Complementary and Alternative Medicine for Chronic Pain

When guiding patients to decrease their opioid medication, providers may wish to offer alternative pain management options. This document summarizes existing evidence as of August 2018 for noninvasive non-pharmacological treatments and complementary health approaches for chronic pain conditions including fibromyalgia, headache (migraine and tension-type), irritable bowel syndrome, low-back pain, neck pain, osteoarthritis, and rheumatoid arthritis. Evidence was derived from reviews by the National Center for Complementary and Integrative Health (NCCIH) and the Agency for Healthcare Research and Quality (AHRQ). We also provide a table that summarizes "doses" of different pain management treatments that have been used in research studies.

Last Update: August 13, 2018

References:

National Center for Complementary and Integrative Health:
Complementary Health Approaches for Chronic Pain: What the Science Says, September 2016
https://nccih.nih.gov/health/providers/digest/chronic-pain-science

Agency for Healthcare Research and Quality:
Skelly AC, Chou R, Dettori JR, et al. Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review. Comparative Effectiveness Review No. 209. AHRQ Publication No 18-EHC013-EF. Rockville, MD: Agency for Healthcare Research and Quality; June 2018.
https://effectivehealthcare.ahrq.gov/topics/nonpharma-treatment-pain/research-2018

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Table 1: Summary of existing evidence for noninvasive non-pharmacological treatments and complementary health approaches for chronic pain conditions

Condition	Stronger evidence	Limited evidence	Insufficient evidence (Not enough evidence to conclude either way)	Ineffective - Trials demonstrate no effect
Fibromyalgia		Mind and body approaches: Qi gong, Tai chi, yoga, mindfulness training, and biofeedback, cognitive behavioral therapy	Natural products (e.g. capsaicin containing creams, S-adenosyl-L-methionine (SAMe) or soy)	Mindfulness-based stress reduction (short term effects)
		Exercise		
		Multidisciplinary rehabilitation		
		Myofascial release therapy		
		Vitamin D for those with Vit. D deficiency		
		Acupuncture (for function but not pain)		
Headache	For migraine prevention: Butterbur (petasites)	For migraine prevention: Riboflavin, magnesium, feverfew, coenzyme Q10, relaxation training, thermal biofeedback combined with relaxation training, EMG biofeedback, and cognitive behavioral therapy	For tension headaches: Tai chi	
		For migraine treatment: biofeedback, massage therapy		
		Tension headache prevention/treatment: relaxation techniques, biofeedback, acupuncture, spinal manipulation		
Irritable Bowel Syndrome (IBS)		Psychological therapies, including hypnotherapy	Acupuncture	
		Peppermint oil	Melatonin	
		Other herbal medicines	Meditation	
		Probiotics	Yoga	
			Artichoke leaf extract	
			Reflexology	

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Low-Back Pain	Cognitive behavioral therapy	Acupuncture		Ultrasound
	Exercise	Massage (for short term relief)		Traction
	Spinal manipulation (osteopathic, chiropractic, physical therapy)	Yoga (Viniyoga)		
	Interdisciplinary rehabilitation (https://www.hindawi.com/journals/prt/2016/7217684/)	Natural Products: devil's claw and white willow bark and topical preparations of cayenne, comfrey, Brazilian arnica, and lavender essential oil (http://www.cochrane.org/CD004504/BACK_herbal-medicine-for-low-back-pain)		
		Mindfulness-based stress reduction		
		Functional Restoration		
		Low level laser therapy		
Neck Pain		Manual therapies (primarily manipulation or mobilization)		
		Combination exercise		
		Low-level laser therapy		
		Alexander Technique		
		Acupuncture		
		Massage therapy (low level evidence)		
Osteoarthritis (Studies often focused on a single joint type. Refer to articles for more detail.)	Acupuncture	Herbs (ginger, avocado-soybean unsaponifiables (ASUs), Boswellia serrata, topical arnica gel and comfrey gel)	Supplements: DMSO and MSM, SAMe	Cognitive behavioral therapy
	Exercise	Ultrasound (short-term function and pain intensity)	Glucosamine or chondroitin	TENS
	Massage therapy	Electromagnetic Field		
	Tai chi			

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Rheumatoid Arthritis	Fish oil	GLA (gamma linolenic acid)	Acupuncture	
		Thunder god vine (but has serious safety concerns: risks outweigh benefits)		
		Mindfulness meditation, biofeedback, and relaxation training		
		Tai chi (may improve function but not pain)		
		Yoga		

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Table 2: Evidence for "dosing" of different pain management treatments

Migraine Prevention
Butterbur
Two studies show Petasites (purified extract from the butterbur plant) to be effective in reducing migraine attack frequency at a dose of 50mg BID in one study and 75mg BID in another
Grossman W, Schmidramsl H. An extract of Petasites hybridus is effective in the prophylaxis of migraine. Altern Med Rev. 2001 Jun; 6(3):303-10.
Lipton RB, Göbel H, Einhäupl KM, Wilks K, Mauskop A. Petasites hybridus root (butterbur) is an effective preventive treatment for migraine. Neurology. 2004 Dec 28; 63(12):2240-4.
Low Back Pain
Cognitive-behavioral therapy
In one study, patients who attended between 6-8 2-hour CBT sessions resulted in greater improvement in back pain and functional limitations at 26 and 52 weeks, as compared with usual care
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. JAMA. 2016 Mar 22;315(12):1240-9.
In another study, six sessions of group CBT sessions (1.5 hours each) improved back pain disability scores which was maintained at 12 months
Lamb SE, Hansen Z, Lall R, Castelnuovo E, Withers EJ, Nichols V, Potter R, Underwood MR, Back Skills Training Trial investigators. Group cognitive behavioural treatment for low-back pain in primary care: a randomised controlled trial and cost-effectiveness analysis. The Lancet. 2010 Mar 13;375(9718):916-23.
Exercise
Not much can be concluded on the influence of exercise intensity, frequency, and duration on outcome. In one meta-regression analysis of randomized controlled trials, authors found that number of exercise sessions is significantly associated with the effect of exercise on low back pain at the short-term follow-up. Results suggest that, for each additional exercise session, the effect size would increase by 0.13 (95% CI: 0.02, 0.24) on a 100-point scale. The total number of exercise hours, however, was not significantly associated with exercise effect size.
Ferreira ML, Smeets RJ, Kamper SJ, Ferreira PH, Machado LA. Can we explain heterogeneity among randomized clinical trials of exercise for chronic back pain? A meta-regression analysis of randomized controlled trials. Physical therapy. 2010 Oct 1;90(10):1383-403.
See the following UpToDate article for specific recommendations: Exercise-Based Therapy for Low Back Pain https://www.uptodate.com/contents/exercise-based-therapy-for-low-back-pain
Spinal manipulation
Findings from a large and rigorous randomized dose-response study of spinal manipulative therapy (SMT) for chronic low-back pain suggest that 12 sessions (SMT) may be the best "dose" for people with chronic low-back pain.
Haas M, Vavrek D, Peterson D, et al. Dose-response and efficacy of spinal manipulation for care of chronic low back pain: a randomized controlled trial. Spine Journal. 2014;14(7):1106–1116.

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Interdisciplinary rehabilitation (defined as an integrated intervention with rehabilitation plus a psychological and/or social/occupational component)
Though it can vary, the most effective programs generally involve cognitive/behavioral and supervised exercise components with at least several sessions a week, with over 100 total hours of treatment
Chou, R., Loeser, J. D., Owens, et al. (2009). Interventional therapies, surgery, and interdisciplinary rehabilitation for low back pain: an evidence-based clinical practice guideline from the American Pain Society. Spine, 34(10), 1066-1077.
Guzman J, Esmail R, Karjalainen K, et al. Multidisciplinary rehabilitation for chronic low back pain: systematic review. BMJ2001;322:1511–16.
Guzman J, Esmail R, Karjalainen K, et al. Multidisciplinary bio-psycho-social rehabilitation for chronic low-back pain. Cochrane Database Syst Rev 2002:CD000963.
Osteoarthritis
Acupuncture
Evidence is not conclusively available for the ideal number of treatments
In one study, six or more acupuncture treatments were significantly associated with positive outcomes (P=0.03)
Ezzo J, Berman B, Hadhazy VA, Jadad AR, Lao L, Singh BB. Is acupuncture effective for the treatment of chronic pain? A systematic review. Pain. 2000;86(3):217–25.
Exercise
A systematic review of exercise for knee OA found that 24 total sessions and durations of 8 and 12 were the parameters most often associated with large effect sizes, and a frequency of 1 time per week were related to no effect.
Young JL, Rhon DI, Cleland JA, Snodgrass SJ. The Influence of Exercise Dosing on Outcomes in Patients With Knee Disorders: A Systematic Review. Journal of Orthopaedic & Sports Physical Therapy. 2018 Mar;48(3):146-61.
Massage therapy
A study found that a 60-minute “dose” of Swedish massage therapy delivered once a week for pain due to osteoarthritis of the knee was both optimal and practical, establishing a standard for use in future research
Perlman AI, Ali A, Njike VY, et al. Massage therapy for osteoarthritis of the knee: a randomized dose-finding trial. PLoS One. 2012;7(2):e30248.
Tai chi
One study found that two 1-hour sessions per week was helpful in reducing pain and improvements in physical functioning for patients with OA of the knee
Wang C, Schmid CH, Iversen MD, et al. Comparative effectiveness of tai chi versus physical therapy for knee osteoarthritis: a randomized trial. Annals of Internal Medicine. 2016;165(2):77-86.
A meta-analysis found that a 12-week course of tai chi provides benefits of improvement in arthritic symptoms and physical function in patients with OA; however, long term benefits is not clear
Yan, Jun-Hong, Wan-Jie Gu, Jian Sun, Wen-Xiao Zhang, Bao-Wei Li, and Lei Pan. "Efficacy of Tai Chi on pain, stiffness and function in patients with osteoarthritis: a meta-analysis." PLoS One 8, no. 4 (2013): e61672.

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Rheumatoid Arthritis
Fish oil
There is no consensus on the recommended amount of fish oil supplementation for patients with RA. The Arthritis Foundation recommends fish oil capsules with at least 30% EPA/DHA up to 2.6 g, twice a day. https://www.arthritis.org/living-with-arthritis/treatments/natural/supplements-herbs/guide/fish-oil.php

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Evidence Tables for Alternative Treatments of Specific Chronic Pain Conditions

Reference: AHRQ Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review
https://effectivehealthcare.ahrq.gov/sites/default/files/cer-209-evidence-summary-non-pharma-chronic-pain.pdf

Table A. Chronic low back pain: effects of nonpharmacological interventions compared with usual care, placebo, sham, attention control, or waitlist

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Exercise	slight +	none +	none +	slight ++	moderate +	moderate +
Psychological Therapies: CBT primarily	slight ++	slight ++	slight ++	slight ++	slight ++	slight ++
Physical Modalities: Ultrasound	insufficient evidence	no evidence	no evidence	none +	no evidence	no evidence
Physical Modalities: Low-Level Laser Therapy	slight +	none +	no evidence	moderate +	none +	no evidence
Manual Therapies: Spinal Manipulation	slight +	slight +	no evidence	none +	slight ++	no evidence
Manual Therapies: Massage	slight ++	none +	no evidence	slight ++	none +	no evidence
Manual Therapies: Traction	none +	no evidence	no evidence	none +	no evidence	no evidence
Mindfulness Practices: MBSR	none +	none +	none +	slight ++	slight +	none +
Mind-Body Practices: Yoga	slight ++	slight +	no evidence	moderate +	moderate ++	no evidence
Acupuncture	slight +	none +	none +	slight ++	none +	slight +
Multidisciplinary Rehabilitation	slight +	slight +	none +	slight ++	slight ++	none +

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
CBT = cognitive behavioral therapy; MBSR = mindfulness-based stress reduction; none = no effect/no statistically significant effect; SOE = strength of evidence.

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Table B. Chronic low back pain: effects of nonpharmacological interventions compared with exercise

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Physical Modalities: Low-Level Laser Therapy	no evidence	none +	no evidence	no evidence	slight +	no evidence
Manual Therapies: Spinal Manipulation	none +	none +	no evidence	none +	slight +	no evidence
Manual Therapies: Massage	no evidence	none +	no evidence	no evidence	none +	no evidence
Mind-Body Practices: Yoga	none +	none +	no evidence	slight +	none +	no evidence
Mind-Body Practices: Qigong	none +	slight favoring exercise +	no evidence	slight favoring exercise +	none +	no evidence
Multidisciplinary Rehabilitation	slight ++	slight ++	none +	slight ++	slight ++	none +

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
none = no effect/no statistically significant effect; SOE = strength of evidence.

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Table C. Chronic neck pain: effects of nonpharmacological interventions compared with usual care, placebo, sham, attention control, or waitlist

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Exercise	none +	no evidence	no evidence	none +	no evidence	no evidence
Psychological Therapies: PT-lead relaxation training	none +	none +	no evidence	none +	none +	no evidence
Physical Modalities: Low-Level Laser Therapy	moderate ++	no evidence	no evidence	moderate ++	no evidence	no evidence
Manual Therapies: Massage	none +	none +	no evidence	no evidence	no evidence	no evidence
Mind-Body Practices: Alexander Technique	slight +	slight +	no evidence	no evidence	no evidence	no evidence
Acupuncture	slight +	slight +	none +	none +	none +	none +

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
none = no effect/no statistically significant effect; PT = physical therapist; SOE = strength of evidence.

Table D. Chronic neck pain: effects of nonpharmacological interventions compared with exercise

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Psychological Therapies: PT-lead relaxation training	none +	none +	no evidence	none +	none +	no evidence
Manual Therapies: Massage	no evidence	no evidence	no evidence	no evidence	none +	no evidence
Mind-Body Practices: Body Awareness Therapy	none +	no evidence	no evidence	no evidence	no evidence	no evidence

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
none = no effect/no statistically significant effect; PT = physical therapist; SOE = strength of evidence.

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Table E. Osteoarthritis of the knee: effects of nonpharmacological interventions compared with usual care, placebo, sham, attention control, or waitlist

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Exercise	slight ++	slight +	slight +	slight ++	moderate +	none +
Psychological Therapies: Pain coping, CBT	none +	none +	none +	none +	none +	none +
Physical Modalities: Ultrasound	slight +	none +	no evidence	slight +	none +	no evidence
Physical Modalities: TENS	no evidence	none +	no evidence	no evidence	none +	no evidence
Physical Modalities: Electromagnetic Field	none +	no evidence	no evidence	none +	no evidence	no evidence
Acupuncture	none +	none ++	no evidence	none +	none ++	no evidence

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
CBT = cognitive-behavioral therapy; none = no effect/no statistically significant effect; TENS = transcutaneous electrical nerve stimulation; SOE = strength of evidence

Table F. Osteoarthritis of the knee: effects of nonpharmacological interventions compared with exercise

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Psychological Therapies: Pain coping	none +	none +	no evidence	none +	none +	no evidence

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
none = no effect/no statistically significant effect; SOE = strength of evidence

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Table G. Osteoarthritis of the hip: effects of nonpharmacological interventions compared with usual care, placebo, sham, attention control, or waitlist

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Exercise	slight +	slight +	insufficient evidence	slight +	none +	insufficient evidence

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
none = no effect/no statistically significant effect; SOE = strength of evidence

Table H. Osteoarthritis of the hip: effects of nonpharmacological interventions compared with exercise

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Manual Therapies	slight +	slight +	no evidence	slight +	insufficient evidence	no evidence

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
SOE = strength of evidence

Table I. Osteoarthritis of the hand: effects of nonpharmacological interventions compared with usual care, placebo, sham, attention control, or waitlist

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Physical Modalities: Low-Level Laser Therapy	none +	no evidence	no evidence	none +	no evidence	no evidence
Multidisciplinary Rehabilitation	none +	no evidence	no evidence	none +	no evidence	no evidence

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
none = no effect/no statistically significant effect; SOE = strength of evidence

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Table J. Fibromyalgia: effects of nonpharmacological interventions compared with usual care, placebo, sham, attention control, or waitlist

Intervention	Function *Short-Term* Effect Size SOE	Function *Intermediate-Term* Effect Size SOE	Function *Long-Term* Effect Size SOE	Pain *Short-Term* Effect Size SOE	Pain *Intermediate-Term* Effect Size SOE	Pain *Long-Term* Effect Size SOE
Exercise	slight +	slight ++	none +	slight ++	none ++	none ++
Psychological Therapies: CBT	slight +	slight +	insufficient evidence	slight +	none +	insufficient evidence
Physical Modalities: Magnetic Pads	insufficient evidence	none +	no evidence	insufficient evidence	none +	no evidence
Manual Therapies: Massage (Myofascial Release)	no evidence	slight +	none +	insufficient evidence	insufficient evidence	slight +
Mindfulness Practices: MBSR	none ++	no evidence	no evidence	none ++	no evidence	no evidence
Mind-Body Practices: Qigong, Tai Chi	slight +	no evidence	no evidence	moderate +	no evidence	no evidence
Acupuncture	slight ++	slight ++	no evidence	none +	none +	no evidence
Multidisciplinary Rehabilitation	slight +	slight +	slight +	none +	slight +	none +

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
CBT = cognitive-behavioral therapy; MBSR = mindfulness-based stress reduction; none = no effect/no statistically significant effect; SOE = strength of evidence

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