

Non-Pharmacologic Interventions for Pain

ACTIVE	
Exercise	<p>Exercise is defined as physical activity that is planned and structured. There are many different types of exercise, including aerobic, strengthening, and flexibility, and this should be considered when interpreting evidence. There is a moderate level of evidence supporting exercise as an intervention for chronic LBP (www.effectivehealthcare.ahrq.gov/low-back-pain).</p> <p>The benefit of exercise for pain control likely comes from the impact of exercise on the endogenous opioid system and on central pain modulatory systems. Patients with some chronic pain conditions seem to have a dysfunctional endogenous pain modulatory system, which should be considered when prescribing exercise. The prescription of exercise for chronic pain must address the biomechanical issues and the psychosocial factors that contribute to the patient's pain and disability. Patient education, coordination of care within the health care team, and selecting an exercise regimen that is meaningful to and achievable by the patient are all-important components to promote a successful rehabilitation program.</p> <p>Exercise therapy for chronic pain. Kroll HR. Phys Med Rehabil Clin N Am. 2015 May;26(2):263-81</p> <p>Exercise, not to exercise, or how to exercise in patients with chronic pain? Applying science to practice. Daenen L, Varkey E, Kellmann M, Nijs J.</p>
Yoga/Tai Chi	<p>Yoga is a movement and spiritual discipline that originated in India. There is a growing body of evidence supporting yoga as an effective approach to treating chronic pain conditions, including low back pain, osteoarthritis, and fibromyalgia. https://nccih.nih.gov/health/yoga</p> <p>Yoga has been found to reduce pain and improve function in these populations (Nahin RL et al. Evidence-based evaluation of complementary health approaches for pain management in the united states. 2016; 91 (9): 1292-1306.). Yoga required active participation, can be practiced individually or in groups, and can be combined with mindfulness practices.</p> <p>Tai Chi is another movement discipline, originally developed as a martial art form in China, which entails the performance of slow, gentle, focused movements.</p> <p>There is evidence to support Tai Chi as effective in reducing chronic pain associated with osteoarthritis and low back pain. (Kong, L. J. <i>et al.</i> Tai Chi for Chronic Pain Conditions: A Systematic Review and Meta-analysis of Randomized Controlled Trials. <i>Sci. Rep.</i> 6, 25325; doi: 10.1038/srep25325 (2016). Tai Chi also requires active participation, individually or in groups.</p>

<p>Mindfulness Meditation</p>	<p>Although there is not a large pool of evidence available on the effectiveness of meditation on pain, recent individual studies are promising, for example: Zeidan F, Adler-Neal AL, Wells RE, et al. Mindfulness-meditation-based pain relief is not mediated by endogenous opioids. <i>Journal of Neuroscience</i>. 2016;36(11):3391-3397 – this study found that meditation was effective in reducing experimentally induced pain.</p> <p>Two RCT's, one published in <i>JAMA</i>, found meditation to be effective in treating chronic low back pain: Cherkin DC, Sherman KJ, Balderson BH, Cook AJ, Anderson ML, Hawkes RJ, Hansen KE, Turner JA. Effect of Mindfulness-Based Stress Reduction vs Cognitive Behavioral Therapy or Usual Care on Back Pain and Functional Limitations in Adults With Chronic Low Back Pain A Randomized Clinical Trial. <i>JAMA</i>. 2016;315(12):1240-1249. doi:10.1001/jama.2016.2323</p>
<p>Psychological Approaches (Cognitive-Behavioral, Relaxation techniques)</p>	<p>Systematic reviews provide evidence that cognitive-behavioral interventions improve function and decrease pain in the non-specific <i>low back pain</i> population when compared to no intervention (Richmond H et al, 2015). Evidence for effectiveness in treating <i>headaches</i> is equivocal (Harris P et al, 2015).</p> <p>According to AHRQ, when considered in conjunction with other psychological approaches including relaxation techniques and biofeedback, the strength of evidence is low for reducing pain and improving function in the chronic low back pain population (www.effectivehealthcare.ahrq.gov/low-back-pain).</p> <p>May include multiple different interventions.</p> <p>CBT is effective in altering mood and catastrophising outcomes, when compared with treatment as usual/waiting list, with some evidence that this is maintained at six months. Behaviour therapy has no effects on mood, but showed an effect on catastrophising immediately post-treatment.</p> <p>Sturgeon JA. Psychological therapies for the management of chronic pain. <i>Psychology Research and Behavior Management</i>. 2014;7:115-124. doi:10.2147/PRBM.S44762.</p>
<p>Relaxation Techniques</p>	<p>Relaxation training follows a specific method, process, procedure, or activity with the intent to release physical tension and refocus the mind away from anxious, angry, or disturbing thoughts in order to reduce stress and/or pain and achieve a sense of well-being and calmness</p> <p>Lee C, Crawford C, Hickey A. Active Self-Care Therapies for Pain (PACT) Working Group. <i>Pain Med</i>. 2014 Apr;15 Suppl 1:S21-39. doi: 10.1111/pme.12383.</p>

Superficial Heat	<p>There is moderate level evidence that heat decreases pain and improves function for acute phase low back pain – at 4-5 days. There is low level evidence that heat is more effective than acetaminophen or ibuprofen for acute phase pain.</p> <p>Qaseem A, Wilt TJ, McLean RM, Forciea MA, for the Clinical Guidelines Committee of the American College of Physicians. Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American College of Physicians [published online February 14, 2017]. Ann Intern Med. doi:10.7326/M16-2367.</p>
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Intervention	Summary Comments
PASSIVE	
Acupuncture	<p>Has been found to be effective in the treatment of a variety of conditions, including chronic low back pain (LBP) and osteoarthritis (OA). NIH considers acupuncture a “reasonable” option for OA (nccih.nih.gov). Low to moderate level of evidence for chronic back pain according to AHRQ (www.effectivehealthcare.ahrq.gov/low-back-pain).</p> <p>Acupuncture is effective for the treatment of chronic pain and is therefore a reasonable referral option. Significant differences between true and sham acupuncture indicate that acupuncture is more than a placebo. However, these differences are relatively modest, suggesting that factors in addition to the specific effects of needling are important contributors to the therapeutic effects of acupuncture.</p> <p>Acupuncture for chronic pain: individual patient data meta-analysis. Vickers AJ, Cronin AM, Maschino AC, Lewith G, MacPherson H, Foster NE, Sherman KJ, Witt CM, Linde K; Acupuncture Trialists' Collaboration. Arch Intern Med. 2012 Oct 22;172(19):1444-53.)</p> <p>Additionally, in a recent systematic review and meta-analysis, acupuncture was found to provide significant relief of low back pain compared to sham acupuncture and no treatment (Yuan QL, Guo TM, Liu L, Sun F, Zhang YG. Traditional Chinese medicine for neck pain and low back pain: a systematic review and meta-analysis PLoS One. 2015;10 (2):e0117146).</p>
Neuromodulation	<p>There is evidence that both dorsal root ganglion and high-frequency stimulation also have analgesic efficacy in certain chronic neuropathic syndromes.</p>

	<p>Deer, TR, et al. (2017, April). Dorsal Root Ganglion Stimulation Yielded Higher Treatment Success Rate for Complex Regional Pain Syndrome and Causalgia at 3 and 12 months: A Randomized Comparative Trial. <i>Pain</i>, 158(4), 669-681.</p> <p>Kapural, L, et.al. (2015). Novel 10-kHz High-Frequency Therapy (HF10 Therapy) Is Superior to Traditional Low-Frequency Spinal Cord Stimulation for the Treatment of Chronic Back and Leg Pain; The SENZA-RCT Randomized Controlled Trial. <i>Anesthesiology</i>, 123, 851-60.</p> <p>Turner, J. A., et.al.. (2004). Spinal Cord Stimulation for Patients with Failed Back Surgery Syndrome or Complex Regional Pain Syndrome: A Systematic Review of Effectiveness and Complications. <i>Pain</i>, 108, 137-147.</p>
Massage	<p>May be helpful for low back pain. There is a low level of evidence for acute and subacute low back pain (nccih.nih.gov). This is consistent with the findings of the AHRQ analysis for massage as a treatment of acute and subacute low back pain (www.effectivehealthcare.ahrq.gov/low-back-pain.)</p> <p>Similar findings can be found for massage as a treatment for fibromyalgia, neck pain, and osteoarthritis, with generally short-term improvements in pain, and no significant long-term improvements in function (Nahin RL et al. Evidence-based evaluation of complementary health approaches for pain management in the united states. 2016; 91 (9): 1292-1306.)</p>
Manipulation	<p>Manipulation has been studied extensively for the treatment of low back pain (LBP). Manipulation has been found to be effective in reducing pain and improving function in people with LBP. There is low-to-moderate level evidence that it is effective in the chronic LBP population (www.effectivehealthcare.ahrq.gov/low-back-pain).</p> <p>It is recommended for the treatment of non-specific low back pain in the majority of national clinical guidelines for LBP management. There is less evidence to support its use in the treatment of neck pain. It has been found to be effective in the treatment of some types of headache and osteoarthritis.</p> <p>Chiropractors, Osteopathic Physicians, and Physical Therapists most commonly utilize manipulation in back pain management. Although it is a passive intervention, it is often combined with exercise in patient management.</p>
Electrotherapy/ TENS	<p>Passive physical modalities as a whole have small-to-no effect on treating common pain problems (AHRQ).</p> <p>Systemic reviews suggest that TENS is effective for post-operative pain, osteoarthritis, diabetic neuropathy, and some acute pain</p>

	<p>conditions when applied at adequate intensities.</p> <p>There is insufficient evidence to recommend specific TENS regimes at this time. (Vance, C., Dailey, D., Rakel, B., & Sluka, K. (2014). Using TENS for pain control: the state of evidence. <i>Pain Management</i>, 4(3), 197-209 and Chou, R., Gordon, D., de Leon-Casasola, O., Rosenberg, J., et al. (2016). Guidelines on the Management of Postoperative pain. <i>Journal of Pain</i>, 17(2), 131-157)</p>

AHRQ Levels of Evidence:

High: High confidence that the evidence reflects the true effect. Further research is very unlikely to change our confidence in the estimate of effect.

Moderate: Moderate confidence that the evidence reflects the true effect. Further research may change our confidence in the estimate of effect and may change the estimate.

Low: Low confidence that the evidence reflects the true effect. Further research is likely to change our confidence in the estimate of effect and is likely to change the estimate.

Insufficient: Evidence either is unavailable or does not permit a conclusion.