

Acupuncture for Pain

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Acupuncture is increasingly used as an alternative or complementary therapy for the treatment of pain. It is well tolerated, with a low risk of serious adverse effects. Traditional and modern acupuncture techniques may result in reported improvement in pain patterns. Research on acupuncture has had a number of limitations, including: incomplete understanding of the physiologic effects of acupuncture; ineffective blinding of participants; unclear adequacy of acupuncture “dose;” difficulty in identification of suitable sham or placebo treatments; and the use of standardized treatment regimens rather than the individualized approach that characterizes most acupuncture practice. Controlled trials have been published regarding acupuncture for lumbar, shoulder, and neck pain; headache; arthritis; fibromyalgia; temporomandibular joint pain; and other pain syndromes. Enough data are available for some conditions to allow systematic evaluations or meta-analyses. Based on published evidence, acupuncture is most likely to benefit patients with low back pain, neck pain, chronic idiopathic or tension headache, migraine, and knee osteoarthritis. Promising but less definitive data exist for shoulder pain, fibromyalgia, temporomandibular joint pain, and postoperative pain. Acupuncture has not been proven to improve pain from rheumatoid arthritis. For other pain conditions, there is not enough evidence to draw conclusions. (*Am Fam Physician*. 2009;80(5):481-484, 506. Copyright © 2009 American Academy of Family Physicians.)

► **Patient information:**
A handout on acupuncture for pain relief, written by the author of this article, is provided on page 506.

In 1997, a National Institutes of Health consensus panel concluded that acupuncture was an effective treatment for postoperative dental pain, but drew no conclusions about other types of pain.¹ Over the past decade, interest in and use of acupuncture in the United States has grown tremendously. Many studies of the effectiveness of acupuncture have also been conducted.

In Eastern tradition, pain is thought to result from blockage or stagnation of the normal movement of energy (qi) in the area that hurts. Acupuncture is thought to restore the normal flow of qi. In modern scientific study, acupuncture has been shown to have multiple effects on the central and peripheral nervous systems. These effects and other physiologic mechanisms are presumed to change pain perception, although the exact mechanism is unknown.²

In practice, acupuncture treatment methods vary substantially. Treatment typically is individualized based on assumptions about the causes of symptoms and the best techniques to address them.^{3,4} Practitioners vary in terms of training, styles, experience, and use of related modalities such as traditional pulse diagnosis (based on palpating and

interpreting the qualities of the radial artery pulsation in both wrists), tongue diagnosis (based on inspection of tongue shape, color, coat, size, and other characteristics), herbal therapies, and dietary modification.⁵ Some practitioners use ear, hand, or scalp acupuncture in addition to (or instead of) body acupuncture. Physicians who study acupuncture usually have different training, licensing requirements, and styles of practice compared with nonphysician acupuncture practitioners.⁶ For example, physicians use less herbal therapy and less pulse and tongue diagnosis, but they are more likely to use nontraditional acupuncture techniques for pain problems, usually with electrical stimulation of some or all of the acupuncture needles (i.e., electroacupuncture).

Because of the heterogeneity of acupuncture theory and practice, research using Western scientific methods (e.g., the randomized controlled trial [RCT]) has been difficult to perform and interpret. Problems include incomplete understanding of acupuncture's physiologic effects, ineffective blinding of research participants, inadequate treatment “dose,” difficulty in identification of suitable sham or placebo controls, and the use of

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standardized treatment regimens rather than an individualized approach.⁷ A common finding has been that both sham and actual acupuncture improve pain, and the differences between the treatments do not reach statistical significance.⁸ Sham treatments often have been criticized as being too similar to actual treatment, especially if a needle is inserted into tissue; in the case of acupuncture, this suggests the possibility of a nonspecific needling effect. Actual treatment may be unrealistically standardized or poorly conceived. Despite these difficulties, however, acupuncture has been proven helpful in a number of common painful conditions, and this list is growing as evidence accumulates.

Uses and Effectiveness

CHRONIC LOW BACK PAIN

Chronic musculoskeletal pain syndromes are the most common reasons patients try acupuncture. Of these, chronic low back pain is the most prevalent. Several prospective trials and systematic literature reviews or meta-analyses have attempted to evaluate the effectiveness of acupuncture.⁹ Several RCTs found that acupuncture and minimal or sham acupuncture are effective in relieving pain compared with wait-list controls¹⁰ or conventional therapy.¹¹ Sham acupuncture is less effective than actual acupuncture, but this difference does not reach statistical significance. An RCT comparing acupuncture to usual care found that both treatments are effective at 12 months, but that acupuncture is significantly more effective in reducing pain at 24 months.¹² In a large trial, acupuncture plus routine care was associated with marked clinical improvements at a cost of €10,526 (approximately \$13,000) per quality-adjusted life-year (QALY), representing very good cost-effectiveness.¹³ Cochrane systematic reviews concluded that acupuncture is more effective for immediate and short-term pain relief and functional improvement than no treatment or sham treatment.¹⁴ A meta-analysis concluded that acupuncture effectively relieves chronic low back pain, but it did not find evidence that acupuncture is more effective than other active therapies.¹⁵ Percutaneous nerve stimulation is a nontraditional modern electroacupuncture technique that shows great promise; it is commonly used by physician acupuncturists for back and neck pain.^{16,17}

CHRONIC NECK AND SHOULDER PAIN

Chronic pain syndromes affecting the neck and shoulder are commonly treated with acupuncture. Several RCTs

SORT: KEY RECOMMENDATIONS FOR PRACTICE

<i>Clinical recommendation</i>	<i>Evidence rating</i>	<i>References</i>
Acupuncture should be considered as a treatment option in the following conditions:		
Low back pain	A	9-15
Shoulder pain	B	18, 19, 24
Neck pain	A	19-23, 25
Headache (chronic idiopathic)	A	26, 28, 29
Headache (migraine)	A	27, 30, 31
Knee osteoarthritis	B	33-35
Fibromyalgia	B	39
Temporomandibular joint pain	B	40, 41
Postoperative pain	B	42

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to <http://www.aafp.org/afpsort.xml>.

have reported significant and sometimes long-lasting effectiveness of acupuncture for these conditions.¹⁸⁻²² Cost-effectiveness of acupuncture for neck pain is similar to that for back pain (€12,469 per QALY, or approximately \$15,600).²³ A Cochrane systematic review of acupuncture for shoulder pain concluded that there is not enough published evidence of sufficient quality to support or refute its use.²⁴ A Cochrane systematic review of acupuncture for neck disorders concluded that acupuncture relieves pain better than sham treatments, inactive treatments, or wait-list control status.²⁵

HEADACHE

Acupuncture has been studied in the settings of chronic daily idiopathic or tension headaches and migraine prophylaxis. Most of the published data relate to chronic daily or frequent headache pain syndromes. A Cochrane systematic review of acupuncture for chronic tension-type and migraine headaches concluded that the existing evidence supports the value of acupuncture.^{26,27} Several RCTs have found benefits of acupuncture. Acupuncture was found to improve headaches and health-related quality of life when added to medical management in patients with chronic daily headache.²⁸ Another RCT found persisting benefits for primary care patients with chronic headache, particularly migraines.²⁹ Cost-effectiveness analysis of this data was also favorable, with an estimate of £9,180 per QALY (approximately \$13,000).²⁹ In an RCT of acupuncture for migraine prevention, individualized and sham acupuncture treatment groups had reductions in migraine frequency over six months of follow-up.³⁰ Individualized treatment was significantly superior to sham treatment in the first two months of treatment.

In another study, acupuncture was equal to or better than metoprolol for migraine prophylaxis, with fewer adverse effects.³¹

ARTHRITIS

Acupuncture has been studied in the setting of rheumatoid arthritis and osteoarthritis. In the case of rheumatoid arthritis, a Cochrane systematic review found that acupuncture has no effect on serum markers, pain, medication use, or disease activity.³²

Acupuncture for knee osteoarthritis has been studied fairly extensively in RCTs. A large, high-quality RCT showed improvement in function and pain relief when acupuncture was compared with sham acupuncture or patient education.³³ Systematic reviews and meta-analyses have also been published.³⁴⁻³⁷ There is some disagreement about the effectiveness of acupuncture for knee osteoarthritis, although trials with adequate acupuncture “dose” generally showed favorable outcomes. Electroacupuncture with strong stimulation, for example, may be an important component of successful treatment.³⁸

OTHER CONDITIONS

High-quality RCTs for fibromyalgia³⁹ and temporomandibular joint (TMJ) pain⁴⁰ and a systematic review on TMJ pain⁴¹ concluded that acupuncture significantly improved symptoms. A recent systematic review supports using acupuncture in patients with postoperative pain.⁴² Other promising outcomes have been reported for cancer pain, lateral epicondylitis pain, chronic prostate and pelvic pain, dysmenorrhea, obstetric labor pain, and pain from irritable bowel syndrome. However, additional data are needed to draw firm conclusions for these conditions.

Safety and Adverse Effects

Acupuncture is generally well tolerated, with few adverse effects. In two large series, mild adverse effects (e.g., tiredness, local pain, headache, temporary exacerbation of symptoms) occurred at least once in approximately 10 percent of patients treated over three months.^{43,44} More significant adverse effects (e.g., severe nausea, fainting, severe or prolonged exacerbation of symptoms, strong emotional reactions) occurred at a rate of 1.3 per 1,000 treatments. No serious events (e.g., hospital admission, permanent disability, death) occurred. There have been reports of pneumothorax or serious infection as a result of acupuncture, but these are rare events.⁴⁵

Bottom Line

Acupuncture is generally safe and well tolerated. Over the past decade, evidence of its effectiveness for treatment

of a variety of pain conditions has been accumulating. Research methods are becoming more sophisticated, as demonstrated by sham acupuncture techniques that do not require a needle to be placed in tissue, yet have excellent blinding of participants as to their treatment status.³⁹ Several trials are underway through the National Center for Complementary and Alternative Medicine (<http://nccam.nih.gov/>) on chronic daily headaches, fibromyalgia, irritable bowel syndrome, low back pain, osteoarthritis of the knee, TMJ pain, and several other conditions not included in this review.

Patients with a painful condition may prefer to try acupuncture instead of usual treatment, or they may try acupuncture when other treatment modalities have not adequately helped. Acupuncture can be recommended to patients with a variety of common syndromes as an adjunctive or even primary treatment option. Resources available for patients seeking physician and nonphysician acupuncturists include the American Academy of Medical Acupuncture and the American Association of Acupuncture and Oriental Medicine, respectively.

Members of various family medicine departments develop articles for “Alternative and Complementary Medicine.” This is one in a series coordinated by Sumi Sexton, MD.

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