

# Non-Pharmacological Methods for Managing Chronic Pain: Psychological 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*<sup>1</sup> 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 psychological category. Psychological methods, such as mindfulness, cognitive behavioural therapy, and yoga, help to safely manage chronic pain using the connection between thoughts, feelings, and behaviours. For online access to all of the clinician and patient handouts for non-pharmacological methods for managing chronic pain, visit [www.cadth.ca/chronicpain](http://www.cadth.ca/chronicpain).

## Bottom Line



### Mindfulness

Mindfulness may lower pain for people with low back pain and fibromyalgia.<sup>a</sup>



### Cognitive Behavioural Therapy (CBT)

CBT may lower pain for people with low back pain, neck pain, knee osteoarthritis, and fibromyalgia.<sup>a</sup>



### Yoga

Yoga may lower pain for people with low back pain and primary dysmenorrhea.<sup>a</sup>

<sup>a</sup> 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.

## Bottom Line:

Mindfulness may lower pain for people with low back pain and fibromyalgia.

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

Pain condition	Research findings	Limitations of the evidence	Practical considerations <sup>a</sup>
<b>Chronic pain in general<sup>b</sup></b>	<ul style="list-style-type: none"> <li>Evidence suggests mindfulness training versus waitlist control may improve pain acceptance and depression scores for patients with chronic pain; however, no statistically significant improvements in pain intensity, anxiety, and quality of life outcomes were found when compared to no treatment.<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>Evidence is unclear in terms of quality<sup>b,c</sup></li> <li>Generalizability is limited as the evidence review included only patients who were not receiving any other treatment for pain<sup>b</sup></li> <li>No data on harms<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>Before recommending psychological interventions such as mindfulness, help the patient develop a biopsychosocial understanding of pain. For example, “For chronic pain, underlying medical conditions are not always found that can explain the pain — this does not mean that the pain is not real. It can be a disease in its own right and not a result of some other medical condition. Chronic pain often involves changes in how the brain, spinal cord, and nerves detect and interpret information from the environment.”</li> <li>Avoid suggestions that mindfulness is recommended because no physical disease or injury has been found.</li> <li>Reinforce that psychological therapies, such as mindfulness, reduces pain in two ways:               <ul style="list-style-type: none"> <li>Reduce the impact of comorbid psychological conditions, such as depression and anxiety, that are common in people with chronic pain and that worsen pain symptoms</li> <li>Activate central nervous system mechanisms that inhibit pain</li> </ul> </li> <li>Some people may feel worse with mindfulness training. Be cautious when recommending this method to those with a history of social or emotional trauma or depression.</li> <li>Mindfulness can be practised as a focused meditation session, or incorporated into everyday life, in a group setting or independently. The practice can be tailored to suit the individual.</li> <li>Psychological therapies take time to have an effect. Patients may only see an effect after several weeks of practice.</li> </ul>
<b>Low back pain<sup>d</sup></b>	<ul style="list-style-type: none"> <li>Evidence suggests mindfulness may be effective at reducing pain for patients with low back pain when compared to controls in the short and intermediate term.<sup>e</sup> No effect was found in the long term.<sup>d,e</sup></li> <li>Nonserious adverse events (increased pain) were reported for mindfulness.<sup>d</sup></li> </ul>	<ul style="list-style-type: none"> <li>Evidence was sparse and the strength of the evidence was low to moderate<sup>c,d</sup></li> <li>Limited data on harms<sup>d</sup></li> <li>Not always reported if changes in pain were meaningful to patients<sup>d</sup></li> <li>Small sample sizes<sup>d</sup></li> <li>Variability among included studies (e.g., differences in interventions, comparators, and comorbidities)<sup>d</sup></li> <li>No evidence was identified for long-term<sup>e</sup> effects in patients with fibromyalgia<sup>d</sup></li> </ul>	
<b>Fibromyalgia<sup>d</sup></b>	<ul style="list-style-type: none"> <li>Evidence suggests mindfulness may be effective at reducing pain and improving function for patients with fibromyalgia when compared to controls in the intermediate term.<sup>e</sup> No effect was found in the short term.<sup>d,e</sup></li> </ul>		

<sup>a</sup> “Practical considerations” were developed by the Saskatchewan Health Authority, and reviewed by the Canadian Pain Task Force and its External Advisory Panel.

<sup>b</sup> As outlined in CADTH’s Rapid Response report *Mindfulness Training and Yoga for the Management of Chronic Non-malignant Pain: A Review of Clinical Effectiveness and Cost-effectiveness*.<sup>2</sup>

<sup>c</sup> 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.

<sup>d</sup> As outlined in the Pacific Northwest Evidence-Based Practice Center’s *Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update*.<sup>3</sup>

<sup>e</sup> Short term = one to fewer than six months; intermediate term = six months or more to fewer than 12 months; long term = 12 months or fewer.

## Bottom Line:

CBT may lower pain for people with low back pain, neck pain, knee osteoarthritis, and fibromyalgia.

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

Pain condition	Research findings	Limitations	Practical considerations <sup>a</sup>
<b>Neck pain<sup>b</sup></b>	<ul style="list-style-type: none"> <li>Evidence suggests CBT may reduce pain and disability, and improve quality of life for patients with neck pain when compared to no treatment. It did not significantly affect psychological indicators, such as kinesiophobia and distress.<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>Evidence was of low quality<sup>b, c</sup></li> <li>Primary studies did not focus solely on CBT<sup>b</sup></li> <li>Variability among included studies (e.g., different types of cognitive and behavioural interventions)<sup>b</sup></li> <li>Chronic pain duration was not always defined<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>Introduce a recommendation for CBT by describing the aspects of pain that it will impact. For example, “Most people find it very stressful to live with chronic pain. This can affect mood and mental health, and can cause sleep problems that affect quality of life. Treatments like CBT not only reduce pain, they also help people build skills that help them maintain a fulfilling life and be involved in activities they enjoy.”</li> <li>Reinforce that psychological therapies, such as CBT, reduces pain in two ways:                             <ul style="list-style-type: none"> <li>Reduce the impact of comorbid psychological conditions, such as depression and anxiety, that are common in people with chronic pain and that worsen pain symptoms</li> <li>Activate central nervous system mechanisms that inhibit pain</li> </ul> </li> <li>CBT can be practised in an individual or group setting, either in person, by telephone, or online.</li> <li>The number of sessions recommended is dependent on the individual.</li> <li>Treatment risks with CBT include sharing personal information and being emotionally vulnerable. Encourage patients to take the time to understand how their information is protected. Finding a trusted therapist who specializes in pain will help with vulnerability.</li> <li>Psychological therapies take time to have an effect. Patients may only see an effect after several weeks of practice.</li> </ul>
<b>Low back pain<sup>b, d</sup></b>	<ul style="list-style-type: none"> <li>Evidence suggests CBT may reduce pain<sup>b, d</sup> and improve function<sup>d</sup> for patients with low back pain when compared to controls in the short, intermediate, and long term.<sup>d, e</sup></li> <li>No serious adverse events were reported.<sup>d</sup></li> </ul>	<ul style="list-style-type: none"> <li>Quality of the evidence was low from one source<sup>b</sup> and the strength of the evidence was moderate from another source<sup>b, 3</sup></li> <li>Limited data were available on harms<sup>d</sup></li> <li>Not always reported if changes in pain were meaningful to patients<sup>d</sup></li> <li>Variability existed among included studies (e.g., differences in clinical diagnosis, comorbidities, types of cognitive and behavioural interventions)<sup>b, d</sup></li> <li>Primary studies did not focus solely on CBT<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>CBT can be practised in an individual or group setting, either in person, by telephone, or online.</li> <li>The number of sessions recommended is dependent on the individual.</li> <li>Treatment risks with CBT include sharing personal information and being emotionally vulnerable. Encourage patients to take the time to understand how their information is protected. Finding a trusted therapist who specializes in pain will help with vulnerability.</li> <li>Psychological therapies take time to have an effect. Patients may only see an effect after several weeks of practice.</li> </ul>
<b>Knee osteoarthritis<sup>d</sup></b>	<ul style="list-style-type: none"> <li>Evidence suggests CBT may reduce pain for patients with knee osteoarthritis when compared to controls in the short term.<sup>c</sup> No effect was seen in the intermediate or long term.<sup>d, e</sup></li> <li>No adverse events were observed.<sup>d</sup></li> </ul>	<ul style="list-style-type: none"> <li>Evidence was sparse for knee osteoarthritis<sup>d</sup></li> <li>Strength of the evidence was low<sup>c, d</sup></li> <li>Limited data were available on harms<sup>d</sup></li> <li>Not always reported if changes in pain were meaningful to patients<sup>d</sup></li> <li>Small sample sizes<sup>d</sup></li> <li>Variability existed among included studies (e.g., differences in interventions, comparators, and comorbidities)<sup>d</sup></li> <li>Insufficient evidence was identified for long-term<sup>e</sup> effects in patients with fibromyalgia</li> </ul>	<ul style="list-style-type: none"> <li>CBT can be practised in an individual or group setting, either in person, by telephone, or online.</li> <li>The number of sessions recommended is dependent on the individual.</li> <li>Treatment risks with CBT include sharing personal information and being emotionally vulnerable. Encourage patients to take the time to understand how their information is protected. Finding a trusted therapist who specializes in pain will help with vulnerability.</li> <li>Psychological therapies take time to have an effect. Patients may only see an effect after several weeks of practice.</li> </ul>
<b>Fibromyalgia<sup>b</sup></b>	<ul style="list-style-type: none"> <li>Evidence suggests CBT may reduce pain in the short term<sup>e</sup> and improve function in the intermediate term<sup>e</sup> for patients with fibromyalgia when compared to controls. No effect was seen in the short term<sup>e</sup> for function or in the intermediate term<sup>e</sup> for pain.<sup>d</sup></li> <li>Adverse events were minor overall and occurred at similar frequencies between the CBT and control groups.<sup>d</sup></li> </ul>	<ul style="list-style-type: none"> <li>Insufficient evidence was identified for long-term<sup>e</sup> effects in patients with fibromyalgia</li> </ul>	<ul style="list-style-type: none"> <li>CBT can be practised in an individual or group setting, either in person, by telephone, or online.</li> <li>The number of sessions recommended is dependent on the individual.</li> <li>Treatment risks with CBT include sharing personal information and being emotionally vulnerable. Encourage patients to take the time to understand how their information is protected. Finding a trusted therapist who specializes in pain will help with vulnerability.</li> <li>Psychological therapies take time to have an effect. Patients may only see an effect after several weeks of practice.</li> </ul>

CBT = cognitive behavioural therapy.

<sup>a</sup> “Practical considerations” were developed by the Saskatchewan Health Authority, and reviewed by the Canadian Pain Task Force and its External Advisory Panel.

<sup>b</sup> As outlined in CADTH’s Rapid Response report *Cognitive Behavioural Therapy for Chronic Non-Cancer Pain: A Review of Clinical Effectiveness*.<sup>4</sup>

<sup>c</sup> 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.

<sup>d</sup> As outlined in the Pacific Northwest Evidence-Based Practice Center’s *Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update*.<sup>3</sup>

<sup>e</sup> 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.

## Bottom Line:

Yoga may lower pain for people with low back pain and primary dysmenorrhea.

**Table 3: Research Findings and Practical Considerations of Yoga for Chronic Pain**

Pain condition	Research findings	Limitations	Practical considerations <sup>a</sup>
<b>Low back pain</b> <sup>b, c</sup>	<ul style="list-style-type: none"> <li>Evidence suggests yoga may reduce pain intensity<sup>b, c</sup> and improve function,<sup>c</sup> back flexibility,<sup>b</sup> and physiologic domains (e.g., serum serotonin)<sup>b</sup> for patients with low back pain when compared to controls. Pain reduction and function improvements were over the short and intermediate term.<sup>c, e</sup></li> <li>Adverse events occurred at similar frequencies between the yoga and control groups.<sup>c</sup></li> </ul>	<ul style="list-style-type: none"> <li>Quality of the evidence was low from one source<sup>b</sup> and strength of the evidence was low to moderate from another source<sup>c, d</sup></li> <li>Generalizability was limited as the evidence reviewed included only patients who were not receiving any other treatment for pain<sup>b</sup></li> <li>Limited data on harms<sup>b, c</sup></li> <li>Not always reported if changes in pain were meaningful to patients<sup>c</sup></li> <li>Small sample sizes<sup>c</sup></li> <li>Variability among included studies (e.g., differences in interventions, comparators, clinical diagnosis, and comorbidities)<sup>c</sup></li> <li>No evidence was identified for long-term<sup>e</sup> effects<sup>c</sup></li> </ul>	<ul style="list-style-type: none"> <li>Recommend yoga as a mind-body practice that has been used for thousands of years to alleviate suffering in addition to a form of exercise.</li> <li>Yoga combines physical (i.e., movements and breath control) with psychological and spiritual elements (i.e., meditation, relaxation, compassion towards self and others, acceptance and contentment with the present moment, finding purpose and peace). Yoga sessions can focus on the elements that are most meaningful to the person at the time.</li> <li>There are many forms of yoga, with some being physically demanding and others not requiring any physical movement.</li> <li>Yoga can be varied for any body type and physical ability level. It is important for patients to choose a form that fits their ability and needs.</li> <li>Yoga can be practised in an individual or group setting, and be supervised or independent.</li> </ul>
<b>Primary dysmenorrhea</b> <sup>b</sup>	<ul style="list-style-type: none"> <li>Evidence suggests yoga may reduce pain intensity and psychological distress (i.e., feelings of stress, anger, tension, anxiety, depression, mood swings), and improve well-being and general activity (i.e., participation in daily activities, socialization, absenteeism) for patients with primary dysmenorrhea when compared to no treatment.<sup>b</sup></li> <li>No adverse events were reported as a result of yoga.<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>Evidence ranged from low to high quality<sup>b, d</sup></li> <li>Generalizability was limited as the evidence reviewed included only patients who were not receiving any other treatment for pain<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>Patients can learn about yoga from a certified yoga therapist who has training in chronic pain.</li> <li>Although no equipment, clothing, or footwear are required, most people prefer to practice on a padded mat which can be purchased for under \$20.</li> <li>Many gentle yoga practices can be found online (e.g., search for online videos for “gentle chair yoga” or “gentle yoga for beginners”).</li> </ul>

<sup>a</sup> “Practical considerations” were developed by the Saskatchewan Health Authority, and reviewed by the Canadian Pain Task Force and its External Advisory Panel.

<sup>b</sup> As outlined in CADTH’s Rapid Response report *Mindfulness Training and Yoga for the Management of Chronic Non-malignant Pain: A Review of Clinical Effectiveness and Cost-effectiveness*.<sup>2</sup>

<sup>c</sup> As outlined in the Pacific Northwest Evidence-Based Practice Center’s *Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update*.<sup>3</sup>

<sup>d</sup> 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.

<sup>e</sup> 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.

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 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](http://www.cadth.ca/chronicpain).

**Acknowledgements:** CADTH would like to thank the Saskatchewan Health Authority for its clinical expertise in developing the “practical considerations” and its Department of Pain Strategy for reviewing the remaining content. An additional thanks to the Canadian Pain Task Force and its External Advisory Panel for reviewing the “practical considerations.”

## References

1. Busse JW, Craigie S, Juurlink DN, Buckley DN, Wang L, Couban RJ, et al. Guideline for opioid therapy and chronic noncancer pain. CMAJ [Internet]. 2017 May 8 [cited 2018 Apr 26];189(18):E659-E666. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5422149>
2. Mindfulness Training and Yoga for the Management of Chronic Non-malignant Pain: A Review of Clinical Effectiveness and Cost-effectiveness. Ottawa: CADTH; 2019 Sept. (CADTH rapid response report: summary with critical appraisal). <https://www.cadth.ca/mindfulness-training-and-yoga-management-chronic-non-malignant-pain-review-clinical-effectiveness-0>
3. Skelly AC, Chou R, Dettori JR, Turner JA, Friedly JL, Rundell SD, Fu R, Brodt ED, Wasson N, Kantner S, Ferguson AJR. Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update. Comparative Effectiveness Review No. 227. (Prepared by the Pacific Northwest Evidence-based Practice Center under Contract No. 290- 2015-00009-1.) AHRQ Publication No. 20-EHC009. Rockville, MD: Agency for Healthcare Research and Quality; April 2020. DOI: <https://doi.org/10.23970/AHRQEPCCER227>. <https://effectivehealthcare.ahrq.gov/products/noninvasive-nonpharm-pain-update/research>
4. Cognitive Behavioural Therapy for Chronic Non-Cancer Pain: A Review of Clinical Effectiveness. Ottawa: CADTH; 2019 Sept. (CADTH rapid response report: summary with critical appraisal). <https://www.cadth.ca/cognitive-behavioural-therapy-chronic-non-cancer-pain-review-clinical-effectiveness-0>

## DISCLAIMER

This material is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose; this document should not be used as a substitute for professional medical advice or for the application of professional judgment in any decision-making process. Users may use this document at their own risk. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not guarantee the accuracy, completeness, or currency of the contents of this document. CADTH is not responsible for any errors or omissions, or injury, loss, or damage arising from or relating to the use of this document and is not responsible for any third-party materials contained or referred to herein. Subject to the aforementioned limitations, the views expressed herein do not necessarily reflect the views of Health Canada, Canada's provincial or territorial governments, other CADTH funders, or any third-party supplier of information. This document is subject to copyright and other intellectual property rights and may only be used for non-commercial, personal use or private research and study.

## 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.

CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

September 2020