CADTH Evidence Driven.

Non-Pharmacological Methods for Managing Chronic Pain: Physical Methods

A summary of the evidence for clinicians (e.g., physicians, physiotherapists, nurses, nurse practitioners, pharmacists, occupational therapists, massage therapists, and chiropractors)

Because of the prevalence and burden of chronic pain, and because relying on opioids alone carries substantial risks and may be ineffective, health care providers are looking for the best multifaceted approach to pain treatment. The *2017 Canadian Guideline for Opioids for Chronic Non-Cancer Pain*[1] recommends optimizing non-opioid pharmacotherapy and non-pharmacological therapy before trialling opioids for patients with chronic, non-cancer pain.

Pain medications commonly work by mimicking the body's own pain relief system; many non-pharmacological therapies work by producing those chemicals naturally or by mitigating the adverse stimuli causing the pain. Non-pharmacological therapies can be divided into three categories: psychological, physical, and preventive. These therapies can be used on their own or in combination with pharmacotherapy, which is often more effective when prescribed in conjunction with these non-pharmacological therapies. To help support evidence-informed decision-making regarding the management of chronic pain, CADTH has reviewed and summarized the evidence from various sources for some of the interventions that fall into these three categories.

Here you'll find the evidence highlights and practical considerations for some interventions that fall into the physical category. Physical methods involve a patient using their own body to help reduce or safely manage pain; these include exercise, acupuncture, and manual therapy. For online access to all of the clinician and patient handouts for non-pharmacological methods for managing chronic pain, visit www.cadth.ca/chronicpain.

Bottom Line

Exercise

Exercise may lower pain for people with many types of chronic pain, such as low back pain, knee osteoarthritis, hip osteoarthritis, fibromyalgia, rheumatoid arthritis, and neck pain.[a]

Acupuncture

Acupuncture may lower pain for people with low back pain, hip osteoarthritis, osteoarthritis, headache, shoulder pain, pelvic pain syndrome or prostatitis, sciatica, and myofascial pain.[a]

Manual Therapy

Manual therapy may lower pain for people with chronic low back pain (spine manipulation and massage), neck pain (massage), and tension headaches (spinal manipulation).[a]

[a] Note that there is uncertainty in these findings as the strength or quality of the evidence varied depending on the patient population, the duration of each intervention, and the length of follow-up for each intervention. More research is needed.

Exercise

CADTH

Bottom Line:

Exercise may lower pain for people with many types of chronic pain, such as low back pain, knee osteoarthritis, hip osteoarthritis, fibromyalgia, rheumatoid arthritis, and neck pain.

Table 1: Research Findings and Practical Considerations of Exercise for Chronic Pain

Pain condition	Research findings	Limitations of the evidence	Practical considerations[a]
Chronic pain,[b] including but not limited to: • **Low back pain** • **Osteoarthritis** • **Fibromyalgia** • **Rheumatoid arthritis** • **Neck pain**	• Overall, evidence suggests that exercise may reduce pain severity and improve physical function compared with no intervention for patients with chronic pain.[b] • Exercise was found to have few adverse effects for people with chronic pain.[b]	• Low-quality evidence[b,c] • Variability existed among included studies (e.g., differences in types of pain and exercise)[b] • Primary studies included in the review were published prior to April 2015; new evidence may be available[b] • Non-Cochrane systematic reviews were excluded[b] • Insufficient evidence found on the long-term impacts of exercise[b]	• Some are fearful of the word "exercise," so instead, recommend "movement" or "being active." • No one mode of exercise is better than others; help people identify several activities that they enjoy doing. When they have many to choose from, they can select an activity that will work for them each day. • Start low and go slow. More frequent (e.g., daily), shorter bouts of exercise are more tolerable than fewer, longer bouts. • Exercises for cardiovascular fitness are more tolerable than resistance exercises in people who are new to exercise. Start with cardiovascular and progress to adding resistance exercise. • Discuss what they expect to happen when they exercise, both the positive and negative outcomes (e.g., increased pain, sweating, weight loss). Reinforce that it is normal and acceptable to experience pain during and after exercise, but the goal is to find a balance. Explain that exercise may eventually help pain, sleep, and mood, and that being regularly active makes other pain treatments more effective. • Prescribe exercise and arrange for follow-up assessment, feedback, and support. On follow-up, ask questions that reinforce their responsibility to manage pain (e.g., "What did you do for exercise this week?," "How did you manage your pain when it increased?").
Chronic knee osteoarthritis pain[d]	• Evidence suggests exercise may reduce pain and improve function, performance, and health-related quality of life in patients with knee osteoarthritis when compared with usual care, no treatment, or sham interventions.[d] • A temporary increase in minor pain was reported with exercise in patients with knee osteoarthritis compared to those on sham therapy, but no difference was reported in worsening pain, falls, or death.[d] • Low-impact exercise that combines muscle strengthening, stretching, and aerobic activity did not cause serious adverse events in older adults. In addition, it did not affect the frequency of knee replacement surgeries between exercise and control groups.[d]	• Low-to-moderate quality evidence[c,d] • Variability existed among included studies (e.g., differences in types and duration of exercise, duration of follow-up)[d] • Limited information available about patient's adherence to exercise programs and adverse events[d]	

[a] "Practical considerations" were developed by the Saskatchewan Health Authority, and reviewed by the Canadian Pain Task Force and its External Advisory Panel.

[b] As outlined in the Cochrane Database of Systematic Reviews's *Physical activity and exercise for chronic pain in adults: An Overview of Cochrane Reviews*.[2]

[c] The quality or strength of the evidence can be ranked as unclear, low, moderate, or high. The lower the quality or strength, the less confidence there is in the results. When the quality or strength of the evidence is low, there is a need for more quality research to be certain of the interventions' effect.

[d] As outlined in CADTH's Rapid Response report *Physical Activity for Chronic Osteoarthritic Knee Pain: A Review of Clinical Effectiveness*.[3]

Acupuncture

CADTH

Bottom Line:

Acupuncture may lower pain for people with low back pain, hip osteoarthritis, osteoarthritis, headache, shoulder pain, pelvic pain syndrome or prostatitis, sciatica, and myofascial pain.

Table 2: Research Findings and Practical Considerations of Acupuncture for Chronic Pain

Pain condition	Research findings	Limitations	Practical considerations[a]
Chronic non-cancer pain[b, c]	• Evidence suggests that acupuncture may be an effective intervention for reducing pain for adults living with low back pain,[b, c] hip osteoarthritis,[b] osteoarthritis,[b] headache,[b] shoulder pain,[b] myofascial pain,[b] sciatica,[b] and prostatitis or pelvic pain syndrome[b] compared to those receiving no treatment, sham, placebo, or usual care. For low back pain, one source[c] reported small reductions in pain with acupuncture in the short and long term, and no effect in the intermediate term.[d] • Studies specific to chronic prostatitis and pelvic pain found no difference in adverse events between acupuncture groups and comparator groups.[b]	• Quality of the evidence was low from one source[b] and strength of the evidence was low to moderate from another source[c,e] • Inconsistent results depending on the patient population and type of acupuncture[b] • Not always reported if changes in pain were meaningful to patients[b, c] • Lack of long-term follow-up[b] • Variability existed among the included studies (e.g., differences in clinical diagnosis, comorbidities, interventions, comparators)[b, c] • Outcomes lacked standardization[b] • Limited data on harms[b, c] • Small sample sizes[c]	• It may take two to four treatments to notice results; however, many patients feel relief (e.g., reduced pain, improved relaxation and sleep) that can last for several days after one treatment. • Needle insertion is usually not painful but may cause mild, short-lasting soreness or warmth at the acupuncture site. Any needle that is too uncomfortable can be removed. Ideally, patients will feel a dull pressure sensation under the needle. Any residual soreness can be managed with light stretching and gentle self-massage. • Bruising or slight bleeding may occur. More serious adverse events are extremely rare and related to incorrect application. • Patients should search for a certified acupuncture practitioner who has experience working with people with chronic pain.

[a] "Practical considerations" were developed by the Saskatchewan Health Authority, and reviewed by the Canadian Pain Task Force and its External Advisory Panel.

[b] As outlined in CADTH's Rapid Response report *Acupuncture for Chronic Non-Cancer Pain: A Review of Clinical Effectiveness, Cost Effectiveness and Guidelines.*[4]

[c] As outlined in the Agency for Healthcare Research and Quality's *Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update*.[5]

[d] Short term = one to fewer than six months; intermediate term = six months or more to fewer than 12 months; long term = 12 months or more.

[e] The quality or strength of the evidence can be ranked as unclear, low, moderate, or high. The lower the quality or strength, the less confidence there is in the results. When the quality or strength of the evidence is low, there is a need for more quality research to be certain of the interventions' effect.

Manual Therapy

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Bottom Line:

Manual therapy may lower pain for people with chronic low back pain (spinal manipulation and massage), neck pain (massage), and tension headaches (spinal manipulation).

Table 3: Research Findings and Practical Considerations of Manual Therapy for Chronic Pain

Pain condition	Research findings	Limitations	Practical considerations[a]
Chronic back pain[b, c]	**Spinal manipulation** • While some evidence suggests that when compared to controls, spinal manipulation may be effective at reducing pain in the intermediate term[d] and improving function in the short and intermediate term[d] for people with chronic low back pain,[b] other evidence is mixed.[c] • Manual therapies are generally well-tolerated, with mild transient adverse events such as discomfort, tiredness,[c] and increased pain.[b]	• Quality of the evidence was low to moderate from one source[c] and strength of the evidence was low to moderate from another source[b, e] • Variability existed among included studies (e.g., differences in type of manual therapy and patient populations)[b, c] • Not always reported if the changes in pain were meaningful to the patients[b, c] • Limited data on harms[b] • No evidence was identified for long-term[d] effects[b]	• Recommended treatment regimens for pain management are dependent on the location of pain, diagnosis, care goals, patient preferences, and treatment response. • Encourage the use of manual therapies as a bridge strategy to reduce pain, which allows the patient to become more physically active and able to self-manage (dependence on treatments can develop and reinforce feelings of powerlessness and reliance on providers for pain management). • Patients should be encouraged to search for a manual therapist with experience in chronic pain; someone who shares the philosophy of using manual therapy as an adjunct to supporting self-management. • Short-term discomfort may be experienced during treatment and for one to two days after. This can be managed with gentle movement, thermal agents (e.g., hot and cold packs), and self-massage. • Patient preference of licenced or regulated health care providers should be respected without judgment. Patients should be encouraged to explore the different providers and types of manual therapy care they have access to, and to pursue the option that provides them with some relief. Experience with different providers should be explored (no further pain reductions, or conversely, increases in pain following a reasonable course of care) prior to considering more invasive health care interventions.
	Massage • Evidence suggests massage may be effective at reducing pain and improving function in the short term[d] for patients with chronic low back pain when compared to controls.[b] No effect was seen in the intermediate term for either outcome.[d] • No serious adverse events were reported with massage. Mild adverse events (e.g., increased pain) were reported.[b]	• Evidence was sparse and the strength was low to moderate[b, e] • Limited data on harms[b] • Not always reported if changes in pain were meaningful to patients[b] • Small sample sizes[b] • Variability existed among included studies (e.g., differences in clinical diagnosis and comorbidities)[b] • No evidence was identified for long-term[d] effects[b]	
Chronic neck pain[b]	**Massage** • Evidence suggests that massage may be effective at reducing pain and improving function in the short term[d] for patients with chronic neck pain when compared to controls[b] • No serious adverse events were reported with massage. Reported mild adverse effects included discomfort or pain, headache, dizziness, sleepiness, mood swings, nausea, difficulty staying asleep, and difficulty moving the head and neck[b]	• Evidence was sparse and the strength was low[b, e] • Limited data on harms[b] • Not always reported if changes in pain were meaningful to patients[b] • Small sample sizes[b] • Variability existed among included studies (i.e., differences in clinical diagnosis and comorbidities)[b] • No evidence was identified for long-term[d] effects[b]	

Pain condition	Research findings	Limitations	Practical considerations[a]
Chronic tension headaches[b]	**Spinal manipulation** • Evidence suggests that spinal manipulation may be effective at reducing pain and improving function in the short term[d] for people with chronic tension headaches, when compared to controls.[b]	• Evidence was sparse and the strength of the evidence was low[b, e] • Limited data on harms[b] • Not always reported if changes in pain were meaningful to patients[b] • Small sample sizes[b] • Variability existed among included studies (e.g., differences in clinical diagnosis and comorbidities)[b] • No evidence was identified for long-term[c] effects[b]	

[a] "Practical considerations" were developed by the Saskatchewan Health Authority, and reviewed by the Canadian Pain Task Force and its External Advisory Panel.

[b] As outlined in the Agency for Healthcare Research and Quality's *Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update*.[5]

[c] As outlined in CADTH's Rapid Response report *Manual therapy for chronic, non-cancer back and neck pain: a review of clinical effectiveness*.[6]

[d] Short term = one to fewer than six months; intermediate term = six months or more to fewer than 12 months; long term = 12 months or more.

[e] The quality or strength of the evidence can be ranked as unclear, low, moderate, or high. The lower the quality or strength, the less confidence there is in the results. When the quality or strength of the evidence is low, there is a need for more quality research to be certain of the interventions' effect.

Not all pain conditions were captured in the evidence that was reviewed by CADTH. This doesn't mean these methods to manage pain won't work for other types of pain, it may simply mean that research has not been done or has not been reviewed on the specific pain condition yet. In addition, not every intervention listed will achieve the lowering of pain that is desired by the patient as every individual responds differently to each method of managing pain. As a result, patients and their health care providers need to work together to find the methods that work best for them.

To access a PDF of this handout visit **www.cadth.ca/chronicpain**.

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ABOUT CADTH

CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs and medical devices in our health care system.

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