

Acupuncture Therapy for Chronic Pain

Clinical Guidelines

The **2017 Clinical Guidelines of the American College of Physicians** recommend that for **acute, subacute and chronic low back pain**, clinicians and patients should select nonpharmacologic treatments as a first line of care with acupuncture therapy included as one option.

Qaseem A, Wilt TJ, McLean RM, Forciea M, for the Clinical Guidelines Committee of the American College of P. Noninvasive treatments for acute, subacute, and chronic low back pain: A clinical practice guideline from the American College of Physicians. *Ann of Intern Med.* 2017.

Chou R, Deyo R, Friedly J, et al. Nonpharmacologic Therapies for Low Back Pain: A Systematic Review for an American College of Physicians Clinical Practice Guideline. *Ann Intern Med.* 2017

The US Department of Health and Human Services Agency for Healthcare Quality and Research (AHRQ) found for **chronic low back pain**, effective therapies versus placebo, sham, no treatment, usual care, or wait list included acupuncture therapy.

Chou R, Deyo R, Friedly J, Skelly A, Hashimoto R, Weimer M, et al. Noninvasive Treatments for Low Back Pain Agency for Healthcare Research and Quality (US) (AHRQ) Comparative Effectiveness Reviews. 2016;Number 169(Report No.: 16-EHC004-

The National Institutes of Health (NIH) National Center for Complementary and Integrative Health (NCCIH) reviewed evidence-based approaches for pain management and recommended acupuncture and yoga for **low back pain**; and acupuncture and Tai chi for **knee osteoarthritis**

Nahin RL, Boineau R, Khalsa PS, Stussman BJ, Weber WJ. Evidence-Based Evaluation of Complementary Health Approaches for Pain Management in the United States. *Mayo Clinic proceedings.* 2016;91(9):1292-306.

Systematic Reviews with Meta-Analysis Acupuncture for Chronic Pain Conditions:

Headache, neck, shoulder, back, knee pain

A systematic review with meta-analysis involving nearly 18,000 patients using acupuncture therapy for musculoskeletal pain related to the neck and low back, osteoarthritis of the knee, and headache and migraine, found acupuncture was significantly better than both sham acupuncture and usual care for all conditions.

MacPherson H, Vickers A, Bland M, et al. Programme Grants for Applied Research. *Acupuncture for chronic pain and depression in primary care: a programme of research.* Southampton (UK): NIHR Journals Library 2017

A cost effectiveness analysis of nonpharmacologic treatments for **knee OA** found acupuncture to be one of the more clinically effective therapies and cost effective at the UK National Institute for Health and Care Excellence (NICE) QALY thresholds.

Woods B, Manca A, Weatherly H, et al. Cost-effectiveness of adjunct non-pharmacological interventions for osteoarthritis of the knee. *PLoS One.* 2017;12(3):e0172749.

In a 2016 meta-analysis of 29 trials (n=17,922) using acupuncture for **musculoskeletal pain** (low back, neck and shoulder), osteoarthritis of the knee and headache/migraine found 90% of benefit persisted at 12 months in trials using wait list or usual care as control; trials comparing acupuncture to sham saw a 50% of effect persistence at 12 months.

The effects of a course of acupuncture treatment for patients with chronic pain persist significantly following care.

MacPherson H, Vertosick EA, Foster NE, et al. The persistence of the effects of acupuncture after a course of treatment: A meta-analysis of patients with chronic pain. *Pain.* 2016.

In a 2014 review and meta-analysis, acupuncture for nonspecific **musculoskeletal pain, osteoarthritis, chronic headache, or shoulder pain** is associated with improved pain outcomes compared with sham-acupuncture and no-

acupuncture control, with response rates of approximately 30% for no acupuncture, 42.5% for sham acupuncture (where sham was not inactive control), and 50% for acupuncture.

Vickers AJ, Linde K. Acupuncture for chronic pain. *JAMA*. 2014;311(9):955-956.

A systematic review with meta-analysis also confirms auricular treatment, acupuncture or pressure by way of seed or magnetic spheres fixed at ear-points with tape, is effective for **acute and chronic pain** management

Yeh CH, Chiang YC, Hoffman SL, et al. Efficacy of auricular therapy for pain management: a systematic review and meta-analysis. *Evid Based Complement Alternat Med*. 2014;2014:934670.

A 2012 individual patient data meta-analysis of acupuncture for four **chronic pain conditions: back and neck pain, osteoarthritis, chronic headache, and shoulder pain** found acupuncture is effective beyond placebo effect and is a reasonable referral options.

Vickers AJ, Cronin AM, Maschino AC, et al. Acupuncture for Chronic Pain: Individual Patient Data Meta-analysis. *Arch Intern Med*. 2012;1-10.

Knee OA specific

A 2016 meta-analysis of 10 RCTs (n=2007) of acupuncture for **chronic knee osteoarthritis** demonstrates that acupuncture can improve short-term (up to 13 weeks following treatment) and long-term physical function (up to 26 weeks), and provides short-term pain relief in patients with chronic knee pain due to osteoarthritis compared to controls of sham treatment usual care or no intervention.

Lin X, Huang K, Zhu G, Huang Z, Qin A, Fan S. The Effects of Acupuncture on Chronic Knee Pain Due to Osteoarthritis: A Meta-Analysis. *J Bone Joint Surg Am*. 2016;98(18):1578-1585.

Headache, migraine

Two updated Cochrane systematic reviews found acupuncture to be effective in the treatment and prevention of **tension-type headache and in migraine prophylaxis**. 'From a purely comparative effectiveness perspective the evidence from clinical trials and meta-analyses makes a compelling case in support of a potentially important role for acupuncture as part of a treatment plan for patients with migraine, tension-type headache, and several different types of chronic headache disorders.

Linde K, Allais G, Brinkhaus B, et al. Acupuncture for the prevention of tension-type headache. *Cochrane Database Syst Rev*. 2016;48(CD007587) doi: 10.1002/14651858.CD007587.pub2).

Linde K, Allais G, Brinkhaus B, et al. Acupuncture for the prevention of episodic migraine. *Cochrane Database Syst Rev*. 2016;6(CD001218) doi: 10.1002/14651858.CD001218.pub3).

Coeytaux RR, Befus D. Role of Acupuncture in the Treatment or Prevention of Migraine, Tension-Type Headache, or Chronic Headache Disorders. *Headache*. 2016;56(7):1238-1240.

Neck pain

An updated systematic review of acupuncture for neck disorders published by Cochrane has been withdrawn to incorporate comments.

Trinh K, Graham N, Irnich D, Cameron ID. Acupuncture for Neck Disorders. *Cochrane Database Syst Rev*. 2016;5:CD004870:(pending)

A 2007 systematic review of 10 trials found moderate evidence that acupuncture was more effective than sham control immediately post treatment, and more effective than inactive sham immediately post treatment and at short term follow up; limited evidence acupuncture was more effective than massage at short term follow up. And there was moderate evidence that acupuncture was more effective than a wait-list control at short term follow-up.

Trinh K, Graham N, Gross A, et al. Acupuncture for neck disorders. *Spine (Phila Pa 1976)*. 2007;32(2):236-243.

In a multi-center trial of 14,161 patients with chronic neck pain randomized to acupuncture group (1880), no acupuncture (1886) or if refusing randomization, acupuncture care (10,395); 15 sessions over 3 months. Treatment with acupuncture added to routine care in patients with chronic neck pain was associated with improvements in neck pain and disability maintained through 6 months compared to treatment with routine care alone.

Witt CM, Jena S, Brinkhaus B, Liecker B, Wegscheider K, Willich SN. Acupuncture for patients with chronic neck pain. *Pain*. 2006;125(1-2):98-106.

In a trial of 3,451 subjects with chronic neck pain duration (>6 months) found benefit from acupuncture compared to controls. There were increased costs associated with the addition of acupuncture care but with health benefit lasting beyond the three-month study duration, per international cost-effectiveness threshold values, the authors found acupuncture to be a cost-effective treatment strategy in patients with chronic neck pain.

Willich SN, Reinhold T, Selim D, Jena S, Brinkhaus B, Witt CM. Cost-effectiveness of acupuncture treatment in patients with chronic neck pain. *Pain*. 2006;125(1-2):107-113.

Temporomandibular disorders

Nine trials qualified for meta-analysis (n=231) found acupuncture therapy to be superior to sham nonpenetrating acupuncture and sham laser therapy when measured by the VAS of pain and muscle tenderness.

Wu JY, Zhang C, Xu YP, et al. Acupuncture therapy in the management of the clinical outcomes for temporomandibular disorders: A PRISMA-compliant meta-analysis. *Medicine (Baltimore)*. 2017;96(9):e6064.

Shoulder pain specific

Randomized trials (12; n=1012) that evaluated the effects of acupuncture with rehabilitation for poststroke shoulder pain compared to rehabilitation alone were reviewed with meta-analysis. Acupuncture combined with rehabilitation treatment appeared to be more effective than rehabilitation treatment alone for poststroke shoulder pain, with authors calling for more research for conclusive evidence.

Lee SH, Lim SM. Acupuncture for Poststroke Shoulder Pain: A Systematic Review and Meta-Analysis. *Evid Based Complement Alternat Med*. 2016;2016:3549878

A 2012 systematic review of 7 RCTs found acupuncture combined with exercise was effective for shoulder pain following stroke.

Lee JA, Park S-W, Hwang PW, et al. Acupuncture for Shoulder Pain After Stroke: A Systematic Review. *J Altern Complement Med*. 2012;18(9):818-823.

Patients (n=117) with subacromial impingement syndrome (SIS) were treated with corticosteroid injection or acupuncture (30 minute sessions twice weekly for 5 weeks) with home exercises. Treatments were equally beneficial in reducing pain and improving shoulder function, with global impression of change in favor of acupuncture group at 6 months but equivalent at 12 months.

Johansson K, Bergstrom A, Schroder K, Foldevi M. Subacromial corticosteroid injection or acupuncture with home exercises when treating patients with subacromial impingement in primary care—a randomized clinical trial. *Fam Pract*. 2011;28(4):355-365.

Hip pain

In a randomized trial (n=3,633), patients with chronic pain due to OA of the knee (2,627) or the **hip** (n=926) who were treated with acupuncture in addition to routine care showed significant improvements in symptoms and quality of life (34.5% responded with equal or > 50% reduction in WOMAC index) compared with patients who received routine care alone Benefits were only slightly reduced at 6 months (3 months after completion of study).

Witt CM, Jena S, Brinkhaus B, Liecker B, Wegscheider K, Willich SN. Acupuncture in patients with osteoarthritis of the knee or hip: a randomized, controlled trial with an additional nonrandomized arm. *Arthritis Rheum*. 2006;54(11):3485-3493.

In a RCT of (n=45) patients with osteoarthritis of the hip were randomized to patient education alone, electro-acupuncture (EA) with patient education or hydrotherapy with patient education. EA and hydrotherapy, both in combination with patient education, induce long-lasting effects, shown by reduced pain and ache and by increased functional activity and quality of life.

Stener-Victorin E, Kruse-Smidje C, Jung K. Comparison between electro-acupuncture and hydrotherapy, both in combination with patient education and patient education alone, on the symptomatic treatment of osteoarthritis of the hip. *Clin J Pain*. 2004;20(3):179-185.

In a RCT (n=32) patients with hip OA were randomized to receive either acupuncture (6 weekly sessions) or advice and exercises for their hip, 6 weekly sessions; acupuncture was found to be more effective in symptomatic treatment of hip OA with benefit persisting at 8-week follow-up.

Haslam R. A comparison of acupuncture with advice and exercises on the symptomatic treatment of osteoarthritis of the hip--a randomised controlled trial. *Acupunct Med*. 2001;19(1):19-26.

Peripheral Neuropathy

A review on the management of **peripheral neuropathy induced by chemotherapy** found acupuncture among therapies that may be useful for PN, but not electroacupuncture.

Al-Atiyyat N, Obaid A. Management of peripheral neuropathy induced by chemotherapy in adults with cancer: a review. *Int J Palliat Nurs*. 2017;23(1):13-17.

In a systematic review with meta-analysis (15 trials) showed benefit for acupuncture over control in the treatment of diabetic neuropathy, Bell's palsy, and carpal tunnel syndrome. Acupuncture is probably effective in the treatment of HIV-related neuropathy, and there is insufficient evidence for its benefits in idiopathic neuropathy.

Dimitrova A, Murchison C, Oken B. Acupuncture for the Treatment of Peripheral Neuropathy: A Systematic Review and Meta-Analysis. *J Altern Complement Med*. 2017;23(3):164-179.

Curious sustained and long term benefits of acupuncture treatment for pain

Carpal tunnel syndrome and neuroplasticity

In a trial of eligible patients with carpal tunnel syndrome (n=80), patients received either i) verum electro-acupuncture 'local' to the more affected hand; (ii) verum electro-acupuncture at 'distal' body sites, near the ankle contralesional to the more affected hand; and (iii) local sham electro-acupuncture using non-penetrating placebo needles. Acupuncture therapy was provided for 16 sessions over 8 weeks. Verum acupuncture is associated with measurable physiological improvements in pain centers in the brain and nerves not shown with sham acupuncture. Improvement in brain measures predicted greater relief three months' post treatment that was not seen with sham treatment. The longitude of benefit is confirmed over equal pain relief in the short term from sham treatment of carpal tunnel syndrome, wrist pain.

Maeda Y, Kim H, Kettner N, et al. Rewiring the primary somatosensory cortex in carpal tunnel syndrome with acupuncture. *Brain*. 2017.

Long-term cardiac benefit from acupuncture treatment of fibromyalgia

A large trial performing a 1 to 1 propensity score match of 58,899 patients who received acupuncture for fibromyalgia to 58,899 who did not have acupuncture found the cumulative incidence of coronary heart disease (CHD) was significantly lower in the acupuncture cohort independent of age, sex, comorbidities or statins used.

Wu MY, Huang MC, Chiang JH, Sun MF, Lee YC, Yen HR. Acupuncture decreased the risk of coronary heart disease in patients with fibromyalgia in Taiwan: a nationwide matched cohort study. *Arthritis Res Ther*. 2017;19(1):37.