Case 2A – Alternative therapies for low back pain

Case Scenario:

A 45-year old male presents for discussion of treatment options for his chronic low back pain. He reports a 5 year history of progressively worsened back pain localized between L3-S1 area, with occasional intermittent radiation down to his right posterior hip and thigh area. Pain was described to be “achy”, “tight”, 5/10 on average, and 8/10 with prolonged sitting. Repetitive lumbar flexing activities exacerbate his pain. A lumbar MRI from 3 months ago showed non-specific arthritic change and mild disc bulging at L2-3 area. He has tried NSAIDS, antidepressants, muscle relaxants, and physical therapy before with mild response. He was recently referred to a spine center at a major teaching hospital and received an epidural injection of “steroid and pain medication” which did not help at all. He did not want to take narcotics because he is a machine operator. Surgery was not an option. He wanted to see if you could recommend anything else.

Identify clinical questions that you would have in this situation – for which you might pursue evidence-based answers?
Case 2A – Alternative therapies for low back pain

Clinical Question:

What therapies (other than medications or surgery) have evidence for reducing pain in patients with chronic low back pain?

Case 2A – Information and Evidence found in National Center for Complementary and Alternative Medicine

What search strategy would you use? Which sources and for what information…
Manipulative and Body-Based Practices: An Overview

Keywords: chiropractic, massage, osteopathic manipulation, spinal manipulation

On this page
- Introduction
- Scope of the Research
- Summary of the Major Threads of Evidence
- Definitions
- References
- For More Information

Introduction

Under the umbrella of manipulative and body-based practices is a heterogeneous group of CAM interventions and therapies. These include chiropractic and osteopathic manipulation, massage therapy, Tui Na, reflexology, rolfing, Bowen technique, Trager bodywork, Alexander technique, Feldenkrais method, and a host of others (a list of definitions is given at the end of this report). Surveys of the U.S. population suggest that between 3 percent and 16 percent of adults receive chiropractic manipulation in a given year, while between 2 percent and 14 percent receive some form of massage therapy.\(^1\)\(^5\) In 1997, U.S. adults made an estimated 192 million visits to chiropractors and 114 million visits to massage therapists. Visits to chiropractors and massage therapists combined represented 50 percent of all visits to CAM practitioners.\(^6\) Data on the remaining manipulative and body-based practices are sparser, but it can be estimated that they are collectively used by less than 7 percent of the adult population.

Manipulative and body-based practices focus primarily on the structures and systems of the body, including the bones and joints, the soft tissues, and the circulatory and lymphatic systems. Some practices were derived from traditional systems of medicine, such as those from China, India, or Egypt, while others were developed within the last 150 years (e.g., chiropractic and osteopathic manipulation). Although many providers have formal training in the anatomy and physiology of humans, there is considerable variation in the training and the approaches of these providers both across and within modalities. For example, osteopathic and chiropractic practitioners, who use primarily manipulations that involve rapid movements, may have a very different treatment approach than massage therapists, whose techniques involve slower applications of force, or than craniosacral therapists.

Despite this heterogeneity, manipulative and body-based practices share some common characteristics, such as the principles that the human body is self-regulating and has the ability to heal itself and that the parts of the human body are interdependent. Practitioners in all these therapies also tend to tailor their treatments to the specific needs of each patient.
Summary of the Major Threads of Evidence

**Clinical Studies: Trials**

Forty-three clinical trials have been conducted on the use of spinal manipulation for low-back pain, and there are numerous systematic reviews and meta-analyses of the efficacy of spinal manipulation for both acute and chronic low-back pain.\(^{10-14}\) These trials employed a variety of manipulative techniques. Overall, manipulation studies of varying quality show minimal to moderate evidence of short-term relief of back pain. Information on cost-effectiveness, dosing, and long-term benefit is scant. Although clinical trials have found no evidence that spinal manipulation is an effective treatment for asthma,\(^{15}\) hypertension,\(^{16}\) or dysmenorrhea,\(^ {17}\) spinal manipulation may be as effective as some medications for both migraine and tension headaches\(^ {18}\) and may offer short-term benefits to those suffering from neck pain.\(^ {19}\) Studies have not compared the relative effectiveness of different manipulative techniques.

Although there have been numerous published reports of clinical trials evaluating the effects of various types of massage for a variety of medical conditions (most with positive results), these trials were almost all small, poorly designed, inadequately controlled, or lacking adequate statistical analyses.\(^ {20}\) For example, many trials included co-interventions that made it impossible to evaluate the specific effects of massage, while others evaluated massage delivered by individuals who were not fully trained massage therapists or followed treatment protocols that did not reflect common (or adequate) massage practice.

There have been very few well-designed controlled clinical trials evaluating the effectiveness of massage for any condition, and only three randomized controlled trials have specifically evaluated massage for the condition most frequently treated with massage—back pain.\(^ {21}\) All three trials found massage to be effective, but two of these trials were very small. More evidence is needed.

**Risks**

There are some risks associated with manipulation of the spine, but most reported side effects have been mild and of short duration. Although rare, incidents of stroke and vertebral artery dissection have been reported following manipulation of the cervical spine.\(^ {22}\) Despite the fact that some forms of massage involve substantial force, massage is generally considered to have few adverse effects. Contraindications for massage include deep vein thrombosis, burns, skin infections, eczema, open wounds, bone fractures, and advanced osteoporosis.\(^ {21,23}\)

**Utilization/Integration**

In the United States, manipulative therapy is practiced primarily by doctors of chiropractic, some osteopathic physicians, physical therapists, and physiatrists. Doctors of chiropractic perform more than 90 percent of the spinal manipulations in the United States, and the vast majority of the studies that have examined the cost and utilization of spinal manipulation have focused on chiropractic.
Disease or Condition

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

O
- Osteoarthritis
  - Acupuncture
  - Acupuncture Report (PDF)
  - More osteoarthritis treatments >>
  - Osteoporosis

P
- Pain
  - Acupuncture
  - Magnets
  - Integration of Behavioral and Relaxation Approaches Into the Treatment of Chronic Pain and Insomnia (National Institutes of Health)<
  - Parkinson's Disease, Coenzyme Q10 Slows Functional Decline in

R
- Renal Disease
- Rheumatoid Arthritis
  - Chinese Thunder God Vine
  - Omega-3 Fatty Acids
  - Rheumatoid Arthritis and Complementary and Alternative Medicine

S
- Sleep Disorders
  - Integration of Behavioral and Relaxation Approaches Into the Treatment of Chronic Pain and Insomnia (National Institutes of Health)
  - Melatonin (Agency for Healthcare Research and Quality)
  - Valerian

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### Lower back pain and related conditions

Levels of scientific evidence for specific therapies

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<thead>
<tr>
<th>Grade: B (Good Scientific Evidence)</th>
<th>Specific therapeutic Use(s)</th>
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<tbody>
<tr>
<td><strong>Therapy</strong></td>
<td></td>
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<tr>
<td>Chiropractic</td>
<td>Low back pain</td>
</tr>
<tr>
<td>Chiropractic, Soft Manipulative Therapy, Soft Manipulation</td>
<td>Low back pain (subacute or chronic)</td>
</tr>
<tr>
<td>Devil’s Claw (Harpagophytum procumbens DC)</td>
<td>Low back pain</td>
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<tr>
<td>Hydrotherapy</td>
<td>Low back pain</td>
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<tr>
<td>Physical therapy</td>
<td>Whiplash</td>
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<tr>
<td>Willow bark (Salix sp.)</td>
<td>Lower back pain</td>
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</table>

<table>
<thead>
<tr>
<th>Grade: C (Unclear or Conflicting Scientific Evidence)</th>
<th>Specific therapeutic Use(s)</th>
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<tbody>
<tr>
<td><strong>Therapy</strong></td>
<td></td>
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<tr>
<td>Acupressure, Shiatsu</td>
<td>Low back pain</td>
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<tr>
<td>Acupuncture</td>
<td>Back pain (chronic)</td>
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<tr>
<td>Acupunctura</td>
<td>Neck pain</td>
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<tr>
<td>Alexander technique</td>
<td>Back pain</td>
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<tr>
<td>Chiropractic</td>
<td>Lumbar disc herniation</td>
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<tr>
<td>Chiropractic</td>
<td>Neck pain</td>
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<tr>
<td>Chiropractic, Soft Manipulative Therapy, Soft Manipulation</td>
<td>Whiplash injuries</td>
</tr>
<tr>
<td>Chiropractic, Soft Manipulative Therapy, Soft Manipulation</td>
<td>Cervical disc herniation</td>
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<tr>
<td>Chiropractic, Soft Manipulative Therapy, Soft Manipulation</td>
<td>Low back pain (acute)</td>
</tr>
<tr>
<td>Chiropractic, Soft Manipulative Therapy, Soft Manipulation</td>
<td>Lumbar disc herniation</td>
</tr>
<tr>
<td>Chiropractic, Soft Manipulative Therapy, Soft Manipulation</td>
<td>Neck pain (acute and chronic)</td>
</tr>
<tr>
<td>Chiropractic, Soft Manipulative Therapy, Soft Manipulation</td>
<td>Whiplash injuries</td>
</tr>
<tr>
<td>Healing touch</td>
<td>Back pain</td>
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<tr>
<td>Magnet therapy</td>
<td>Neck pain</td>
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<tr>
<td>Massage</td>
<td>Back pain</td>
</tr>
<tr>
<td>Meditation</td>
<td>Low back pain (chronic)</td>
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Chiropractic, Spinal Manipulative Therapy

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for informational purposes only, and should not be interpreted as specific medical advice.
Patients should consult with a qualified healthcare provider before making decisions about
therapies and/or health conditions.

While some complementary and alternative techniques have been studied scientifically, high-quality data regarding
safety, effectiveness, and mechanism of action are limited or controversial for most therapies. Whenever possible, it
is recommended that practitioners be licensed by a recognized professional organization that adheres to clearly
published standards. In addition, before starting a new technique or engaging a practitioner, it is recommended that
patients speak with their primary healthcare provider(s). Potential benefits, risks (including financial costs), and
alternatives should be carefully considered. The below monograph is designed to provide historical background
and an overview of clinically-oriented research, and neither advocates for or against the use of a particular therapy.

<table>
<thead>
<tr>
<th>Uses</th>
<th>Grade</th>
</tr>
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<tbody>
<tr>
<td><strong>Low back pain (subacute or chronic)</strong></td>
<td>B</td>
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<tr>
<td>There are more than 150 published human trials and case reports that detail the use of chiropractic manipulation in patients with low back pain. Results are variable, with some studies reporting benefits, and others suggesting no significant effects. Most trials are not well designed or reported, with inconsistent use of definitions of disease, techniques, and measured outcomes. Several analyses (meta-analyses) have attempted to pool the results of the better-quality trials (97:96;99:100:101:102:103:104:105:106:107:108:109:110:111). However, combining or comparing results of different trials is difficult due to inconsistencies between studies, and these meta-analyses have also reported variable effects. Despite these problems with existing research, the available scientific evidence overall suggests some improvement in pain symptoms. Better research is necessary before a definitive conclusion can be reached.</td>
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<tr>
<td><strong>Low back pain (acute)</strong></td>
<td>C</td>
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<tr>
<td>There is not enough reliable scientific evidence to conclude whether chiropractic techniques are beneficial in the management of acute back pain when compared to other approaches, including conservative management (112:113:114:115:116;98:70:117:118).</td>
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Devil's claw (Harpagophytum procumbens DC)

Natural Standard Botanical Monograph. Copyright © 2007 (www.naturalstandard.com). Commercial distribution prohibited. This monograph is intended for informational purposes only, and should not be interpreted as specific medical advice. You should consult with a qualified healthcare provider before making decisions about therapies and/or health conditions.

While some complementary and alternative techniques have been studied scientifically, high-quality data regarding safety, effectiveness, and mechanism of action are limited or controversial for most therapies. Whenever possible, it is recommended that practitioners be licensed by a recognized professional organization that adheres to clearly published standards. In addition, before starting a new technique or engaging a practitioner, it is recommended that patients speak with their primary healthcare provider(s). Potential benefits, risks (including financial costs), and alternatives should be carefully considered. The below monograph is designed to provide historical background and an overview of clinically-oriented research, and neither advocates for or against the use of a particular therapy.

BACKGROUND

- Devil's claw (Harpagophytum procumbens) originates from the Kalahari and Savannah desert regions of South and Southeast Africa. In these parts of the world, devil's claw has historically been used to treat a wide range of conditions including fever, malaria and indigestion. The medicinal ingredient of the devil's claw plant is extracted from the dried root.

- Currently, the major uses of devil's claw are as an anti-inflammatory and pain reliever for joint diseases, back pain and headache. There is currently widespread use of standardized devil's claw for mild joint pain in Europe.

- Potential side effects include gastrointestinal upset, low blood pressure, or abnormal heart rhythms (increased heart rate or increased heart squeezing effects).

- Traditionally, it has been recommended to avoid using devil's claw in patients with stomach ulcers, or in people using blood thinners (anticoagulants such as warfarin/Coumadin®).

SCIENTIFIC EVIDENCE

<table>
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<th>Uses</th>
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<tr>
<td>Low back pain</td>
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These uses have been tested in humans or animals. Safety and effectiveness have not always been proven. Some of these conditions are potentially serious, and should be evaluated by a qualified healthcare provider.
Hydrotherapy

While some complementary and alternative techniques have been studied scientifically, high-quality data regarding safety, effectiveness, and mechanism of action are limited or controversial for most therapies. Whenever possible, it is recommended that practitioners be licensed by a recognized professional organization that adheres to clearly published standards. In addition, before starting a new technique or engaging a practitioner, it is recommended that patients speak with their primary healthcare provider(s). Potential benefits, risks (including financial costs), and alternatives should be carefully considered. The below monograph is designed to provide historical background and an overview of clinically-oriented research, and neither advocates for or against the use of a particular therapy.

Related Terms:
- Aquatic physical therapy, bath, cold therapy, colonic hydrotherapy, colonic irrigation
- constitutional hydrotherapy, Dead Sea bath, douche, external hydrotherapy, fomentation, foot bath, hot therapy, hot tub, hot tub therapy, immersion bath, internal hydrotherapy, jet spray, local hydrotherapy, motion-based treatment, mud bath, poultice, purifying bath, salt bath, sauna, shower, sitz bath, spa treatment, soaked towel, temperature-based treatment, Turkish bath, warm salt water immersion, warm sulfur water immersion, warm tap water immersion, water bath, water birth, water mineral bath, Watsu®, whirlpool.

# SCIENTIFIC EVIDENCE

## Uses
These uses have been tested in humans or animals. Safety and effectiveness have not always been proven. Some of these conditions are potentially serious, and should be evaluated by a qualified healthcare provider.

<table>
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<th>Grade</th>
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Several small controlled trials report that regular use of hot whirlpool baths with massaging jets improves the duration and severity of back pain when added to standard therapy, compared to standard therapy alone (Constant, 1995; Constant, 1998; Guillemín, 1994; McIveen, 1990). It is not clear if there is a reduced need for pain control drugs, or if benefits are long-standing. Because these studies are small with flaws in design and reporting, better quality research is necessary before a strong conclusion can be drawn.
Willow bark (*Salix* spp.)

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While some complementary and alternative techniques have been studied scientifically, high-quality data regarding safety, effectiveness, and mechanism of action are limited or controversial for most therapies. Whenever possible, it is recommended that practitioners be licensed by a recognized professional organization that adheres to clearly published standards. In addition, before starting a new technique or engaging a practitioner, it is recommended that patients speak with their primary healthcare provider(s). Potential benefits, risks (including financial costs), and alternatives should be carefully considered. The below monograph is designed to provide historical background and an overview of clinically-oriented research, and neither advocates for or against the use of a particular therapy.

- Several countries in Europe have approved willow bark for pain and inflammatory disorders. The German Commission E has approved willow bark for fever, rheumatic ailments, and headaches. The British Herbal Compendium indicates that willow bark can be used for rheumatic and arthritic conditions, and fever associated with cold and influenza. In France, willow bark has been approved as an analgesic to treat headache and toothache pain, as well as painful articular (joint) conditions, tendonitis, and sprains. The European Scientific Cooperative on Phytotherapy (ESCOP) has approved willow bark extract for the treatment of fever, pain, and mild rheumatic complaints.

### Scientific Evidence

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<tr>
<td><strong>Osteoarthritis</strong></td>
<td>A</td>
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<tr>
<td>Willow bark is a traditional analgesic (pain relieving) therapy for osteoarthritis. Several studies have confirmed this finding. Additional study comparing willow bark to conventional medicinal agents for safety and effectiveness is warranted.</td>
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<tr>
<td><strong>Lower back pain</strong></td>
<td>B</td>
</tr>
<tr>
<td>White willow has been compared to placebo and to cyclooxygenase-2 inhibitors, and many of the studies found willow bark to be as effective or superior to other methods. Cost effectiveness studies have also been performed between white willow bark and conventional treatment, and found that willow bark was more cost effective. Additional study would help make a strong recommendation.</td>
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Search PubMed

PubMed Clinical Queries

This page provides the following specialized PubMed searches for clinicians:

- Search by Clinical Study Category
- Find Systematic Reviews
- Medical Genetics Searches

After running one of these searches, you may further refine your results using PubMed's Limits feature.

Results of searches on these pages are limited to specific clinical research areas. For comprehensive searches, use PubMed directly.

Search by Clinical Study Category

This search finds citations that correspond to a specific clinical study category. The search may be either broad and sensitive or narrow and specific. The search filters are based on the work of Keynes RR et al. See the filter table for details.

Search: raw back pain and alternative treatments

Category
- etiology
- diagnosis
- therapy
- prognosis
- clinical prediction guides

Scope
- narrow, specific search
- broad, sensitive search

Find Systematic Reviews

For your topic(s) of interest, this search finds citations for systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, and guidelines.

For more information, see Help. See also related sources for systematic review searching.

Search


Case 2A – Evidence found in Cochrane


**Herbal medicine for low back pain: a Cochrane review.**

**Gagnier JJ, van Tulder MW, Berman B, Bombardier C**

Institute of Medical Science, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada. j.gagnier@utoronto.ca

**STUDY DESIGN:** A systematic review of randomized controlled trials. **OBJECTIVES:** To determine the effectiveness of herbal medicine compared with placebo, no intervention, or "standard/accepted/conventional treatments" for nonspecific low back pain. **SUMMARY OF BACKGROUND DATA:** Low back pain is a common condition and a substantial economic burden in industrialized societies. A large proportion of patients with chronic low back pain use complementary and alternative medicine (CAM) and/or visit CAM practitioners. Several herbal medicines have been purported for use in low back pain.

**METHODS:** The following databases were searched: Medline (1966 to April 2003), Embase (1980 to April 2003), Cochrane Controlled Trials Register (Issue 1, 2003), and Cochrane Complementary Medicine (CM) field Trials Register. Additionally, reference lists in review articles, guidelines, and in the retrieved trials were checked. Randomized controlled trials (RCTs), using adults (>18 years of age) suffering from acute, subacute, or chronic nonspecific low back pain. Types of interventions included herbal medicines defined as a plant that is used for medicinal purposes in any form. Primary outcome measures were pain and function. Two reviewers (J.J.G. and M.W.T.) conducted electronic searches in all databases. One reviewer (J.J.G.) contacted content experts and acquired relevant citations. Authors, title, subject headings, publication type, and abstract of the isolated studies were downloaded or a hard copy was retrieved. Methodologic quality and clinical relevance were assessed separately by two individuals (J.J.G. and M.W.T.). Disagreements were resolved by consensus. **RESULTS:** Ten trials were included in this review. Two high-quality trials utilizing Harpagophytum procumbens (Devil's claw) found strong evidence for short-term improvements in pain and rescue medication for daily doses standardized to 50 mg or 100 mg harpagoside with another high-quality trial demonstrating relative equivalence to 12.5 mg per day of rofecoxib. Two moderate-quality trials utilizing Salix alba (White willow bark) found moderate evidence for short-term improvements in pain and rescue medication for daily doses standardized to 120 mg or 240 mg salicin with an additional trial demonstrating relative equivalence to 12.5 mg per day of rofecoxib. Three low-quality trials using Capsicum frutescens (Cayenne) using various topical preparations found moderate evidence for favorable results against placebo and one trial found equivalence to a homeopathic ointment. **CONCLUSIONS:** Harpagophytum procumbens, Salix alba, and Capsicum frutescens seem to reduce pain more than placebo. Additional trials testing these herbal medicines against standard treatments will clarify their equivalence in terms of efficacy. The quality of reporting in these trials was generally poor; thus, trialists should refer to the CONSORT statement in reporting clinical trials of herbal medicines.

PMID: 17202897 [PubMed - indexed for MEDLINE]
Case 2A – Evidence in Other Journals

1. **BMC Musculoskelet Disord.** 2005 Aug;6(1).

*Osteopathic manipulative treatment for low back pain: a systematic review and meta-analysis of randomized controlled trials.*

**Licciardone JC, Brimhall AK, King LN.**

Osteopathic Research Center, University of North Texas Health Science Center, Fort Worth, TX 76107, USA. jliccar@hsc.unt.edu

**BACKGROUND:** Osteopathic manipulative treatment (OMT) is a distinctive modality commonly used by osteopathic physicians to complement their conventional treatment of musculoskeletal disorders. Previous reviews and meta-analyses of spinal manipulation for low back pain have not specifically addressed OMT and generally have focused on spinal manipulation as an alternative to conventional treatment. The purpose of this study was to assess the efficacy of OMT as a complementary treatment for low back pain.

**METHODS:** Computerized bibliographic searches of MEDLINE, EMBASE, MANTIS, OSTMED, and the Cochrane Central Register of Controlled Trials were supplemented with additional database and manual searches of the literature. Six trials, involving eight OMT vs control treatment comparisons, were included because they were randomized controlled trials of OMT that involved blinded assessment of low back pain in ambulatory settings. Data on trial methodology, OMT and control treatments, and low back pain outcomes were abstracted by two independent reviewers. Effect sizes were computed using Cohen’s d statistic and meta-analysis results were weighted by the inverse variance of individual comparisons. In addition to the overall meta-analysis, stratified meta-analyses were performed according to control treatment, country where the trial was conducted, and duration of follow-up. Sensitivity analyses were performed for both the overall and stratified meta-analyses. **RESULTS:** Overall, OMT significantly reduced low back pain (effect size, −0.30; 95% confidence interval, −0.47 to −0.13; P = .001). Stratified analyses demonstrated significant pain reductions in trials of OMT vs active treatment or placebo control and OMT vs no treatment control. There were significant pain reductions with OMT regardless of whether trials were performed in the United Kingdom or the United States. Significant pain reductions were also observed during short-, intermediate-, and long-term follow-up. **CONCLUSION:** OMT significantly reduces low back pain. The level of pain reduction is greater than expected from placebo effects alone and persists for at least three months. Additional research is warranted to elucidate mechanistically how OMT exerts its effects, to determine if OMT benefits are long lasting, and to assess the cost-effectiveness of OMT as a complementary treatment for low back pain.

**PMID:** 16080794 [PubMed - indexed for MEDLINE]
Complementary and alternative therapies for low back pain.

van Tulder MW, Furlan AD, Gagnier JJ.

Institute for Research in Extramural Medicine, VU University Medical Center, Van der Boechorststraat 7, 1081 BT Amsterdam, The Netherlands. mw.vantulder@vumc.nl

The support for the principles of evidence-based medicine has increased within the field of complementary and alternative medicine (CAM). The objective of this chapter is to determine the effectiveness of CAM therapies compared to placebo, no intervention, or other interventions for acute/subacute and chronic non-specific low back pain (LBP). Results from Cochrane reviews on acupuncture, botanical medicine, massage, neuroreflexotherapy, and spinal manipulation have been used. The results showed that acupuncture is more effective than no treatment or sham treatment for chronic LBP but that there are no differences in effectiveness compared with other conventional therapies. Specific botanical medicines can be effective for acute episodes of chronic non-specific LBP in terms of short-term improvement in pain and functional status; long-term efficacy was not assessed. Massage seems more beneficial than sham treatment for chronic non-specific LBP but effectiveness compared with other conventional therapies is inconclusive. Neuroreflexotherapy appears to be more effective than sham treatment or standard care for chronic non-specific LBP. Spinal manipulation was more effective than sham manipulation or ineffective therapies, and equally effective as other conventional therapies. In summary, the results on CAM therapies for (acute episodes of) chronic LBP are promising but more evidence on the relative cost-effectiveness compared to conventional treatments is needed.

PMID: 15949781 [PubMed - Indexed for MEDLINE]
Addition of choice of complementary therapies to usual care for acute low back pain: a randomized controlled trial.

Eisenberg DM, Post DE, Davis RB, Connelly MT, Legedza AT, Hrbek AL, Prosser LA, Burton JR, Atul TS, Cherkin DC

Division for Research and Education in Complementary and Integrative Medical Therapies, Osher Institute, Harvard Medical School, Boston, MA 02215, USA, david_eisenberg@hmh.harvard.edu

STUDY DESIGN: A randomized controlled trial. OBJECTIVE: To investigate the effectiveness and cost of usual care plus patient choice of acupuncture, chiropractic, or massage therapy (choice) compared with usual care alone in patients with acute low back pain (LBP). SUMMARY OF BACKGROUND DATA: Few studies have evaluated care models with facilitated access to and financial coverage for adjunctive complementary and alternative medicine therapies. METHODS: A total of 444 patients with acute LBP (<21 days) were recruited from 4 clinical sites and randomized into 2 groups: usual care or choice. Outcomes included symptoms (bothersomeness), functional status (Roland), and satisfaction between baseline and 5 weeks, and cost of medical care in the 12 weeks after randomization. RESULTS: After 5 weeks, providing patients with a choice did not yield clinically important reductions in symptoms (median -4, interquartile range -7, -2) for usual care, and -5 [-7, -3] for choice; P = 0.002) or improvements in functional status (-8 [-13, -2] for usual care, and -9 [-15, -4] for choice; P = 0.15). Although there was a significantly greater satisfaction with care in the choice group, this came at a net increase in costs of 244 dollars per patient. This consisted of a 99 dollars reduction in the average cost to the insurer for medical care but an additional cost of 343 dollars, for an average of 66.0 complementary and alternative medicine treatments per patient. CONCLUSIONS: A model of care that offered access to a choice of complementary and alternative medicine therapies for acute LBP did not result in clinically significant improvements in symptom relief or functional restoration. This model was associated with greater patient satisfaction but increased total costs. Future evaluations of this choice model should focus on patients with chronic conditions (including chronic back pain) for which conventional medical care is often costly and of limited benefit.

PMID: 17224808 [PubMed - indexed for MEDLINE]
Case 2B – Acupuncture for low back pain

The patient’s wife had suggested acupuncture, and after discussing it further the patient wants to try acupuncture.

Clinical Question(s):

What is acupuncture?

Is acupuncture safe?

Is acupuncture effective for reducing low back pain compared to no treatment or standard medical care?

Is acupuncture effective for reducing low back pain compared to placebo or sham control?

Is acupuncture more effective than other modalities for reducing low back pain?
Case 2B – Information from NCCAM

Acupuncture

Keywords: acupuncture, traditional Chinese medicine (TCM), osteoarthritis

On this page

- Key Points
- What is acupuncture?
- How widely is acupuncture used in the United States?
- What does acupuncture feel like?
- Is acupuncture safe?
- Does acupuncture work?
- How might acupuncture work?
- How do I find a licensed acupuncture practitioner?
- How much will acupuncture cost?
- Will it be covered by my insurance?
- What should I expect during my first visit?
- Definitions
- References
- For More Information

Any decision you make about your health care is important—including deciding whether to use acupuncture. The National Center for Complementary and Alternative Medicine (NCCAM) has developed this fact sheet to provide you with information on acupuncture. It includes frequently asked questions, issues to consider, and a list of sources for further information. Terms that are underlined are defined at the end of this fact sheet.
Case 2B – Evidence from Meta-Analysis – Annals of Int Med

Meta-Analysis: Acupuncture for Low Back Pain
Eric Manheimer, MS; Adrian White, MD, BM, BCH; Brian Berman, MD; Kelly Forys, MA; and Edzard Ernst, MD, PhD

Background: Low back pain limits activity and is the second most frequent reason for physician visits. Previous research shows widespread use of acupuncture for low back pain.

Purpose: To assess acupuncture’s effectiveness for treating low back pain.

Data Sources: Randomized, controlled trials were identified through searches of MEDLINE, Cochrane Central, EMBASE, AMED, CINAHL, CISCOM, and GERA databases through August 2004. Additional data sources included previous reviews and personal contacts with colleagues.

Study Selection: Randomized, controlled trials comparing needle acupuncture with sham acupuncture, other sham treatments, no additional treatment, or another active treatment for patients with low back pain.

Data Extraction: Data were dually extracted for the outcomes of pain, functional status, overall improvement, return to work, and analgesic consumption. In addition, study quality was assessed.

Data Synthesis: The 33 randomized, controlled trials that met inclusion criteria were subgrouped according to acute or chronic pain, style of acupuncture, and type of control group used. The principal measure of effect size was the standardized mean difference, since the trials assessed the same outcome but measured it in various ways. For the primary outcome of short-term relief of chronic pain, the meta-analyses showed that acupuncture is significantly more effective than sham treatment (standardized mean difference, 0.54 [95% CI, 0.35 to 0.73]; 7 trials) and no additional treatment (standardized mean difference, 0.69 [CI, 0.40 to 0.98]; 8 trials). For patients with acute low back pain, data are sparse and inconclusive. Data are also insufficient for drawing conclusions about acupuncture’s short-term effectiveness compared with most other therapies.

Limitations: The quantity and quality of the included trials varied.

Conclusions: Acupuncture effectively relieves chronic low back pain. No evidence suggests that acupuncture is more effective than other active therapies.

For author affiliations, see end of text.

A 60-Year-Old Woman Considering Acupuncture for Knee Pain

CLINICIAN’S CORNER
CLINICAL CROSSROADS
CONFERENCES WITH PATIENTS AND DOCTORS

JAMA. 2007;297:1697-1707 www.jama.com


**Case 2B – Evidence from BMJ Clinical Evidence:**

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**Acupuncture**

**In this section:**

Summary

One systematic review found limited evidence of short term pain relief and functional improvement for acupuncture compared with no treatment or sham therapy. The review found insufficient evidence on the effects of acupuncture compared with other conventional therapies. It found limited evidence that acupuncture, added to other conventional therapies, relieved pain and improved function better than the conventional therapies alone.

Benefits

We found one systematic review (search date 2003). The review identified 24 RCTs (1718 people) comparing acupuncture versus no treatment, sham acupuncture, sham transcutaneous electrical nerve stimulation (TENS), Chinese herbal medicine, education, exercise, massage, moxibustion, non-steroidal anti-inflammatory drugs (NSAIDs), physiotherapy, spinal manipulation, TENS, trigger point injections, and usual treatment by a general practitioner. Six studies compared the effectiveness of two different acupuncture techniques.

Acupuncture versus no treatment:

The review included two lower quality RCTs that compared acupuncture versus no treatment. It found that acupuncture significantly reduced short term pain (less than 12 weeks) and improved short term function compared with no treatment (pain: 2 RCTs, 90 people, SMD 0.73, 95% CI 0.28 to 1.19; function: effect size 0.63, 95% CI 0.19 to 1.08). However, the first RCT (50 people) included people with abnormal x-rays (38/43) and sciatica (27/49); the second RCT (40 people) also included people with disc disease and sciatica (absolute numbers not reported).

Acupuncture versus sham treatment:

The review pooled results for two higher and two lower quality RCTs. It found that acupuncture was significantly more effective in reducing pain immediately after the treatment session compared with sham treatment (4 RCTs, 314 people, WMD −10.21, 95% CI −14.99 to −5.44). It found that acupuncture significantly reduced pain at short term follow up (up to 3 months) compared with sham treatment (2 higher quality RCTs, 138 people, WMD −17.9, 95% CI −25.5 to −10.07), but found no significant difference between groups in pain at intermediate (3–12 months) follow up (1 higher and 1 lower quality RCT, 96 people, WMD −5.74, 95% CI −14.72 to +3.25). The review found no difference between acupuncture and sham treatment for measures of function assessed immediately after treatment or at intermediate (3–12 months) follow up.

Acupuncture versus other interventions:

The review included two lower and two higher quality RCTs that compared acupuncture with a variety of other treatments including spinal manipulation, massage, NSAIDs/paracetamol, TENS, or self care education. It did not pool results but found
limited evidence of no significant difference between acupuncture and the other treatments in the RCTs included in the review. [35]

Addition of acupuncture to other interventions:

The review included four higher quality RCTs (289 people) that compared the addition of acupuncture to another treatment versus the other treatment alone. The other treatments included exercises, NSAIDs, aspirin, non-narcotic analgesics, mud packs, infrared heat therapy, back care education, ergonomics, or behavioural modification. The review found that the addition of acupuncture to the other interventions was significantly more effective than the other intervention alone for pain (measured immediately after the end of the sessions: 4 RCTs, 289 people, SMD –0.76, 95% CI –1.02 to –0.5; short term [up to 3 months]: 3 RCTs, 183 people, SMD –1.1, 95% CI –1.62 to –0.58; intermediate [3 months to 1 year]: 2 RCTs, 115 people, SMD –0.76, 95% CI –1.14 to –0.38), and function (measured immediately after the end of the sessions: 3 RCTs, 173 people, SMD –0.95, 95% CI –1.27 to –0.63; short term [up to 3 months]: 2 RCTs, 99 people, SMD –0.95, 95% CI –1.37 to –0.54; intermediate [3 months to 1 year]: 2 RCTs, 115 people, SMD –0.55, 95% CI –0.92 to –0.18).

Harms

One systematic review found that serious and rare adverse effects included infections (HIV, hepatitis, and bacterial endocarditis) and visceral trauma (pneumothorax and cardiac tamponade). [35]

Comment

The review concluded that in general, many of the included RCTs were of poor methodological quality and there was a need for future higher quality studies. It noted that although the analysis showed some positive results for acupuncture, the magnitude of the effects were generally small.

References


Web publication date: 01 Apr 2006 (based on November 2004 search)
This page contains links to the full text of major guidelines relevant to this review. All of these guidelines have been produced by national or international government sources, professional medical organisations, or medical speciality societies, and have met *BMJ Clinical Evidence* predetermined quality requirements. New guidelines are added regularly, and revised guidelines are updated as they are published. As guideline inclusion into *BMJ Clinical Evidence* systematic reviews is a new and ongoing process, some specialties and international guidelines may only be fully represented as we continue to develop this aspect of our service.

**United Kingdom**

- Cost-effectiveness and safety of epidural steroids in the management of sciatica. Health Technology Assessment NHS R&D HTA Programme
- Longer term clinical and economic benefits of offering acupuncture care to patients with chronic low back pain. Health Technology Assessment NHS R&D HTA Programme

**United States**

- Interventional techniques in the management of chronic spinal pain: evidence-based practice guidelines. American Society of Interventional Pain Physicians
- Opioid guidelines in the management of chronic non-cancer pain. American Society of Interventional Pain Physicians
- Practice advisory for perioperative visual loss associated with spine surgery. A report by the American Society of Anesthesiologists Task Force on Perioperative Blindness. American Society of Anesthesiologists
- Low back complaints. American College of Occupational and Environmental Medicine
- **acupuncture - systematic reviews reach different conclusions**
  - *acupuncture may have short-term efficacy for reducing pain and improving function in chronic low back pain* (**level 2 [mid-level evidence]**); systematic review of 32 randomized trials, most of poor methodological quality; acupuncture had short term efficacy for pain relief and functional improvement compared to no treatment or sham treatment, addition of acupuncture to conventional therapies resulted in small improvements in pain and function, no evidence of superior efficacy to other therapies; systematic review last updated 2004 Sep 20 (*Cochrane Library 2005 Issue 1:CD001351*), earlier version published in *Spine 1999 Jun 1;24(11):1113* (ACP J Club 2000 Jan-Feb;132(1):23)
  - *acupuncture associated with short-term relief of chronic low back pain*; systematic review of 33 randomized trials of acupuncture for back pain; trials excluded from meta-analysis were 4 trials classified as acute low back pain (defined as pain 3 months or less), 3 trials of pregnancy-associated low back pain, and 4 trials using western-style acupuncture instead of Chinese acupuncture; classification uncertain since study methods state "we considered primary care to include acute pain and secondary care to cover chronic pain" in description of how classification was done when original articles did not state pain duration; meta-analysis of 22 trials found statistically significant effect sizes comparing acupuncture with sham acupuncture (7 trials) and no additional intervention (8 trials) but insufficient data comparing acupuncture with other treatments (*Ann Intern Med 2005 Apr 19;142(8):651*), correction can be found in Ann Intern Med 2005 Jun 7;142(11):950, commentary can be found in *Ann Intern Med 2005 Nov 1;143(9):691*, correction can be found in Ann Intern Med 2005 Nov 1;143(9):695, commentary can be found in *Am Fam Physician 2006 Feb 1;73(3):525*
  - *acupuncture reported to be superior to various control interventions, but insufficient evidence to claim superior to placebo*; systematic review of 12 trials (meta-analysis of 9 trials) of acupuncture for treatment of back pain; odds ratio of improvement with acupuncture compared with control intervention was 2.3 (statistically significant) but only 1.37 for sham-controlled, evaluator-blinded trials (not statistically significant) (*Arch Intern Med 1998 Nov 9;158(20):2235*)
  - *acupuncture may be a reasonable option for low back pain* (*Acupuncture - NIH Consensus Statement 1997 Nov 3-5;15(5):107*); summary details of supporting evidence can be found in *Altern Ther Health Med 1998 Jan;4(1):22*
  - *acupuncture more effective than no acupuncture but not more effective than minimal acupuncture in randomized trial in 298 patients with chronic
low back pain (Arch Intern Med 2006 Feb 27;166(4):450), commentary can be found in Arch Intern Med 2006 Jul 24;166(14):1527

- acupuncture reduced pain over 6 months in small trial; 50 patients with chronic low pain (mean 9.5 years) randomized to acupuncture vs. electroacupuncture vs. mock TENS once weekly for 8 weeks; comparing either acupuncture group vs. mock TENS, 16 of 34 (47%) vs. 2 of 16 (12.5%) had improvement at 1 month (NNT 3), 14 of 34 (41%) vs. 2 of 16 (12.5%) had improvement at 6 months (NNT 4) (Clin J Pain 2001 Dec;17(4):296)

- addition of acupuncture and sham acupuncture had similar efficacy and both more effective than 12 weeks of physiotherapy alone at 9 months in randomized trial of 131 patients with chronic low back pain (Pain 2002 Mar;96(1-2):189)

- additional trials suggest short-term efficacy
  - electro-acupuncture may reduce disability in elderly with chronic low back pain; 55 patients > 60 years old with low back pain > 12 weeks were randomized to electro-acupuncture biweekly for 5 weeks vs. usual care, 8 patients dropped out, acupuncture group but not control group had significant decrease in disability scores at 6 weeks and 9 weeks (Rheumatology (Oxford) 2003 Dec;42(12):1508)
  - electrical auricular acupuncture may provide more pain relief than conventional auricular acupuncture; 61 patients with chronic low back pain randomized to auricular electro-acupuncture vs. conventional auricular acupuncture provided as 6 treatments lasting for 48 hours once weekly (Anesth Analg 2004 May;98(5):1359 in Alternative Medicine Alert 2004 Jul;7(7):73)

- acupuncture might provide small long-term pain reduction (level 2 [mid-level] evidence)
  - based on open randomized trial
  - 241 adults aged 18-65 years with non-specific low back pain lasting 4-52 weeks were randomized to 10 individualized acupuncture treatments vs. usual care
  - no significant differences between groups in improvement in pain scores at 12 months
  - acupuncture had greater improvement in pain score over control at 24 months, absolute difference 8 points on 100-point scale equivalent to 10-15% difference in final pain score
  - Reference - BMJ 2006 Sep 23;333(7569):623 full-text
  - cost-effectiveness analysis can be found in BMJ 2006 Sep 23;333(7569):626 full-text
• editorial can be found in BMJ 2006 Sep 23;333(7569):611
• acupressure may reduce pain and disability in patients with chronic low back pain (level 2 [mid-level] evidence)
  o 129 orthopedic patients > 18 years old in Taiwan with chronic low back pain for at least 4 months not caused by organic or psychiatric diseases were randomized to acupressure vs. physical therapy
    • assigned therapy provided in 6 sessions within 1 month
    • physical therapy could include pelvic manual traction, spinal manipulation, thermotherapy, infrared light therapy, electrical stimulation and exercise therapy as determined by physical therapist
  o 7 patients refused assigned therapy, 4 patients switched to opposite therapy
  o mean Roland and Morris disability questionnaire score in acupressure vs. physical therapy groups
    • 10.9 vs. 10 at baseline
    • 5.4 vs. 9.2 at 1 month
    • 2.2 vs. 6.7 at 6 months
  o mean pain score (0-100 scale) in acupressure vs. physical therapy groups
    • 58.8 vs. 57 at baseline
    • 30.6 vs. 48 at 1 month
    • 16.1 vs. 41.4 at 6 months
  o Reference - BMJ 2006 Mar 25;332(7543):696 full-text, editorial can be found in BMJ 2006 Mar 25;332(7543):680, commentary can be found in Am Fam Physician 2006 Aug 15;74(4):651