
<td>5258</td>
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<td>No. 107, Qianyang Road</td>
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<td>STERIS Corporation</td>
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<td>3412</td>
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<td>2201 Cooperative Way, Herndon, VA 20171</td>
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<td>231 Northland Blvd, Cincinnati, OH 45246</td>
<td>(513)772-6635</td>
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<td>Surgical Affiliates Management Group, Inc.</td>
<td>3976</td>
<td>PO Box 1528, Sacramento, CA 95812</td>
<td>(916)441-0400</td>
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<td>2440 Broadway, Suite 124, New York, NY 10024</td>
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<td>Surgionix Ltd.</td>
<td>4550</td>
<td>PO Box 20 092, Glen Eden, Auckland, 0641, New Zealand</td>
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<td>1514</td>
<td>77 Enterprise Drive, Ann Arbor, MI 48103</td>
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<td>105 Woodshire Ln, Chapel Hill, NC 27314</td>
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<td>5143</td>
<td>678 Simmons Lane, Bozeman, MT 59715</td>
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<tr>
<td>Systemedx Healthcare Technology</td>
<td>4447</td>
<td>18741 US Hwy 31 North, Suite 103, Cullman, AL 35058</td>
<td>(888)489-8324</td>
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<td>Tecres Spa</td>
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<td>27176 Cedar Ridge Place Valencia, CA 91381 Phone: (800) 633-7221 Web: <a href="http://www.trimedortho.com">www.trimedortho.com</a> Product Codes: I</td>
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<td>529-1 Yonghyun-Dong Uijungbu, Kyunggi-Do 480-050 Korea, Republic of Phone: 82318250102 Web: <a href="http://www.uosc.com">www.uosc.com</a> Product Codes: I, P, SI</td>
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<td>One Tower Lane Suite 640 Oakbrook Terrace, IL 60181 Phone: (630)572-2287 Web: <a href="http://www.ubs.com/team/tategroup">www.ubs.com/team/tategroup</a> Product Codes: FIN, FRST, PP</td>
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<td>2550 23rd Street Bldg. 3, 3rd Floor San Francisco, CA 94110 Phone: (415)999-9123 Web: <a href="http://www.orthotrauma.com">www.orthotrauma.com</a> Product Codes: BB, BNE, EDU, P, PE</td>
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<td>834 Chestnut St Suite G-114 Philadelphia, PA 19107 Phone: (215)521-3004 Web: <a href="http://www.union">www.union</a> surgical.com Product Codes: I, SI</td>
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<td>Union Tough International Limited</td>
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<td>Room 1605, Tower A, North Ring Center, 18 Yumin Road Xicheng District Beijing, China, 100029 China Phone: 86-14180803699 Web: <a href="http://www.union-tough.com">www.union-tough.com</a> Product Codes: CS, DEV, FRST, MS</td>
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<td>2323 Pennsylvania Street Fort Wayne, IN 46803 Phone: (800)227-8748 Web: <a href="http://www.unitedorthobracing.com">www.unitedorthobracing.com</a> Product Codes: AS, DI, MS, SI, SURG</td>
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<td>6300 N. River Road Rosemont, IL 60018 Phone: 847-430-5053 Web: <a href="http://www.usbj.org">www.usbj.org</a> Product Codes: AO</td>
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<td>3270 Alpine Road Portola Valley, CA 94028 Phone: (650)417-5688 Web: <a href="http://www.venoushealth.com">www.venoushealth.com</a> Product Codes: DEV</td>
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<td>300 Linden Oaks, Floor 2 Rochester, NY 14625 Phone: (585)249-6231 Web: <a href="http://www.virtualscopics.com">www.virtualscopics.com</a> Product Codes: DE, DI, IMG, MRI, XRAY</td>
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<td>305 Foster Street Suite 204 Littleton, MA 01460 Phone: (888)808-8357 Web: <a href="http://www.visibilitytech.com">www.visibilitytech.com</a> Product Codes: AS, DI, FRST</td>
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### Exhibit Dates and Hours:

**Wednesday, March 20**
9:00 AM – 5:00 PM

**Thursday, March 21**
9:00 AM – 5:00 PM

**Friday, March 22**
9:00 AM – 4:00 PM

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### Anatomical Model - AM

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- EOS Electro Optical Systems 461
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- Materialise 3710, 4357
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- Sawbones/Pacific Research 2506
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- Virtamed AG 4653

### Arthroscopic Systems - AS

- Advanced Endoscopy Devices, Inc. 1907
- Allen Medical Systems 1020
- AME/Orthotec International 3100
- American Medical Endoscopy, Inc. 2652
- Arthrex, Inc. 3453
- Arthrotech, Inc. 1008
- Case Medical 4309
- Cayenne Medical 2006
- Comerfak Enterprises LLC 4450
- ConMed Linvatec 2029
- Devix, LLC 126
- Flagship Surgical, LLC 1808
- FMD LLC 4446
- IMDS Innovative Medical Device Solutions 658
- INEX Surgical Inc. 2906
- Ionbond 4455
- Karl Storz Endoscopy America, Inc. 4224
- Knee Creations, LLC 4575
- Marmoted Orthopedic Systems 3410
- Orthopedic Sciences, Inc. 2035
- Parcus Medical, LLC 3000
- ProDex Inc. 4250

- Razeq Equipamentos Ltda. 3600
- Richard Wolf Medical Instruments Corp. 1521
- Sawbones/Pacific Research 2506
- SH Medical Corp. 4272
- Siemens Medical Solutions USA, Inc. 3865
- Smith & Nephew Inc. 1812
- Stryker Endoscopy 3412
- Stryker Orthopaedics 3412
- Symmetry Medical Inc. 1842
- TekArtis 2100
- TORNIER 2065
- United Endoscopy 904
- VisionScope Technologies 4337
- Whittemore Enterprises, Inc. 2103
- Zgrum Medical 4472
- Zigg Design LLC 4951

### Blood Products - BLD

- Arthrex, Inc. 3453
- Celling Biosciences 3602
- Circle Biologics 4753
- Cytonics Corporation 4776
- Exactech, Inc. 4612
- Haemonetics Corporation 2004
- Harvest Technologies Corp. 1800
- Ionbond 4455
- KYOCERA Medical Corporation 2600
- OHK Medical Devices 1108
- Regen Lab 4469
- Stryker Instruments 3412
- Stryker Orthopaedics 3412
- Zimmer 529

### Bone Products - BNE

- Aap Implantate AG 1416
- Advanced Biologics 143
- Allosource 3450
- Amedica Corp. 1107
- American Medical Endoscopy, Inc. 2652
- Arcam AB 3909
- Arztt 4649
- Bacterin International Holdings, Inc. 409
- Baxter Healthcare Corporation 616
- Berkeley Advanced Biomaterials, Inc. 1406
- BioComposites 3046
- Biologic Therapies, Inc. 132
- Biomatlante 3508
- BioMimetic Therapeutics 1260
- BIOECK S.p.A. 906
- Brasseler USA 2000
- CareFusion 3204
- Celling Biosciences 3602
- Cellight Technologies, LLC 5252
- Cerapedics, Inc. 1005
- Changzhou Waston Medical Appliance Co., Ltd. 1901
- Circle Biologics 4753
- Dallen Medical 137
- Devicix, LLC 126
- Etex Corporation 1307

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<td>Cannuflow, Inc.</td>
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<td>Cleveland Clinic Foundation</td>
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<td>Comerflat Enterprises LLC</td>
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<td>ConforMIS, Inc.</td>
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<td>137</td>
</tr>
<tr>
<td>Danco Anodizing</td>
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<tr>
<td>Delti Medical Innovations, Inc.</td>
<td>131</td>
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<td>1646</td>
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<td>126</td>
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<td>Directed Manufacturing, Inc.</td>
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<td>461</td>
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<td>Exactech, Inc.</td>
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<td>Extremity Medical, LLC</td>
<td>4709</td>
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<td>2846</td>
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<td>Flagship Surgical, LLC</td>
<td>1808</td>
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<td>3203</td>
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<td>G21 S.r.l.</td>
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<td>GEXFIX International Corp.</td>
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<td>Go Steady, LLC</td>
<td>115</td>
</tr>
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<td>1835</td>
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<td>2004</td>
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<td>Hand Biomechanics Lab, Inc.</td>
<td>810</td>
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<td>Harvest Technologies Corp.</td>
<td>1800</td>
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<td>Hologic</td>
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<tr>
<td>IFlow, LLC, a KimberlyClark Health Care Company</td>
<td>3478</td>
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<td>658</td>
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<td>IMTUSA, LLC</td>
<td>1712</td>
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<tr>
<td>Incisive Surgical, Inc.</td>
<td>1903</td>
</tr>
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<td>Industrial Technology Research</td>
<td>4106</td>
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<td>Inst. for Advanced Orthopedics, Inc.</td>
<td>865</td>
</tr>
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<td>Skyclight Healthcare Systems</td>
<td>5419</td>
</tr>
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<td>Socrates Ortho</td>
<td>5429</td>
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<td>Stryker Endoscopy</td>
<td>3412</td>
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<td>Warm Endoscopy</td>
<td>5017</td>
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<td>Systemedx Healthcare Technology</td>
<td>4447</td>
</tr>
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<td>Tekscan, Inc.</td>
<td>1622</td>
</tr>
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<td>5041</td>
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<td>3875</td>
</tr>
<tr>
<td>Your Practice Online, LLC</td>
<td>5226</td>
</tr>
</tbody>
</table>

© 2013 American Academy of Orthopaedic Surgeons
Ossur Americas .................................. 1450
OsteoMed ........................................ 1460
Oxford Performance Materials ......... 4208
PCC Structural Inc. ......................... 3608
Pega Medical, Inc. ........................... 2208
Phillips Precision Medicraft............. 104
Pioneer Surgical ............................... 1717
Pivot Medical................................... 4851
ProDex Inc. ..................................... 4250
Pulsar Scientific, LLC ....................... 4555
Pyxidis .......................................... 3809
QAL Medical ................................... 5133
Quadrant Engineering Plastic
Products........................................... 4107
RD Concepts, Inc. ............................ 5161
Sanofi Biosurgery ............................. 2839
Sento, LLC ...................................... 5049
SIBONE, Inc. ................................... 655
Signus Medical, LLC ......................... 1524
Skeletal Dynamics ............................. 420
Small Bone Innovations, Inc............. 1607
Smith & Nephew Inc. ......................... 1812
Sonoma Orthopedic Products ........... 3506
SonoSite, Inc. ................................... 2849
Spinal Simplicity LLC ....................... 5134
SpineFrontier .................................. 125
Spiracus Inc. .................................... 5053
Stelkast ......................................... 4312
Stryker Instruments ........................... 3412
Stryker Orthopaedics....................... 3412
Surface Dynamics ............................. 5061
Surgical Planning Associates, Inc..... 4749
Surgionix Ltd. .................................. 4550
Symmetry Medical Inc. ...................... 1842
Synthes .......................................... 1646
Tecres Spa ...................................... 1257
TeDan Surgical Innovations ............. 4024
Teknimed ....................................... 1720
Tenex Health, Inc. ............................. 4562
TGS Knee Innovations/ART .............. 3807
ThermoTek, Inc. ................................. 1309
THI Total Healthcare Innovation
GmbH .............................................. 4507
TORNIER ....................................... 2065
Total Plastics ................................... 3300
Union Tough International Ltd. ..... 4375
Venous Health Systems ................. 106
VQ OrthoCare .................................. 612
Waldemar Link GmbH & Co. KG ... 3423
Zigg Design LLC ............................... 4951
Zimmer .......................................... 529

Diagnoitic Equipment - DI
AccelLAB Inc. ................................. 2308
Comerlat Enterprises LLC ............... 4450
Cuattro ........................................... 4239
Danco Anodizing ............................... 3406
Del Medical, Inc. ............................. 4536
Devicix, LLC .................................... 126
Diagnostic Instruments, Inc. .......... 4440
EOS Imaging .................................... 4233
Esaote North America ....................... 4241
FUJIFILM Medical Systems ............. 4436
GE Healthcare .................................. 4229
Hitachi Medical Systems ................. 4036
Hologic .......................................... 4042
iCReo, Inc. ...................................... 4736
INEX Surgical Inc. ............................ 2906
Medstar, Inc. .................................... 229
Medweb .......................................... 2407
Merge Healthcare ............................. 5229
NHMD, Inc. ..................................... 4539
OrthoScan Inc. ................................ 4442
Panasonic ....................................... 4739
Paramedical Systems, Inc. .............. 4433
Planned, Inc. .................................... 4636
Quadrant Engineering Plastic
Products........................................... 4107
Radlink .......................................... 4169
SH Medical Corp. .............................. 4272
Shimadzu Medical Systems USA ..... 4637
Siemens Medical Solutions USA, Inc. 3865
Siemens Orthopedic Solutions, Inc. .. 2849
Tekscan, Inc. .................................... 1622
Tenex Health, Inc. ............................. 4562
TXR Tingle XRay LLC ........................ 4439
United Endoscopy ............................. 904
VirtualScopics .................................. 5450
VisionScape Technologies ............... 4337
Whale Imaging ................................. 4039

Education - Patient and
Physician - EDU
AAOS Advocacy Booth ...................... 1600
AAOS Exhibit Hall Resource Center 1265
Ageless Regenerative Institute ......... 3975
American National Medical
Management ....................................... 5040
Anatomage ...................................... 1073
Arthrex, Inc. ..................................... 3453
CARE .............................................. 4920
ChartLogic, Inc. ............................... 5012
Cleveland Clinic Foundation .......... 5253
ConMed Linvatec ............................... 2029
Current Concepts Institute .......... 1357
Custom Orthopaedic Solutions ....... 2274
Depuy Synthes Joint Reconstruction 1646
Ebone .............................................. 804
Elsevier Clinical Key ........................ 1472
FORCE – TJR ..................................... 1270
FORE .............................................. 1474
FORCE Foundation For Orthopaedic
Research and Education ............... 1474
Hospital For Joint Diseases at NYU
Langone Medical Center ............... 1373
Hospital for Special Surgery .......... 1475
ISAKOS ............................................ 766
Journal of Bone and Joint Surgery
(Am) ............................................... 1572
Kilgore International Inc. ............... 1426
Maestro .......................................... 973
Medical Marketing Group .............. 3876
National Association of Orthopaedic
Nurses ........................................... 1372
North American Spine Society ........ 866
Orthopaedic Learning Center ......... 1602
Ossur Americas.............................. 1450
Pacific American Life Science
Learning Center ............................... 4336
Penn Medicine The University of
Pennsylvania ................................. 972
Perfect Fit Health ............................ 3675
PracticeLink.com ............................. 5315
Primal Pictures LTD ......................... 867
Raymond Fox & Associates ............. 5215
Sawbones/Pacific Research .......... 2506
ScribeAmerica ................................. 4830
Siemens Medical Solutions USA, Inc. 3865
Simbionix USA Corporation .......... 4875
Sinai Hospital of Baltimore, Rubin
Inst. for Advanced Orthopedics ....... 865
Skeletal Dynamics ............................ 420
SkyLight Healthcare Systems ......... 5419
Smith & Nephew Inc. ......................... 1812
Stryker Orthopaedics ....................... 3412
Swarm Interactive ........................... 5017
Synthes .......................................... 1646
The Methodist Hospital ................. 1173
Thomas Jefferson University
Hospitals ......................................... 868
UCSF/SFGH Orthopaedic Trauma
Institute ......................................... 1075
Understand.com ............................... 5025
University of St. Augustine ............. 1269
University of Tennessee Physician
Executive MBA Program ................. 869
Venel .............................................. 5426
VirtaMed AG ................................. 4653
VQ OrthoCare ................................. 612
Your Practice Online, LLC ............. 5226
Zimmer .......................................... 529

Electronic Medical Records - EMR
AllMeds ......................................... 4836
Aprima Medical Software .......... 5019
ChartLogic, Inc. ............................... 5012
Compulink Business Systems, Inc.... 5033
Data Strategies, Inc. ....................... 5223
DTC Healthcom ............................... 5432
Exscribe, Inc. ................................. 5009
FusionOne Electronic Healthcare .... 5117
GE Healthcare ................................. 4229
Greenway Medical Technologies .. 5212
KM Medical Software Ltd .......... 5431
MD Logic EMR ............................... 5022
Medstreaming, LLC ......................... 5209
Medweb .......................................... 2407
Merge Healthcare ............................ 5229
Modernizing Medicine, Inc. .......... 3219
Nextech ......................................... 4642

© 2013 American Academy of Orthopaedic Surgeons
NextGen Healthcare Information
Systems, Inc. ........................................ 5316
One Medical, LLC .................................. 5119
Orthosensor, Inc. ................................... 432
Phoenix Ortho ....................................... 5413
Pulse Systems, Inc. ................................. 4061
ScribeAmerica ....................................... 4850
SRSoft .............................................. 5029
Stryker Endoscopy ................................... 3412
SurgiMate ........................................... 5225
Systemedx Healthcare Technology .......... 4447
TransPortal .......................................... 5041

**Facility Planning and Design - FPD**

ApexNetwork Physical Therapy ............... 4655
BBL Medical Facilities ............................ 5222
Cleveland Clinic Foundation .................... 5253
L3 Healthcare Design Inc. ....................... 5044
Medkitax, LLC .................................... 5144
Nuterr a ............................................. 4919
Physician Owned Surgery Centers ............. 5412
Physicians’ Capital Investments, LLC ....... 5136
Practice Flow Solutions .......................... 5423
Practice Partners in Healthcare, Inc. ......... 5118
Raymond Fox & Associates ....................... 5215
Siemens Medical Solutions USA, Inc. ...... 3865
STERIS Corporation ................................ 1629

**Financial Planning/Investments - FIN**

American National Medical Management .................. 5040
Bank of America Practice Solutions .......... 1006
D1 Sports ........................................... 5424
Medkitax, LLC .................................... 5144
P & M Corporate Finance .......................... 5043
Physicians’ Capital Investments, LLC ....... 5136
Raymond Fox & Associates ....................... 5215
UBS Financial Services Inc. ...................... 4176

**First-Time Exhibitor - FRST**

Advanced Arm Dynamics .......................... 3002
Ageless Regenerative Institute .................. 3975
AliMedic Co., Ltd. .................................. 4849
Algebra Therapies .................................. 5162
Allotech Co., Ltd. .................................. 4954
American National Medical Management .................. 5040
American Preclinical Services ................. 4261
Ammox Medical ..................................... 5261
Anatomage ........................................... 1073
ApexNetwork Physical Therapy ............... 4653
Arenamed, LLC .................................... 4458
Arcosomalix Americas, Inc. ..................... 4338
Arctic Ease, LLC .................................... 4651
ARP Wave LLC ..................................... 117
Auxein Medical ..................................... 4339
AxeoGen, Inc. ....................................... 4750
Baitella AG .......................................... 4362
Bank of America Practice Solutions .......... 1006
Beijing AKEC Medical Co., Ltd. ............... 5256
Bellevue Pharmacy ................................ 4075
BioD, LLC ........................................... 114
Biologic Therapies, Inc. ......................... 132
BioOil ............................................... 4275
Bioventus ............................................ 1624
Blue Belt Technologies ............................. 4950
Blue Star Radiology ................................ 4872
Bone Clones, Inc. .................................. 5059
Boston EndoSurgical Technologies .......... 120
Branch Medical Group ............................. 4675
Bridge Medical Orthopedics .................... 4373
CARE ............................................... 4920
CBSET ............................................... 4773
Cellbright Technologies, LLC ................. 5252
Ceterix Orthopaedics ............................... 5239
Circle Biologics .................................... 4753
Cleveland Clinic Foundation .................... 5253
Comerlat Enterprises LLC ....................... 4450
Compulink Business Systems, Inc. ............ 5033
Conventus Orthopaedics, Inc. ................. 4553
Cytomedix, Inc. .................................... 4453
Cytronics Corporation ............................. 4776
Daeung Maref Co., Ltd. ......................... 4559
Dallen Medical ...................................... 5223
Data Strategies, Inc. ................................ 5223
Donson Machine Co. ............................... 5050
Doximity ............................................. 5257
DTC Healthcom .................................... 5432
East Coast Orthotic and Prosthetic Corporation .............. 5156
ElliptiGO Inc. ...................................... 4755
Elsevier Clinical Key ................................ 1472
Enova Illumination ................................ 5159
Eurocoating SpA .................................... 5062
Everyday Health Inc. .............................. 4939
Fili .................................................... 4853
FMD LLC ............................................ 4446
FORCE – TJR ....................................... 1270
FORE Foundation For Orthopaedic Research and Education .................. 1474
Francis Lamont Innovations Ltd .......... 4650
Gateway EDI ....................................... 5310
Gensco Laboratories .............................. 4175
GEXFIX International Corp. .................... 4956
Go Steady, LLC ..................................... 115
GPI Prototype and Manufacturing Services Inc. .... 4454
Hangzhou Zhengda Medical Co., Ltd. .... 4456
HNK Medical ....................................... 4451
Iconacy Orthopedic Implants ................. 4772
ImplantcastUSA .................................... 4953
Infinite Therapeutics ............................. 4360
Innovasis Inc. ....................................... 4646
Innovative Orthopedic Technologies ......... 4346
Insurgical Powered Instruments .............. 5260
Integrated Medical Systems (IMS) .......... 4654
Inter Equipment .................................... 5775
InVivoLink .......................................... 5415
Iontbond .............................................. 4455
IrriMax Corporation ............................... 4754

ISAKOS ............................................. 766
Jiangsu BaiDe Medical Instrument Co., Ltd. .... 5058
JJ International Instruments ....................... 4372
JRI Orthopaedics Ltd. ............................. 4756
KareOutcomes ..................................... 4775
KM Medical Software Ltd ....................... 5431
Knee Creations, LLC. .............................. 4575
LH Medical Corporation ......................... 144
Li Wai Precision International Ltd. ............. 4461
LISI Medical ......................................... 121
Massaging Insoles By Bestsole, Inc. .......... 4949
Mastin Medical Co., Ltd. ......................... 4462
Mazur Marketing .................................... 3704
MedDirect, a MedData Company .................. 5037
Medical Consultants Network .................... 5422
Medical Marketing Group ......................... 3876
Medicus Healthcare Solutions .................. 5210
Medkita, LLC ....................................... 5144
Medstreaming, LLC ................................ 5209
Micon Products ..................................... 3776
Micropoint Orthopedics .......................... 5138
Millstone Medical Outsourcing ................... 4551
Models Plus LLC .................................... 4475
Modernizing Medicine, Inc. ..................... 5219
Moj i .................................................. 5254
Musculoskeletal Imaging Consultants, LLC .... 4636
NEOSTEO ........................................... 5151
NexTech ............................................. 4642
NHD, Inc. ........................................... 4539
NIH Osteoporosis & Related Bone Diseases .............. 768
Nihon Kohden America ......................... 4076
Novitas Medical .................................... 4561
Nuterr a ............................................. 4919
Orfit Industries America ......................... 4376
Ortho Solutions Limited ......................... 4465
Orthogen LLC ..................................... 4473
Orthopedic Innovation Centre .................. 1338
Orthobirth Co., Ltd. ............................... 4549
Pacific Instruments, Inc. ......................... 4449
Perfect Fit Health ................................... 3675
Peter Brehm GmbH ................................. 4854
Physicians’ Capital Investments, LLC ....... 5136
Physicians Rehab Solution ....................... 116
Pivot Medical ....................................... 4851
Professional Data Systems, Inc. .............. 5137
Pulsar Scientific, LLC .............................. 4555
Pulse Systems, Inc. ................................ 4061
QAL Medical ....................................... 5153
Radlink .............................................. 4639
Rayence Inc. ........................................ 4136
RD Concepts, Inc. .................................. 5161
Regen Lab .......................................... 4469
Research for Life, LLC ............................. 5036
Response Ortho LLC ............................... 5149
Rose Micro Solutions ............................. 5155
Rosemont Media, LLC ............................. 5416
ScribAmerica ....................................... 4850
Sentio, LLC .......................................... 5049

© 2013 American Academy of Orthopaedic Surgeons
SH Medical Corp. 4272
Shanghai Xinsheng Photoelectric Technology Co., Ltd. 5258
Shapres Compliance, Inc. 5036
SimBiox USA Corporation 4875
Solana Surgical, LLC 5046
Southwest Medical Books, A 1074
Division of Elsevier 5046
Span Link International, LLC 5051
Spinal Simplicity LLC 5154
Spiracur Inc. 5053
Spiracur Inc. 5054
Synergy Biologics 2908
Stemcup Medical Products AG 4672
Surefire Social 4104
Surface Dynamics 5061
Surgical Affiliates Management Group, Inc. 3976
Surgical Planning Associates, Inc. 4749
Surgionix Ltd. 4530
Synergi Ingenieria Medica (synamed) 4572
Synergy Surgicalists 5143
Systemedx Healthcare Technology 4447
Technicality, Inc. 4558
Tenex Health, Inc. 4562
TGM Medical, Inc. 4856
The Doctors Company 5420
The Methodist Hospital 1173
Thomas Jefferson University Hospitals 868
Tipson Tibbi Aleter A.S. 143
Transgenomic 4359
TransPortal 5041
Tyy Consulting 4673
UBS Financial Services Inc. 4746
Union Tough International Ltd. 4375
University of St. Augustine 1269
Veritas Health LLC 1174
Virtamed AG 4653
Vicosys 136
VisionScape Technologies 4337
VSMOPTirus, US 5054
Wavemark 3875
WebToMed 3003
Weigao Orthopaedic Device Co., Ltd. 5150
Whale Imaging 4039
Zgrum Medical 4472
Zigg Design LLC 4951
Ziptek LLC 4276

**Image Guiding/Navigation - IMG**

AccelLAB Inc. 2308
Aesculap Implant Systems 1024
AIP 3606
Arthrex, Inc. 3453
Blue Belt Technologies 4950
Brainlab 2070
Compulink Business Systems, Inc. 5033
Custom Orthopaedic Solutions 2274
Depuy Synthes Joint Reconstruction 1646
Devicix, LLC 126
Diagnostic Instruments, Inc. 4440
Elsevier Clinical Key 1472
Esote North America 4241
Hitachi Medical Systems America, Inc. 4036
Lexi Corporation 4008
Medtronic 2443
Merge Healthcare 5229
Omi Life Science 2615
OrthAlign, Inc. 3850
OrhotScan Inc. 4442
Orthosensor, Inc. 452
Siemens Medical Solutions USA, Inc. 3865
SonoSite, Inc. 2849
Stanmore Implants 4246
Stryker Endoscopy 3412
Stryker Instruments 3412
Surgical Planning Associates, Inc. 4749
Tenex Health, Inc. 4562
VirtualScopics 4540
Zimmer 529

**Implants - I**

aap Implantate AG 1416
Active Implants Corporation 1900
Acumed 3446
Advanced Biologies 143
Advanced Orthopaedic Solutions, Inc. 824
Aesculap Implant Systems 1024
AliMedic Co., Ltd. 4849
AIP 3606
AME/Orthotex International 3100
Amedica Corp. 1107
American Medical Endoscopy, Inc. 2652
Amniox Medical 5261
Arcam AB 3909
ARGO Medical AG 1700
Arthrex, Inc. 3453
ArthroCare 3902
Arthrosurface, Inc. 3469
Artimplant 2900
Arztz 4649
Aston Medical SAS 4307
Autocam Medical 4306
Auxin Medical 139
Avalign Technologies 236
AxoGen, Inc. 4750
Beijing AKEC Medical Co., Ltd. 5256
Beijing Chunzhengheda Medical Instruments Co., Ltd. 2703
Berkeley Advanced Biomaterials, Inc. 1406
Biocomposites 3046
Biomatlante 3508
BIOMECHPatan Biotech Co., Ltd. 3504
Biomer 3429
BioMimetic Therapeutics 1260
BioPro, Inc. 1454
Bioretic Ltd 3609
BK Meditech Co., Ltd. 2707
Blue Belt Technologies 4950

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Integra .................................................. 3465
Inter Equipement .................................. 3775
Intrauma SRL ........................................ 4069
Invibio Inc .............................................. 3109
Ionbond ................................................... 4855
Jiangsu BaiDe Medical Instrument Co., Ltd.......................... 5058
JRI Orthopaedics Ltd .................................... 4756
Juno Inc ..................................................... 3703
K2M, Inc ..................................................... 3650
Kapp Surgical Instrument Inc .................................. 1616
Kensey Nash Corporation .................................... 133
Kinamed, Inc ............................................... 2239
Knee Creations, LLC ...................................... 4575
KYOCERA Medical Corporation ................................. 2600
Kyungwon Medical Co., Ltd ................................. 109
LH Medical Corporation .................................... 144
Life Spine ...................................................... 1701
Limacorporate Spa ....................................... 3623
LISI Medical .................................................. 121
Madison Ortho Inc ......................................... 458
Magellan Technology ....................................... 4819
MAKO Surgical Corp ...................................... 212
Maxim Medical Co., Ltd .................................... 4462
Mathys Ltd Bertlach ........................................ 1048
Medacta International .................................... 651
Medartis, Inc ............................................... 2452
Medfix International, LLC .................................. 232
MedShape, Inc .............................................. 4056
Medtronic .................................................... 2443
Medysse Spine ............................................. 909
Merete Medical, Inc ....................................... 609
Micron Products ............................................ 3776
Microport Orthopedics ...................................... 5158
Milkstone Medical Outsourcing ................................. 4551
MTF .............................................................. 4619
NEOSTEO .................................................... 5151
Newclip USA ................................................. 3200
Normed MedizinTechnik GmbH ........................... 1054
NovaBone Products LLC .................................. 108
NuTech ......................................................... 1850
ODI North America ......................................... 3004
Ommi Life Science ......................................... 2615
Orchid Orthopedic Solutions .................................. 241
Ortho Development ......................................... 624
Ortho Solutions Limited .................................... 4465
Orthogen LLC ............................................... 4473
Orthomed, Inc .............................................. 2206
Orthopaedic Innovation Centre ................................ 138
OrthoPediatrics ........................................... 3306
Orthopedic Sciences, Inc .................................. 2035
Orthorebirth Co., Ltd ....................................... 4549
Orthosensor, Inc ............................................ 452
OrthoView ..................................................... 5139
Osteomed .................................................... 1460
OTIS Biotech Inc., Ltd ...................................... 3502
Oxford Performance Materials ................................ 4208
Paragon Medical ............................................ 4406
Parcus Medical, LLC ...................................... 3000
PCC Structural Inc .......................................... 3608
Pega Medical, Inc ............................................. 2208
Peter Brehm GmbH ......................................... 4854
Phillips Precision Medcraft ................................... 104
Pioneer Surgical ............................................. 1717
Pivot Medical ................................................ 4851
Purac Biomaterials .......................................... 3308
Quadrant Engineering Plastic Products ......................... 4107
Response Ortho LLC ...................................... 5149
RTI Biologics, Inc .......................................... 3823
Sanatmetal Ltd ............................................... 2649
SBM Inc ........................................................ 1708
Sharma Surgical and Engg. Pvt. Ltd ........................... 2108
Shoulder Options, Inc ....................................... 3402
Showa Ika Kohgyo Co., Ltd ................................ 141
Signus Medical, LLC ........................................ 1524
Skeletal Dynamics ............................................ 420
Small Bone Innovations, Inc ................................ 1607
Smith & Nephew Inc ....................................... 1812
Solana Surgical, LLC ...................................... 5046
Sonoma Orthopedic Products ................................ 3506
Spinal Simplicity LLC ....................................... 5154
SpinFrontier .................................................... 125
Spinway ........................................................ 2306
Stammore Implants .......................................... 4246
Stelkast ....................................................... 4312
Stellen Medical, LLC ........................................ 4506
Stemcup Medical Products AG ............................... 4672
Styker Endoscopy ........................................... 3412
Styker Orthopaedics ......................................... 3412
Surface Dynamics ............................................ 5061
Surgical Planning Associates, Inc .............................. 4749
Symmetry Medical Inc ...................................... 1842
Synthes ....................................................... 1646
TDM Co., Ltd ............................................... 3104
Technicaity, Inc .............................................. 4558
Tecomed ....................................................... 1404
TekArts ........................................................ 2100
Tekamed ....................................................... 1720
TGM Medical, Inc .......................................... 4856
TGS Knee Innovations/ART .................................. 3807
Tianjin ZhengTian Medical Instrument Co., Ltd ............. 1865
Tipsan Tibbi Aletler A.S. .................................... 143
Tissue Banks International ................................... 2800
Toby Orthopaedics LLC ................................... 4003
TONKR ........................................................ 2065
Total Plastics .................................................. 3300
Trauson (China) Medical Instrument Co., Ltd ................. 4207
TriMed, Inc ................................................. 3217
U&I Corporation ............................................. 2843
Union Surgical, LLC ......................................... 2806
United Orthopedic Corporation ............................... 820
Vilex, Inc ...................................................... 2608
VSMPO-Tiitus, US ........................................... 5054
Waldemar Link GmbH & Co. KG ............................ 3423
Weigao Orthopaedic Device Co., Ltd ......................... 5150
Whitemore Enterprises, Inc ................................ 2103
Wright Medical Technology .................................. 812
XSpine Systems, Inc ......................................... 620
Zgrum Medical .............................................. 4472
Zigg Design LLC ............................................ 4951
Zimmer ........................................................ 529
Ziptek LLC ..................................................... 4276

Market Research Services - MKT

AVICENNNE ............................................ 3607
CBSET ...................................................... 4773
HRA Healthcare Research & Analytics ........................... 2307
iData Research Inc .......................................... 4206
Market Access Partners ...................................... 1809
Millennium Research Group .................................. 2710
P & M Corporate Finance ..................................... 5043
Raymond Fox & Associates .................................. 5215
Venel ............................................................. 5426

Medical Supplies - MS

3Point Products Inc ........................................ 3009
ArthoPlastics, Inc .......................................... 1008
Artimplant ..................................................... 2900
Baitella AG ..................................................... 4362
Bauerfeind USA ............................................. 1609
Bledsoe Brace Systems ....................................... 1220
Case Medical ................................................ 4509
Cases By Source, Inc ....................................... 4108
Changzhou Waston Medical Appliance Co., Ltd ............... 1901
Circle Biologics .............................................. 4753
CoolShirt Systems ........................................... 3804
Cura Surgical, Inc .......................................... 3603
DePuy Mitek ................................................. 1646
DeRoyal ....................................................... 1632
DJO Global ................................................. 3039
Dry Corp, LLC ............................................... 2406
Ergoactives .................................................... 3108
Flagship Surgical, LLC ..................................... 1808
GMReis ....................................................... 1517
H+H Surgical Technologies ................................... 3708
Hangzhou Zhengda Medical Co., Ltd ............................ 4456
Innovative Medical Products .................................. 1665
IrriMax Corporation ......................................... 4754
Joslin Orthopedic Gear ....................................... 4610
Kapp Surgical Instrument Inc ................................ 1616
Knee Creations, LLC ........................................ 4575
KYOCERA Medical Corporation ............................... 2600
Linemaster Switch Corp ..................................... 4409
Medex Orthopaedic & Medical Supplies .......................... 806
Medfix International, LLC .................................. 232
Medical Compression Systems, Inc ................................ 118
Meditech Group, LLC ...................................... 2706
Medinux Systems AG ...................................... 3107
Mizuho OSI .................................................... 1246, 1446
Mobi LLC ....................................................... 3202
NHD, Inc ...................................................... 4539
Novitas Medical .............................................. 4561
Ortho Solutions Limited .................................... 4465
OrthoMed, Inc .............................................. 2206
RD Concepts, Inc ........................................... 5161
Röchling Engineering Plastics .................................. 3806
Rose Micro Solutions ........................................ 5155
Serola Biomechanics, Inc......................................... 4103
Sharps Compliance, Inc........................................ 5036
Sky Medical, Inc.................................................. 1910
Stryker Instruments............................................... 3412
ThermoTek, Inc.................................................... 1309
Union Tough International Limited.......................... 4375
United Endoscopy.................................................. 904
VQ OrthoCare...................................................... 612
Zimmer.............................................................. 529

MRI - MRI
AccelLAB Inc...................................................... 2308
Esaote North America........................................... 4241
GE Healthcare..................................................... 4229
Hitachi Medical Systems America, Inc...................... 4036
Hologic............................................................... 4042
Musculoskeletal Imaging Consultants, LLC............... 4656
Paramed Medical Systems, Inc............................... 4433
Siemens Medical Solutions USA, Inc. 3865
VirtualScopics...................................................... 4540

Orthoses - O
3Point Products Inc............................................. 3009
Aspen Medical Products........................................ 449
Bauerfeind USA................................................... 1609
Becker Orthopedic................................................. 1603
Bird & Cronin Inc................................................ 2209
Bonutti Technologies............................................ 1251
BortSwiss Orthopedic Supply................................ 2410
Breg................................................................. 2235
Brownmed.......................................................... 3403
CoolShirt Systems................................................. 3804
CORFLEX INC...................................................... 1516
Cropper Medical, Inc............................................ 130
East Coast Orthotic and Prosthetic Corporation........ 5156
EOSElectro Optical Systems.................................... 461
GEXFIX International Corp................................... 4956
IMing Sanitary Materials Co., Ltd. 3207
INEX Surgical Inc................................................ 2906
Jiangsu BaiDe Medical Instrument Co., Ltd.............. 5058
Kao Chen Enterprise Co., Ltd................................ 4955
M.J. Markell Shoe Co., Inc.................................... 1526
Mammon International Corp................................. 2909
Maramed Orthopedic Systems................................. 3410
Medex Orthopaedic & Medical Supplies.................... 806
Medi USA.......................................................... 2074
Meditech Group, LLC.......................................... 2706
NeuMed............................................................. 1518
Neurotech.......................................................... 140
Novitas Medical................................................... 4561
Opp Medical Inc.................................................. 2701
OPTEC USA, Inc................................................ 3910
Orfitt Industries America...................................... 4376
Ossur Americas................................................... 1450
Sky Medical, Inc.................................................. 1910
Span Link International, LLC................................. 5051
Tekscan, Inc....................................................... 1622
Top Shelf Orthopedics........................................... 2803
Total Plastics...................................................... 3300
Townsend Design............................................... 1639
United Ortho....................................................... 5262
VQ OrthoCare...................................................... 612

Other - OTH
AAOS Advocacy Booth........................................... 1600
Accuret Test Laboratory (testing services, testing equipment) 2110
Ageless Regenerative Institute (stem cell training)........ 3975
AIP (radiolucent trauma guides)................................ 3606
Aligned (posture shirts)........................................... 1420
Alliance Surgical Distributors (physician-owned distribution) 5418
AlloSource (biologics)............................................. 3450
Augustine Temperature Management (patient warming).... 4262
Automated Healthcare Solutions (medical dispensing)...... 3302
Biologic Therapies, Inc. (bone marrow aspiration and processing) 132
BioOil (skin care)..................................................... 4275
Blue Star Radiology (teleradiology, radiology reading service) 4872
CARE (mobile app).................................................. 4920
Celling Biosciences (biologics)................................. 3602
Cleveland Clinic Foundation (robotic testing)............... 5253
Cytonics Corporation (biotechnology)........................ 4776
Ebene (neckties, scarves)........................................... 804
Element Cincinnati (testing/ manufacturing)............... 3401
Empirical Testing Corp (testing services).................... 1802
Endolab GmbH (implant testing services).................... 3400
Exponent, Inc. (consulting services).......................... 2704
Incise Surgical, Inc. (wound closure).......................... 1903
Industrial Pharmacy Management (urinary drug testing).... 2852
Industrias Medicas Sampedro S.A.S. (osteosynthesis)...... 2709
Infinite Therapeutics (massage chairs)......................... 4360
Invibio Inc (biomaterials)........................................ 3109
IrriMax Corporation (infection/wound)......................... 4754
Kensey Nash Corporation (biomaterials)...................... 133
Magellan Technology (RFID tracking)........................ 4819
Materialise (patient specific surgical guides).............. 3710, 4357
Medical Consultants Network (independent medical evaluations & peer/utilization reviews)........... 5422

Medin Corporation (delivery systems)......................... 1829
Millstone Medical Outsourcing (clean room processing).... 4551
Musculoskeletal Clinical Regulatory Advisers, LLC (consulting services)................................. 1908
Musculoskeletal Imaging Consultants, LLC (teleradiology)........ 4656
Nadia International, Inc. (surgical bronze sculptures)...... 1713
NIH Osteoporosis & Related Bone Diseases (government) ................................. 768
NovaRad Corporation (digital viewing)......................... 4839
Novitas Medical (compression therapy)........................ 4561
Nutramax Laboratories, Inc. (nutraceuticals)................. 1806
Orchid Orthopedic Solutions (design services)............. 241
Orthopedic Analysis LLC (diagnostic)........................ 4109
Perfect Fit Health (patient engagement care/care delivery solution).......................... 3675
Physician Assistants in Orthopaedic Surgery (professional organization) ......................... 1172
Physicians’ Capital Investments, LLC (medical development).......................... 5136
Qntus Composites (external fixation targeting guide)........ 129
Sentio, LLC (intraoperative MMG nerve mapping system) .... 5049
Solway Specialty Polymers (biomaterials and medical-grade plastics)........................ 3700
Stanmore Implants (robotics).................................... 4246
Stryker Orthopaedics (trauma)................................ 3412
Surefire Social (internet marketing services)............... 4104
Tekscan, Inc. (pressure measurement systems).............. 1622
The Doctors Company (insurance).. 5420
The Doctors Company (insurance)............................. 5420
Transgenomic (ScoliScore AIS prognostic test)............... 4359
Viscos (oral liquid hyaluronic acid)............................ 136
Wavemark (inventory management). 3875

Pharmaceuticals - PH
AccelLAB Inc...................................................... 2308
American Regent .................................................. 107
Auxilium Pharmaceuticals, Inc................................. 4253, 4256
Bellevue Pharmacy............................................... 4075
Gebauer Company................................................. 805
Gencso Laboratories............................................. 4175
Horizon Pharma, Inc............................................ 3702
Industrial Pharmacy Management............................. 2852
Janssen Pharmaceuticals, Inc................................ 5420
Janssen Pharmaceuticals, Inc................................ 5420
Lilly USA, LLC..................................................... 4606
Linear Medical Solutions........................................ 5425
Mallickrodt, the Pharmaceuticals Business of Covidien .... 855

© 2013 American Academy of Orthopaedic Surgeons
<table>
<thead>
<tr>
<th>Product Listings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhRMA Member - PHRM</td>
</tr>
<tr>
<td>DePuy Synthes Joint Reconstruction</td>
</tr>
<tr>
<td>Ferring Pharmaceuticals</td>
</tr>
<tr>
<td>Fidia Pharma USA</td>
</tr>
<tr>
<td>G2i S.r.l.</td>
</tr>
<tr>
<td>Horizon Pharma, Inc.</td>
</tr>
<tr>
<td>Janssen Pharmaceuticals, Inc.</td>
</tr>
<tr>
<td>Lilly USA, LLC</td>
</tr>
<tr>
<td>Siemens Medical Solutions USA, Inc.</td>
</tr>
<tr>
<td>Physician Recruitment - PR</td>
</tr>
<tr>
<td>Army Medical Recruiting</td>
</tr>
<tr>
<td>ARP Wave LLC</td>
</tr>
<tr>
<td>Community Health Systems</td>
</tr>
<tr>
<td>Delphi Healthcare Partners</td>
</tr>
<tr>
<td>Francis Lamont Innovations Ltd.</td>
</tr>
<tr>
<td>Group Health Physicians</td>
</tr>
<tr>
<td>Jackson &amp; Coker</td>
</tr>
<tr>
<td>JBIJobs</td>
</tr>
<tr>
<td>LocumTenens.com</td>
</tr>
<tr>
<td>Medical Consultants Network</td>
</tr>
<tr>
<td>Medics Healthcare Solutions</td>
</tr>
<tr>
<td>Nuerra</td>
</tr>
<tr>
<td>PracticeLink.com</td>
</tr>
<tr>
<td>Sinai Hospital of Baltimore, Rubin Inst. for Advanced Orthopedics</td>
</tr>
<tr>
<td>Staff Care, Inc.</td>
</tr>
<tr>
<td>Surgical Affiliates Management Group, Inc.</td>
</tr>
<tr>
<td>Synergy Surgeonists</td>
</tr>
<tr>
<td>VISTA Staffing Solutions</td>
</tr>
<tr>
<td>Practice/Office Management - PM</td>
</tr>
<tr>
<td>AAOS Exhibit Hall Resource Center</td>
</tr>
<tr>
<td>ACIGI Relaxation/Fujiryoki</td>
</tr>
<tr>
<td>AllMeds</td>
</tr>
<tr>
<td>American Association of Orthopaedic Executives</td>
</tr>
<tr>
<td>American National Medical Management</td>
</tr>
<tr>
<td>Aprima Medical Software</td>
</tr>
<tr>
<td>Breg</td>
</tr>
<tr>
<td>CARE</td>
</tr>
<tr>
<td>ChartLogic, Inc.</td>
</tr>
<tr>
<td>Compulink Business Systems, Inc.</td>
</tr>
<tr>
<td>Data Strategies, Inc.</td>
</tr>
<tr>
<td>Everyday Health Inc</td>
</tr>
<tr>
<td>Exscribe, Inc.</td>
</tr>
<tr>
<td>Gateway EDI</td>
</tr>
<tr>
<td>GE Healthcare</td>
</tr>
<tr>
<td>Linear Medical Solutions</td>
</tr>
<tr>
<td>MedDirect, a MedData Company</td>
</tr>
<tr>
<td>Medics Healthcare Solutions</td>
</tr>
<tr>
<td>Medkita, LLC</td>
</tr>
<tr>
<td>MedNet Technologies</td>
</tr>
<tr>
<td>Medstreaming, LLC</td>
</tr>
<tr>
<td>Medweb</td>
</tr>
<tr>
<td>Merge Healthcare</td>
</tr>
<tr>
<td>NextGen Healthcare Information Systems, Inc.</td>
</tr>
<tr>
<td>Nuerra</td>
</tr>
<tr>
<td>Ortech Data Centre Inc.</td>
</tr>
<tr>
<td>Ossur Americas</td>
</tr>
<tr>
<td>Perfect Fit Health</td>
</tr>
<tr>
<td>Physician Owned Surgery Centers</td>
</tr>
<tr>
<td>Practice Flow Solutions</td>
</tr>
<tr>
<td>Practice Partners in Healthcare, Inc.</td>
</tr>
<tr>
<td>Raymond Fox &amp; Associates</td>
</tr>
<tr>
<td>Rosemont Media, LLC</td>
</tr>
<tr>
<td>Sharps Compliance, Inc.</td>
</tr>
<tr>
<td>Socrates Ortho</td>
</tr>
<tr>
<td>SRSoft</td>
</tr>
<tr>
<td>Stryker Orthopaedics</td>
</tr>
<tr>
<td>Surefire Social</td>
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<tr>
<td>SurgiMate</td>
</tr>
<tr>
<td>Synergy Surgeonists</td>
</tr>
<tr>
<td>Systemed Healthcare Technology</td>
</tr>
<tr>
<td>Understand.com</td>
</tr>
<tr>
<td>WebToMed</td>
</tr>
<tr>
<td>Your Practice Online, LLC</td>
</tr>
<tr>
<td>Prothesis - P</td>
</tr>
<tr>
<td>Advanced Arm Dynamics</td>
</tr>
<tr>
<td>American Medical Endoscopy, Inc.</td>
</tr>
<tr>
<td>Auxin Medical</td>
</tr>
<tr>
<td>Bauerfeind USA</td>
</tr>
<tr>
<td>Beijing Chunzhihengda Medical Instruments Co., Ltd.</td>
</tr>
<tr>
<td>Breg</td>
</tr>
<tr>
<td>C2F Implants</td>
</tr>
<tr>
<td>Cleveland Clinic Foundation</td>
</tr>
<tr>
<td>Covision Medical Technologies Ltd.</td>
</tr>
<tr>
<td>DJO Global</td>
</tr>
<tr>
<td>Dry Corp, LLC</td>
</tr>
<tr>
<td>East Coast Orthotic and Prosthetic Corporation</td>
</tr>
<tr>
<td>EOS Electro Optical Systems</td>
</tr>
<tr>
<td>Eurocoating Spa</td>
</tr>
<tr>
<td>FH Orthopedics</td>
</tr>
<tr>
<td>Fuji</td>
</tr>
<tr>
<td>Fx Solutions</td>
</tr>
<tr>
<td>GMReis</td>
</tr>
<tr>
<td>Groupe Lepine</td>
</tr>
<tr>
<td>JRI Orthopaedics Ltd.</td>
</tr>
<tr>
<td>KYOCERA Medical Corporation</td>
</tr>
<tr>
<td>LimaCorporate Spa</td>
</tr>
<tr>
<td>LISI Medical</td>
</tr>
<tr>
<td>Madison Ortho Inc.</td>
</tr>
<tr>
<td>Maramed Orthopedic Systems</td>
</tr>
<tr>
<td>Mathys Ltd Bettlach</td>
</tr>
<tr>
<td>Medacta International</td>
</tr>
<tr>
<td>Meditech Group, LLC</td>
</tr>
<tr>
<td>Merete Medical, Inc.</td>
</tr>
<tr>
<td>Neologments (a Division of Xiros)</td>
</tr>
<tr>
<td>Ortho Solutions Limited</td>
</tr>
<tr>
<td>Orthopaedic Innovation Centre</td>
</tr>
<tr>
<td>OrthoView</td>
</tr>
<tr>
<td>Ossur Americas</td>
</tr>
<tr>
<td>Peter Brehm GmbH</td>
</tr>
<tr>
<td>Phillips Precision Medicastr</td>
</tr>
<tr>
<td>Sanatmetal Ltd</td>
</tr>
<tr>
<td>Skeletal Dynamics</td>
</tr>
<tr>
<td>Spineway</td>
</tr>
<tr>
<td>Stanmore Implants</td>
</tr>
<tr>
<td>Synergie Ingeniere Medicale</td>
</tr>
<tr>
<td>Tecres Spa</td>
</tr>
<tr>
<td>Teknimed</td>
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<tr>
<td>Tipsan Tibbi Aletler A.S.</td>
</tr>
<tr>
<td>TORNIER</td>
</tr>
<tr>
<td>Total Plastics</td>
</tr>
<tr>
<td>Trauson (China) Medical Instrument Co., Ltd.</td>
</tr>
<tr>
<td>U&amp;CI Corporation</td>
</tr>
<tr>
<td>United Orthopedic Corporation</td>
</tr>
<tr>
<td>Waldemar Link GmbH &amp; Co. KG</td>
</tr>
<tr>
<td>Publishers - PUB</td>
</tr>
<tr>
<td>AAOS Exhibit Hall Resource Center</td>
</tr>
<tr>
<td>American Medical Association</td>
</tr>
<tr>
<td>British Editorial Society of Bone &amp; Joint Surgery</td>
</tr>
<tr>
<td>Data Trace Publishing</td>
</tr>
<tr>
<td>Elsevier</td>
</tr>
<tr>
<td>ElsevierClinical Key</td>
</tr>
<tr>
<td>Jaypee Brothers Medical Publishers</td>
</tr>
<tr>
<td>Journal of Bone and Joint Surgery (Am)</td>
</tr>
<tr>
<td>Lippincott, Williams &amp; Wilkins</td>
</tr>
<tr>
<td>Wolters Kluwer Health</td>
</tr>
<tr>
<td>ORTHOWORLD Inc.</td>
</tr>
<tr>
<td>Outpatient Surgery Magazine</td>
</tr>
<tr>
<td>PracticeLink.com</td>
</tr>
<tr>
<td>Primal Pictures LTD</td>
</tr>
<tr>
<td>Rodman Publishing ODT</td>
</tr>
<tr>
<td>SAGE</td>
</tr>
<tr>
<td>Sinai Hospital of Baltimore, Rubin Inst. for Advanced Orthopedics</td>
</tr>
<tr>
<td>SLACK Incorporated</td>
</tr>
<tr>
<td>Southwest Medical Books, A Division of Elsevier</td>
</tr>
<tr>
<td>Springer</td>
</tr>
<tr>
<td>The American Journal of Orthopedics</td>
</tr>
<tr>
<td>Thieme Medical Publishers</td>
</tr>
<tr>
<td>Veritas Health LLC</td>
</tr>
<tr>
<td>Webb Dordick, Rare Medical Books</td>
</tr>
<tr>
<td>Rehabilitation and Exercise Equipment - REHB</td>
</tr>
<tr>
<td>3Point Products Inc.</td>
</tr>
<tr>
<td>ACIGI Relaxation/Fujiryoki</td>
</tr>
<tr>
<td>Arctic Ease, LLC</td>
</tr>
<tr>
<td>ARP Wave LLC</td>
</tr>
<tr>
<td>Bauerfeind USA</td>
</tr>
<tr>
<td>Bird &amp; Cronin Inc.</td>
</tr>
<tr>
<td>Bonutti Technologies</td>
</tr>
<tr>
<td>BortSwiss Orthopedic Supply</td>
</tr>
<tr>
<td>© 2013 American Academy of Orthopaedic Surgeons</td>
</tr>
</tbody>
</table>
**Product Listings**

**Technical Exhibits**

<table>
<thead>
<tr>
<th>Index</th>
<th>Product</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Medical Co., Ltd.</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>D1 Sports</td>
<td>5424</td>
<td></td>
</tr>
<tr>
<td>Daesung Maref Co. Ltd.</td>
<td>4530</td>
<td></td>
</tr>
<tr>
<td>DeRoyal</td>
<td>1632</td>
<td></td>
</tr>
<tr>
<td>DJO Global</td>
<td>3039</td>
<td></td>
</tr>
<tr>
<td>ElliptiGO Inc.</td>
<td>4755</td>
<td></td>
</tr>
<tr>
<td>Game Ready</td>
<td>1204</td>
<td></td>
</tr>
<tr>
<td>Hangzhou Zhengda Medical Co., Ltd.</td>
<td>4456</td>
<td></td>
</tr>
<tr>
<td>IMing Sanitary Materials Co., Ltd.</td>
<td>3207</td>
<td></td>
</tr>
<tr>
<td>Infinite Therapeutics</td>
<td>4360</td>
<td></td>
</tr>
<tr>
<td>Kao Chen Enterprise Co., Ltd.</td>
<td>4955</td>
<td></td>
</tr>
<tr>
<td>Kneeborne Therapeutic LLC</td>
<td>1408</td>
<td></td>
</tr>
<tr>
<td>Medex Orthopaedic &amp; Medical Supplies</td>
<td>806</td>
<td></td>
</tr>
<tr>
<td>Medkita, LLC</td>
<td>5144</td>
<td></td>
</tr>
<tr>
<td>Moji</td>
<td>5254</td>
<td></td>
</tr>
<tr>
<td>Neuro Resource Group</td>
<td>1909</td>
<td></td>
</tr>
<tr>
<td>Neurotech</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Oppo Medical Inc.</td>
<td>2701</td>
<td></td>
</tr>
<tr>
<td>Perfect Fit Health</td>
<td>3675</td>
<td></td>
</tr>
<tr>
<td>Physicians Rehab Solution</td>
<td>116</td>
<td></td>
</tr>
<tr>
<td>Pulsar Scientific, LLC</td>
<td>4559</td>
<td></td>
</tr>
<tr>
<td>QAL Medical</td>
<td>5153</td>
<td></td>
</tr>
<tr>
<td>Quality Care Products, LLC</td>
<td>1510</td>
<td></td>
</tr>
<tr>
<td>Serola Biomechanics, Inc.</td>
<td>4103</td>
<td></td>
</tr>
<tr>
<td>Sky Medical, Inc.</td>
<td>1910</td>
<td></td>
</tr>
<tr>
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- Phillips Precision Medicraft..............104
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- Pulse Lavage AB.................................1007
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- SpineView Inc...................................2408
- Spracur Inc......................................5033
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<td>Del Medical, Inc.......................4536</td>
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<td>EOS Imaging..................................4233</td>
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<td>FUJIFILM Medical Systems USA, Inc......4436</td>
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<td>NHD, Inc.................................4539</td>
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<td>OrthoScan Inc...............................4442</td>
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<td>Pacific American Life Science Learning Center...................................4336</td>
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<td>Planned, Inc...............................4636</td>
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<td>Quadrant Engineering Plastic Products...........................................4107</td>
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<td>Quantum Medical Imaging, LLC.........4236</td>
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<td>Rayence Inc...............................4136</td>
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<td>Shanghai Bojin Electric Instrument &amp; Device Co., Ltd..........................3802</td>
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<tr>
<td>Siemens Medical Solutions USA, Inc....3865</td>
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<tr>
<td>TXR Tingle XRay LLC......................4439</td>
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<td>VirtualScopics.............................4540</td>
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<td>Ziehm Imaging..............................4029</td>
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Exhibit Dates and Hours:

- **Wednesday, March 20**
  - 9:00 AM – 5:00 PM

- **Thursday, March 21**
  - 9:00 AM – 5:00 PM

- **Friday, March 22**
  - 9:00 AM – 4:00 PM

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About our Members and Volunteers
### AAOS Committee Meetings

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Event Details</th>
</tr>
</thead>
</table>
| **AAOS Communications Skills Mentoring Program, and TeamSTEPPS Project** | Mentors Meeting  
Wednesday, March 20  
7:00 - 8:30 AM  
McCormick Place, Lakeside  
Room E253a |

| **AAOS Exhibitors Advisory Council** | Luncheon Meeting  
Friday, March 22  
11:30 AM - 1:30 PM  
McCormick Place  
Room S505a |

| **AAOS Now Obesity Forum** | Meeting  
Monday, March 18  
12:00 – 6:00 PM  
Hilton Chicago  
Wilford C |

| **AAOS Program Committees** | Meeting  
Wednesday, March 20  
7:00 - 7:45 AM  
McCormick Place  
Room S103bcd |

| **AAOS/OTA/VR Hip Fracture Project Team** | Meeting  
Wednesday, March 20  
8:00 – 10:00 AM  
McCormick Place, Lakeside  
Room E263 |

| **ABOS/AAOS/AOA Resident Curriculum Development Project** | Meeting  
Wednesday, March 20  
3:30 – 5:30 PM  
McCormick Place, Lakeside  
Room E263 |

| **American Joint Replacement Registry** | Board of Director’s Meeting  
Monday, March 18  
8:00 AM - 4:30 PM  
Hilton Chicago  
Astoria |

| **Annual Meeting Committee** | Breakfast Meeting  
Saturday, March 23  
7:30 - 9:30 AM  
McCormick Place  
Room S505a |

| **Biological Implants** | Meeting  
Thursday, March 21  
6:00 - 8:00 AM  
McCormick Place, Lakeside  
Room E261 |

| **Biomedical Engineering Committee** | Meeting  
Wednesday, March 20  
11:00 AM - 1:00 PM  
McCormick Place, Lakeside  
Room E253b |

| **Board of Councilors** | Executive Committee  
Thursday, March 21  
3:30 - 6:00 PM  
McCormick Place, Lakeside  
Room E262 |

| **Board of Specialty Societies** | Match Committee  
Wednesday, March 20  
6:00 – 8:00 AM  
McCormick Place, Lakeside  
Room E253b |

| **Economic Issues Committee** | Orientation Session  
Wednesday, March 20  
1:00 - 4:00 PM  
McCormick Place, Lakeside  
Room E333c |

| **Health Policy Committee** | Orientation Meeting  
Wednesday, March 20  
7:00 – 8:00 AM  
McCormick Place, Lakeside  
Room E266 |

| **BOC SOS Committee** | State Legislative & Regulatory Issues Committee  
Friday, March 22  
4:00 - 6:00 PM  
McCormick Place, Lakeside  
Room E258 |

| **Research Committee** | Board of Specialty Societies  
Wednesday, March 20  
6:00 - 8:00 AM  
McCormick Place, Lakeside  
Room E253 |

| **Communications Committee** | Thursday, March 21  
6:00 - 8:00 AM  
McCormick Place, Lakeside  
Room E253b |
### AAOS Committee Meetings

<table>
<thead>
<tr>
<th>Committee Name</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>Business Meeting</strong></td>
<td>Friday, March 22</td>
<td>6:00 - 8:00 AM</td>
<td>McCormick Place, Lakeside Room E450b</td>
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<tr>
<td><strong>CAC Organizational Meeting</strong></td>
<td>Friday, March 22</td>
<td>2:00 - 3:30 PM</td>
<td>McCormick Place, Lakeside Room E259</td>
</tr>
<tr>
<td><strong>Candidate, Resident and Fellow Committee</strong></td>
<td>Thursday, March 21</td>
<td>6:30 - 8:30 AM</td>
<td>McCormick Place, Lakeside Room E256</td>
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<tr>
<td><strong>Central Evaluation Committee</strong></td>
<td>Thursday, March 21</td>
<td>12:00 - 1:30 PM</td>
<td>McCormick Place, Lakeside Room E353c</td>
</tr>
<tr>
<td><strong>Central Instructional Course Committee</strong></td>
<td>Saturday, March 23</td>
<td>11:45 AM - 1:00 PM</td>
<td>McCormick Place, Lakeside Room S505a</td>
</tr>
<tr>
<td><strong>Communications Cabinet</strong></td>
<td>Thursday, March 21</td>
<td>2:00 - 4:00 PM</td>
<td>McCormick Place, Lakeside Room E271a</td>
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<tr>
<td><strong>Diversity Advisory Board</strong></td>
<td>Thursday, March 21</td>
<td>3:30 - 5:30 PM</td>
<td>Hilton Chicago Astoria</td>
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<tr>
<td><strong>Education Research Work Group</strong></td>
<td>Thursday, March 21</td>
<td>6:00 - 8:00 AM</td>
<td>McCormick Place, Lakeside Room E263</td>
</tr>
<tr>
<td><strong>Evaluation Leadership</strong></td>
<td>Wednesday, March 20</td>
<td>11:30 AM - 12:30 PM</td>
<td>McCormick Place, Lakeside Room E253a</td>
</tr>
</tbody>
</table>

**Evaluation New Member Orientation and Item Writing Workshop**

Meeting:  
Wednesday, March 20  
1:00 - 3:45 PM  
McCormick Place, Lakeside Room E253a

**Executive Directors Luncheon**

Luncheon:  
Friday, March 22  
11:00 AM - 1:00 PM  
McCormick Place, Lakeside Room E255

**Exhibits Committee**

Meeting:  
Tuesday, March 19  
4:00 - 6:00 PM  
McCormick Place Room S505a

Meeting:  
Wednesday, March 20  
6:30 - 9:00 AM  
McCormick Place Room S505a

**International Committee**

Meeting:  
Thursday, March 21  
12:00 - 2:00 PM  
McCormick Place, Lakeside Room E257

**International Presidents’ Breakfast and World Opinion Forum**

Breakfast Meeting:  
Wednesday, March 20  
6:30 - 9:30 AM  
McCormick Place, Lakeside Room E333ab

**JAAOS Deputy Editors**

Breakfast Meeting:  
Friday, March 22  
7:00 – 8:00 AM  
McCormick Place, Lakeside Room E256

**Leadership Development Committee**

Luncheon Meeting:  
Friday, March 22  
12:00 - 2:00 PM  
McCormick Place, Lakeside Room E256

**Leadership Fellows Program**

Graduation/Orientation:  
Friday, March 22  
6:00 - 8:00 AM  
McCormick Place, Lakeside Room E263

Alumni Reception:  
Friday, March 22  
6:00 - 7:00 PM  
Hyatt McCormick Regency A
### AAOS Committee Meetings

#### Medical Liability Committee
- **Meeting**
  - Wednesday, March 20
  - 1:30 - 3:30 PM
  - McCormick Place, Lakeside
  - Room E256

#### Membership Committee
- **Meeting**
  - Thursday, March 21
  - 8:00 - 10:00 AM
  - McCormick Place, Lakeside
  - Room E267

#### Orthopaedic Learning Center
- **Board of Directors Meeting**
  - Saturday, March 23
  - 6:30 - 8:30 AM
  - McCormick Place, Lakeside
  - Room E267

#### OrthoInfo
- **Breakfast Meeting**
  - Wednesday, March 20
  - 7:00 - 9:00 AM
  - McCormick Place, Lakeside
  - Room E262

#### OTA/OrthoPortal
- **Meeting**
  - Wednesday, March 20
  - 11:00 AM – 12:00 PM
  - Hyatt McCormick
  - CC10A

#### PAC Luncheon
- **Luncheon**
  - Wednesday, March 20
  - 12:00 - 1:30 PM
  - McCormick Place, Lakeside
  - Room E353ab

#### Patient Education Committee
- **Breakfast Meeting**
  - Friday, March 22
  - 7:00 – 9:00 AM
  - McCormick Place, Lakeside
  - Room E262

#### Patient Safety Committee
- **Meeting**
  - Friday, March 22
  - 6:00 - 8:00 AM
  - McCormick Place, Lakeside
  - Room E261

#### Periodicals
- **Reception**
  - Friday, March 22
  - 6:00 – 8:00 PM
  - Hilton Chicago
  - Wilford A

### Practice Management Committee
- **Meeting**
  - Thursday, March 21
  - 12:00 - 2:30 PM
  - McCormick Place, Lakeside
  - Room E253b

### Resident Liaison Meeting
- **Meeting**
  - Thursday, March 21
  - 1:30 - 3:00 PM
  - McCormick Place
  - Room S101b

### Technology Project Team
- **Meeting**
  - Wednesday, March 20
  - 7:30 - 9:30 AM
  - McCormick Place, Lakeside
  - Room E259

### VR Shoulder Project Team
- **Meeting**
  - Thursday, March 21
  - 11:30 - 1:00 PM
  - McCormick Place, Lakeside
  - Room E267

### Women’s Health Issues Advisory Board
- **Luncheon Meeting**
  - Wednesday, March 20
  - 12:00 - 3:00 PM
  - McCormick Place, Lakeside
  - Room E261

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### Affiliate Committee Meeting Hotels

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Phone</th>
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<tbody>
<tr>
<td>Chicago Marriott - Magnificent Mile</td>
<td>340 N. Michigan Avenue</td>
<td>312-836-0100</td>
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<tr>
<td>Fairmont Chicago</td>
<td>200 N. Columbus Drive</td>
<td>312-565-8000</td>
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<tr>
<td>Four Seasons Hotel Chicago</td>
<td>120 E. Delaware Place</td>
<td>312-280-8800</td>
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<tr>
<td>Hilton Chicago Hotel &amp; Towers</td>
<td>720 S. Michigan Avenue</td>
<td>312-922-4400</td>
</tr>
<tr>
<td>Hyatt Regency Chicago</td>
<td>151 E. Wacker Drive</td>
<td>312-565-1234</td>
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<tr>
<td>Hyatt Regency McCormick Place</td>
<td>2233 S. Martin L King Boulevard</td>
<td>312-567-1234</td>
</tr>
<tr>
<td>InterContinental Chicago</td>
<td>505 N. Michigan Avenue</td>
<td>312-944-4100</td>
</tr>
<tr>
<td>Omni Chicago</td>
<td>676 N. Michigan Avenue</td>
<td>312-944-6664</td>
</tr>
<tr>
<td>Palmer House Hilton</td>
<td>17 E. Monroe Street</td>
<td>312-726-7500</td>
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<tr>
<td>Peninsula Chicago</td>
<td>108 E. Superior Street</td>
<td>312-337-2888</td>
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<tr>
<td>Renaissance Blackstone</td>
<td>636 S. Michigan Avenue</td>
<td>312-447-0955</td>
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<tr>
<td>Ritz Carlton Chicago</td>
<td>160 E. Pearson Street</td>
<td>312-266-1000</td>
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<tr>
<td>Sheraton Chicago Hotel &amp; Towers</td>
<td>301 E. North Water Street</td>
<td>312-464-1000</td>
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<td>Westin Chicago River North</td>
<td>320 N. Dearborn Avenue</td>
<td>312-744-1900</td>
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<tr>
<td><strong>Albany Medical Center Hospital</strong></td>
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<td><strong>Alumni Reception</strong></td>
<td>Friday, March 22</td>
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<tr>
<td><strong>American Association of Hip and Knee Surgeons (AAHKS)</strong></td>
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<tr>
<td><strong>Board of Directors Meeting</strong></td>
<td>Wednesday, March 20</td>
<td>5:30 - 8:30 PM</td>
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<td><strong>Publications Committee Meeting</strong></td>
<td>Friday, March 22</td>
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<td><strong>American Association of Latino Orthopaedic Surgeons (AALOS)</strong></td>
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<td><strong>Annual Meeting Luncheon</strong></td>
<td>Friday, March 22</td>
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<td><strong>American Orthopaedic Association (AOA)</strong></td>
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<tr>
<td><strong>Officer’s Meeting</strong></td>
<td>Tuesday, March 19</td>
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<td><strong>Development Committee</strong></td>
<td>Tuesday, March 19</td>
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<tr>
<td><strong>Own the Bone Committee</strong></td>
<td>Tuesday, March 19</td>
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<td><strong>Orthopaedic IOM Council</strong></td>
<td>Wednesday, March 20</td>
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<td>Wednesday, March 20</td>
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<td><strong>Nominating Committee Meeting</strong></td>
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<td><strong>Fellowships Alumni Reception</strong></td>
<td>Wednesday, March 20</td>
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<tr>
<td><strong>Leadership Development Committee</strong></td>
<td>Thursday, March 21</td>
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<tr>
<td><strong>Finance Committee</strong></td>
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<tr>
<td><strong>Critical Issues Committee</strong></td>
<td>Thursday, March 21</td>
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<tr>
<td><strong>Fellowships Coordinating Committee</strong></td>
<td>Thursday, March 21</td>
<td>2:00 - 2:45 PM</td>
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<tr>
<td><strong>Executive Committee</strong></td>
<td>Thursday, March 21</td>
<td>3:00 - 5:30 PM</td>
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<tr>
<td><strong>CORD Conference</strong></td>
<td>Friday, March 22</td>
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<tr>
<td><strong>CORD Educational Programming Committee</strong></td>
<td>Friday, March 22</td>
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<tr>
<td><strong>OMeGA Board Meeting</strong></td>
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<tr>
<td><strong>American Orthopaedic Foot &amp; Ankle Society (AOFAS)</strong></td>
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<td><strong>IFFAS Council Meeting</strong></td>
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<tr>
<td><strong>FAI Managerial Board</strong></td>
<td>Thursday, March 21</td>
<td>1:30 - 3:00 PM</td>
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<tr>
<td><strong>Education Committee</strong></td>
<td>Friday, March 22</td>
<td>7:00 - 8:00 AM</td>
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<tr>
<td>Committee</td>
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<tr>
<td>Public Education Committee</td>
<td>Friday, March 22</td>
<td>7:00 - 8:00 AM</td>
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<tr>
<td>Humanitarian Services Committee</td>
<td>Friday, March 22</td>
<td>8:15 - 9:30 AM</td>
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<tr>
<td>CPT/RUC Committee</td>
<td>Friday, March 22</td>
<td>9:45 - 10:45 AM</td>
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<tr>
<td>Post Graduate Education &amp; Training Committee</td>
<td>Friday, March 22</td>
<td>9:45 - 10:45 AM</td>
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<td>Research Committee</td>
<td>Friday, March 22</td>
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<tr>
<td>OFAR Managerial Board</td>
<td>Friday, March 22</td>
<td>12:00 - 1:15 PM</td>
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<tr>
<td>FAI Reviewers Meeting</td>
<td>Friday, March 22</td>
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<tr>
<td>Young Physicians Committee</td>
<td>Friday, March 22</td>
<td>2:15 - 3:15 PM</td>
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<tr>
<td>OEF Board Meeting</td>
<td>Friday, March 22</td>
<td>3:30 - 4:30 PM</td>
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<tr>
<td>Membership Committee</td>
<td>Friday, March 22</td>
<td>4:30 - 5:30 PM</td>
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<tr>
<td>Board Meeting</td>
<td>Friday, March 22</td>
<td>4:30 - 6:00 PM</td>
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<tr>
<td>F&amp;A Fellowship Faculty Meeting</td>
<td>Saturday, March 23</td>
<td>6:00 - 7:00 AM</td>
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<tr>
<td>Member Reception</td>
<td>Saturday, March 23</td>
<td>5:00 - 8:00 PM</td>
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**American Orthopaedic Society for Sports Medicine (AOSSM)**

<table>
<thead>
<tr>
<th>Committee</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Publications Committee Meeting</td>
<td>Thursday, March 21</td>
<td>12:00 - 3:00 PM</td>
<td>Hyatt Regency McCormick Place CC21C</td>
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<tr>
<td>Research Committee Meeting</td>
<td>Thursday, March 21</td>
<td>1:00 - 2:00 PM</td>
<td>Hyatt Regency McCormick Place Meeting Suite 1</td>
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<tr>
<td>Enduring Education Committee Meeting</td>
<td>Thursday, March 21</td>
<td>2:00 - 3:00 PM</td>
<td>Hyatt Regency McCormick Place CC23B</td>
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<tr>
<td>OKO Committee Meeting</td>
<td>Thursday, March 21</td>
<td>2:00 - 3:00 PM</td>
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<tr>
<td>Public Relations Committee Meeting</td>
<td>Thursday, March 21</td>
<td>2:00 - 3:00 PM</td>
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<tr>
<td>PI CME Committee Meeting</td>
<td>Thursday, March 21</td>
<td>3:00 - 4:00 PM</td>
<td>Hyatt Regency McCormick Place CC22A</td>
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<tr>
<td>Education and Industry Relations Committee</td>
<td>Thursday, March 21</td>
<td>3:00 - 4:30 PM</td>
<td>Hyatt Regency McCormick Place CC22C</td>
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<tr>
<td>History Committee Meeting</td>
<td>Thursday, March 21</td>
<td>3:30 - 4:30 PM</td>
<td>Hyatt Regency McCormick Place CC22B</td>
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<tr>
<td>Traveling Fellowship Committee Meeting</td>
<td>Friday, March 22</td>
<td>8:00 - 10:00 AM</td>
<td>Hyatt Regency McCormick Place Meeting Suite 3</td>
</tr>
<tr>
<td>Match Committee</td>
<td>Friday, March 22</td>
<td>9:00 - 10:00 AM</td>
<td>Hyatt Regency McCormick Place CC22A</td>
</tr>
<tr>
<td>STOP Outreach Committee</td>
<td>Friday, March 22</td>
<td>10:00 - 11:30 AM</td>
<td>Hyatt Regency McCormick Place C11A</td>
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<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Nominating Committee</td>
<td>Friday, March 22</td>
<td>10:15 - 11:30 AM</td>
<td>Hyatt Regency McCormick Place CC22C</td>
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<tr>
<td>Fellowship Committee</td>
<td>Friday, March 22</td>
<td>10:30 - 11:30 AM</td>
<td>Hyatt Regency McCormick Place CC23B</td>
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<tr>
<td>Education Committee</td>
<td>Friday, March 22</td>
<td>12:00 - 1:00 PM</td>
<td>Hyatt Regency McCormick Place CC11A</td>
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<tr>
<td>Health Policy &amp; Ethics Committee Meeting</td>
<td>Friday, March 22</td>
<td>12:00 - 1:00 PM</td>
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<td>Technology Committee</td>
<td>Friday, March 22</td>
<td>12:00 - 1:00 PM</td>
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<tr>
<td>Fellowship Program Directors Meeting</td>
<td>Friday, March 22</td>
<td>12:00 - 1:00 PM</td>
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<td>Hall of Fame Committee</td>
<td>Friday, March 22</td>
<td>12:00 - 1:30 PM</td>
<td>Hyatt Regency McCormick Place CC10BC</td>
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<td>STOP Advisory Committee Meeting</td>
<td>Friday, March 22</td>
<td>12:00 - 2:00 PM</td>
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<td>Council of Delegates Meeting</td>
<td>Friday, March 22</td>
<td>2:00 - 4:00 PM</td>
<td>Hyatt Regency McCormick Place CC10A</td>
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<tr>
<td>Arthroscopy Association of North America (AANA)</td>
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<tr>
<td>International Committee</td>
<td>Thursday, March 21</td>
<td>12:00 - 2:00 PM</td>
<td>Hyatt Regency McCormick Place Boardroom 2</td>
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<tr>
<td>MOC Task Force</td>
<td>Thursday, March 21</td>
<td>12:00 - 2:00 PM</td>
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<td>Fellowship Committee</td>
<td>Friday, March 22</td>
<td>10:30 - 11:30 AM</td>
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<tr>
<td>Archives Committee</td>
<td>Friday, March 22</td>
<td>12:00 - 2:00 PM</td>
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<tr>
<td>Reception</td>
<td>Saturday, March 23</td>
<td>6:00 - 8:00 PM</td>
<td>Shearaton Chicago Towers Michigan</td>
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<tr>
<td>Association of Bone and Joint Surgeons (ABJS)</td>
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<tr>
<td>CORR Editorial Meeting</td>
<td>Wednesday, March 20</td>
<td>7:00 - 8:00 AM</td>
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<td>CORR Publishers Meeting</td>
<td>Wednesday, March 20</td>
<td>8:30 AM - 2:30 PM</td>
<td>Hyatt Regency McCormick Place Boardroom 2</td>
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<tr>
<td>ABJS Executive Committee/ CORR Board of Trustees</td>
<td>Thursday, March 21</td>
<td>11:30 AM - 5:00 PM</td>
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<tr>
<td>CORR Reception</td>
<td>Friday, March 22</td>
<td>7:00 - 10:00 PM</td>
<td>Trump International Hotel &amp; Tower</td>
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<td>American Society for Surgery of the Hand (ASSH)</td>
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<td>ASSH - AAHS Presidential Reception</td>
<td>Friday, March 22</td>
<td>6:00 - 7:30 PM</td>
<td>Hyatt Regency McCormick Place Regency E</td>
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<tr>
<td>American Sports Medicine Fellowship Society</td>
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<tr>
<td>Alumni Reception</td>
<td>Friday, March 22</td>
<td>6:00 - 8:00 PM</td>
<td>Palmer House Hilton Monroe</td>
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<tr>
<td>Association of Residency Coordinators in Orthopaedic Surgery (ARCOS)</td>
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<td>TAGME Assessment</td>
<td>Tuesday, March 19</td>
<td>8:00 AM - 2:00 PM</td>
<td>Hyatt Regency Chicago Dusable</td>
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<tr>
<td>Reception</td>
<td>Tuesday, March 19</td>
<td>6:00 - 8:00 PM</td>
<td>Hyatt Regency Chicago Wrigley</td>
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© 2013 American Academy of Orthopaedic Surgeons
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<th>Event</th>
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| **Annual Meeting**                                                   | Wednesday, March 20 7:00 AM - 5:00 PM  
Hyatt Regency Chicago  
Crystal A-B                                                              |
| **Annual Meeting**                                                   | Thursday, March 21 7:00 AM - 5:00 PM  
Hyatt Regency Chicago  
Crystal A-B                                                              |
| **Annual Meeting**                                                   | Friday, March 22 7:00 AM - 5:00 PM  
Hyatt Regency Chicago  
Crystal A-B                                                              |
| **Balboa Naval Hospital**                                            | Alumni Reception  
Friday, March 22 6:00 - 9:00 PM  
Palmer House Hilton  
Hancock Parlor                                                            |
| **Brown Medical School/Rhode Island Hospital Department of Orthopaedics** | Alumni Reception  
Thursday, March 21 6:00 PM - 9:00 PM  
Hyatt Regency McCormick Place  
Regency B                                                                     |
| **California Orthopaedic Association**                               | Board of Directors Meeting  
Thursday, March 21 6:30 - 10:00 AM  
Hyatt Regency McCormick Place  
CC10-A                                                                        |
| **Cervical Spine Research Society (CSRS)**                           | Executive Committee Meeting  
Friday, March 22 10:00 AM - 3:00 PM  
McCormick Place  
Lakeside, Room E253b                                                      |
| **Cincinnati Sports Medicine Fellowship Alumni**                     | Reception  
Thursday, March 21 6:00 - 9:00 PM  
Hyatt Regency McCormick Place  
CC21-A                                                                        |
| **Cleveland Clinic**                                                 | Alumni Reception  
Friday, March 22 6:00 - 8:00 PM  
Hyatt Regency Chicago  
Addams                                                                         |
| **Clinical Orthopaedic Society**                                     | Board of Directors Meeting  
Wednesday, March 20 12:00 - 2:00 PM  
Hyatt Regency McCormick Place  
CC12-A                                                                       |
| **Community Health System (CHS)**                                   | Reception  
Wednesday, March 20 5:00 - 7:00 PM  
Omni Chicago Hotel  
676 N. Michigan, 4th Floor  
(Picasso B)                                                                  |
| **Drew University**                                                  | Alumni Reception  
Friday, March 22 6:00 - 9:00 PM  
Hilton Chicago  
Astoria                                                                        |
| **Drexel University College of Medicine**                            | Alumni Reception  
Thursday, March 21 6:00 - 7:00 PM  
Palmer House Hilton  
Medinah                                                                       |
| **Einstein/Montefiore Orthopaedics**                                 | Alumni Reception  
Thursday, March 21 6:00 - 9:00 PM  
Chicago Marriott Downtown  
540 N Michigan Avenue  
Avenue Ballroom                                                              |
| **Emory Orthopaedics/Kelly Society**                                 | Reception  
Friday, March 22 6:00 - 8:00 PM  
Hilton Chicago  
Private Dining Room 4                                                      |
| **Federation of Spine Associations (FOSA)**                          | Executive Committee Meeting  
Saturday, March 23 6:15 - 8:15 am  
McCormick Place  
Room S106b                                                                   |
| **Florida Orthopaedic Society**                                     | Board of Directors Meeting  
Thursday, March 21 3:00 - 5:00 PM  
Hyatt Regency McCormick Place  
CC10-D                                                                       |
| **Foot Club**                                                        | Luncheon  
Saturday, March 23 12:00 - 1:00 PM  
Hyatt Regency McCormick Place  
Meeting Suite 1                                                               |
| **Foundation for the Advancement in Research**                       | 12th Annual Board of Directors and Guest Luncheon  
Thursday, March 21 11:30 AM - 1:30 PM  
Hyatt Regency McCormick Place  
Regency D                                                                     |
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<th>Event</th>
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<tr>
<td>Alumni Reception</td>
<td>Friday, March 22</td>
<td>7:00 - 10:00 PM</td>
<td>Hyatt Regency McCormick Place</td>
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<td>Freiberg Society</td>
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<td>CC21-B</td>
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<td>Alumni Reception</td>
<td>Friday, March 22</td>
<td>6:30 - 8:30 PM</td>
<td>Westin Chicago River North Executive</td>
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<td>George Washington University</td>
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<tr>
<td>Alumni Reception</td>
<td>Friday, March 22</td>
<td>6:00 - 8:00 PM</td>
<td>Westin Chicago River North Grand Ballroom A</td>
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<tr>
<td>Growing Spine Foundation</td>
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<tr>
<td>Board of Directors Meeting</td>
<td>Tuesday, March 19</td>
<td>10:00 AM - 1:00 PM</td>
<td>Sheraton Chicago Huron</td>
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<tr>
<td>Harvard Combined Orthopaedic Residency Program</td>
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<tr>
<td>Alumni Reception</td>
<td>Friday, March 22</td>
<td>6:00 - 8:00 PM</td>
<td>Westin Chicago River North Grand Ballroom A</td>
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<tr>
<td>Henry Ford Orthopaedic Alumni Reception</td>
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<tr>
<td>Reception</td>
<td>Friday, March 22</td>
<td>6:00 - 10:00 PM</td>
<td>Union League Club of Chicago 65 W. Jackson Boulevard</td>
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<td>Herodicus Society</td>
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<tr>
<td>Reception</td>
<td>Friday, March 22</td>
<td>6:00 - 10:00 PM</td>
<td>Union League Club of Chicago 65 W. Jackson Boulevard</td>
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<td>Hospital for Special Surgery</td>
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<td>Alumni Meeting</td>
<td>Thursday, March 21</td>
<td>11:00 - 3:00 PM</td>
<td>Hyatt Regency McCormick Place</td>
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<tr>
<td>Special Friends of the Alumni Association Breakfast</td>
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<td>Hyatt Regency McCormick Place Regency E</td>
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<td>Hughston Society</td>
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<tr>
<td>Alumni Reception</td>
<td>Friday, March 22</td>
<td>6:00 - 8:00 PM</td>
<td>Palmer House Hilton Monroe</td>
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<td>Indiana University</td>
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<tr>
<td>Orthopaedic Reception</td>
<td>Thursday, March 21</td>
<td>6:00 - 8:00 PM</td>
<td>Chicago Marriott Downtown 540 N Michigan Avenue</td>
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<tr>
<td>International Congress for Joint Reconstruction (ICJR)</td>
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<tr>
<td>Board of Directors Meeting</td>
<td>Thursday, March 21</td>
<td>9:00 AM - 5:00 PM</td>
<td>Hyatt Regency McCormick Place Meeting Suite 4</td>
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<tr>
<td>International Society for Technology in Arthroplasty (ISTA)</td>
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<tr>
<td>Board of Directors Meeting</td>
<td>Wednesday, March 20</td>
<td>4:00 - 6:00 PM</td>
<td>Hyatt Regency McCormick Place C22-A</td>
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<tr>
<td>International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine (ISAKOS)</td>
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<tr>
<td>Executive Committee Meeting</td>
<td>Monday, March 18</td>
<td>8:00 AM - 5:00 PM</td>
<td>Hilton Chicago Boulevard C</td>
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<tr>
<td>Committee Meeting</td>
<td>Tuesday, March 19</td>
<td>7:00 AM - 5:00 PM</td>
<td>Hilton Chicago Boulevard A</td>
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<tr>
<td>Committee Meeting</td>
<td>Tuesday, March 19</td>
<td>7:00 AM - 5:00 PM</td>
<td>Hilton Chicago Boulevard B</td>
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<td>Tuesday, March 19</td>
<td>7:00 AM - 5:00 PM</td>
<td>Hilton Chicago Boulevard C</td>
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<tr>
<td>Committee Meeting</td>
<td>Wednesday, March 20</td>
<td>7:00 AM - 5:00 PM</td>
<td>Hilton Chicago Boulevard A-B</td>
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<tr>
<td>Committee Meeting</td>
<td>Thursday, March 21</td>
<td>7:00 AM - 5:00 PM</td>
<td>Hilton Chicago Boulevard A</td>
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</table>
AAOS Affiliate & Alumni Meetings

**International Society of Orthopaedic Surgery & Traumatology (SICOT)**

- **US Section Board Meeting**  
  Friday, March 22  
  10:30 AM - 12:15 PM  
  Hyatt Regency McCormick Place CC10D

- **US Section Luncheon**  
  Friday, March 22  
  12:30 - 2:00 PM  
  Hyatt Regency McCormick Place Regency B

**Irish American Orthopaedic Society**

- **Reception**  
  Friday, March 22  
  6:00 - 9:00 PM  
  Hyatt Regency McCormick Place Regency C

**J. Robert Gladden Orthopaedic Society (JRGOS)**

- **Board Meeting**  
  Thursday, March 21  
  6:00 - 10:00 AM  
  Hyatt Regency McCormick Place CC22

- **Annual Luncheon**  
  Thursday, March 21  
  1:00 - 3:00 PM  
  Hyatt Regency McCormick Place Regency AB

- **Medical Student Symposium Workshop**  
  Thursday, March 21  
  3:00 - 6:00 PM  
  Hyatt Regency McCormick Place CC10 BC

- **Medical Student Networking Reception**  
  Thursday, March 21  
  6:00 - 7:30 PM  
  Hyatt Regency McCormick Place Regency C

- **Trilogy Breakfast**  
  Friday, March 22  
  9:00 - 10:30 AM  
  Hyatt Regency McCormick Place Regency CD

**Johns Hopkins Orthopaedic Surgeons**

- **Alumni Reception**  
  Thursday, March 21  
  6:00 - 9:00 PM  
  Hyatt Regency McCormick Place CC10-A

**Journal of Bone and Joint Surgery (JBJS)**

- **Ad Sales Meeting**  
  Tuesday, March 19  
  5:00 - 7:00 PM  
  Hyatt Regency Chicago Atlanta

- **Newsletter Editors Meeting**  
  Thursday, March 21  
  6:00 - 7:30 AM  
  Hyatt Regency McCormick Place CC10-D

- **Deputy Editors Reception**  
  Thursday, March 21  
  6:00 - 7:30 PM  
  Hilton Chicago Normandie Lounge

- **Deputy Editors Breakfast**  
  Friday, March 22  
  6:00 - 9:00 AM  
  Hyatt Regency McCormick Place CC10-D

**Lenox Hill Hospital Orthopaedics/Staff**

- **Alumni Reception**  
  Thursday, March 21  
  7:00 - 9:00 PM  
  Hyatt Regency McCormick Place CC22-C

**Limb Lengthening and Reconstruction Society (LLRS)**

- **Executive Board Meeting**  
  Thursday, March 21  
  5:30 - 9:00 PM  
  Hilton Chicago Pullman

**Loma Linda University, Orthopaedic Surgery**

- **Reception**  
  Thursday, March 21  
  6:00 - 8:30 PM  
  Hyatt Regency Chicago Crystal C

**Long Island Jewish Alumni Association**

- **Reception**  
  Friday, March 22  
  6:00 - 7:30 PM  
  Sheraton Chicago Missouri

**Loyola University Chicago, Sofield**

- **Reception**  
  Friday, March 22  
  6:00 - 9:00 PM  
  Loyola University Museum of Art 820 N. Michigan Ave

**LSU Health Shreveport, Department of Orthopaedic Surgery**

- **Alumni Reception**  
  Thursday, March 21  
  6:30 - 8:30 PM  
  Hilton Chicago Joliet

**LSU New Orleans Orthopaedic Alumni Association**

- **Alumni Reception**  
  Wednesday, March 20  
  6:30 - 8:30 PM  
  Hyatt Regency Chicago Buckingham

**Massachusetts General Hospital**

- **ISAR Meeting**  
  Thursday, March 21  
  4:00 - 7:00 PM  
  Hilton Chicago Marquette
<table>
<thead>
<tr>
<th>Event</th>
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<tr>
<td><strong>Mayo Clinic Orthopedic Alumni Association</strong></td>
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<td>Reception</td>
<td>Friday, March 22</td>
<td>Hilton Chicago</td>
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<td>5:00 - 8:00 PM</td>
<td>Marquette</td>
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<td><strong>Medical College of Virginia</strong></td>
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<td>Alumni Reception</td>
<td>Thursday, March 21</td>
<td>Hyatt Regency Chicago</td>
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<td>6:00 - 8:00 PM</td>
<td>New Orleans</td>
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<td><strong>Medical College of Wisconsin</strong></td>
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<td>Reception</td>
<td>Friday, March 22</td>
<td>Peninsula Chicago</td>
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<td>6:00 - 8:00 PM</td>
<td>Water Tower Park I &amp; II</td>
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<td><strong>Medical University of South Carolina</strong></td>
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<td>Friday, March 22</td>
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<td>McCormick Place</td>
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<td><strong>Meniscus Transplantation Study Group</strong></td>
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<td>Meeting</td>
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<td><strong>Mid-America Orthopaedic Association</strong></td>
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<td>Finance Committee Meeting</td>
<td>Friday, March 22</td>
<td>Hilton Chicago</td>
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<td>McCormick Place</td>
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<tr>
<td>Board of Directors Meeting</td>
<td>Friday, March 22</td>
<td>Hilton Chicago</td>
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<td>10:30 - 2:30 PM</td>
<td>McCormick Place</td>
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<td><strong>Mount Sinai Orthopaedics</strong></td>
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<td><strong>Musculoskeletal Transplant Foundation (MTF)</strong></td>
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<td>Board of Directors Meeting</td>
<td>Friday, March 22</td>
<td>Fairmont Chicago</td>
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<td>7:30 AM - 1:00 PM</td>
<td>McCormick Place</td>
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<td><strong>Musculoskeletal Tumor Society (MSTS)</strong></td>
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<td>Executive Committee Meeting</td>
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<td>12:00 - 5:00 PM</td>
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<td><strong>National Board of Certification of Orthopedic Physician Assistants (NBCOPA)</strong></td>
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<td>Business Meeting</td>
<td>Tuesday, March 19</td>
<td>Chicago Marriott Downtown</td>
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<td></td>
<td>7:30 AM - 4:30 PM</td>
<td>McCormick Place</td>
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<td>Reception</td>
<td>Wednesday, March 20</td>
<td>Hyatt Regency McCormick Place</td>
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<td>5:30 - 7:30 PM</td>
<td>McCormick Place</td>
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<td>Meeting Suite 4</td>
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<tr>
<td><strong>Northwestern University Orthopaedics</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Friday, March 22</td>
<td>Robert H. Lurie Compr. Cancer Center</td>
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<td>6:00 - 9:00 PM</td>
<td>McCormick Place</td>
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<td>303 E. Superior</td>
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<td>Ryan Family Atrium</td>
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<td><strong>NYOH Alumni Association / Columbia Orthopaedics</strong></td>
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<tr>
<td>Cocktail Reception</td>
<td>Friday, March 22</td>
<td>Hilton Chicago</td>
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<td>6:00 - 9:00 PM</td>
<td>McCormick Place</td>
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<td>Grand Tradition</td>
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<td><strong>NYU Hospital for Joint Diseases</strong></td>
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<tr>
<td>Alumni Reunion</td>
<td>Friday, March 22</td>
<td>Chicago Marriott Downtown</td>
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<tr>
<td></td>
<td>6:00 - 9:00 PM</td>
<td>McCormick Place</td>
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<td></td>
<td></td>
<td>540 N. Michigan Avenue</td>
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<tr>
<td><strong>NYU Langone Hospital for Joint Diseases</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Friday, March 22</td>
<td>Omni Chicago Hotel</td>
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<td></td>
<td>6:00 - 9:00 PM</td>
<td>McCormick Place</td>
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<td></td>
<td></td>
<td>676 N. Michigan</td>
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<tr>
<td><strong>Ohio State University Alumni/ Columbus Orthopaedic Society</strong></td>
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<tr>
<td>Reception</td>
<td>Thursday, March 21</td>
<td>Hyatt Regency Chicago</td>
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<td></td>
<td>6:00 - 8:00 PM</td>
<td>McCormick Place</td>
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<tr>
<td><strong>Orthopaedic Laser Society of North America</strong></td>
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<tr>
<td>Annual Meeting</td>
<td>Thursday, March 21</td>
<td>Hyatt Regency McCormick Place</td>
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<tr>
<td></td>
<td>7:00 - 9:00 AM</td>
<td>McCormick Place</td>
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<tr>
<td><strong>Orthopaedic Trauma Association (OTA)</strong></td>
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<tr>
<td>Military Committee</td>
<td>Wednesday, March 20</td>
<td>Hyatt Regency McCormick Place</td>
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<tr>
<td></td>
<td>7:00 - 8:00 AM</td>
<td>McCormick Place</td>
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<td></td>
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<td>Meeting Suite 4</td>
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</tbody>
</table>
Classification and Open Fracture
Wednesday, March 20
8:00 - 11:00 AM
Hyatt Regency McCormick Place
Meeting Suite 3

Public Relations Committee
Thursday, March 21
2:30 - 3:30 PM
Hyatt Regency McCormick Place
Meeting Suite 2

Research Committee
Wednesday, March 20
11:00 AM - 1:00 PM
Hyatt Regency McCormick Place
CC10C

Basic Science Focus Forum Committee
Friday, March 22
7:30 - 8:30 AM
Hyatt Regency McCormick Place
CC23B

Education Committee
Wednesday, March 20
12:00 - 2:00 PM
Hyatt Regency McCormick Place
CC10A

International Relations Committee
Friday, March 22
8:00 - 9:00 AM
Hyatt Regency McCormick Place
CC23A

Fund Development Committee
Wednesday, March 20
1:00 - 2:00 PM
Hyatt Regency McCormick Place
Meeting Suite 2

Health Policy Committee
Friday, March 22
1:00 - 2:00 PM
Hyatt Regency McCormick Place
Meeting Suite 4

Board of Directors Meeting
Wednesday, March 20
6:00 - 10:00 PM
Hyatt Regency McCormick Place
Regency B

Orthopaedics Overseas Program
 Directors Council Meeting
Thursday, March 21
5:00 - 6:30 PM
Palmer House Hilton
Wrigley Parlor

Practice Management Committee
Thursday, March 21
7:00 - 8:00 AM
Hyatt Regency McCormick Place
Meeting Suite 4

Annual Luncheon
Friday, March 22
12:00 - 2:00 PM
Palmer House Hilton
Adams

Disaster Management Committee
Thursday, March 21
8:00 - 9:00 AM
Hyatt Regency McCormick Place
Meeting Suite 4

Pediatric Orthopaedic Society of North America (POSNA)
 Board of Directors Meeting
Wednesday, March 20
9:30 AM - 3:30 PM
Hyatt Regency McCormick Place
CC21

Fellowship Directors Meeting
Thursday, March 21
11:00 AM - 12:00 PM
Hyatt Regency McCormick Place
CC10BC

Penn State College of Medicine
 Alumni & Friends Reception
Friday, March 22
6:30 - 8:30 PM
Palmer House Hilton
Medinah Parlor

HWB Meeting
Thursday, March 21
11:00 AM - 2:30 PM
Hyatt Regency McCormick Place
Regency C

Piedmont Orthopedic Society
Mid-Winter Meeting
Friday, March 22
6:30 - 8:30 PM
Sheraton Chicago
Michigan

COTA Meeting
Thursday, March 21
11:30 AM - 2:00 PM
Hyatt Regency McCormick Place
CC22C

Puerto Rico Orthopedic Society (SPOT) Alumni Night
Alumni Reception
Thursday, March 21
7:00 - 10:00 PM
Hilton Chicago
Conference Room 4A

Fellowship Committee
Thursday, March 21
12:00 - 1:00 PM
Hyatt Regency McCormick Place
CC10BC

Membership Committee
Thursday, March 21
12:00 - 1:00 PM
Hyatt Regency McCormick Place
Meeting Suite 2
<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Date</th>
<th>Time</th>
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<tbody>
<tr>
<td><strong>Rush University Medical Center - Orthopaedic Alumni Association</strong></td>
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<tr>
<td>Cocktail Reception</td>
<td>Midwest Orthopaedics at Rush 1611 W. Harrison Street</td>
<td>Friday, March 22</td>
<td>6:00 - 9:00 PM</td>
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<tr>
<td><strong>Ruth Jackson Orthopaedic Society (RJOS)</strong></td>
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<tr>
<td>Board of Directors Meeting</td>
<td>Palmer House Hilton Spire Room</td>
<td>Tuesday, March 19</td>
<td>12:00 - 3:30 PM</td>
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<tr>
<td>2013 Annual Meeting</td>
<td>Palmer House Hilton Monroe</td>
<td>Tuesday, March 19</td>
<td>5:00 - 9:00 PM</td>
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<tr>
<td>2013 Breakfast Meeting</td>
<td>Hyatt Regency McCormick Place Regency A</td>
<td>Wednesday, March 20</td>
<td>6:30 - 10:00 AM</td>
</tr>
<tr>
<td>2013 Resident/Student Workshop</td>
<td>Hyatt Regency McCormick Place Regency A</td>
<td>Wednesday, March 20</td>
<td>10:00 AM - 2:00 PM</td>
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<tr>
<td><strong>Saint Louis University School of Medicine</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Sheraton Chicago Huren</td>
<td>Friday, March 22</td>
<td>6:00 - 9:00 PM</td>
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<tr>
<td><strong>Sandia Orthopaedic Alumni Society</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Fairmont Chicago Ambassador</td>
<td>Friday, March 22</td>
<td>6:30 - 8:30 PM</td>
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<tr>
<td><strong>Scripps LER Fellows</strong></td>
<td></td>
<td>Thursday, March 21</td>
<td>5:30 - 8:00 PM</td>
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<tr>
<td>Reunion</td>
<td>Hyatt Regency McCormick Place CC20-C</td>
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<tr>
<td><strong>SFORP 47th Annual Alumni Reception</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Hyatt Regency Chicago New Orleans</td>
<td>Friday, March 22</td>
<td>6:00 - 9:00 PM</td>
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<tr>
<td><strong>SIROT Executive Committee Meeting</strong></td>
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<tr>
<td>Dinner</td>
<td>Hyatt Regency Chicago Wrigley</td>
<td>Thursday, March 21</td>
<td>6:00 - 9:00 PM</td>
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<tr>
<td><strong>Society of Military Orthopaedic Surgeons</strong></td>
<td></td>
<td>Thursday, March 21</td>
<td>3:00 - 7:00 PM</td>
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<tr>
<td>Board of Directors Meeting</td>
<td>Hyatt Regency McCormick Place Regency A</td>
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</tr>
<tr>
<td>Reception</td>
<td>Hyatt Regency McCormick Place Regency A</td>
<td>Thursday, March 21</td>
<td>7:00 - 10:00 PM</td>
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<tr>
<td><strong>Southern California Orthopedic Institute (SCOI)</strong></td>
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<tr>
<td>Sports Medicine</td>
<td>Friday, March 22</td>
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<tr>
<td>Fellowship Reception</td>
<td>Hyatt Regency Chicago Acapulco</td>
<td>8:00 - 11:00 PM</td>
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<tr>
<td><strong>St. Luke’s Roosevelt Orthopaedics</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Fairmont Chicago Royal</td>
<td>Friday, March 22</td>
<td>7:00 - 9:00 PM</td>
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<tr>
<td><strong>SUMMA/Akron City Hospital</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Hyatt Regency Chicago Burnham</td>
<td>Thursday, March 21</td>
<td>6:00 - 9:00 PM</td>
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<tr>
<td><strong>SUNY Stony Brook Department of Orthopaedics</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Hyatt Regency Chicago Field</td>
<td>Friday, March 22</td>
<td>6:00 - 8:00 PM</td>
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<tr>
<td><strong>Tufts Medical Center &amp; New England Baptist Orthopaedics</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Hyatt Regency Chicago Wrigley</td>
<td>Friday, March 22</td>
<td>6:00 - 8:00 PM</td>
</tr>
<tr>
<td><strong>UAMS Alumni &amp; Arkansas Orthopaedic Society</strong></td>
<td></td>
<td>Thursday, March 21</td>
<td>6:30 - 8:30 PM</td>
</tr>
<tr>
<td>Reception</td>
<td>Hyatt Regency Chicago Wrigley</td>
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<tr>
<td><strong>UC San Diego Orthopaedic Surgery</strong></td>
<td></td>
<td>Thursday, March 21</td>
<td>6:00 - 9:00 PM</td>
</tr>
<tr>
<td>Alumni Reception</td>
<td>John Hancock Building The Signature Room at the 95th 875 N. Michigan Avenue</td>
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<tr>
<td><strong>UCLA Orthopaedic Surgery</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Hyatt Regency Chicago Buckingham</td>
<td>Friday, March 22</td>
<td>6:00 - 8:00 PM</td>
</tr>
</tbody>
</table>
### AAOS Affiliate & Alumni Meetings

#### UCSF Alumni/Abbott Society
Alumni Reception  
Thursday, March 21  
6:00 - 9:00 PM  
Fairmont Chicago  
Regal

#### UMDNJ - Robert Wood Johnson Medical School
Alumni Reception  
Friday, March 22  
5:00 - 7:00 PM  
Chicago Marriott Downtown  
540 N Michigan Avenue

#### University of Chicago
Alumni Reception  
Friday, March 22  
6:30 - 8:30 PM  
Palmer House Hilton  
Grant Park Parlor

#### University of Connecticut Health Center
Alumni Reception  
Thursday, March 21  
6:00 - 8:00 PM  
Hyatt Regency McCormick Place  
CC22-A

#### University of Florida - Department of Orthopaedics
Alumni Reception  
Friday, March 22  
6:30 - 9:30 PM  
John Hancock Building  
The Signature Room at the 95th  
875 N. Michigan Avenue

#### University of Illinois at Chicago
Alumni Reception  
Thursday, March 21  
7:00 - 8:30 PM  
Hyatt Regency McCormick Place  
Regency E

#### University of Iowa
Alumni Reception  
Friday, March 22  
6:00 - 8:00 PM  
Ritz Carlton Hotel  
160 East Pearson Street  
Concorde Room

#### University of Kansas Medical Center - Kansas City
Alumni Reception/Dinner  
Thursday, March 21  
6:30 - 9:00 PM  
Mike Ditka’s Chicago  
100 E. Chesnut

#### University of Kansas-Wichita Orthopaedic Residency Program
Alumni Reception  
Thursday, March 21  
6:30 - 8:00 PM  
Hyatt Regency Chicago  
Dusable

#### University of Louisville
Alumni Reception  
Thursday, March 21  
4:00 - 6:00 PM  
Hyatt Regency McCormick Place  
Meeting Suite 3

#### University of Maryland
Alumni Reception  
Thursday, March 21  
7:00 - 10:00 PM  
Palmer House Hilton  
Water Tower Parlor

#### University of Massachusetts Medical School
Alumni Reception  
Friday, March 22  
6:00 - 9:00 PM  
Hyatt Regency McCormick Place  
CC21-A

#### University of Miami
Alumni Reception  
Friday, March 22  
6:00 - 8:00 PM  
Hilton Chicago  
Boulevard B

#### University of Michigan
Alumni Reception  
Thursday, March 21  
6:00 - 9:00 PM  
Fairmont Chicago  
200 N. Columbus  
Chancellor Room

#### University of Minnesota Residency
Alumni Reception  
Friday, March 22  
6:00 - 8:00 PM  
Palmer House Hilton  
Water Tower

#### University of Missouri Orthopedic Association
Annual Reception  
Thursday, March 21  
6:30 - 8:30 PM  
Hyatt Regency Chicago  
Field

#### University of Pennsylvania
Alumni Reception  
Friday, March 22  
6:00 - 9:00 PM  
Westin Chicago River North  
Grand Ballroom C

#### University of Rochester
Alumni Reception  
Friday, March 22  
7:00 - 11:00 PM  
Fairmont Chicago  
Embassy
<table>
<thead>
<tr>
<th>Institution</th>
<th>Event Details</th>
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<tbody>
<tr>
<td>University of Texas Medical Branch, Department of Orthopaedic Surgery &amp; Rehabilitation</td>
<td>Alumni Reception Thursday, March 21 6:00 - 8:00 PM Four Seasons Hotel Chicago LaSalle Room</td>
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<tr>
<td>University of Toronto</td>
<td>Alumni Reception Thursday, March 21 6:00 - 9:30 PM Fairmont Chicago Embassy</td>
</tr>
<tr>
<td>University of Utah</td>
<td>Alumni Reception Friday, March 22 6:30 - 9:30 PM Sheraton Chicago Ohio</td>
</tr>
<tr>
<td>University of Virginia</td>
<td>Alumni Reception Thursday, March 21 7:00 - 9:00 PM Hyatt Regency McCormick Place CC10-D</td>
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<tr>
<td>University of Wisconsin Orthopedics</td>
<td>Alumni Reception Thursday, March 21 6:00 - 8:00 PM Fairmont Chicago Ambassador</td>
</tr>
<tr>
<td>Vanderbilt Orthopaedic Society Alumni and Friends</td>
<td>Alumni Reception Friday, March 22 6:00 - 8:30 PM Hyatt Regency McCormick Place Regency B</td>
</tr>
<tr>
<td>Washington University/J. Albert Key Society</td>
<td>Alumni Reception Friday, March 22 6:30 - 8:30 PM Fairmont Chicago Chancellor</td>
</tr>
<tr>
<td>Wayne State University Orthopaedic Surgery</td>
<td>Alumni Reception Thursday, March 21 6:00 - 9:00 PM Hyatt Regency McCormick Place C11-B</td>
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<tr>
<td>West Virginia University</td>
<td>Alumni Reception Friday, March 22 5:30 - 7:00 PM Hilton Chicago Private Dining Room 1</td>
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<tr>
<td>Willis C. Campbell Club</td>
<td>Alumni Reception Friday, March 22 6:30 - 8:30 PM Hilton Chicago Boulevard A</td>
</tr>
<tr>
<td>WMU School of Medicine Orthopaedic Program</td>
<td>Reception Thursday, March 21 5:00 - 7:00 PM Hyatt Regency Chicago San Francisco</td>
</tr>
<tr>
<td>Wright State</td>
<td>Alumni Reception Friday, March 22 7:00 - 11:00 PM Palmer House Hilton Millennium</td>
</tr>
<tr>
<td>Yale Orthopedic Association</td>
<td>Reception Thursday, March 21 6:00 - 8:00 PM Palmer House Hilton Grant Park Parlor</td>
</tr>
</tbody>
</table>
Active Fellows

A
Kristopher J. Aalderink, MD
Brian Abell, DO
Scott Marvin Abraham, MD
Mark S. Adickes, MD
Stephen E. Adolfsen, MD
Gurpal Singh Ahluwalia, MD
Sonya Sayed Ahmed, MD
Jaimo Ahn, MD, PhD
Tamara Alexandrov, MD
Richard Todd Allen, MD
Pamela G. Allen, MD
Abigail K. Allen, MD
Gilberto Jose Alvarado, MD
Mohan Anantharajah, MD
Kane L. Anderson, MD
Rebecca L. Bennett Anderson, MD
Terrence Damon Anderson, MD
Shannon Antekeier, MD
Paul T. Appleton, MD
Nicole Louise Arcand, MD
Frank Michael Armocida, MD
Amarpal S. Arora, MD
Nomaan Ashraf, MD
Samer Attar, MD
Joseph B. Byrne, MD
Jonathan E. Buzzell, MD
Brandon Dubose Bushnell, MD
Matthew Donald Bush, MD
Jeffrey L. Bush, MD
Matthew Donald Bush, MD
Brandon Dubose Bushnell, MD
Jonathan E. Buzzell, MD
Joseph B. Byrne, MD

B
Dov A. Bader, MD
Ramin Bagheri, MD
Michael S. Bak, MD
James Douglas Baker, MD
Gregory P. Ballard, MD
Larry S. Bankston Jr, MD
Wahid M. Baqaie, MD
Matthew Daniel Barber, MD
Aaron A. Bare, MD
Ted Marcus Barnett, MD
Jason A. Barry, MD
Aaron Michael Bates, MD
Stacy Gerald Beaty, MD
C. Dustin Bechtold, MD
Asheesh Bedi, MD
Jerome M. Benavides, MD
Miguel Arturo Berastain Jr, MD
Ryan Kirkhus Bergeson, MD
Patrick M. Birmingham, MD
Gary Takashiro Blum, MD
Cale Walter Bonds, MD
Herman G. Botero, DO
Torey Paul Botti, MD
Joseph M. Bowen, MD
Timothy C. Bowlin, MD
James I. Boyd III, MD
James William Boyle, MD
Letitia Bradford, MD
Mark L. Brandon, MD
Daniel Gabe Branham, MD
Joanna Ganea Branstetter, MD
James Louis Brezina Jr, MD
Glenn A. Brien, MD
Brian K. Brighton, MD
Sean Joseph Brimacombe, MD
Brian T. Brisco, MD
Ouida Lynna Brown, MD
Michael H. Brown, MD
Brandon Thomas Bruce, MD
Lance Michael Brunton, MD
Daniel Bullock, MD
Chadler Ryan Burgoyne, MD
Mohammad Umar Burney, MD
Michael W. Burris, MD
Jeffrey L. Bush, MD
Matthew Donald Bush, MD
Brandon Dubose Bushnell, MD
Jonathan E. Buzzell, MD
Joseph B. Byrne, MD

C
Julian A. Cameron, MD
Winfield Campbell Jr, MD
David R. Capiola, MD
Kendall E. Carll, MD
Sam Carter, MD
Jason D. Carter, MD
Dara Chafik, MD, PhD
Michael Su Chang, MD
Seth A. Cheatham, MD
Ryan Chen, MD
Ankur Chhabria, MD
Tony J. Choi, MD
Joseph Young Choi, MD, PhD
Cory G. Christiansen, MD
Benjamin I. Chu, MD
Angelo Ciminelli, MD
Jonathan James Clabeaux, MD
William C. Clark Jr, MD
Clifford Dana Clark, MD
Russell Jay Clark, MD
Avnish Neil Clerk, MD
Mark VanDuser Clough, MD
David Alan Coats, MD
Diana Conaway, MD
Christopher Mark Cook, MD
Alfred Cook, MD
Minton Truitt Cooper, MD
Nicola Shamsey Corbett, MD
Jonathan P. Cornelius, MD
Wesley K. Cox, MD
Michael Joseph Cox, MD
Samuel C. Coy, MD
Marcis A. Craig, MD
Charles Hopkins Crawford III, MD
Joshua A. Crum, MD
Juan Esteban Cuartas, MD
Mary Rose Anne Cunningham-Bonan, MD

D
Michael Dabbah, MD
Michael Edward Darowish, MD
Jason C. Datta, MD
Jason A. Davis, MD
D. Nicole Deal, MD
Michael DeFranco, MD
Adam D. Derhake, MD
Robert Corwin Detch, MD
Clinton J. Devin, MD
Christopher Bateman Dewing, MD
Robert C. Dewes, MD
David Brian Dickerson, MD
Matthew V. Diltz, MD
Paul T. Dinh, MD
Christian P. Dipaola, MD
Matthew J. DiPaola, MD
Alexander Rose Disston, MD
Joseph Karl Eichinger, MD
E
Enaven Duggal, MD
Michael Duffy, MD
Raymond Robert Drabicki, MD
Christopher T. Donaldson, MD
Raymond Robert Drabicki, MD
Michael Duffy, MD
Naven Duggal, MD

E
Josef Karl Eichinger, MD
Patrick Roan Ellender, MD
Michael Elman, MD
Benton A. Embloy, MD
Christopher Edward Emond, MD
William Enright, MD
Michael T. Espiritu, MD
Aaron C. Eubanks, MD
Jason David Eubanks, MD
Andrea Envenski, MD
Todd A. Fairchild, MD
James M. Fair, MD
Rory C. Farris, MD
Scott Thomas Ferry, MD
Anthony Festa, MD
Zahir Fishtkin, MD
Brian Anthony Fissel, MD

H
Marcus James Haemmerle, MD
Christopher A. Hajnik, MD
William Michael Hakeos, MD
J. Douglas Halton Jr, MD
Stephen Edward Hanks, MD
Adam True Harder, MD

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AAOS Class of 2013

Kyle P. Ritter, MD
William Matthew Roberson, MD
Richard Judd Robins, MD
Mitchel S. Robinsson, MD
Jason Franklin Robison, MD
Ramon Francisco Rodriguez, MD
Gregory J. Roehrig, MD
Neil Romero, MD
Harris Samuel Rose, MD
Brian Jay Rosenberg, MD, MSc
Seth Rosenzweig, MD
James Thomas Rosneck, MD
Matthew Ian Rudloff, MD
James Anthony Ryan, MD

Jonathan Patrick Smerek, MD
Ryan Matthew Slechta, MD
Anshuman Singh, MD
James Paul Sieradzki, MD
Roman A. Sibel, MD
Michael Shin, MD
Adam L. Shimer, MD
Derek S. Shia, MD
Robert A. Sherman, MD
Jonathan Christopher Shaver, MD
Nirav Shah, MD
Michael John Serra, MD
Paul Bradley Segebarth, MD
Joseph Frank Scordino, MD
Paul Bradley Segebarth, MD
Michael John Serra, MD
 Nirav Shah, MD
Jonathan Christopher Shaver, MD
Jessica Leigh Shelloch, MD
Robert A. Sherman, MD
James Christopher Sherrell, MD
Derek S. Shia, MD
Adam L. Shimer, MD
Michael Shin, MD
Shyam M. Shridharani, MD
Roman A. Sibel, MD
James Paul Sieradzki, MD
Anshuman Singh, MD
Ryan Matthew Slechta, MD
Jonathan Patrick Smerek, MD
Matthew V. Smith, MD
Ryan R. Snyder, MD
Joshua T. Snyder, MD
Jonathan R. Snyder, MD
David H. Sohn, MD
Frederick Suh Song, MD
Vivek Sood, MD
Bradley Sparks, MD
Craig J. Spurdlle, MD
Kurtis Scott Staples, MD
Jeremy O’Neal Statton, MD
Eric M. Stehly, MD
Joshua D. Stein, MD
Bruce A. Stewart, MD
Ian Andrew Stine, MD
K. Brandon Strenge, MD
David Howard Strohman, MD
Jacob S. Stueve, MD
Eric S. Stufflemann, MD
Jinsil Sung, MD
Justin Browning Swan, MD
Matthew Jay Swick, MD
Sascha Darius Taghizadeh, MD
Neil Arif Tayyab, MD
Cary R. Templin, MD
Richard Justin Thom, MD
Thomas Ward Throckmorton, MD
Jason Christopher Tinley, MD
Stephen Leonard Tocci, MD
Albert Tom, MD
Charles Victor Toman, MD
Charles Toulson, MD
Patrick Christopher Toy, MD
Michael R. Tracy, MD
Sean C. Tracy, MD
Tuan Christopher Tran, MD
Andrew Cooper Trueblood, MD
Peter C. Tsai, MD
Kimberly K. Tucker, MD
Christopher J. Tucker, MD
Jonathan L. Tueting, MD
Jennifer Michele Ty, MD
Wakenda K. Tyler, MD
Max Tyorkin, MD

Sascha Darius Taghizadeh, MD
Neil Arif Tayyab, MD
Cary R. Templin, MD
Richard Justin Thom, MD
Thomas Ward Throckmorton, MD
Jason Christopher Tinley, MD
Stephen Leonard Tocci, MD
Albert Tom, MD
Charles Victor Toman, MD
Charles Toulson, MD
Patrick Christopher Toy, MD
Michael R. Tracy, MD
Sean C. Tracy, MD
Tuan Christopher Tran, MD
Andrew Cooper Trueblood, MD
Peter C. Tsai, MD
Kimberly K. Tucker, MD
Christopher J. Tucker, MD
Jonathan L. Tueting, MD
Jennifer Michele Ty, MD
Wakenda K. Tyler, MD
Max Tyorkin, MD

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Michael A. Vazquez, MD
Oscar Vazquez, MD
Eleanor Fisher von Stade, MD

W
Matthew Robert Wagner, MD
Chad Alan Waits, MD
Aaron J. Wallace, MD
Tony Wanich, MD
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Russell A. Ward, MD
Brett Thomas Weinzapel, MD, PhD
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Kip R. Wilkins, MD
Ryan Edward Will, MD
Nicholas Joseph Wills, MD
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Michael Allen Wind, MD
Bret Ryan Winter, MD
Michael Allen Wind, MD
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Y
Gautam P. Yagnik, MD
Shiraz Ahmad Younas, MD
Charles Robert Young, MD

Z
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<td>Nawroze Shinwary, MD</td>
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<td><strong>New International Affiliate Members</strong></td>
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<tr>
<th>Country</th>
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<tr>
<td><strong>Cyprus</strong></td>
<td>Kostas Kontozis, MD</td>
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<td><strong>Denmark</strong></td>
<td>Anders Kunov, MD</td>
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<td>Thailand</td>
<td>Chayanin Angthong, MD</td>
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In Memoriam

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<td>Robert G. Addison, MD</td>
<td>Unknown</td>
<td>Chicago, IL</td>
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<tr>
<td>Borden Bachynski, MD</td>
<td>7/7/2010</td>
<td>Regina, SK</td>
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<tr>
<td>Mahmoud Elnokrash Ibrahim Bakr, MD</td>
<td>10/12/2012</td>
<td>Cairo, Egypt</td>
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### In Memoriam

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The primary focus of the orthopaedic profession is care of the patient. As part of their lifetime commitment to patients, orthopaedic surgeons must maintain specialized knowledge and skills through participation in continuing medical education (CME) programs, seminars, and professional meetings. Often, these professional functions are sponsored by the manufacturers of medical devices, biologics, drugs and other items used in the care of the patient (Product). These businesses play an important role in the support of CME events and the development of new technologies. This collaborative effort ensures that patients have the best outcomes through the invention and testing of new technology, research and evaluation of existing technology, and continued education of orthopaedic surgeons.

Cooperative relationships between orthopaedic surgeons and industry benefit patients. Orthopaedic surgeons are best qualified to provide innovative ideas and feedback, conduct research trials, serve on scientific advisory boards, and serve as faculty to teach the use of new technology. Orthopaedic surgeons, in an effort to improve patient care, rely on industry to bring their creative ideas to fruition. A collaborative relationship between orthopaedic surgeons and industry is necessary to improve patient care, but must be carefully scrutinized to avoid pitfalls of improper inducements, whether real or perceived.

A potential conflict of interest exists when professional judgment concerning the well being of the patient has a reasonable chance of being influenced by other interests of the physician. Disclosure of a conflict of interest is required in communications to patients, the public and colleagues. Orthopaedic surgeons, like all physicians, have an ethical obligation to present themselves and the services they provide to patients in a clear and accurate manner.

When faced with a potential conflict of interest that cannot be resolved, an orthopaedic surgeon should consult with colleagues or an institutional ethics committee to determine whether there is an actual or potential conflict of interest and how to address it.

These Standards of Professionalism draw from the aspirational Code of Medical Ethics and Professionalism for Orthopaedic Surgeons that appears in bold italics. The statements that follow the aspirational Code establish the mandatory minimum standards of acceptable conduct for orthopaedic surgeons when engaged in relationships with industry. Violations of these minimum standards may serve as grounds for a formal complaint to and action by the AAOS as outlined in the AAOS Bylaws Article VIII.

The Standards of Professionalism on Orthopaedic Surgeon - Industry Relationships apply to all AAOS Fellows and Members. Only an AAOS Fellow or Member may file complaints of an alleged violation of these Standards of Professionalism regarding another AAOS Fellow or Member.

Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, I.A.: The orthopaedic profession exists for the primary purpose of caring for the patient. The physician-patient relationship is the central focus of all ethical concerns.

Mandatory Standards:
1. An orthopaedic surgeon shall, while caring for and treating a patient, regard his or her responsibility to the patient as paramount.
2. An orthopaedic surgeon shall prescribe products or other treatments primarily on the basis of medical considerations and patient needs, regardless of any direct or indirect interests in or benefit from industry.

Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, I.I. C.: The orthopaedic surgeon should obey all laws, uphold the dignity and honor of the profession, and accept the profession’s self-imposed discipline. Within legal and other constraints, if the orthopaedic surgeon has a reasonable basis for believing that a physician or other health care provider has been involved in any unethical or illegal activity, he or she should attempt to prevent the continuation of this activity by communicating with that person and/or identifying that person to a duly-constituted peer review authority or the appropriate regulatory agency. In addition, the orthopaedic surgeon should cooperate with peer review and other authorities in their professional and legal efforts to prevent the continuation of unethical or illegal conduct.

Mandatory Standard:
3. An orthopaedic surgeon shall comply with all relevant federal and state conflict of interest and fraud and abuse laws.

Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, III.A.: The practice of medicine inherently presents potential conflicts of interest. When a conflict of interest arises, it must be resolved in the best interest of the patient. The orthopaedic surgeon should exercise all reasonable alternatives to ensure that the most appropriate care is provided to the patient. If the conflict of interest cannot be resolved, the orthopaedic surgeon should notify the patient of his or her intention to withdraw from the relationship.

Mandatory Standards:
4. An orthopaedic surgeon shall, when treating a patient, resolve conflicts of interest in accordance with the best interest of the patient, respecting a patient’s autonomy to make health care decisions.
5. An orthopaedic surgeon shall notify the patient of his or her intention to withdraw from the patient-physician relationship, in a manner consistent with state law, if a conflict of interest cannot be resolved in the best interest of the patient.
Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, III.C.:

When an orthopaedic surgeon receives anything of significant value from industry, a potential conflict exists which should be disclosed to the patient. When an orthopaedic surgeon receives inventor royalties from industry, the orthopaedic surgeon should disclose this fact to the patient if such royalties relate to the patient’s treatment. It is unethical for an orthopaedic surgeon to receive compensation of any kind from industry for using a particular product. Fair market reimbursement for reasonable administrative costs in conducting or participating in a scientifically sound research clinical trial is acceptable.

Mandatory Standards:

6. An orthopaedic surgeon shall decline subsidies or other financial support from industry, except that an orthopaedic surgeon may accept non-monetary items which benefit patients or serve an educational function and which have a fair market value of less than $100.

7. An orthopaedic surgeon who has influence in selecting a particular product or service for an entity shall disclose any relationship with industry to colleagues, the institution and other affected entities.

8. An orthopaedic surgeon shall disclose to the patient any financial arrangements with industry that relate to the patient’s treatment, including the receipt of inventor royalties, stock options or paid consulting arrangements with industry.

9. An orthopaedic surgeon shall accept no direct financial inducements from industry for utilizing a particular product or for switching from one manufacturer’s product to another.

10. An orthopaedic surgeon shall enter into consulting agreements with industry only when such arrangements are established in advance and in writing to include evidence:

• That there is an actual need for the service;
• That the provision of the service will be verified;
• That the compensation for services provided by the orthopaedic surgeon is based on fair market value;
• That the compensation for services provided by the orthopaedic surgeon is not based on the volume or value of business he or she generates; and
• That reimbursement for reasonable and actual expenses, such as modest meals, travel and lodging, incurred by the orthopaedic surgeon is based on appropriate need and accurate documentation.

11. An orthopaedic surgeon shall consult at only those meetings that are conducted in clinical, educational, or conference settings conducive to the effective exchange of basic science and/or clinical information.

Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, IV.A.:

The orthopaedic surgeon continually should strive to maintain and improve medical knowledge and skill and should make available to patients and colleagues the benefits of his or her professional attainments. Each orthopaedic surgeon should participate in continuing medical educational activities.

Mandatory Standards:

12. An orthopaedic surgeon shall accept no financial support from industry to attend industry-related social functions where there is no educational element.

13. An orthopaedic surgeon who is attending a CME event shall accept no industry financial support for attendance at a CME event. Residents and orthopaedists-in-training may accept an industry grant to attend a CME event if they are selected by their training institution or CME sponsor and the payment is made by the training program or CME sponsor.

The industry entity funding the grant shall have no influence in the selection of the individual recipients. Bona fide faculty members at a CME event may accept industry-supported reasonable honoraria, travel expenses, lodging and modest meals from the conference sponsors.

14. An orthopaedic surgeon, when attending an industry-sponsored non-CME educational event, shall accept only tuition, travel and modest hospitality, including meals and receptions. The time and focus of the event must be for the presentation of bona fide scientific, educational or business information or training.

15. An orthopaedic surgeon, when attending an industry-sponsored non-CME educational event, shall accept no financial support for meals, hospitality, travel, or other expenses for his or her guests or for any other person who does not have a bona fide professional interest in the information being shared at the meeting.

Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, III.D.:

An orthopaedic surgeon reporting on clinical research or experience with a given procedure or product must disclose any financial interest in that procedure or product if the orthopaedic surgeon or any institution with which that orthopaedic surgeon is connected has received anything of value from its inventor or manufacturer.

Mandatory Standards:

16. An orthopaedic surgeon, when reporting on clinical research or experience with a given procedure or product, shall disclose any financial interest in that procedure or product if he or she or any institution with which he or she is connected has received anything of value from its inventor, manufacturer, or distributor.

17. An orthopaedic surgeon who is an investigator shall make his or her best efforts to ensure at the completion of an industry-sponsored study that relevant research results are reported and reported truthfully and honestly with no bias or influence from funding sources, regardless of positive or negative findings.
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All presenters and co-authors must disclose financial relationships in the AAOS Orthopaedic Disclosure Program. The disclosure must be entered or updated as of April 1, 2013. Abstracts will not be graded without all disclosures.

2014 Annual Meeting
March 11 - 15
New Orleans, LA
Participants Index
Index

2013 Participants Index

Abane, Lamine .................................. 79
Abboud, Joseph A.................................. 148
Abdel, Matthew P.................................. 114
Abdelbar, Hesham .............................. 66, 69, 130, 170, 191
Abdellah, Adham ................................. 102, 263
Abdulian, Michael ................................. 278
Abdul-Rahim, Zainab ............................... 118
Abe, Hirohito ........................................ 209
Abe, Satomi .......................................... 74
Abe, Shinichi ......................................... 114
Abe, Yuichiro ......................................... 165
Abidi, Nicholas A.................................. 112
Abitbol, Jean-Jacques ......................... 285
Abjornson, Celeste ................................. 96
Abolghasemian, Mansour ..................... 199
Abouaf, Albert J .................................. 52, 376
Abraham, John L .................................. 266-267
Ahmad, Syed ........................................ 189
Adcock, Dorothy M ................................. 259
Adelani, Muyibat A ................................. 147
Adams, Samuel B ................................. 345
Adams, Mary Jo .................................. 357
Adams, Julie E ....................................... 369
Adams, John D ....................................... 381
Adams, John F ....................................... 405
Adams, Brian D ..................................... 429
Adams, Lucas ........................................ 441
Adams, Kyle ......................................... 453
Adams, Brian ........................................ 465
Adams, Barry ........................................ 477
Adams, John ......................................... 489
Adams, Brian ........................................ 491
Adams, Barry ........................................ 503
Akiyama, Keisuke .................................. 70
Alden, Mattias ....................................... 72
Alaia, Michael J ..................................... 136
Alamanda, Vignesh ............................... 244
Alamin, Todd ........................................ 246
Alapatt, Michale .................................... 186
Albret, Todd J ........................................ 252
Albrecht, Mark ...................................... 136
Albright, John P .................................... 96
Alexander, A Herbert ......................... 46, 340
Alexander, Gerald .................................. 68
Alexander, Ian J ...................................... 211
Alexandrov, Peter ..................... 226, 229, 237
Alexer, Michael M ................................. 136
Algin, Sheila .......................................... 242
Ahajjara, Fadi Y ..................................... 156, 174
Alijanipour, Pouya ................................. 109
Aliprandi, Alberto ................................. 75, 89, 167
Alam, Ahmad Fouda A ............................. 246
Alam, Ahmad S ...................................... 246
All, Answorh A ...................................... 114
Alluri, Ravi .......................................... 127
Al-Majahy, Mohammed A ...................... 143
Almosa, Suleiman ................................ 209
Alolabi, Bashar ...................................... 92
Alpaugh, Kyle ....................................... 164
Alsousou, Joseph ...................... 107, 111, 252
Alta, Tjaco D .......................................... 150
Althausen, Peter L ....... 61, 81-82, 93, 119, 214, 230, 252
Alton, Timothy B ................................. 273
Amadio, Peter C ..................................... 273
Amado, Paulo ....................................... 187, 249
Amar, Eyal .......................................... 167
Ambati, Divya ....................................... 110
Amendola, Annunziato ......................... 43-44, 49, 68, 135, 143, 145, 181, 244, 245, 278
Amees, Christopher ............................... 58
Amir, Anish .......................................... 146
Amir, Nirav H ....................................... 207, 219
Amimnine, Afshin ......................... 131, 261, 265
Ammeen, Debbie .................................... 220
An, Howard S ......... 203-204, 210, 283
An, Hai Nari ......... 100, 192
Anand, Amritjal ...................... 102, 145
Anand, Bobby ....................................... 136
Anand, Neel .......................................... 94
Anderson, Allen F ....... 83, 94, 112, 150-151, 259
Anderson, Christian N ........................... 116
Anderson, Christophor R ...................... 178
Anderson, Jani L .................................. 192
Anderson, D Greg ................................ 195
Anderson, David W ............................... 242
Anderson, Donald D ............................. 108
Anderson, Edward R .............................. 179
Anderson, Frederick A ......................... 218
Anderson, Jade A ....... 160-161, 211, 230, 253
Anderson, John G .................................. 179
Anderson, Kyle ..................................... 199
Anderson, Lucas .................................. 145
Anderson, Mike ................................... 225
Anderson, Paul A .................................. 203
Anderson, Robert .................................. 99
Anderson, Sarah .................................. 148
Anderson, Gunnar B .............................. 108, 235
Ando, Akira ........................................ 166
Ando, Kei ............................................ 161
Andrade, Tony J ....................... 211, 253
Andrea, Antonini .................................. 227
Andreaelli, Carlos ................................ 137
Andreu, Dimosthenis ......................... 64, 174
Andrews, Barry .................................... 204
Andrews, Karen L .................................. 263
Andriolli, Luca ..................................... 137
Ang, Li ........................................... 71, 164, 269, 274
Angeline, Michael E .............................. 237
Angelini, Andrea .................................. 260
Angelo, Richard L ....... 58, 61, 64, 68, 96, 112, 137, 176, 197, 228, 232, 243, 244, 251
Angerame, Marc .................................. 169
Angers, Michelle ......................... 127, 274
Anglen, Jeffrey ..................................... 166
Anjananantuskhan, Chankia ................. 267
Anthong, Chayanin ....................... 100, 153, 176
Anjjar, Leon ......................................... 76
Anissipour, Alireza .................. 260
Annis, Prokopis ........... 130-130, 260
Annulis, Brian D ................................. 259
Anract, Philippe ......................... 115, 269
Anthony, lain ....................................... 286
Antony, Kallur K .................................... 87
Anvar, Iqbal A ...................................... 284
Anz, Adam W ....................................... 261
Anz, Alan G .......................................... 150
Aoki, Stephen K ....... 107, 168, 201
Aono, Kiyoshi ...................................... 249
Apostolo, Alessandro ...................... 64
Apthorp, Hugh ..................................... 261
Aqi, Adeel ............................................ 99
Arai, Eisuke ........................................ 110
Arau, Yuji ........................................... 62, 117, 135, 146, 150
Arami, Amir ....................................... 174
Arango, Dillon .................................... 115
Araujo, Paulo H ................................. 103
Archeacon, Michael T ......................... 109
Archer, Kristin ................................. 68, 112, 119
Archibek, Michael J ......................... 166
Arden, Nigel ........................................ 91
Arendt, Elizabeth A ......................... 286
Argenson, Jean-Noel A ....................... 141
Argento, Giuseppe ...................... 86
Argintar, Evan H .................................. 128
Armagnani, Sheyan ......................... 100
Armstrong, April D ...................... 126, 144
Armstrong, Douglass G ...................... 223
Arnold, William V ............................... 212
Arnot, Nele ................... 60, 166, 222, 233
Arora, Armapal S ......................... 112, 172, 190, 217
Arsoy, Diren ....................................... 246
Arthur, Angus ..................................... 101
Arsenal, Marisol ................................. 182
Ashbury, Jahangir ......................... 82
Assini, Joseph ..................................... 270
Astarita, Emanuel ...................... 97, 225
At, Yurika ........................................... 237
Atanda, Abiola ...................... 111, 159, 170, 199
Atanda, Alfred ......................... 217
Atanassian, Edward A ................. 231
Atans, William ...................... 108, 201
Atwal, George S .................................. 198
Atkinson, Kim ..................................... 285
Atlan, Franck ...................................... 109
Atoun, Ethid ........................................ 225
Attar, Fahad ....................................... 177
Attarian, David ......................... 279
Au, Brigham K .................................. 225
Au, Hugh K .......................................... 91
Awb, Carl-Eric .................................... 99, 164, 174, 276
Auerbach, Joshua D ......................... 188
Augustin, Salvador ...................... 63, 100
Austin, Matthew ....................... 264
Avant, Kristopher ................... 109, 143, 246
Aversano, Michael W ......................... 177
Avery, Anthony ................................. 246
Avian, Alexander ..................... 203, 215
Ayeni, Olufemi ................................... 251
Ayers, David C ................................. 180
Aziar, Frederick M ...................... 58, 94, 172
<p>| Chun, Dong-il | 142 |
| Chun, Kyle F | 274 |
| Chun, Yong-Min | 149, 255, 270 |
| Chung, Chin Y | 80, 168 |
| Chung, Jun Young | 97 |
| Chung, Kyung-Chi | 259 |
| Chung, Nam Yun | 254 |
| Chung, Seok Won | 88, 254 |
| Chuntarasap, Tapanut | 190 |
| Chutkan, Norman B | 254 |
| Chun, Dong-Il | 434 |
| Cook, Jay B | 117, 205, 209 |
| Colbrunn, Robb | 267, 270 |
| Col, Brian J | 43-44, 111, 116, 159, 181, 287 |
| Cole, Peter A | 64, 68, 256, 277, 280 |
| Coleman, Nathan W | 142 |
| Coleman, Struan H | 188-189 |
| Collier, John P | 213, 226, 233 |
| Collin, Philippe | 87, 151 |
| Collinge, Cory A | 99, 102, 183 |
| Collins, Daraan | 79 |
| Collins, Jamie E | 199 |
| Collins, Jason A | 218 |
| Collins, Mark | 273 |
| Collins, Michael W | 170 |
| Collins, Rachel | 137 |
| Collo, Gianluca | 215 |
| Comer, Brendan J | 210 |
| Communi, Sesh | 192 |
| Comstock, Dawn | 170 |
| Conge, Paulette | 126, 268 |
| Congiusta, Francesco | 73 |
| Conkle, Sean B | 286 |
| Conley, Anthony P | 282 |
| Conn, Kevin | 225 |
| Connell, Patricia L | 251 |
| Connelly, Camille | 166 |
| Connelly, Claire L | 165 |
| Conner, Devin | 60 |
| Connolly, Keith P | 165 |
| Connolly, Susan | 178 |
| Connors, Daniel M | 273 |
| Conrad, Bryan P | 138 |
| Conrad, Ernest U | 178, 180 |
| Conte, Stan | 150 |
| Cook, Crist R | 116 |
| Cook, James L | 116, 173, 186, 219 |
| Cook, Jay B | 98, 186 |
| Coombs, Matthew | 141, 284 |
| Coon, Thomas M | 235 |
| Cooper, Herbert J | 114, 184, 214, 222 |
| Cooperman, Daniel R | 177 |
| Cope, Robert | 228 |
| Copley, Lawson A | 132 |
| Cordasco, Frank A | 269 |
| Cordill, Ronda | 133 |
| Cornelius, Andrew L | 100 |
| Cornwall, Roger | 70 |
| Corten, Kristoff | 212, 231 |
| Csorgo, Andrew J | 218 |
| Costa, Christopher R | 175, 196, 240 |
| Costantini, Alberto | 204 |
| Costantini, Julian | 228 |
| Costouros, John G | 163 |
| Coughlin, Ralph R | 84 |
| Courpied, Jean-Pierre | 137, 160 |
| Court-Brown, Charles M | 165 |
| Covey, Dana C | 94 |
| Cox, Christopher | 89 |
| Coyne, Ellen | 262, 266 |
| Craft, David W | 240 |
| Craig, Edward V | 75, 94, 123, 144, 152, 193, 258 |
| Craik, Jonathan D | 119 |
| Cram, Peter | 179 |
| Crane, John K | 163 |
| Cravino, Mattia | 215 |
| Crawford, Alvin | 286 |
| Crawford, Charles H | 262 |
| Crawford, Dennis C | 98, 159, 271 |
| Crawford, Haemish A | 144 |
| Creevy, William R | 146 |
| Crist, Brett D | 64, 173, 278 |
| Critchley, Rebecca J | 235, 241 |
| Cro, Suzie | 169 |
| Crocco, Lauren | 103 |
| Cron, Greg | 211 |
| Crook, Karla | 95 |
| Crosby, Colin G | 202 |
| Crosby, Lynn A | 71, 151-152, 157, 193 |
| Crosby, Samuel | 153, 167, 179-180 |
| Cross, Michael B | 136, 213, 223 |
| Crouch, Sarah | 189 |
| Crowther, Mark A | 186 |
| Cruz-Pardos, Ana | 95 |
| Cuellar, Alberto D | 252 |
| Cuellar, Vanessa I | 164 |
| Cuff, Derek J | 150 |
| Cuff, Germaine | 81 |
| Cui, Quanjun | 233 |
| Culp, Randall W | 89, 247-248 |
| Cunningham, Matthew E | 261 |
| Cunningham, Tommy J | 115 |
| Cuomo, Anna V | 250 |
| Cuomo, Frances | 194 |
| Currie, Barbara H | 213, 226 |
| Currie, Bradford L | 260 |
| Currie, John H | 60, 213, 226 |
| Curtin, Brian M | 272 |
| Curtis, Daniel M | 204 |
| Cusher, Fred D | 65, 105, 125, 181 |
| Cvetanovich, Gregory L | 117 |
| Czyzewska, Anna | 252 |
| D’Allemand, Jean-Claude | 174 |
| D’Amato, Michele | 204 |
| D’Apuzzo, Michele R | 60, 196, 222 |
| D’Elia, Elizabeth M | 134 |
| D’Lima, Darryl D | 237 |
| Daffner, Scott D | 138 |
| Daher, Robert J | 97, 209 |
| Dahlin, William J | 178 |
| Dahn, Diane L | 72, 80, 85, 114-115, 148, 181, 273 |
| Daigle, Meghan E | 214 |
| Daigre, Justin | 276 |
| Dailey, Elizabeth A | 118 |
| Dailey, Jacqueline A | 176, 242 |
| Dall, Tim | 158 |
| Daluisi, Aaron | 197-198, 286 |
| Dalury, David F | 61, 85, 182, 239, 242 |
| Daly, Michael C | 138 |
| Dang, Alexis | 267 |
| Dangles, Chris J | 77 |
| Daniels, Alan H | 192, 200 |
| Daniels, Marissa | 128 |
| Daniels, Timothy R | 142, 145 |
| Daram, Shiva P | 133 |
| Darwallach, Jimmy H | 89 |
| Darwiche, Hussein | 229 |
| Datta, Neil | 63 |
| Dattilio, Jonathan R | 214, 240 |
| Daubs, Michael D | 101, 107-108, 145, 201, 263-265 |
| David, Karli | 149 |
| David, Tal S | 208, 210 |
| Davidson, Bruce | 118 |
| Davidson, Done | 178, 180 |
| Davidson, David | 77, 229, 239 |
| Davidson, Jerome | 240 |
| Davidson, Philip A | 195 |
| Davignon, Isabelle | 192 |
| Davis, Aileen M | 127 |
| Davis, Charles M | 240 |
| Davis, Edward T | 66 |
| Davis, Kenneth | 238 |
| Davis, Jon R | 123 |
| Davids, Susan | 118 |
| Davidenko, Darin | 178, 180 |
| Davidenko, David | 77, 229, 239 |
| Davidenko, Jerome | 240 |
| Davison, Philip A | 195 |
| Davignon, Isabelle | 192 |
| Davis, Aileen M | 127 |
| Davis, Charles M | 240 |
| Davis, Edward T | 66 |
| Davis, Kenneth | 238 |
| Davis, Michael L | 99 |
| Davis, Max | 273 |
| Davis, William T | 82 |
| Dawson, John R | 133 |
| Day, Charles S | 182, 246 |
| Day, Jonathan | 192 |
| Day, Judd | 166 |
| Day, Michael S | 82 |
| Day, Romain | 103 |
| Daylamani, Dan A | 239 |
| de la Huerta, Fernando | 341 |
| Dearborn, John T | 125, 242 |
| DeBerardino, Thomas M | 59, 71 |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debrah, Kevin</td>
<td>189</td>
</tr>
<tr>
<td>DeBriz, James N</td>
<td>99</td>
</tr>
<tr>
<td>Debski, Richard E</td>
<td>272</td>
</tr>
<tr>
<td>De Carli, Angelo</td>
<td>189</td>
</tr>
<tr>
<td>Declercq, Geert</td>
<td>94</td>
</tr>
<tr>
<td>De Corte, Ronny</td>
<td>240</td>
</tr>
<tr>
<td>Decroooc, Lauryl</td>
<td>150</td>
</tr>
<tr>
<td>Ded, Ozgur</td>
<td>249</td>
</tr>
<tr>
<td>Deelihan, David</td>
<td>67, 100, 106, 184, 235, 241</td>
</tr>
<tr>
<td>Dee, Rachel M</td>
<td>107</td>
</tr>
<tr>
<td>De Fine, Marcello</td>
<td>203, 210, 283</td>
</tr>
<tr>
<td>deForest Keys, David</td>
<td>209</td>
</tr>
<tr>
<td>De Gasperis, Nicola</td>
<td>204</td>
</tr>
<tr>
<td>deGravelle, Martin</td>
<td>198</td>
</tr>
<tr>
<td>DeHaan, Alexander</td>
<td>147, 255, 271</td>
</tr>
<tr>
<td>Dehoux, Emile</td>
<td>118</td>
</tr>
<tr>
<td>Deie, Masataka</td>
<td></td>
</tr>
<tr>
<td>Deirmengian, Carl A</td>
<td>59, 229</td>
</tr>
<tr>
<td>Deirmengian, Gregory K</td>
<td>59, 185, 229</td>
</tr>
<tr>
<td>Dejour, David</td>
<td>85</td>
</tr>
<tr>
<td>Dekutoski, Mark B</td>
<td>94, 159, 260</td>
</tr>
<tr>
<td>De La Fuente, Paulina</td>
<td>208</td>
</tr>
<tr>
<td>Deland, Jonathan T</td>
<td>109, 155, 214</td>
</tr>
<tr>
<td>Delaney, Ruth A</td>
<td>255</td>
</tr>
<tr>
<td>Delanois, Ronald E</td>
<td>66, 147, 184, 239, 243</td>
</tr>
<tr>
<td>De La Rocha, Adriana</td>
<td>79, 140, 248</td>
</tr>
<tr>
<td>Del Core, Michael</td>
<td>100</td>
</tr>
<tr>
<td>Del Gaizo, Daniel J</td>
<td>113, 232</td>
</tr>
<tr>
<td>Dell, Paul C</td>
<td>248</td>
</tr>
<tr>
<td>Della, Alejandro M Gonzalez</td>
<td>227</td>
</tr>
<tr>
<td>Della-Orlan, Shelley</td>
<td>121</td>
</tr>
<tr>
<td>Della Rocca, Gregory J</td>
<td>64, 172, 278</td>
</tr>
<tr>
<td>Della Valle, Craig J</td>
<td>74, 93, 101, 105, 122, 134, 137, 158, 175-176, 184, 194, 196, 212, 214, 229, 235</td>
</tr>
<tr>
<td>Delos, Demetris</td>
<td>218-219</td>
</tr>
<tr>
<td>Del Rossi, Gianluca</td>
<td>138</td>
</tr>
<tr>
<td>Delsole, Edward M</td>
<td>83</td>
</tr>
<tr>
<td>DeLuca, Peter F</td>
<td>248</td>
</tr>
<tr>
<td>Deluce, Simon R</td>
<td>197-198</td>
</tr>
<tr>
<td>Deluzio, Kevin</td>
<td>259</td>
</tr>
<tr>
<td>De Mee, Federico</td>
<td>204</td>
</tr>
<tr>
<td>Demetracopolous, Constantine</td>
<td>155, 214, 270</td>
</tr>
<tr>
<td>Deml, Moritz</td>
<td>91</td>
</tr>
<tr>
<td>Denspey, Ian J</td>
<td>193</td>
</tr>
<tr>
<td>Demura, Satoru</td>
<td>140, 260-261, 109-110, 192, 244, 252</td>
</tr>
<tr>
<td>Dijk, C N Van</td>
<td>76, 171</td>
</tr>
<tr>
<td>Dijkmman, Bart Van</td>
<td>166</td>
</tr>
<tr>
<td>Dilisio, Matthew F</td>
<td>259</td>
</tr>
<tr>
<td>Dimar, John R</td>
<td>69, 159</td>
</tr>
<tr>
<td>Di Martino, Alberto</td>
<td>203-204</td>
</tr>
<tr>
<td>Di Martino, Alessandro</td>
<td>98</td>
</tr>
<tr>
<td>Di Matteo, Berardo</td>
<td>98</td>
</tr>
<tr>
<td>Din, Rainero Del</td>
<td>215</td>
</tr>
<tr>
<td>Dines, David M</td>
<td>123, 150, 162, 217-218</td>
</tr>
<tr>
<td>Dines, Josh</td>
<td>217</td>
</tr>
<tr>
<td>Dionisio, Robert G</td>
<td>139</td>
</tr>
<tr>
<td>Dionne, Carol</td>
<td>192</td>
</tr>
<tr>
<td>Dionysian, Emil</td>
<td>88</td>
</tr>
<tr>
<td>DiPaola, Matthew J</td>
<td>146</td>
</tr>
<tr>
<td>Di Primio, Gina</td>
<td>221</td>
</tr>
<tr>
<td>Disegna, Steven</td>
<td>232</td>
</tr>
<tr>
<td>Ditto, Richard</td>
<td>270</td>
</tr>
<tr>
<td>Di Sanzo, Vincenzo</td>
<td>206</td>
</tr>
<tr>
<td>Diwam, Amnna</td>
<td>128</td>
</tr>
<tr>
<td>Djuurasovic, Mladen</td>
<td>107</td>
</tr>
<tr>
<td>Djott, Jeffrey S</td>
<td>65</td>
</tr>
<tr>
<td>Dmitriev, Anton E</td>
<td>91, 201-202, 260</td>
</tr>
<tr>
<td>Do, Huang</td>
<td>96, 109, 137, 197, 228</td>
</tr>
<tr>
<td>Doan, Josh</td>
<td>141</td>
</tr>
<tr>
<td>Doarn, Michael C</td>
<td>270</td>
</tr>
<tr>
<td>Dobbs, Matthew B</td>
<td>144, 177</td>
</tr>
<tr>
<td>Dodd, Christopher A</td>
<td>105, 244</td>
</tr>
<tr>
<td>Dodson, Christopher</td>
<td>150</td>
</tr>
<tr>
<td>Doerr, Natalie R</td>
<td>142</td>
</tr>
<tr>
<td>Doga, Yoshihiro</td>
<td>220, 280</td>
</tr>
<tr>
<td>Doherty, David B</td>
<td>275</td>
</tr>
<tr>
<td>Dolan, Kyle J</td>
<td>120, 277</td>
</tr>
<tr>
<td>Dolan, Lori</td>
<td>156</td>
</tr>
<tr>
<td>Doilkart, Oleg</td>
<td>117, 127</td>
</tr>
<tr>
<td>Domayer, Stephan</td>
<td>225</td>
</tr>
<tr>
<td>Domb, Benjamin</td>
<td>207, 219</td>
</tr>
<tr>
<td>Dominedo, Cristina</td>
<td>206</td>
</tr>
<tr>
<td>Domingues, Brian</td>
<td>203, 205</td>
</tr>
<tr>
<td>Domont, Zachary</td>
<td>255</td>
</tr>
<tr>
<td>Donaldson, Thomas K</td>
<td>78</td>
</tr>
<tr>
<td>Donaldson, William F</td>
<td>71, 138, 189</td>
</tr>
<tr>
<td>Donati, Davide</td>
<td>283</td>
</tr>
<tr>
<td>Donegan, Derek J</td>
<td>99</td>
</tr>
<tr>
<td>Dong, Nick N</td>
<td>211</td>
</tr>
<tr>
<td>Dong, Zheng-Ren</td>
<td>86</td>
</tr>
<tr>
<td>Donley, Brian G</td>
<td>76</td>
</tr>
<tr>
<td>Donohue, Michael</td>
<td>201</td>
</tr>
<tr>
<td>Donovan, Andrea</td>
<td>195, 285</td>
</tr>
<tr>
<td>Doornberg, Job N</td>
<td>166</td>
</tr>
<tr>
<td>Dopp, Ikay</td>
<td>203-204</td>
</tr>
<tr>
<td>Doorm, Robert</td>
<td>203</td>
</tr>
<tr>
<td>Dorn, John P</td>
<td>69, 102</td>
</tr>
<tr>
<td>Dornan, Grant</td>
<td>115</td>
</tr>
<tr>
<td>Dorrwachter, Janet</td>
<td>253</td>
</tr>
<tr>
<td>Doss, Harold</td>
<td>237</td>
</tr>
<tr>
<td>Dougherty, Evan</td>
<td>275</td>
</tr>
<tr>
<td>Dougherty, Paul J</td>
<td>94</td>
</tr>
<tr>
<td>Douglas, Dirschl R</td>
<td>244</td>
</tr>
<tr>
<td>Doung, Yee-Cheen</td>
<td>147</td>
</tr>
<tr>
<td>Douguhi, Wiemi</td>
<td>103</td>
</tr>
<tr>
<td>Dowdell, James E</td>
<td>90</td>
</tr>
<tr>
<td>Downen, Daniel J</td>
<td>251</td>
</tr>
<tr>
<td>Downes, Katherine</td>
<td>254, 258, 279</td>
</tr>
<tr>
<td>Doyle, Shaeuan M</td>
<td>178</td>
</tr>
<tr>
<td>Drago, Gabriele</td>
<td>121</td>
</tr>
<tr>
<td>Dragoo, Jason L</td>
<td>71, 164, 269, 274</td>
</tr>
<tr>
<td>Dreese, James C</td>
<td>97</td>
</tr>
<tr>
<td>Drerup, Tammy D</td>
<td>286</td>
</tr>
<tr>
<td>Drew, Megan</td>
<td>284</td>
</tr>
<tr>
<td>Drexl, Michael</td>
<td>239</td>
</tr>
<tr>
<td>Driscoll, Matthew D</td>
<td>177</td>
</tr>
<tr>
<td>Dryden, Peter</td>
<td>142</td>
</tr>
<tr>
<td>Drye, Elizabeth</td>
<td>68</td>
</tr>
<tr>
<td>Dubiel, Matthew J</td>
<td>168</td>
</tr>
<tr>
<td>Dubina, Andrew G</td>
<td>164</td>
</tr>
<tr>
<td>Duda, Georg</td>
<td>278</td>
</tr>
<tr>
<td>Duffee, Andrew R</td>
<td>72</td>
</tr>
<tr>
<td>Dugas, Jeffrey R</td>
<td>150</td>
</tr>
<tr>
<td>Duggal, Naven</td>
<td>101, 250</td>
</tr>
<tr>
<td>Dujardin, Jan</td>
<td>125</td>
</tr>
<tr>
<td>Dukes, Chase A</td>
<td>174</td>
</tr>
<tr>
<td>Dumont, Guillaume D</td>
<td>104</td>
</tr>
<tr>
<td>Dunbar, Michael</td>
<td>61</td>
</tr>
<tr>
<td>Dunbar, Robert P</td>
<td>64</td>
</tr>
<tr>
<td>Duncan, Christopher</td>
<td>195, 230, 241</td>
</tr>
<tr>
<td>Duncan, Clive P</td>
<td>78, 225, 341</td>
</tr>
<tr>
<td>Duncan, Scott F M</td>
<td>340</td>
</tr>
<tr>
<td>Dunlap, James T</td>
<td>138</td>
</tr>
<tr>
<td>Dunn, Alan R</td>
<td>97</td>
</tr>
<tr>
<td>Dunn, Warren</td>
<td>81</td>
</tr>
<tr>
<td>Duquin, Thomas</td>
<td>118, 163</td>
</tr>
<tr>
<td>Duralde, Xavier A</td>
<td>157</td>
</tr>
<tr>
<td>Durham, Jennifer</td>
<td>71</td>
</tr>
<tr>
<td>Durinka, Joel</td>
<td>185</td>
</tr>
<tr>
<td>Durkan, Michael</td>
<td>271</td>
</tr>
<tr>
<td>Durrani, Salim K</td>
<td>239</td>
</tr>
<tr>
<td>Duwelius, Paul</td>
<td>173</td>
</tr>
<tr>
<td>Dvorak, Marcel</td>
<td>285</td>
</tr>
<tr>
<td>Dvorzhinskiy, Aleksey</td>
<td>286</td>
</tr>
<tr>
<td>Dwek, Jerry R</td>
<td>187</td>
</tr>
<tr>
<td>Dwyer, Kevin W</td>
<td>236</td>
</tr>
<tr>
<td>Dwyer, Tim</td>
<td>73, 239</td>
</tr>
<tr>
<td>Dy, Christopher J</td>
<td>104, 137, 178, 228</td>
</tr>
<tr>
<td>Participants Index</td>
<td>437</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Garbuz, Donald S.</td>
<td>61, 78, 83, 111, 134, 225</td>
</tr>
<tr>
<td>Garcia-Rey, Eduardo</td>
<td>95</td>
</tr>
<tr>
<td>Garcia, E. Stephen J</td>
<td>152</td>
</tr>
<tr>
<td>Garcia, Grant</td>
<td>140, 271</td>
</tr>
<tr>
<td>Garcia, Michael J</td>
<td>90</td>
</tr>
<tr>
<td>Garcia-Cimb레로, Eduardo</td>
<td>95</td>
</tr>
<tr>
<td>Gardeniers, Jean W M</td>
<td>227</td>
</tr>
<tr>
<td>Gardner, Eric J</td>
<td>268</td>
</tr>
<tr>
<td>Gardner, Michael J</td>
<td>66, 100, 102, 128, 277, 280</td>
</tr>
<tr>
<td>Gardner, Thomas R</td>
<td>117, 150</td>
</tr>
<tr>
<td>Garelick, Goran</td>
<td>113, 223</td>
</tr>
<tr>
<td>Garg, Bhavuk</td>
<td>147, 189</td>
</tr>
<tr>
<td>Garg, Rohil</td>
<td>189</td>
</tr>
<tr>
<td>Garg, Sumeet</td>
<td>80, 190</td>
</tr>
<tr>
<td>Garino, Jonathan P</td>
<td>233-234</td>
</tr>
<tr>
<td>Garner, Matthew R</td>
<td>63</td>
</tr>
<tr>
<td>Garrido, Cecilia Pascual</td>
<td>97, 116, 214</td>
</tr>
<tr>
<td>Gartsman, Gary M</td>
<td>103, 112, 151, 172</td>
</tr>
<tr>
<td>Garvin, Kevin L</td>
<td>146</td>
</tr>
<tr>
<td>Gary, Joshua L</td>
<td>275</td>
</tr>
<tr>
<td>Garzon-Mudji, Juan</td>
<td>259</td>
</tr>
<tr>
<td>Gaskin, Cere</td>
<td>126, 144</td>
</tr>
<tr>
<td>Gaskins, Roger B</td>
<td>267, 282</td>
</tr>
<tr>
<td>Gasser, Seth I</td>
<td>283</td>
</tr>
<tr>
<td>Gauger, Erich M</td>
<td>277, 280</td>
</tr>
<tr>
<td>Gaume, Rachel E</td>
<td>91, 201-202</td>
</tr>
<tr>
<td>Geada, M Muras</td>
<td>143</td>
</tr>
<tr>
<td>Gebhard, Florian</td>
<td>259, 275</td>
</tr>
<tr>
<td>Geddes, Timothy</td>
<td>278</td>
</tr>
<tr>
<td>Gehrke, Thorsten</td>
<td>236</td>
</tr>
<tr>
<td>Geissler, William B</td>
<td>145</td>
</tr>
<tr>
<td>Geller, Jeffrey A</td>
<td>124, 153, 222</td>
</tr>
<tr>
<td>George, Michael S</td>
<td>103</td>
</tr>
<tr>
<td>Georgiadis, Andrew G</td>
<td>138</td>
</tr>
<tr>
<td>Georgopoulos, Gaia</td>
<td>133</td>
</tr>
<tr>
<td>Georgoulis, Anastasios</td>
<td>60</td>
</tr>
<tr>
<td>Gerber, Christian</td>
<td>58, 151-152, 259, 341</td>
</tr>
<tr>
<td>Gerbino, Peter G</td>
<td>114</td>
</tr>
<tr>
<td>Germino, Margherita</td>
<td>215</td>
</tr>
<tr>
<td>Getelman, Mark H</td>
<td>209</td>
</tr>
<tr>
<td>Getz, Charles L</td>
<td>162</td>
</tr>
<tr>
<td>Ghanayem, Alexander J</td>
<td>108, 261</td>
</tr>
<tr>
<td>Ghareeb, George M</td>
<td>151</td>
</tr>
<tr>
<td>Ghate, Raju S</td>
<td>205</td>
</tr>
<tr>
<td>Ghee, Taylor T</td>
<td>103</td>
</tr>
<tr>
<td>Gheti, Adrian J Cassar</td>
<td>269</td>
</tr>
<tr>
<td>Ghijselings, Stijn</td>
<td>125</td>
</tr>
<tr>
<td>Ghiisseli, Gary</td>
<td>102</td>
</tr>
<tr>
<td>Ghori, Ahmer K</td>
<td>78</td>
</tr>
<tr>
<td>Giannakos, Antonios</td>
<td>187</td>
</tr>
<tr>
<td>Giannini, Sandro</td>
<td>136, 215, 245, 283</td>
</tr>
<tr>
<td>Giannoudis, Peter</td>
<td>129, 165, 173</td>
</tr>
<tr>
<td>Gibbs, Stephen</td>
<td>199</td>
</tr>
<tr>
<td>Gibson, Emmanuel</td>
<td>161</td>
</tr>
<tr>
<td>Gibson, Gary</td>
<td>179</td>
</tr>
<tr>
<td>Gigi, Roy</td>
<td>117</td>
</tr>
<tr>
<td>Gikas, Panagiotis</td>
<td>231</td>
</tr>
<tr>
<td>Gil, Joseph A</td>
<td>110, 268</td>
</tr>
<tr>
<td>Gilbert, Jeremy</td>
<td>226</td>
</tr>
<tr>
<td>Gilde, Alex</td>
<td>256</td>
</tr>
<tr>
<td>Giles, Josh W</td>
<td>186, 198</td>
</tr>
<tr>
<td>Gilg, Magdalena M</td>
<td>281</td>
</tr>
<tr>
<td>Gill, Corey S</td>
<td>221</td>
</tr>
<tr>
<td>Gill, Harinderjit</td>
<td>105, 160, 188, 244</td>
</tr>
<tr>
<td>Gillespie, Robert J</td>
<td>164, 253</td>
</tr>
<tr>
<td>Gillette, Blake P</td>
<td>195, 230, 241</td>
</tr>
<tr>
<td>Grill, Ronald M</td>
<td>223</td>
</tr>
<tr>
<td>Gillogly, Scott D</td>
<td>209</td>
</tr>
<tr>
<td>Gilotra, Mohil</td>
<td>59</td>
</tr>
<tr>
<td>Giori, Nicholas J</td>
<td>196, 231</td>
</tr>
<tr>
<td>Gitos, Dimitrios</td>
<td>60</td>
</tr>
<tr>
<td>Girard, Steven</td>
<td>251</td>
</tr>
<tr>
<td>Girardi, Federico P</td>
<td>92, 262-263</td>
</tr>
<tr>
<td>Girsch, Werner</td>
<td>132</td>
</tr>
<tr>
<td>Gitelis, Steven</td>
<td>65, 179, 220</td>
</tr>
<tr>
<td>Giurea, Alexander</td>
<td>225</td>
</tr>
<tr>
<td>Giuseffi, Steven A</td>
<td>273</td>
</tr>
<tr>
<td>Gjeans, M R</td>
<td>187</td>
</tr>
<tr>
<td>Given, Kristin</td>
<td>228, 242</td>
</tr>
<tr>
<td>Gjolaj, Joseph P</td>
<td>80</td>
</tr>
<tr>
<td>Gladstone, James N</td>
<td>195</td>
</tr>
<tr>
<td>Glaser, David L</td>
<td>116</td>
</tr>
<tr>
<td>Glaser, Diana A</td>
<td>141, 266</td>
</tr>
<tr>
<td>Glaser, John A</td>
<td>201</td>
</tr>
<tr>
<td>Glasgow, Robert</td>
<td>284</td>
</tr>
<tr>
<td>Glassman, Steven D</td>
<td>66, 90, 130-131, 217, 260, 263</td>
</tr>
<tr>
<td>Gleznbrok, Mark</td>
<td>101, 142, 171</td>
</tr>
<tr>
<td>Glinskow, Wojciech</td>
<td>252</td>
</tr>
<tr>
<td>Glos, David G</td>
<td>141, 284</td>
</tr>
<tr>
<td>Glotzbach, Michael P</td>
<td>81, 275</td>
</tr>
<tr>
<td>Glyn-Jones, Sion</td>
<td>160, 188, 273</td>
</tr>
<tr>
<td>Gobbi, Alberto</td>
<td>97</td>
</tr>
<tr>
<td>Gobezie, Reuben</td>
<td>162, 164, 194, 253</td>
</tr>
<tr>
<td>Goddard, Martin</td>
<td>72</td>
</tr>
<tr>
<td>Goddard, Richard</td>
<td>240</td>
</tr>
<tr>
<td>Goel, Vijay</td>
<td>270</td>
</tr>
<tr>
<td>Goetz, Jessica</td>
<td>156, 245</td>
</tr>
<tr>
<td>Golton, Wade</td>
<td>285</td>
</tr>
<tr>
<td>Goliaslan, Ziya L</td>
<td>123</td>
</tr>
<tr>
<td>Gold, Jon</td>
<td>225, 239</td>
</tr>
<tr>
<td>Gold, Stephanie L</td>
<td>78, 225</td>
</tr>
<tr>
<td>Golden, Robert D</td>
<td>99</td>
</tr>
<tr>
<td>Goldfarb, Charles A</td>
<td>111, 182</td>
</tr>
<tr>
<td>Goldstein, Jeffrey M</td>
<td>237</td>
</tr>
<tr>
<td>Goldstein, Rachel Y</td>
<td>249</td>
</tr>
<tr>
<td>Goldstein, Wayne M</td>
<td>227, 237</td>
</tr>
<tr>
<td>Goldwasser, Dov</td>
<td>230</td>
</tr>
<tr>
<td>Golish, S Raymond</td>
<td>267</td>
</tr>
<tr>
<td>Gollish, Jeffrey</td>
<td>285</td>
</tr>
<tr>
<td>Gomberawalla, M Mustafa</td>
<td>253, 260, 269</td>
</tr>
<tr>
<td>Gonzalez, Mark H</td>
<td>211</td>
</tr>
<tr>
<td>Gooding, Christopher</td>
<td>79</td>
</tr>
<tr>
<td>Goodman, Pens P</td>
<td>236</td>
</tr>
<tr>
<td>Goodman, Murray J</td>
<td>75</td>
</tr>
<tr>
<td>Goodman, Stuart B</td>
<td>57, 70, 95, 161, 211, 241</td>
</tr>
<tr>
<td>Goodman, Zachary A</td>
<td>67</td>
</tr>
<tr>
<td>Goodship, Allen E</td>
<td>231</td>
</tr>
<tr>
<td>Gorczyca, John T</td>
<td>173, 281</td>
</tr>
<tr>
<td>Gordon, Alexander C</td>
<td>227</td>
</tr>
<tr>
<td>Gordon, Chris</td>
<td>177</td>
</tr>
<tr>
<td>Gordon, J E</td>
<td>112</td>
</tr>
<tr>
<td>Gordon, Max</td>
<td>223</td>
</tr>
<tr>
<td>Gordon, Wade T</td>
<td>174</td>
</tr>
<tr>
<td>Gore, Abbey</td>
<td>99</td>
</tr>
<tr>
<td>Gorecki, Andzej</td>
<td>252</td>
</tr>
<tr>
<td>Goslings, J C</td>
<td>166</td>
</tr>
<tr>
<td>Gosselin, Michelle</td>
<td>200</td>
</tr>
<tr>
<td>Gosselin, Richard A</td>
<td>84</td>
</tr>
<tr>
<td>Gotoh, Masafumi</td>
<td>256</td>
</tr>
<tr>
<td>Gottlieb, Meghan</td>
<td>188</td>
</tr>
<tr>
<td>Goudie, Ewan B</td>
<td>186</td>
</tr>
<tr>
<td>Goulet, James A</td>
<td>269</td>
</tr>
<tr>
<td>Gourineri, Prasad V</td>
<td>80</td>
</tr>
<tr>
<td>Goyal, Kanu</td>
<td>279</td>
</tr>
<tr>
<td>Grabinski, Tessa M</td>
<td>179</td>
</tr>
<tr>
<td>Grady, Maureen</td>
<td>288</td>
</tr>
<tr>
<td>Grady-Benson, John</td>
<td>237</td>
</tr>
<tr>
<td>Graham, Jove</td>
<td>153</td>
</tr>
<tr>
<td>Granata, Jaymes</td>
<td>143</td>
</tr>
<tr>
<td>Grande, Daniel A</td>
<td>99</td>
</tr>
<tr>
<td>Grant, John</td>
<td>285</td>
</tr>
<tr>
<td>Grant, Kevin D</td>
<td>278</td>
</tr>
<tr>
<td>Grant, Stuart</td>
<td>236</td>
</tr>
<tr>
<td>Grassi, Alberto</td>
<td>116</td>
</tr>
<tr>
<td>Grau, Luis C</td>
<td>262</td>
</tr>
<tr>
<td>Graves, Matthew L</td>
<td>252</td>
</tr>
<tr>
<td>Graves, Stephen</td>
<td>77, 229, 239</td>
</tr>
<tr>
<td>Gray, Allia</td>
<td>257</td>
</tr>
<tr>
<td>Gray, Andrew C</td>
<td>235</td>
</tr>
<tr>
<td>Gray, Benjamin A</td>
<td>161</td>
</tr>
<tr>
<td>Gray, Robert R</td>
<td>200</td>
</tr>
<tr>
<td>Gray, Tinker</td>
<td>127</td>
</tr>
<tr>
<td>Graziano, Gregory</td>
<td>253</td>
</tr>
<tr>
<td>Greaves, Frank E</td>
<td>286</td>
</tr>
<tr>
<td>Grederizer, Harry G</td>
<td>200</td>
</tr>
<tr>
<td>Green, Andrew</td>
<td>144, 253</td>
</tr>
<tr>
<td>Green, Cynthia</td>
<td>236</td>
</tr>
<tr>
<td>Green, Daniel W</td>
<td>65, 79, 269</td>
</tr>
<tr>
<td>Green, Neil E</td>
<td>153</td>
</tr>
<tr>
<td>442</td>
<td>2013 Participants Index</td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>129, 154, 165, 276, 341</td>
<td>Koyanagi, Junichiro .......... 221</td>
</tr>
<tr>
<td>Koyonos, Loukas .......... 263</td>
<td>Kozaneck, Michal .......... 266</td>
</tr>
<tr>
<td>Kozawa, Eiji .......... 180, 282</td>
<td>Kozin, Scott H .... 70, 94, 172</td>
</tr>
<tr>
<td>Kraay, Matthew J .......... 114, 226</td>
<td>Kraemer, Paul E .......... 107, 111</td>
</tr>
<tr>
<td>Kralevic, Michael .......... 120</td>
<td>Kramer, Dennis E .......... 104</td>
</tr>
<tr>
<td>Kramer, Derek J .......... 251</td>
<td>Kramer, Michael .......... 259, 86</td>
</tr>
<tr>
<td>Krawczak, Karolina .......... 252</td>
<td>Kregor, Philip J .......... 170</td>
</tr>
<tr>
<td>Kremenic, Ian .......... 67</td>
<td>Krenn, Veit .......... 236</td>
</tr>
<tr>
<td>Kremers, Walter K .......... 124, 232</td>
<td>Kreshak, Jennifer .......... 210</td>
</tr>
<tr>
<td>Kretke, Christian .......... 275</td>
<td>Kretzschmar, Martin .......... 246</td>
</tr>
<tr>
<td>Kreuzer, Stefan .......... 145</td>
<td>Krieg, James C .......... 63, 128</td>
</tr>
<tr>
<td>Krishnamoorthy, Venkatadass .......... 249</td>
<td>Krishnamurthy, Anil .......... 86</td>
</tr>
<tr>
<td>Krishnan, Sumant G .......... 111</td>
<td>Krismer, Martin .......... 204</td>
</tr>
<tr>
<td>Krueger, Chad A .......... 193, 214</td>
<td>Krych, Aaron J .... 72, 189, 273</td>
</tr>
<tr>
<td>Kubiak, Erik .......... 64, 146, 175, 183,</td>
<td>Kubista, Bernd .......... 225</td>
</tr>
<tr>
<td>275-276</td>
<td>Kubo, Toshikazu .......... 89, 149</td>
</tr>
<tr>
<td>Kubota, So .......... 231</td>
<td>Kuhn, John E .......... 62, 111</td>
</tr>
<tr>
<td>Kuhn, Kevin M .......... 154</td>
<td>Kuhne, Michael .......... 147, 255, 276</td>
</tr>
<tr>
<td>Kumar, Vijay .......... 147, 189</td>
<td>Kundukulam, Joseph A .......... 216</td>
</tr>
<tr>
<td>Kunisada, Toshiyuki .......... 281</td>
<td>Kunst, Andrew F .......... 207</td>
</tr>
<tr>
<td>Kupiszewski, Stanley J .... 154, 276</td>
<td>Kuroda, Daissuke .......... 213</td>
</tr>
<tr>
<td>Kurtdziel, Michael .......... 118, 254</td>
<td>Kuroda, Ryosuke .......... 220, 274,</td>
</tr>
<tr>
<td>276-277</td>
<td>Kuroki, Keiichi .......... 116, 186</td>
</tr>
<tr>
<td>Kurosaka, Masahiro .......... 120, 220,</td>
<td>Kurzylo, John .......... 63</td>
</tr>
<tr>
<td>274, 276-277, 280</td>
<td>Kurz, Adrian .......... 148</td>
</tr>
<tr>
<td>Kurzweil, Peter R .......... 112</td>
<td>Kusuma, Sharat K .......... 67</td>
</tr>
<tr>
<td>Kusuzaki, Katsuyuki .......... 121</td>
<td>Kuzel, Bradley R .......... 216</td>
</tr>
<tr>
<td>Kuzyk, Paul R .......... 118, 185</td>
<td>Kwack, Kyu-Sung .......... 97</td>
</tr>
<tr>
<td>Kwon, Oh-Ryong .......... 270</td>
<td>Kwong, Woon Y ............ 218</td>
</tr>
<tr>
<td>Kwong, Yong-Wook .......... 162</td>
<td>Kwan, Young-Min .... 157, 160, 161,</td>
</tr>
<tr>
<td>211, 223</td>
<td>Kyle, John .......... 100</td>
</tr>
<tr>
<td>Kyle, Richard F .......... 122, 277</td>
<td>Kyomoto, Masayuki .......... 230</td>
</tr>
<tr>
<td>Kyung, Hee S .......... 126</td>
<td>Labey, Luc .......... 176, 240</td>
</tr>
<tr>
<td>Labianca, Luca .......... 206</td>
<td>Labruto, Fausto .......... 155</td>
</tr>
<tr>
<td>Lacey, Harry .......... 127</td>
<td>Lafferty, Paul M .......... 64</td>
</tr>
<tr>
<td>Lafosses, Laurent .... 58, 187</td>
<td>LaGreca, Jaren .......... 190</td>
</tr>
<tr>
<td>LaGrone, Michael O .......... 261</td>
<td>Lai, Yu-Shu .......... 262</td>
</tr>
<tr>
<td>Laing, Harry .......... 265</td>
<td>Laing, Eric .......... 190</td>
</tr>
<tr>
<td>Lainiala, Olli .......... 78</td>
<td>Laker, Michael W .......... 138</td>
</tr>
<tr>
<td>Lalonde, David .......... 84</td>
<td>Lalonde, Don .......... 84</td>
</tr>
<tr>
<td>Lalone, Emily .......... 197</td>
<td>Lam, Patrick H .......... 87</td>
</tr>
<tr>
<td>Lam, Simon .......... 186</td>
<td>Lam, Bradley M .......... 109, 245</td>
</tr>
<tr>
<td>Lamont, Lauren E .......... 110, 155, 213</td>
<td>Lamtrage, Jean .......... 104, 257</td>
</tr>
<tr>
<td>Lampl, Alexander J .......... 235</td>
<td>Landgreber, Stefan .......... 113</td>
</tr>
<tr>
<td>Landy, David C .......... 244</td>
<td>Landis, William J .......... 250</td>
</tr>
<tr>
<td>Lane, Joseph M ...... 52, 62, 70, 170,</td>
<td>Lane, Paul D .......... 151</td>
</tr>
<tr>
<td>220</td>
<td>Langford, Joshua ...... 57, 64, 154,</td>
</tr>
<tr>
<td>276</td>
<td>Langlois, Jean .......... 160</td>
</tr>
<tr>
<td>Lanternier, Hubert .......... 209</td>
<td>Lanzetti, Riccardo Maria .......... 189</td>
</tr>
<tr>
<td>Lapner, Peter .......... 284</td>
<td>Lavoie, Michel .......... 157, 158</td>
</tr>
<tr>
<td>LaPrade, Robert F ...... 115, 127,</td>
<td>Lara, Joaquin .......... 208</td>
</tr>
<tr>
<td>168, 245</td>
<td>Larocou, Craig .......... 110</td>
</tr>
<tr>
<td>Larsen, Nicholas .......... 132</td>
<td>Larsson, Annalise .......... 140</td>
</tr>
<tr>
<td>Larson, Christopher .......... 94, 146, 182,</td>
<td>Lee, Su-Keon A .......... 128</td>
</tr>
<tr>
<td>187, 272</td>
<td>Lee, Seung Won .......... 117</td>
</tr>
<tr>
<td>Lee, Seung Yeol .......... 155</td>
<td>Lee, Simon .......... 111, 169</td>
</tr>
<tr>
<td>Lee, Su Keon A .......... 149, 270</td>
<td>Lee, Thay Q .......... 103, 149, 167,</td>
</tr>
<tr>
<td>Le, Andrew .......... 219</td>
<td>Lee, Tho, Sang .......... 219</td>
</tr>
<tr>
<td>Le, Byung J .......... 253</td>
<td>Lee, Thomas H .......... 62, 143</td>
</tr>
<tr>
<td>Lee, Daniel .......... 135</td>
<td>Lee, Woo Chun .......... 142, 168</td>
</tr>
<tr>
<td>Le, Jason T .......... 201</td>
<td>Lee, Young-Kyun .......... 119, 129, 148,</td>
</tr>
<tr>
<td>Le, Theodore T .......... 153</td>
<td>228-229</td>
</tr>
<tr>
<td>Le, Vu H .......... 263</td>
<td>LeFevre, George W .......... 237</td>
</tr>
<tr>
<td>Leardnito, Andrew .......... 136</td>
<td>Lehman, Ronald A .......... 90-91,</td>
</tr>
<tr>
<td>Lebli, Darren R .......... 92, 201</td>
<td>201-202, 260</td>
</tr>
<tr>
<td>Lebrun, Lauren M .......... 253</td>
<td>Leibman, Jeffrey A .......... 127</td>
</tr>
<tr>
<td>Lechner, Phillip .......... 223</td>
<td>Leibnner, Charles F .......... 90</td>
</tr>
<tr>
<td>Leclerc, Etienne .......... 73</td>
<td>Leithner, Andreas .......... 281</td>
</tr>
<tr>
<td>Ledonio, Charles Gerald T .......... 140</td>
<td>Leitman, Elliott H .......... 111</td>
</tr>
<tr>
<td>Ledoix, Bill R .......... 142</td>
<td>LeMarr, Angela .......... 105, 240</td>
</tr>
<tr>
<td>Lee, Andrew .......... 219</td>
<td>Leung, David C .......... 211</td>
</tr>
<tr>
<td>Lee, Andy .......... 108</td>
<td>Leung, Michael .......... 58, 61, 182, 212</td>
</tr>
<tr>
<td>Lee, Byung J .......... 253</td>
<td>Levai, Jean .......... 137</td>
</tr>
<tr>
<td>Lee, Cara Beth .......... 107</td>
<td>Leversedge, Fraser J .......... 89, 111,</td>
</tr>
<tr>
<td>Lee, Choon-Ki .......... 91, 266</td>
<td>167, 172, 181</td>
</tr>
<tr>
<td>Lee, Da-Hoe .......... 111</td>
<td>Levin, LS .......... 124</td>
</tr>
<tr>
<td>Lee, Donald H ...... 76, 144, 167, 257</td>
<td>Levin, Paul E .......... 99</td>
</tr>
<tr>
<td>Lee, Gregory Y .......... 188</td>
<td>Levine, Brett R .......... 270</td>
</tr>
<tr>
<td>Lee, Gwo-Chin ...... 75, 233-234, 251</td>
<td>Levine, Daniel M .......... 281</td>
</tr>
<tr>
<td>Lee, Hannah H .......... 98</td>
<td>Leroux, Manon .......... 251</td>
</tr>
<tr>
<td>Lee, Hyun-Joo .......... 126</td>
<td>Les, Clifford M .......... 179</td>
</tr>
<tr>
<td>Lee, Jae-Young .......... 178</td>
<td>Lesko, James .......... 242</td>
</tr>
<tr>
<td>Lee, Jae-Ho .......... 149, 270</td>
<td>Letouzic, Astrid .......... 233</td>
</tr>
<tr>
<td>Lee, John .......... 87</td>
<td>Letson, G Douglas .......... 102, 121, 282</td>
</tr>
<tr>
<td>Lee, Jonathan H .......... 153, 222</td>
<td>Leung, David .......... 211</td>
</tr>
<tr>
<td>Lee, Joon-Kyu ...... 238-239</td>
<td>Leunig, Michael .......... 58, 61, 182, 212</td>
</tr>
<tr>
<td>Lee, Joon Y ...... 138, 189, 267</td>
<td>Levai, Jean .......... 137</td>
</tr>
<tr>
<td>Lee, Jung Ha .......... 137</td>
<td>Levinson, Timothy .......... 211-212</td>
</tr>
<tr>
<td>Lee, Kang .......... 142, 168</td>
<td>Levy, David .......... 246</td>
</tr>
<tr>
<td>Lee, Kwang Chear .......... 99</td>
<td>Levy, David M .......... 117</td>
</tr>
<tr>
<td>Lee, Kwang-Bok .......... 282</td>
<td>Levy, Jonathan .......... 270</td>
</tr>
<tr>
<td>Lee, Kyoung Min ...... 80, 168</td>
<td>Levy, Rayna .......... 233</td>
</tr>
<tr>
<td>Lee, Kyoung-Jae .......... 162, 224</td>
<td>Levine, William .......... 46, 52, 111,</td>
</tr>
<tr>
<td>Lee, Michael J ...... 118, 217, 265</td>
<td>117, 207</td>
</tr>
<tr>
<td>Lee, Myung C .......... 238-239</td>
<td>Levinson, Timothy .......... 211-212</td>
</tr>
<tr>
<td>Lee, Sang Y .......... 220, 280</td>
<td>Levy, David M .......... 117</td>
</tr>
<tr>
<td>Lee, Seung-Yoon .......... 80, 168</td>
<td>Levy, Jonathan .......... 151, 163, 186</td>
</tr>
</tbody>
</table>
Levy, Ofer ..........................256
Lewallen, David G ..........67, 95, 124-125, 134, 158, 182, 221, 227-228, 232
Lewallen, Laura ..............80, 114
Lewis, Courtland G .........237
Lewis, Richard A ..........258
Lewis, Thomas R .......... 80
Lewis, Valerae O ............76, 85, 122-123, 220
Lhee, Sang-hoon .......... 88, 197
Li, Bonnie .......................165
Li, Chenguang .................161
Li, G Ying Y ..................275
Li, Guoan .......................59, 261
Li, Jing-Sheng .................266
Li, Xinning .......................84
Liang, Haixiang ..............201
Liddle, Alex D .................86
Lieber, Richard L ............249
Liebergall, Meir ..............279
Lieberman, Elizabeth .......107
Lieberman, Jay R .......65, 68, 74, 93, 122, 182
Liebs, Thoralf R .............285
Liew, Allan ......................285
Lillermo, Kaitlyn A .........218
Lim, Chin Tat .................138
Lim, Jong-Han H ..........282
Lim, Seung-Jae ...........227, 277
Lim, Tae Kang ................87-88, 116-117, 254
Lin, David L .................115
Lin, Johnny L .................169
Lin, Patrick P .................122, 282
Lin, Yu-Min ....................283
Lin, Zhenqiu .................68
Lincoln, Denis .............185, 240
Lindberg, Antoinette W ....178, 180
Linde-Rosen, Monica ......72
Lindsay, Adam D ..........128
Lindsey, Jason A ..........60
Lindsey, Ronald W ........108
Linford, Samuel .............149
Lingaraj, Krishna ..........138
Lintner, David M ..........115
Linton, Judith .................177
Lipman, Joseph D .......105, 152, 241
Liporace, Frank A .......57, 64, 122, 172, 183
Lippe, Julienne ..............109
Litchfield, Robert B .......62
Little, Milton T ...........62-63, 79, 110, 155, 280
Liu, Chien-Lin ..............122, 139
Liu, Joseph .................128, 277
Liu, Raymond .............177-178
Liu, Stephen Y .............251
Liu, Steve S ..............119-120, 222
Liu, Yen-Liang ..........77, 229, 239
Livingstone, James .........174
Lijunqiu, Yan ..............275
Lloyd, Eric W ...............244
Lo, Eddie Y .................148
Lo, Ngai-Nung ...........105, 138, 234, 238, 242
Lobatto, Daniel ..........152
Lochab, Jasjit ..............121
Lodha, Sameer J ..........235
Loe, Markus .................162
Lombardi, Adolph V ......77, 122, 137, 157, 181, 184, 211-212, 214, 222
Long, William J .............83, 125
Lonner, Baron ..............130-131, 140, 191, 260
Lonner, Jess H .............134, 171, 182, 212
Lopez, Jaime ...............208
Losina, Elena .............199, 214, 281
Louie, Dexter ................167, 199
Lovald, Scott T ..............197
Lovejoy, Steven A ........153
Lowe, pillow, David W ....124
Lowery, Jason K ...........212
Lubbeke-Wolff, Anne ....67-68, 103, 251
Lubowits, James H ........194
Luaic-k-Corea, Charlene ...284
Luciani, Devinaira ..........215
Luf, Thomas W .............79
Luhmann, Scott J ........62, 141, 260
Lundy, Douglas W ........153
Lupariello, Domenico ....189
Lusky, Kevin F ..............159
Luyckx, Ethan .............195, 241
Ly, Thuan V ..................64
Lykissas, Marios ..........248
Lyman, Stephen ..........96, 109, 137, 197, 225, 228
Lynch, Charles ..............179
Lynch, Evan B ..............273
Lyons, Kathleen ..........225
Lyons, Matt C ...............236
Lyons, Steven T ............228
Ma, ChunBong ...............98
Ma, Hsiang-Li ..............139
Ma, Richard R ..............215, 218
Maak, Travis G ...........217-219
Macalay, William B ......95, 153, 181, 196, 222
MacDermid, Joy C .........166
McDonald, Daniel .........114, 226
McDonald, James ..........59
McDonald, Kevin ..........180
McDonald, Peter B .......62, 127, 159
MacDonald, Steven J .......65, 74, 83, 122, 181, 184, 211-212, 226, 230, 236
Mackenzie, Ellen ..........62
Mackenzie, William G ....130, 141
Mackersie, Robert C ......139
MacLean, Angus D ..........106
Madi, Karim ..................118
Maeckelbergh, Liselore ......212
Maeda, Takeshi ..........139, 262, 265, 267
Maehara, Hiroki ..........282
Maerz, Tristan .............110, 118, 202, 261, 267
Maffulli, Nicola .............87, 126
Magnussen, Robert A ......72
Magsalim, Rachel-Anne ...77
Mahan, Susan T ............177, 251
Maher, Patrick .............234, 238
Maheshwari, Aditya V .....243
Maheson, Marcelino .......225
Mahfouz, Mohamed ........234, 242
Mahon, Brian Henry H ......247
Mahon, John H ..............247
Mahoney, Andrew P .......149
Mahoney, Craig R ..........56
Mahoney, Ormonde M .......106, 126, 136
Maislin, Greg ................191
Maiszels, Max ..............178
Maiszlin, Zev ...............189
Makaji, Heeren .............199
Makela, Keijo ...............137
Makhni, Eric C ..............207
Makkri, Tarek ..........273
Malagelada, Francesca ...176
Malchau, Erik ...............67
Malchau, Henrik ..........67, 78, 113, 160-161, 211, 223, 230, 253
Malcolm, Tennison ..........222
Malenfeld, Mitchell ......120, 232, 247
Malitzv, Thomas A ......118, 181
Malizberg, Andrew .......155, 214
Mamm, Eran .................117
Mancuso, Carol A ..........262
Mandell, Peter J ............158
Manfrini, Marco ..........120
Mankin, Henry J ..........122
Manley, Michael T ..........240
Manley, Mollie ..............279
Mann, Bhpinder S ..........86
Mansaf, Michel F ..........260
Mansaf, Pierre ..........260
Manson, Theodore T ......164
Maradit-Kremers, Hila ...124-125, 230
Maratt, Joseph ..........148, 269
Maracci, Maurilio ..........98, 116
Marchi, Giacomo ...........207
Marcus, Matthew S ......64
Marecek, Geoffrey ..........112, 230
Markel, David C ..........185, 240
Markert, Ronald J ..........86
Markiewitz, Andrew D ......216
Marks, Barbara ..............105
Marks, Michael ..........94
Marks, Michaela ..........130, 191, 250
Markus, Heiler O ..........221
Marmor, Meir T ..........154, 239
Marmotti, Antongiulio ......215
Marquez-Lara, Alejandro ...204
Mars, Guido .................157
Marmott, Ricarda ...........84
Marsh, Jackie ...............285
Marsh, John L ..........152, 193, 216, 281
Martell, John M ..........161
Martens, James P ..........153
Martetschläger, Frank ......104, 206-207, 272
Martin, Brook I ..........270
Martin, Christopher T ....119-120, 124, 152, 179
Martin, Elizabeth A ......156
Martin, Hal D ..........182
Martin, Robin ...............230
Martin, Scott D ..........208, 272
Martinez, Danny F ..........164
Martinez-Martos, Sara ....251
Martus, Jeffrey E ..........153
Marumo, Keishi ..........255
Maruo, Masashi .............130
Maruo, Tetsuo ..........113
Mars, Robert G ..........96, 126, 137, 197, 218-219, 228
© 2013 American Academy of Orthopaedic Surgeons

2013 Participants Index 443
<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>McArthur, Benjamin A</td>
<td>213, 223</td>
</tr>
<tr>
<td>McArthur, John</td>
<td>226</td>
</tr>
<tr>
<td>McAuley, James</td>
<td>285</td>
</tr>
<tr>
<td>McBrady, Callum</td>
<td>221</td>
</tr>
<tr>
<td>McCalder, Richard W</td>
<td>184, 224, 226, 230, 236</td>
</tr>
<tr>
<td>McCann, Peter D</td>
<td>111</td>
</tr>
<tr>
<td>McCarty, James J</td>
<td>112, 183</td>
</tr>
<tr>
<td>McCarty, Joseph C</td>
<td>61</td>
</tr>
<tr>
<td>McCormick, Michael</td>
<td>264</td>
</tr>
<tr>
<td>McCormick, Moira M</td>
<td>219, 269</td>
</tr>
<tr>
<td>McCrady, Richard E.</td>
<td>93, 129, 264</td>
</tr>
<tr>
<td>McCratty, Eric C</td>
<td>172</td>
</tr>
<tr>
<td>McCaslin, Michael</td>
<td>48, 56, 68</td>
</tr>
<tr>
<td>McCauley, Julie C</td>
<td>98</td>
</tr>
<tr>
<td>McClellan, Robert T</td>
<td>139</td>
</tr>
<tr>
<td>McCliney, Michael</td>
<td></td>
</tr>
<tr>
<td>McCluggage, Anna</td>
<td>140</td>
</tr>
<tr>
<td>McCormick, Frank</td>
<td>117, 272</td>
</tr>
<tr>
<td>McCormick, Jeremy J</td>
<td>66, 109, 111, 144</td>
</tr>
<tr>
<td>McCoo, Brett W</td>
<td>129</td>
</tr>
<tr>
<td>McCulloch, Patrick C</td>
<td>115</td>
</tr>
<tr>
<td>McCullough, Kirk A</td>
<td>81</td>
</tr>
<tr>
<td>McDaniel, Clint</td>
<td>109</td>
</tr>
<tr>
<td>McDaniel, Lee</td>
<td>276</td>
</tr>
<tr>
<td>McDonald, Douglas J</td>
<td>195</td>
</tr>
<tr>
<td>McDonald, Matthew R</td>
<td>63</td>
</tr>
<tr>
<td>McDonald, Matthew N</td>
<td>192</td>
</tr>
<tr>
<td>McElroy, Mark J</td>
<td>245, 250</td>
</tr>
<tr>
<td>McElvany, Matthew D</td>
<td>146</td>
</tr>
<tr>
<td>McFarland, Edward G</td>
<td>157, 259</td>
</tr>
<tr>
<td>McGarry, Michelle H</td>
<td>103, 149, 254, 258-259, 271</td>
</tr>
<tr>
<td>McGarvey, William C</td>
<td>57</td>
</tr>
<tr>
<td>McGillivary, Gary R</td>
<td>89</td>
</tr>
<tr>
<td>McGirt, Matthew</td>
<td>91</td>
</tr>
<tr>
<td>McGonagle, Dennis</td>
<td>173</td>
</tr>
<tr>
<td>McGowan, Kevin B</td>
<td>191</td>
</tr>
<tr>
<td>McGrath, Timothy V</td>
<td>247</td>
</tr>
<tr>
<td>McHugh, Brian J</td>
<td>131, 260</td>
</tr>
<tr>
<td>McHugh, Dermott J</td>
<td>226</td>
</tr>
<tr>
<td>McHugh, Malachy P</td>
<td>124</td>
</tr>
<tr>
<td>McHutchon, Andrew</td>
<td>251</td>
</tr>
<tr>
<td>Mclff, Terence E</td>
<td>284</td>
</tr>
<tr>
<td>McGinty, Amy L</td>
<td>80, 114</td>
</tr>
<tr>
<td>McIntrye, Louis F</td>
<td>56, 101</td>
</tr>
<tr>
<td>McIntrye, Louis F</td>
<td>101</td>
</tr>
<tr>
<td>McKee, Michael D</td>
<td>69, 94, 104, 123, 185, 257</td>
</tr>
<tr>
<td>McKenzie, James C</td>
<td>82</td>
</tr>
<tr>
<td>McLaren, Robert F</td>
<td>267</td>
</tr>
<tr>
<td>McLardy-Smith, Peter</td>
<td></td>
</tr>
<tr>
<td>McLaurin, Toni M</td>
<td>128</td>
</tr>
<tr>
<td>McLawhorn, Alexander S</td>
<td>234, 238</td>
</tr>
<tr>
<td>MclLeod, Lisa</td>
<td>141</td>
</tr>
<tr>
<td>McMahon, Patrick J</td>
<td>74</td>
</tr>
<tr>
<td>McMurtry, Ian</td>
<td>100</td>
</tr>
<tr>
<td>McNair, Bryan</td>
<td>80, 133</td>
</tr>
<tr>
<td>McPherson, Edward</td>
<td>7</td>
</tr>
<tr>
<td>McQueen, Margaret M</td>
<td>165</td>
</tr>
<tr>
<td>McRoy, Kathryn</td>
<td>60</td>
</tr>
<tr>
<td>Mctighe, Timothy</td>
<td>205</td>
</tr>
<tr>
<td>McWilliam-Ross, Kinda D</td>
<td>99</td>
</tr>
<tr>
<td>Meadows, Molly C</td>
<td>117</td>
</tr>
<tr>
<td>Meccia, Bradley A</td>
<td>234</td>
</tr>
<tr>
<td>Meding, John B</td>
<td>77, 238</td>
</tr>
<tr>
<td>Meermans, Geert</td>
<td>66, 166</td>
</tr>
<tr>
<td>Meftah, Morteza</td>
<td>67, 224, 234, 281</td>
</tr>
<tr>
<td>Mehboob, Amir A</td>
<td>107, 139</td>
</tr>
<tr>
<td>Mehe, Susan C</td>
<td>96, 153</td>
</tr>
<tr>
<td>Melham, Charles T</td>
<td>136, 182</td>
</tr>
<tr>
<td>Mehta, Samir</td>
<td>66, 99, 146, 159, 164, 253</td>
</tr>
<tr>
<td>Mehta, Sapna A</td>
<td>81, 214</td>
</tr>
<tr>
<td>Meinenberg, Eric G</td>
<td>68</td>
</tr>
<tr>
<td>Melhorn, J M</td>
<td>101</td>
</tr>
<tr>
<td>Meller, Menachem M</td>
<td>211</td>
</tr>
<tr>
<td>Melvin, James S</td>
<td>228</td>
</tr>
<tr>
<td>Menakaya, Chinyelu</td>
<td>167</td>
</tr>
<tr>
<td>Mencio, Gregory A</td>
<td>140, 153</td>
</tr>
<tr>
<td>Mendelis, Joseph</td>
<td>185</td>
</tr>
<tr>
<td>Mendelson, Elliot</td>
<td>165</td>
</tr>
<tr>
<td>Mendas, Christopher L</td>
<td>254, 273</td>
</tr>
<tr>
<td>Mendoza-Lattes, Sergio A</td>
<td>124, 216</td>
</tr>
<tr>
<td>Meneghini, Robert M</td>
<td>65, 83, 114, 194</td>
</tr>
<tr>
<td>Menendez, Mariano E</td>
<td>200</td>
</tr>
<tr>
<td>Menga, Emmanuel N</td>
<td>201</td>
</tr>
<tr>
<td>Mensah, Kofi A</td>
<td>220</td>
</tr>
<tr>
<td>Mercuri, John J</td>
<td>83</td>
</tr>
<tr>
<td>Meredith, Dennis</td>
<td>263</td>
</tr>
<tr>
<td>Merican, Shahrin</td>
<td>98</td>
</tr>
<tr>
<td>Merli, Maria Letizia</td>
<td>98</td>
</tr>
<tr>
<td>Merlin, Gabriel</td>
<td>156</td>
</tr>
<tr>
<td>Merrick, Michael</td>
<td>127, 139</td>
</tr>
<tr>
<td>Merriman, David J</td>
<td>100, 280</td>
</tr>
<tr>
<td>Merritt, Andrew L</td>
<td>163</td>
</tr>
<tr>
<td>Merton, Gabriel</td>
<td>217</td>
</tr>
<tr>
<td>Merz, Michael K</td>
<td>237</td>
</tr>
<tr>
<td>Mesfin, Addisu</td>
<td>91, 130, 201-202</td>
</tr>
<tr>
<td>Mesko, J Wesley</td>
<td>66</td>
</tr>
<tr>
<td>Messa, Joseph L</td>
<td>111</td>
</tr>
<tr>
<td>Messacar, Kevin</td>
<td>190</td>
</tr>
<tr>
<td>Messmer, Peter</td>
<td>275</td>
</tr>
<tr>
<td>Meyer, Christophe</td>
<td>212</td>
</tr>
<tr>
<td>Meyer, Dominik C</td>
<td>151</td>
</tr>
<tr>
<td>Meyer, Frederick N</td>
<td>90</td>
</tr>
<tr>
<td>Meyer, Jill E</td>
<td>180</td>
</tr>
<tr>
<td>Meyer, Lauren E</td>
<td>274</td>
</tr>
<tr>
<td>Michael, Keith W</td>
<td>261</td>
</tr>
<tr>
<td>Michaud, Ernest</td>
<td>217</td>
</tr>
<tr>
<td>Micheli, Lyle J</td>
<td>159</td>
</tr>
<tr>
<td>Michielsen, Jf</td>
<td>107</td>
</tr>
<tr>
<td>Michnich, Stuart M</td>
<td>133, 136</td>
</tr>
<tr>
<td>Middleton, Kellie K</td>
<td>72, 219</td>
</tr>
<tr>
<td>Mifune, Yutaka</td>
<td>274, 276-277</td>
</tr>
<tr>
<td>Mighell, Mark A</td>
<td>123, 172, 186, 197-198</td>
</tr>
<tr>
<td>Mikhailo, William M</td>
<td>57, 60, 70, 211, 213</td>
</tr>
<tr>
<td>Mihata, Teruhisa</td>
<td>87, 149</td>
</tr>
<tr>
<td>Miki, Shinya</td>
<td>155</td>
</tr>
<tr>
<td>Milby, Andrew H</td>
<td>262</td>
</tr>
<tr>
<td>Miles, Jonathan</td>
<td>231</td>
</tr>
<tr>
<td>Miles, Kim</td>
<td>240</td>
</tr>
<tr>
<td>Milewski, Matthew</td>
<td>126</td>
</tr>
<tr>
<td>Miller, Benjamin J</td>
<td>179</td>
</tr>
<tr>
<td>Miller, Bruce S.</td>
<td>59, 112, 254, 260, 285</td>
</tr>
<tr>
<td>Miller, Doyle J</td>
<td>252</td>
</tr>
<tr>
<td>Miller, Geoffrey M</td>
<td>286</td>
</tr>
<tr>
<td>Miller, Lawrence S</td>
<td>272</td>
</tr>
<tr>
<td>Miller, Lloyd</td>
<td>59</td>
</tr>
<tr>
<td>Miller, Mark C</td>
<td>170, 198</td>
</tr>
<tr>
<td>Miller, Mark D</td>
<td>52, 58, 126, 144, 209</td>
</tr>
<tr>
<td>Miller, Nancy H</td>
<td>133, 250</td>
</tr>
<tr>
<td>Miller, Richard J</td>
<td>258</td>
</tr>
<tr>
<td>Miller, Stuart D</td>
<td>109, 142</td>
</tr>
<tr>
<td>Miller, Suzanne L</td>
<td>273</td>
</tr>
<tr>
<td>Millett, Peter J</td>
<td>101, 104, 182, 206, 207, 272</td>
</tr>
<tr>
<td>Mills, Michael B</td>
<td>79</td>
</tr>
<tr>
<td>Milne, Edward L</td>
<td>108</td>
</tr>
<tr>
<td>Milner, Jane J</td>
<td>246</td>
</tr>
<tr>
<td>Milone, Michael T</td>
<td>253</td>
</tr>
<tr>
<td>Min, Byoung H</td>
<td>97</td>
</tr>
<tr>
<td>Min, Byung-Woo</td>
<td>162</td>
</tr>
<tr>
<td>Min, Kyong S</td>
<td>133</td>
</tr>
<tr>
<td>Minas, Tom</td>
<td>111, 181</td>
</tr>
<tr>
<td>Ming, Siow Wei</td>
<td>238</td>
</tr>
<tr>
<td>Miniaci, Anthony</td>
<td>102, 272</td>
</tr>
<tr>
<td>Miniaci, Sara L</td>
<td>173</td>
</tr>
<tr>
<td>Minoda, Masaya</td>
<td>120</td>
</tr>
<tr>
<td>Minoda, Yukhide</td>
<td>136, 212, 222, 231, 233, 243</td>
</tr>
<tr>
<td>Mintz, Douglas N</td>
<td>200</td>
</tr>
<tr>
<td>Mioton, Lauren</td>
<td>91</td>
</tr>
<tr>
<td>Miozzi, Hermes</td>
<td>103</td>
</tr>
<tr>
<td>Miquel, Joan</td>
<td>251</td>
</tr>
<tr>
<td>Mir, Hassan R</td>
<td>57, 100, 119, 128-129, 154, 279</td>
</tr>
<tr>
<td>Mirarchi, Adam</td>
<td>255</td>
</tr>
<tr>
<td>Mirtey, Adele</td>
<td>199</td>
</tr>
<tr>
<td>Mirza, Amer J</td>
<td>62, 84, 146</td>
</tr>
<tr>
<td>Mirza, Sohill K</td>
<td>76</td>
</tr>
<tr>
<td>Miscione, Maria Teresa</td>
<td>204</td>
</tr>
<tr>
<td>Name</td>
<td>Page Numbers</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Mishra, Allan K</td>
<td>149</td>
</tr>
<tr>
<td>Mishra, Amit</td>
<td>224</td>
</tr>
<tr>
<td>Miska, Matthias</td>
<td>246</td>
</tr>
<tr>
<td>Mitchell, Byron</td>
<td>111</td>
</tr>
<tr>
<td>Mitchell, Erika J</td>
<td>275, 289</td>
</tr>
<tr>
<td>Mitsugi, Naoto</td>
<td>250</td>
</tr>
<tr>
<td>Mitsui, Yasuhiro</td>
<td>256</td>
</tr>
<tr>
<td>Mitsunari, Kim</td>
<td>243</td>
</tr>
<tr>
<td>Miyagi, Masaru</td>
<td>164</td>
</tr>
<tr>
<td>Miyake, Junichi</td>
<td>280</td>
</tr>
<tr>
<td>Miyamae, Yushi</td>
<td>148</td>
</tr>
<tr>
<td>Miyamoto, Wataru</td>
<td>155</td>
</tr>
<tr>
<td>Miyaji, Firoz</td>
<td>130</td>
</tr>
<tr>
<td>Mizokawa, Shigekazu</td>
<td>212, 233, 243</td>
</tr>
<tr>
<td>Mizuno, Naoko</td>
<td>187</td>
</tr>
<tr>
<td>Mizuuchi, Hideki</td>
<td>237</td>
</tr>
<tr>
<td>Moal, Bertrand</td>
<td>131</td>
</tr>
<tr>
<td>Mochida, Joji</td>
<td>271</td>
</tr>
<tr>
<td>Mochida, Yuichi</td>
<td>250</td>
</tr>
<tr>
<td>Moed, Berton R</td>
<td>170, 245</td>
</tr>
<tr>
<td>Moen, Todd</td>
<td>135</td>
</tr>
<tr>
<td>Mohaddes, Maziar</td>
<td>113</td>
</tr>
<tr>
<td>Mohammed, Shama</td>
<td>177</td>
</tr>
<tr>
<td>Mohan, Sujatha</td>
<td>164</td>
</tr>
<tr>
<td>Mohan, Vivek</td>
<td>125</td>
</tr>
<tr>
<td>Mohdin, Mariar</td>
<td>231</td>
</tr>
<tr>
<td>Mohns, Amir</td>
<td>167</td>
</tr>
<tr>
<td>Mohtadi, Nick G</td>
<td>62</td>
</tr>
<tr>
<td>Molineau, Gregory</td>
<td>150</td>
</tr>
<tr>
<td>Moisan, Alice</td>
<td>132</td>
</tr>
<tr>
<td>Morik, Garry</td>
<td>224</td>
</tr>
<tr>
<td>Molina, Christine B</td>
<td>212, 242</td>
</tr>
<tr>
<td>Moller, Henrik</td>
<td>78</td>
</tr>
<tr>
<td>Moller-Madsen, Bjarne</td>
<td>177</td>
</tr>
<tr>
<td>Molligan, Jeremy</td>
<td>247</td>
</tr>
<tr>
<td>Molloy, Dennis</td>
<td>114</td>
</tr>
<tr>
<td>Molly, Gavigan</td>
<td>148</td>
</tr>
<tr>
<td>Monazzam, Shafagh</td>
<td>187, 249</td>
</tr>
<tr>
<td>Monreal, Amy</td>
<td>121</td>
</tr>
<tr>
<td>Monroy, Alexa N</td>
<td>165</td>
</tr>
<tr>
<td>Morsi, Michael J</td>
<td>222</td>
</tr>
<tr>
<td>Morscher, Melanie</td>
<td>250</td>
</tr>
<tr>
<td>Morse, Lee</td>
<td>115</td>
</tr>
<tr>
<td>Marsh, Saam</td>
<td>128, 277</td>
</tr>
<tr>
<td>Mortimer, Errol S</td>
<td>250</td>
</tr>
<tr>
<td>Montanaro, Antonello</td>
<td>187</td>
</tr>
<tr>
<td>Monteiro, Gustavo C</td>
<td>198</td>
</tr>
<tr>
<td>Montgomery, Scott</td>
<td>107, 143, 168, 201</td>
</tr>
<tr>
<td>Montijo, Harvey E</td>
<td>274</td>
</tr>
<tr>
<td>Monto, Raymond R</td>
<td>197</td>
</tr>
<tr>
<td>Moon, Bryan S</td>
<td>122</td>
</tr>
<tr>
<td>Moon, Jae-Young</td>
<td>72, 85, 106, 127, 233, 269</td>
</tr>
<tr>
<td>Moon, Kyoung H</td>
<td>113</td>
</tr>
<tr>
<td>Moon, Young-Wan</td>
<td>227, 277</td>
</tr>
<tr>
<td>Mooney, Ryan</td>
<td>121</td>
</tr>
<tr>
<td>Mozer, Thomas E</td>
<td>145</td>
</tr>
<tr>
<td>Mubarak, Scott J</td>
<td>215, 277</td>
</tr>
<tr>
<td>Muccioli, Giulio Maria Marchegiani</td>
<td>116</td>
</tr>
<tr>
<td>Mudgal, Chaitanya S</td>
<td>90, 199-200</td>
</tr>
<tr>
<td>Mueller, Andreas Marc A</td>
<td>245</td>
</tr>
<tr>
<td>Mueller, Benjamin</td>
<td>263</td>
</tr>
<tr>
<td>Muhl, Stephanie</td>
<td>138, 162, 253</td>
</tr>
<tr>
<td>Mulhall, Kevin J</td>
<td>269</td>
</tr>
<tr>
<td>Muller, Philip</td>
<td>197</td>
</tr>
<tr>
<td>Muller, Scott M</td>
<td>110, 229</td>
</tr>
<tr>
<td>Mulligan, Michael T</td>
<td>232</td>
</tr>
<tr>
<td>Mullis, Brian</td>
<td>174</td>
</tr>
<tr>
<td>Mulpuri, Kishore</td>
<td>121</td>
</tr>
<tr>
<td>Mummanen, Praveen V</td>
<td>90-91, 130-131, 191, 265</td>
</tr>
<tr>
<td>Mun, Sang Won</td>
<td>126</td>
</tr>
<tr>
<td>Munch, Jacqueline</td>
<td>107, 271</td>
</tr>
<tr>
<td>Mundis, Gregory M</td>
<td>94, 249</td>
</tr>
<tr>
<td>Munro, Jacob</td>
<td>225</td>
</tr>
<tr>
<td>Munro, Mark W</td>
<td>154, 276</td>
</tr>
<tr>
<td>Muz, John W</td>
<td>275</td>
</tr>
<tr>
<td>Muppararapu, Raghuvire</td>
<td>81</td>
</tr>
<tr>
<td>Murakami, Hideki</td>
<td>140, 260-261, 264-265, 283</td>
</tr>
<tr>
<td>Muraoka, Kunihide</td>
<td>223</td>
</tr>
<tr>
<td>Murase, Tsuyoshi</td>
<td>280</td>
</tr>
<tr>
<td>Murawski, Christopher D</td>
<td>154, 219, 246</td>
</tr>
<tr>
<td>Murnaghan, Deborah A</td>
<td>195</td>
</tr>
<tr>
<td>Murnaghan, John J</td>
<td>195, 285</td>
</tr>
<tr>
<td>Murphy, Garnett A</td>
<td>70</td>
</tr>
<tr>
<td>Murphy, Jeffrey A</td>
<td>242</td>
</tr>
<tr>
<td>Murphy, Stephen B</td>
<td>122, 211</td>
</tr>
<tr>
<td>Murray, David W</td>
<td>105, 160, 188, 244</td>
</tr>
<tr>
<td>Murray, Iain</td>
<td>186</td>
</tr>
<tr>
<td>Murray, Paraic A</td>
<td>270</td>
</tr>
<tr>
<td>Murth, Yvonne M</td>
<td>64</td>
</tr>
<tr>
<td>Murthi, Anand M</td>
<td>94, 144</td>
</tr>
<tr>
<td>Muschler, George F</td>
<td>70</td>
</tr>
<tr>
<td>Mutch, Jennifer</td>
<td>259</td>
</tr>
<tr>
<td>Mutch, Peter</td>
<td>151</td>
</tr>
<tr>
<td>Muthukumar, Nagarajan</td>
<td>252</td>
</tr>
<tr>
<td>Mutnal, Amar</td>
<td>270</td>
</tr>
<tr>
<td>Mytaya, Lorraine L</td>
<td>276</td>
</tr>
<tr>
<td>Myers, Richard</td>
<td>84</td>
</tr>
<tr>
<td>Myers, Thomas</td>
<td>235</td>
</tr>
<tr>
<td>Myerson, Mark S</td>
<td>57, 143, 158, 215</td>
</tr>
<tr>
<td>Myung, Karen S</td>
<td>250</td>
</tr>
<tr>
<td>Nadeau, Melissa</td>
<td>285</td>
</tr>
<tr>
<td>Naef, Floreana A</td>
<td>130</td>
</tr>
<tr>
<td>Naessens, James</td>
<td>124, 232</td>
</tr>
<tr>
<td>Nagura, Takeo</td>
<td>256</td>
</tr>
<tr>
<td>Nagy, Mathias</td>
<td>106, 125, 227</td>
</tr>
<tr>
<td>Nair, Pallavi</td>
<td>109, 155, 214</td>
</tr>
<tr>
<td>Naito, Masatoshi</td>
<td>205, 223, 268</td>
</tr>
<tr>
<td>Nakagawa, Shigeru</td>
<td>136</td>
</tr>
<tr>
<td>Nakajima, Kenichiro</td>
<td>155</td>
</tr>
<tr>
<td>Nakamae, Atsuo</td>
<td>273</td>
</tr>
<tr>
<td>Nakamura, Hidehiro</td>
<td>256</td>
</tr>
<tr>
<td>Nakamura, Hiroaki</td>
<td>212, 222</td>
</tr>
<tr>
<td>Nakamura, Kosoz</td>
<td>230</td>
</tr>
<tr>
<td>Nakamura, Nobuo</td>
<td>269</td>
</tr>
<tr>
<td>Nakamura, Tomoki</td>
<td>121, 281</td>
</tr>
<tr>
<td>Nakamura, Toshitaka</td>
<td>117</td>
</tr>
<tr>
<td>Nakamura, Toshiyasu</td>
<td>256</td>
</tr>
<tr>
<td>Nakamura, Yoshinari</td>
<td>223</td>
</tr>
<tr>
<td>Nakao, Shin-ichi</td>
<td>108</td>
</tr>
<tr>
<td>Nakase, Junsuke</td>
<td>115, 132, 282</td>
</tr>
<tr>
<td>Nakashima, Motoshige</td>
<td>268</td>
</tr>
<tr>
<td>Nakashima, Yasuhara</td>
<td>279</td>
</tr>
<tr>
<td>Nakayama, Hiroshi</td>
<td>97</td>
</tr>
<tr>
<td>Nailey, Charles C</td>
<td>282</td>
</tr>
<tr>
<td>Nam, Chang Hyun</td>
<td>243</td>
</tr>
<tr>
<td>Nam, Denis</td>
<td>67, 213, 223, 234, 238</td>
</tr>
<tr>
<td>Namba, Robert S</td>
<td>125, 137</td>
</tr>
<tr>
<td>Namm, Joshua</td>
<td>218</td>
</tr>
<tr>
<td>Nandi, Sumon</td>
<td>226</td>
</tr>
<tr>
<td>Nanni, Matteo</td>
<td>204, 210, 283</td>
</tr>
<tr>
<td>Narayan, Unni G</td>
<td>123, 177</td>
</tr>
<tr>
<td>Narkbunnam, Rapeepat</td>
<td>238</td>
</tr>
<tr>
<td>Narvani, Ali</td>
<td>256</td>
</tr>
<tr>
<td>Nasser, Nader A</td>
<td>78, 114, 176</td>
</tr>
<tr>
<td>Nasser, Ahmad</td>
<td>62, 71, 159, 200, 260</td>
</tr>
<tr>
<td>Naughton, Marybeth</td>
<td>242</td>
</tr>
<tr>
<td>Nauth, Aaron</td>
<td>123, 136</td>
</tr>
<tr>
<td>Navarro, Ronald A</td>
<td>165</td>
</tr>
<tr>
<td>Nawabi, Danyal</td>
<td>67, 78, 114, 225</td>
</tr>
<tr>
<td>Nawaz, Syed</td>
<td>64</td>
</tr>
<tr>
<td>Nayak, Aniruddh</td>
<td>267</td>
</tr>
<tr>
<td>Nayini, Krishnavee</td>
<td>155</td>
</tr>
<tr>
<td>Nazarian, Levon N</td>
<td>150</td>
</tr>
<tr>
<td>Naziri, Gisai</td>
<td>66, 96, 109, 175-176, 196, 239-240, 242-243, 245</td>
</tr>
<tr>
<td>Nebegall, Audrey</td>
<td>160, 211</td>
</tr>
<tr>
<td>Neckrshy, Sergey</td>
<td>262</td>
</tr>
<tr>
<td>Neiss, Geraldine</td>
<td>249</td>
</tr>
<tr>
<td>Nelms, Nathaniel J</td>
<td>147</td>
</tr>
<tr>
<td>Nelson, Bradley J</td>
<td>98</td>
</tr>
<tr>
<td>Nelson, Charles L</td>
<td>176</td>
</tr>
<tr>
<td>Nelson, David L</td>
<td>340</td>
</tr>
<tr>
<td>Nelson, Kenneth J</td>
<td>152</td>
</tr>
<tr>
<td>Nelson, Megan B</td>
<td>121</td>
</tr>
<tr>
<td>Nepola, James V</td>
<td>216</td>
</tr>
</tbody>
</table>
Neradilek, Moni B. 163
Neri, Simona 215
Nesterenko, Sergiy 217, 265
Nestl, Leon 276
Neto, Nelson Astur 223
Nettles, Dana L. 109
Neubauer, Philip R. 264, 266
Neuhaus, Valentin 199-200
Neukom, Lisa 151
Nevisier, Andrew 71, 186
Nevisier, Robert J. 71, 186
Nevitt, Michael C 283
Newman, Ashley M. 104
Newman, Erik 235-236
Newman, Kevin 64
Newton, Peter O. 93, 102, 130, 141, 191, 250, 263, 266-267
Ng, Reza CS 98
Ngarmukos, Srihatch G. 59, 239, 241
Nguyen, Joseph 62, 92, 97, 198, 201, 223, 258, 269-270
Nguyen, Thao 59
Nho, Jae Woon 119, 229
Nho, Shane 283
Nich, Christophe 161
Nicholson, Gregory P 123, 151
Nicholson, James J 60
Nickerson, Edward 82
Nickisch, Florian 245
Niemelainen, Mika 137
Nigro, Philip T. 151, 198
Nikura, Takahiro 220, 280
Niinimaki, Tuukka T. 86
Nikel, Ondrej 232
Nilsson, Gunnar 155
Nilsson, Jan-Ake 218
Nishida, Hideji 120-121, 140, 281-283
Nishida, Yasuyoshi 161
Nishida, Yoshio 180, 282
Nishi, Takashi 269
Nishio, Shoji 224
Niska, Jared 116
Nitri, Marco 59
Noble, Jeffrey S. 259
Noble, Philip C 115, 136, 225, 239, 242
Nodl, Vincent 169
Nodoz, Scott 118, 163
Noel, Curtis R. 259
Nogler, Michael 204
Noguchi, Hideo 252
Noguchi, Takahiro 136
Nojiri, Hideyoshi 117
Nomura, Issel 275
Nomura, Tomohiro 223
Noonan, Benjamin 186
Noonan, Ken J. 122
Nord, Ashley A. 241
Noriki, Miyambo 78
Norris, Rory J. 226
North, Kylee 276
Norton, Adam 143
Norton, Robert P. 108
Noticewala, Manish S. 153, 222
Noussaien, Markku 136
Novais, Eduardo N 161
Novicoff, Wendy 60, 196, 222, 233, 263
Nowinski, Robert J. 162
Noyes, Frank R 126, 268
Nunley, James A. 143-144, 158, 169, 246
Nunley, Ryan 82, 87, 134, 137, 184, 195, 212, 214, 222, 224, 235
Nwachukwu, Benedict U. 192, 272
Nwankwo, Chido D 211
Nye, Darin D. 149
Nylander, Carlmagnus A Cardenas 204
Nyman, Jeffry 81
Nyquist, Ann-Christine 190
O’Brien, Joseph R 84
O’Brien, Kay E 233
O’Brien, Michael J 172
O’Brien, Stephen J 104, 112
O’Connor, Daniel 103, 151
O’Connor, Mary I 74, 124
O’Donnell, Patrick W. 121
O’Donnell, Turlough 257
O’Driscoll, Shawn W 195
O’Hara, John N 221
O’Malley, Michael A 98
O’Neal, Scott B 274
O’Neill, Joseph T. 99
O’Neill, Kevin R 81, 91, 202
O’Shaughnessy, Brian A 262
O’Toole, Robert V 58, 164, 173, 278
Oakes, Christie 287-289
Obermey, Mark T 63, 82, 119, 277, 280
Oh, Hiroyuki 82, 160
Oh, Daniel J. 238
Oh, Jeong-Hwan 67
Oh, Kwang J. 86, 224
Ohashi, Yoshinori 115, 132
Oht, Xavier 118
Ohmri, Donna D 92
Oht, Gary T 193
Onetosa, Pasi 86
Ohue, Mutsuki 87
Ok, Kim Dong 279
Okahisa, Shohei 224
Okawa, Takahiro 256
Okanaka, Ken 237
Okabe, Satoshi 256
Oike, Kanu M 192
Okuda, Rysz 168-169
Okumachi, Etsuko 220, 280
Occt, Christopher W 232
Olcott, Christopher W 294
Ols, Andrew B 189
Olya, Petrovic 202
Oliva, Xavier Martin 143
Ollivier, Matthieu 66
Olsen, Joshua 244
Olson, Ruth A. 118
Oni, Hiroko 271
Omid, Reza 255
Omosho, Shin 280
On, Alvin C 233, 236, 241, 274
Ong, Kevin 139, 166, 197, 228, 232, 240, 244
Onishi, Yasuo 120
Ono, Yoh 114, 268
Onur, Tan S 267
Orfaly, Robert M 58, 203, 255
Orih, Haruhiro 67
Oroca, Fabio A 230
Oroca, Fabio 233, 236, 241, 274
Oretga, Gilbert R 99, 102
Oriz, Alvaro Sanchez 81
Osborne, Kevin A 103, 150
Osborne, Kevin 77
Osterhoff, Georg 110
Osterman, A Lee 89, 247
Ostrum, Robert F 58, 76, 133, 181, 194
Ota, Takashi 140, 260-261, 264-265, 283
Otto, Randall 151, 186, 197
Oudart, Jean-Baptiste 118
Owen, Trevor 164
Owen, Brett D 103
Owen, Johnny 244, 278
Owen, Roger K 107
Ozaki, Toshihiro 281
Ozawa, Hiroshi 262
Paci, Gabrielle M 200
Paci, Gallina 79
Packham, Iain 186
Padalecki, Jeffrey R 115
Paedget, Douglas E 78, 96, 114, 137, 160, 176, 196, 225, 228
Padley, Michelle 110
Paggi, Adam 273
Pagliai, Gherardo 215
Pagnani, Michael J 135
Pagnano, Mark W 74, 93, 101, 122, 125, 133, 181, 195, 230
Pahlavan, Soghrab 200
Pahuta, Mark 211
Paik, Haines 202
Paisley, Kevin C 278
Pajamaki, Jorma 77
Pakos, Emilios 60
Paksima, Nader 172
Pala, Elisa 121
Paletta, George A 73
Paley, Dror 135
Pals, Allison 222
Paller, David 100, 110, 254
Palma, Mark J 283
Palmer, Anthony 160, 188, 273
Palmer, Simon 169
Palumbo, Alessio 87
Palumbo, Brian 282
Palumbo, Tyler R 60
Pan, Chien-Chou 108
Pan, Ting-Jung 96, 137, 228
Panagiotidou, Anna 273
Panchal, Anand 103
Pandey, Radhakant 99
Pandit, Hemant G 105, 244
Pannell, William 143, 168
Papalia, Rocco 87, 126
Papandreou, Rick F 197, 216
Pape, Hans-Christoph 279
Papp, Steven 285
Pappas, Nick 257
Pappas, Nick 257
Paproski, Wayne G 113, 134, 145, 182, 224
Paravani, Daniele 206
Parhami, Farhad 201
Park, Chulhyun 209
Park, Caroline 209
Park, Chulhyun 142, 168
Park, Daniel K 202
Park, Do Young 97
Park, Don Y 89
Park, Jangwon 125, 224, 229
Park, Jong-Hoon 107
Park, Justin J 130
Park, Kwon 99
<p>| Sala, Debra A | 249 |
| Sala, Moshe | 127, 276 |
| Salat, Peter | 143 |
| Salata, Michael | 188, 283 |
| Saleh, Ans | 220 |
| Saleh, Khaled J | 57, 182, 193, 213, 240 |
| Saliman, Justin D | 208 |
| Salim, Satu | 118 |
| Salmon, Lucy J | 72-73, 85 |
| Saltzman, Charles L | 143, 245 |
| Salvati, Eduardo A | 223 |
| Salvo, John P | 272 |
| Sama, Andrew A | 92, 262 |
| Samaan, Samam | 185 |
| Samad, Lubna | 116 |
| Samade, Richard | 140 |
| Samama, Charles Marc | 118 |
| Sambaziotis, Chris | 229 |
| Samdani, Amer | 130, 267 |
| Sammarco, Vincent J | 135 |
| Sampson, Barry | 177 |
| Sampson, Steven | 149 |
| Sampson, Thomas G | 102, 193 |
| Samuel, Sumant | 130 |
| Samuelson, Eric M | 270 |
| Samuelsion, Kathleen | 280 |
| Sanada, Shigeru | 248 |
| Sanchez, Victor M | 102, 269 |
| Sanchez-Sotelo, Joaquin | 69, 125, 198, 254, 256 |
| Sandell, Linda J | 221 |
| Sanders, Albert E | 141 |
| Sanders, David | 174 |
| Sanders, James O | 93, 141, 250 |
| Sanders, Roy W | 136, 165, 172, 174, 245 |
| Sanders, Sheila | 184 |
| Sanders, Thomas | 215 |
| Sanders, Timothy G | 244 |
| Sandiford, Nemandra A | 240 |
| Sandilands, Scott M | 268 |
| Sandler, Michael | 143 |
| Sandman, Emilie | 198, 255, 274 |
| Sandon, Cezar | 203 |
| Sandusky, Matthew F | 109 |
| Sangeorzan, Bruce J | 142, 245 |
| Sanghi, Divya | 192 |
| Sanjum, Samagh | 87 |
| Sano, Hirotaka | 117 |
| Santoni, Brandon G | 258, 267, 282 |
| Sanzone, Anthony G | 275 |
| Sapienza, Anthony | 172 |
| Sarwark, John F | 178 |
| Sasahara, Jun | 155 |
| Sasidhar, Uppuganti | 81 |
| Sass, Rick C | 111 |
| Sasson, Adam | 152 |
| Satcher, Robert L | 122 |
| Sathiakumar, Vasantha | 119 |
| Sato, Atsuko | 82, 160 |
| Sato, Junko | 252 |
| Sato, Shigenobu | 131, 264 |
| Sato, Tatsuya | 161 |
| Satonaka, Haruhiko | 274 |
| Saucedo, James M | 230 |
| Savage-Elliott, Ian | 154 |
| Savoie, Felix H | 46, 146, 159, 172 |
| Saw, Khay-Yong | 98 |
| Sawardeker, Prasad J | 198 |
| Sawyer, Aenor J | 76 |
| Sawyer, Jeffrey RS | 52, 79, 132, 142 |
| Saxena, Arjun | 244 |
| Sayanagi, Junichi | 231 |
| Sayde, William M | 90 |
| Scape, Steven L | 240 |
| Scannell, John A | 85 |
| Scarfield, Jordan F | 261 |
| Schafer, Michael F | 158 |
| Schairer, William W | 87, 130, 152 |
| Schiff, Adam P | 110 |
| Schiffl, Eric D | 232 |
| Schillhammer, Carl | 115 |
| Schieck, Cathy D | 125, 162 |
| Schmalzlried, Thomas P | 57, 134, 157 |
| Schmiel, Andrew H | 58, 94, 174, 256, 277, 289 |
| Schmid, Christopher C | 198 |
| Schmid, Richard D | 75 |
| Schmied, Andreas | 246 |
| Schmier, Jordana K | 197 |
| Schneider, John E | 142 |
| Schoch, Bradley | 152 |
| Schoenecker, Jonathan G | 153, 280 |
| Schoenecker, Perry L | 80, 161 |
| Schoenfield, Andrew J | 152, 191, 236, 252 |
| Scholz, Jesse | 235 |
| Schon, Lew C | 84, 101, 109 |
| Schottel, Patrick C | 62-63, 110, 155 |
| Schreck, Michael J | 262 |
| Schreiber, Joseph | 198, 263 |
| Schreiber, Verena M | 100 |
| Schreurs, B Willem | 227 |
| Schroeder, Joshua | 279 |
| Schreor, William C | 105, 137, 214, 240 |
| Schram, Mark | 197-198 |
| Schurtb, Mario | 66 |
| Schuetz, Phillip | 109 |
| Schulz, Brian M | 207 |
| Schutzer, Steven F | 64, 237 |
| Schwab, Frank J | 58, 131, 260, 265 |
| Schwaib, Ricardo | 128 |
| Schwartz, Alexander K | 146 |
| Schwartz, Daniel G | 187, 259 |
| Schwartz, Herbert S | 120, 179-180 |
| Schwarzbach, Cary C | 164 |
| Schwarzkopf, Ran | 60, 238, 241, 252 |
| Schweitzer, Mark | 211 |
| Schwend, Richard M | 93 |
| Schwenker, James D | 159 |
| Schwindel, Leslie E | 80, 268 |
| Scoioli, Mark | 341 |
| Scola, John A | 164 |
| Scoon, Joanna | 189 |
| Scott, Allison C | 177 |
| Scott, Carolyn | 124 |
| Scott, Gareth | 176 |
| Scott, Jonathan H | 271 |
| Scott, Richard D | 60, 241 |
| Scott, Stephanie E | 142 |
| Scott, W Norman | 125 |
| Scuderi, Gaetano J | 164, 264, 267 |
| Scuderi, Giles R | 61, 75, 124-125, 181-182, 212, 242 |
| Scuderi, Matthew G | 115 |
| Sculco, Peter K | 79, 136, 148, 231 |
| Sculco, Thomas P | 212-213 |
| Sebastian, Arjun | 260 |
| See, Aaron A | 252 |
| Seebauer, Ludwig | 76 |
| Seel, Jane C | 118 |
| Seely, Mark | 275 |
| Seng, Chusheng | 242 |
| Seno, Issel | 266 |
| Seo, Dong-Hyun | 271 |
| Seok, Ju | 168 |
| Seong, Jong-Keon | 72, 85, 95, 106, 127, 148, 233, 269 |
| Seong, Sang C | 137, 238-239 |
| Serenzt, Ninni | 39 |
| Sethi, Manish K | 63, 82, 119, 277, 280 |
| Setsa, Nina | 82 |
| Sewell, Mathew | 186 |
| Sferra, James D | 70 |
| Sforza, Giuseppe | 256 |
| Sgaglione, Nicholas A | 99, 112 |
| Shafqat, Aseer | 278 |
| Shah, Apurva | 132, 192 |
| Shah, Muhammad | 167 |
| Shah, Neil V | 99 |
| Shah, Ritish | 227 |
| Shah, Roshan P | 253 |
| Shah, Shalee S | 235 |
| Shah, Sukun A | 140, 141, 191, 248-249 |
| Shah, Tarak S | 109, 212 |
| Shah, Vivek R | 268 |
| Shah, Juma S | 98, 186 |
| Shah, Steve | 98, 186, 193 |
| Shahab, Faseeh | 165 |
| Shahabuddin, Professor | 165 |
| Shaheen, Phillip J | 261 |
| Shaikh, Aamir H | 257 |
| Shakib, Alireza | 185 |
| Shakir, Irsad A | 193 |
| Shang, Hulan | 201 |
| Shari, Raja H | 151 |
| Shankar, Sheila | 235 |
| Shankar, Viswanathan | 244 |
| Shannon, Brian D | 139 |
| Shannon, Hannah L | 197-198 |
| Shapiro, Frederic | 178 |
| Shapiro, Louis A | 93 |
| Shal, Adam | 99 |</p>
<table>
<thead>
<tr>
<th>Index</th>
<th>2013 Participants Index</th>
<th>453</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watts, Brian..........................</td>
<td>214</td>
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</tr>
<tr>
<td>Walton, Geoffrey..................</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Wang, Chao.............................</td>
<td>266</td>
<td></td>
</tr>
<tr>
<td>Wang, Cheng-Wei..................</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Wang, Ching-Jen.....................</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Wang, Jeffrey C........................</td>
<td>83, 107, 143, 145, 168, 201</td>
<td></td>
</tr>
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<td>Wang, Jung-Pan.....................</td>
<td>227</td>
<td></td>
</tr>
<tr>
<td>Wang, Lawrence C...................</td>
<td>255, 263</td>
<td></td>
</tr>
<tr>
<td>Wang, Luolun........................</td>
<td>259</td>
<td></td>
</tr>
<tr>
<td>Wang, Shaobai.......................</td>
<td>108, 261, 266</td>
<td></td>
</tr>
<tr>
<td>Wang, Shih-Tien........................</td>
<td>139</td>
<td></td>
</tr>
<tr>
<td>Wang, Stewart C......................</td>
<td>269</td>
<td></td>
</tr>
<tr>
<td>Wang, Ta-I..........................</td>
<td>227</td>
<td></td>
</tr>
<tr>
<td>Wang, Zhong..........................</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>Wangroosub, Yongsa...</td>
<td>59, 241</td>
<td></td>
</tr>
<tr>
<td>Wanich, Tony.........................</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Wanke, Tyr...</td>
<td>230</td>
<td></td>
</tr>
<tr>
<td>Wanner, John Paul........................</td>
<td>162, 164, 253</td>
<td></td>
</tr>
<tr>
<td>Wapner, Keith L........................</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Ward, Daniel M........................</td>
<td>226, 237</td>
<td></td>
</tr>
<tr>
<td>Ward, Lorraine........................</td>
<td>251</td>
<td></td>
</tr>
<tr>
<td>Ward, Michael M........................</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>Ward, Patricia A.....................</td>
<td>268</td>
<td></td>
</tr>
<tr>
<td>Ward, Samuel R........................</td>
<td>249</td>
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<tr>
<td>Ward, Timothy T........................</td>
<td>138</td>
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<tr>
<td>Warne, Bryan A........................</td>
<td>218</td>
<td></td>
</tr>
<tr>
<td>Warne, Winston J........................</td>
<td>163</td>
<td></td>
</tr>
<tr>
<td>Warner, Jon P.........................</td>
<td>52, 132, 142, 279</td>
<td></td>
</tr>
<tr>
<td>Warner, William C........................</td>
<td>52, 132, 142, 279</td>
<td></td>
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<tr>
<td>Warren, Russell F........................</td>
<td>97, 116, 152, 198, 214, 219, 258</td>
<td></td>
</tr>
<tr>
<td>Warwas, Sebastian........................</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>Washington, El...</td>
<td>268</td>
<td></td>
</tr>
<tr>
<td>Wasielowski, Ray C........................</td>
<td>183</td>
<td></td>
</tr>
<tr>
<td>Wassilewski, Georgi........................</td>
<td>183, 221</td>
<td></td>
</tr>
<tr>
<td>Waste...</td>
<td>264, 269, 274</td>
<td></td>
</tr>
<tr>
<td>Wastlerian, Amy........................</td>
<td>275, 282</td>
<td></td>
</tr>
<tr>
<td>Watanabe, Chisato........................</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Watanabe, K...</td>
<td>275, 282</td>
<td></td>
</tr>
<tr>
<td>Waterman, Brian........................</td>
<td>149</td>
<td></td>
</tr>
<tr>
<td>Waters, Jonathan......</td>
<td>195, 212, 231, 233</td>
<td></td>
</tr>
<tr>
<td>Waters, Peter M........................</td>
<td>132, 172, 178, 192, 251</td>
<td></td>
</tr>
<tr>
<td>Watkins, Coly J........................</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Watson, Heather........................</td>
<td>232, 240</td>
<td></td>
</tr>
<tr>
<td>Watson, J Tracy........................</td>
<td>58, 63, 100, 124, 154, 172, 194</td>
<td></td>
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<tr>
<td>Watson, Jonathan........................</td>
<td>268</td>
<td></td>
</tr>
<tr>
<td>Watt, James..............................</td>
<td>168</td>
<td></td>
</tr>
<tr>
<td>Watters, Tyler S......................</td>
<td>236</td>
<td></td>
</tr>
<tr>
<td>Wealth...</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Weatherill, Shela...</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Weathermon, Adam..................</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Weaver, Keith W........................</td>
<td>216</td>
<td></td>
</tr>
<tr>
<td>Weaver, Michael J........................</td>
<td>164</td>
<td></td>
</tr>
<tr>
<td>Weaver, Tara..........................</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>Webe...</td>
<td>223</td>
<td></td>
</tr>
<tr>
<td>Weber, Stephen C........................</td>
<td>82, 87</td>
<td></td>
</tr>
<tr>
<td>Weedin, Rickard C........................</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Weeks, Colleen........................</td>
<td>275</td>
<td></td>
</tr>
<tr>
<td>Weeks, Kenneth D........................</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Weening, Alexander........................</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>Wegner, Adam..........................</td>
<td>100, 128</td>
<td></td>
</tr>
<tr>
<td>Wegner, Melanie........................</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Wegryn, Julien........................</td>
<td>67, 69</td>
<td></td>
</tr>
<tr>
<td>Weil, Lowell S........................</td>
<td>169</td>
<td></td>
</tr>
<tr>
<td>Weil, Yoram A........................</td>
<td>279</td>
<td></td>
</tr>
<tr>
<td>Weiner, Bradley K........................</td>
<td>201</td>
<td></td>
</tr>
<tr>
<td>Weiner, Dennis S........................</td>
<td>250</td>
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<tr>
<td>Weins...</td>
<td>173</td>
<td></td>
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<tr>
<td>Weinst...</td>
<td>134, 145, 149</td>
<td></td>
</tr>
<tr>
<td>Weiskopf, Lukas......................</td>
<td>109, 245</td>
<td></td>
</tr>
<tr>
<td>Weis, Marcia..........................</td>
<td>79</td>
<td></td>
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<tr>
<td>Weiser, Bradley K........................</td>
<td>201</td>
<td></td>
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<tr>
<td>Weiser, Karl..........................</td>
<td>152</td>
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<tr>
<td>Wijers...</td>
<td>103</td>
<td></td>
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<tr>
<td>Wilber,...</td>
<td>253</td>
<td></td>
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<tr>
<td>Wilent, Bryan B........................</td>
<td>207</td>
<td></td>
</tr>
<tr>
<td>Wilkin...</td>
<td>285</td>
<td></td>
</tr>
<tr>
<td>Wilkins, Ross M........................</td>
<td>65, 220</td>
<td></td>
</tr>
<tr>
<td>Will, Ryan E..........................</td>
<td>277</td>
<td></td>
</tr>
<tr>
<td>Williams, Allison E........................</td>
<td>276</td>
<td></td>
</tr>
<tr>
<td>Williams, Ash...</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Williams, Bailee........................</td>
<td>168, 283</td>
<td></td>
</tr>
<tr>
<td>Williams, Christopher........................</td>
<td>254, 258</td>
<td></td>
</tr>
<tr>
<td>Williams, Geraint........................</td>
<td>227</td>
<td></td>
</tr>
<tr>
<td>Williams, Gerald R........................</td>
<td>145, 160, 162, 172, 194, 207</td>
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<td>Williams, John L........................</td>
<td>60, 154</td>
<td></td>
</tr>
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<td>Williams, Nadine L........................</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Williams, Nicole T........................</td>
<td>286</td>
<td></td>
</tr>
<tr>
<td>Williams, Philip........................</td>
<td>258</td>
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<tr>
<td>Williams, Riley J........................</td>
<td>97-98</td>
<td></td>
</tr>
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<td>Williamson, Chris........................</td>
<td>249</td>
<td></td>
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<tr>
<td>Wilting, Ryan..........................</td>
<td>197</td>
<td></td>
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<tr>
<td>Willis-...</td>
<td>238</td>
<td></td>
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<tr>
<td>Wilson, Addi...</td>
<td>229</td>
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</tr>
<tr>
<td>Wilson, Brian F........................</td>
<td>208</td>
<td></td>
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<tr>
<td>Wilson, Frederic B........................</td>
<td>128</td>
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<td>Wilson, Philip L........................</td>
<td>97, 104, 248</td>
<td></td>
</tr>
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<td>Wilson, Robert J........................</td>
<td>91</td>
<td></td>
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<tr>
<td>Wimberly, Robert L........................</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>Winalski, Carl S........................</td>
<td>159</td>
<td></td>
</tr>
<tr>
<td>Windhager, Reinhard........................</td>
<td>225</td>
<td></td>
</tr>
<tr>
<td>Wing,...</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>Winter, Matthias........................</td>
<td>259</td>
<td></td>
</tr>
<tr>
<td>Wirth, Michael A........................</td>
<td>102, 135, 203</td>
<td></td>
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<tr>
<td>Wiss, Donald A..........................</td>
<td>52, 170</td>
<td></td>
</tr>
<tr>
<td>Witek...</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>Wittig, James C........................</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Wixson, Richard L........................</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>Woerner, Michael........................</td>
<td>223</td>
<td></td>
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<tr>
<td>Woe...</td>
<td>108</td>
<td></td>
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<tr>
<td>Wolf,...</td>
<td>244</td>
<td></td>
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<tr>
<td>Wolf, Brian R..........................</td>
<td>144</td>
<td></td>
</tr>
<tr>
<td>Wolf, Jennifer M........................</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Wolfe, Caroline........................</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>Wolfe, Scott W..........................</td>
<td>75, 199</td>
<td></td>
</tr>
<tr>
<td>Wolinsky, Philip R........................</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Wollow...</td>
<td>159</td>
<td></td>
</tr>
<tr>
<td>Won, Ho Hyun..........................</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>Won, Man Hee..........................</td>
<td>113</td>
<td></td>
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<tr>
<td>Wong, Andrew M........................</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Wong, Christopher........................</td>
<td>244</td>
<td></td>
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<tr>
<td>Wong, Hubert..........................</td>
<td>142</td>
<td></td>
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<tr>
<td>Wong, Titus..........................</td>
<td>146</td>
<td></td>
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<tr>
<td>W...</td>
<td>85</td>
<td></td>
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<tr>
<td>Wo, Yew Lok..........................</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>Wordeman, Samuel C........................</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Wright, B...</td>
<td>91</td>
<td></td>
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<tr>
<td>Wright, Elizabeth A........................</td>
<td>238</td>
<td></td>
</tr>
<tr>
<td>Wright, Judy L..........................</td>
<td>286</td>
<td></td>
</tr>
<tr>
<td>Wright, Raymond D........................</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td>Wright, Rick W..........................</td>
<td>71, 76, 183, 235, 271</td>
<td></td>
</tr>
<tr>
<td>Wright, Robert J........................</td>
<td>214, 218</td>
<td></td>
</tr>
<tr>
<td>Wright, Thomas W........................</td>
<td>152, 207, 259</td>
<td></td>
</tr>
<tr>
<td>Wright, Timothy M........................</td>
<td>78, 96, 114, 137, 176, 201, 228, 241</td>
<td></td>
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<tr>
<td>Wu,...</td>
<td>141</td>
<td></td>
</tr>
<tr>
<td>Wu, Po-Kuei..........................</td>
<td>122, 227</td>
<td></td>
</tr>
<tr>
<td>Wu, Samuel J..........................</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Wu, Xiao..........................</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Wunder, Jay..........................</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Wyland, Douglas J........................</td>
<td>209</td>
<td></td>
</tr>
<tr>
<td>Wyles, Cody..........................</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>Wyrick, John D........................</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>Wysocki, Robert W........................</td>
<td>167, 235</td>
<td></td>
</tr>
<tr>
<td>Xiao, Xiao..........................</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>Xu,...</td>
<td>257</td>
<td></td>
</tr>
<tr>
<td>Xu,...</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Yamada, Josh..........................</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>Yamaguchi, Ken........................</td>
<td>49, 52, 68, 116, 170, 216</td>
<td></td>
</tr>
<tr>
<td>Yamaguchi, Kent........................</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Yamaguchi, Ryo...</td>
<td>279</td>
<td></td>
</tr>
<tr>
<td>Yamamoto, Nobuyuki........................</td>
<td>258</td>
<td></td>
</tr>
<tr>
<td>Yamamoto, Norio........................</td>
<td>120-121, 281-282</td>
<td></td>
</tr>
<tr>
<td>Yamamoto, Takuaki........................</td>
<td>279</td>
<td></td>
</tr>
<tr>
<td>Yamamoto, Yasuhiko........................</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Yamamura, Kazumasa........................</td>
<td>243</td>
<td></td>
</tr>
<tr>
<td>© 2013 American Academy of Orthopaedic Surgeons</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Yoon, Richard S............... 64, 119
Yoon, S T........................... 62
Yoon, Sun Jung.................... 188
Yoon, Taek R............... 85, 95, 106, 148, 233
Yorgova, Petya..................... 249
Yoshida, Kakunoshin........... 78
Yoshida, Taku............... 212, 231, 233, 243
Yoshihara, Hiroyuki............. 80
Yoshikawa, Hideki.............. 221, 280
Yoshikawa, Tomoaki............. 283
Yoshimura, Ichiro.............. 205, 268
Yoshioka, Katsuhito............. 140,
                           260-261, 264-265, 283
Yoshiya, Shinichi.............. 97, 224
Youderian, Ari................... 257
Youm, Jiwon....................... 96
Young, Elizabeth A............. 109
Young, Ernest..................... 264
Young, Simon..................... 151, 176
Younger, Alastair S E........... 142, 171
Youngmi, Ji....................... 276
Younkins, Elizabeth............. 120
Yu, Warren D..................... 102
Yu, Wing-Kwong............... 139
Yuan, Brandon J................. 162
Yuasa, Masato.................... 280
Yugue, Itaru...................... 139, 265, 267
Yukizawa, Yohei................. 231
Yuktanandana, Pongsak......... 239
Zabar, Sondra.................... 119, 216
Zaffagnini, Stefano............. 98, 116
Zahir, Usman..................... 184
Zaliz, Ira......................... 58, 94, 159
Zanoll, Diego.................. 144
Zartman, Kevin.................. 143
Zebala, Lukas P................. 130, 190
Zett, Andrew..................... 222
Zelenski, Nicole................. 169
Zhang, Clare..................... 271
Zhang, Daniel.................... 248
Zhang, Yejia...................... 265
Zhang, Zhiqi..................... 221
Zhao, Deng....................... 266
Zhao, Garida..................... 279
Zhao, Hongmou.................... 245
Zhihong, Zhou.................... 138, 173
Zhou, Hanbing................... 250
Zhou, Jiaqian................. 245
Zhu, Mark......................... 176
Zigler, Jack E................... 92
Zimel, Melissa N............... 278
Zimmek, Stephanie F........... 72
Zimmermann, Dorith............. 68
Zingmond, David............... 257
Ziran, Bruce..................... 164, 181
Zirker, Chris A................. 168

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