

Physical Activity in Chronic Pain: What Clinicians Need to Know

“Physical Activity in Chronic Pain: What Clinicians Need to Know” is part of a series of six Integrative Health tools designed to assist clinicians who want to enhance patient’s chronic pain self-management skills. For additional information, refer to the other materials in the [“Self-Management of Chronic Pain”](#) overview.

Chronic pain is complex, but it can help to view it from the Integrative Health perspective. Chronic pain requires day-to-day management through the use of multiple self-care strategies, including setting realistic goals, pacing activity, managing thoughts and feelings associated with pain, and—no less important—moving the body. This clinical tool focuses how physical activity is important in the self-management of chronic pain and how clinicians can help patients make optimal use of this area of proactive self-care.

Why Encourage Patients with Pain to Continue to Work Their Bodies?

For chronic pain, physical activity is an important part of a self-management regimen that increases active coping. Treatment approaches that focus on increasing activity rather than avoiding activity have better outcomes.¹

Gradual, progressive exercise improves mood in people who have chronic pain with associated depression or anxiety. For example, in studies of fibromyalgia patients, exercise not only increased fitness and function but also improved their sense of overall well-being.^{2,3}

Exercise has a positive, albeit modest, effect on pain. Among organizations in the fields of pain and spinal disorders (e.g. North American Spine Society, American Pain Society) exercise is uniformly recommended for problems such as subacute and chronic back pain. A longitudinal population-based study suggests that exercise is associated with lower levels of pain and that less pain is reported during times that more exercise was reported.⁴

Exercise may have a pain relieving (hypoalgesic) effect.⁵⁻⁸ In a meta-analytic review, the beneficial effect of exercise was present for individuals who had more localized pain conditions. This did not occur in individuals with diffuse pain. Although more data is needed, exercise may be pain relieving to individuals with fibromyalgia syndrome when exercising at low-to-moderate intensity.⁹

A tendency toward passive coping (e.g. taking medications or waiting for the pain to stop) in people with chronic pain may lead to high attrition rates (38-87%) from ongoing use of exercise.¹⁰⁻¹² Starting small and gradually building on success may show more positive results in patients who are inclined to cope passively.

Exercise improves overall health, disease risk, and progression of chronic illnesses such as cardiovascular disease, type 2 diabetes, and obesity.

Exercise may provide a benefit to sleep disruption, a common pain-related problem. A meta-analysis of fibromyalgia patients suggested that movement therapies (e.g. Tai Chi) lead to significant improvement in sleep.¹³ Exercise does not need to be complicated, require a gym membership, or equipment. A meta-analysis found that walking is associated with significant improvements in pain and function.¹⁴

What Types of Movement Are Helpful?

Sullivan and colleagues (2012) summarized empirical findings on exercise for chronic pain focusing on aerobic and anaerobic, as well as yoga, Pilates, and tai chi.¹⁵ Findings for various types of activity are listed below.¹⁵

Aerobic Exercise

Long-term benefits include improved mood, decreased pain perception, and improved cardiovascular fitness. It may also lead to immediate decreases in anxiety and depression.

Anaerobic Exercise

- Literature supports the use of core strengthening and stabilizing exercise in chronic and subacute low back pain, but not acute pain.
- Benefits include reduced work absenteeism, enhanced personal engagement in physical rehabilitation, and improved overall functioning.
- In patients with subacute pain, anaerobic exercise may prevent profound deconditioning, kinesiophobia, and the development of chronic pain syndromes.
- No one particular strengthening method or technique has been found to be more effective than others.
- Individualized programs may offer the best rates of success (often through physical therapy).

Yoga/Pilates/Tai Chi

- Benefits include pain reduction, improved function, and enhanced spinal mobility.
- Benefits are greater than those obtained through educational interventions and equal to those obtained through participation in conventional exercise programs.
- Exercises which target stretching and flexibility show slightly less impact on pain than aerobic and anaerobic exercise.

Although not mentioned above, strong evidence exists for the effectiveness of **Alexander Technique** lessons for chronic back pain patients. Research suggests that this type of intervention may lead to improvement in balance skills and posture in general chronic pain.¹⁶ One study found that exercise plus Alexander Technique led to modest but significantly greater improvement in quality of life, level of disability, and number of days with back pain.¹⁷

How Can I Help as a Clinician?

Once a full evaluation has been completed and red flags have been ruled out, patients can be encouraged to cultivate attitudes and behaviors that are helpful in the self-management of chronic pain (refer to the box below). Self-management of pain should be part of the discussion as soon as possible to prevent passive coping and a sense of low self-efficacy.

One way for clinicians to enhance self-efficacy is by reinforcing positive coping behaviors they observe. It can help for them to point out, for example, that a person is maintaining some level of physical activity, doing physical therapy, enjoying a hobby, maintaining a good family life, keeping a connection with their church, and/or continuing to work. It is also useful to provide access to materials, groups, or other resources that encourage active coping and self-management. Options might include exercise or pain management groups, individual pain management training, relaxation techniques, meditation training, and physical therapy.

Self-efficacy refers to thoughts that influence whether or not behavior change will be initiated, how much energy will go into that change, and how long effort will be sustained in the face of obstacles and challenges. A meta-analytic review found that self-efficacy is a robust correlate of key outcomes related to chronic pain.¹⁸ This suggests that it is an important risk factor, as well as a protective factor, that has implications for subsequent functioning for those with pain. Higher levels of self-efficacy are associated with increased likelihood of achieving physical activity goals¹⁹ and improvements in pain levels, fatigue, physical functioning, mood, and quality of life.²⁰ Examples of thoughts associated with higher self-efficacy include, “*I can do it,*” or “*I will just do what I can and then rest.*”

Active coping versus passive coping. A tendency toward passive coping mechanisms is associated with poorer outcomes and lower levels of physical activity; active coping is associated with better outcomes and less disability.^{11,12} Examples of active coping include maintaining activity levels, doing as much as is reasonably possible to do, diverting one’s attention away from pain toward more positive activities, and using relaxation strategies.

Seven Topics to Address with Patients

During regular follow-up appointments with patients with chronic pain, focusing on one of the following topics might help to bring about higher functioning and better pain management. Topic 1 is an excellent place to start. When feasible, choose a topic to cover during a routine clinic visit.

Topic 1: Functional Goals

Functional goals focus on improving the health, function, and quality of life of an individual. They can serve as both a target and a source of motivation for patients.

- The idea of functional goals can be introduced through the Personal Health Inventory (PHI). The patient can be provided with the pamphlet and allowed to work on it at home with the support of people who care about him or her.
- Ask them if they have any functional goals that are important to them. For example, do they want to be able to take a vacation, go hunting, or be able to sit through a movie at a

theater? Explore activities they might enjoy or that would be meaningful to them, and then help take steps in the direction of reaching their goals.

Topic 2: Current Activity Level Assessment

How much can patients do on a daily basis? Are they spending the day in bed or in front of the TV? Are they attempting to do too much? Some individuals with pain do less and less over time, while others overdo. Still others may roller coaster between doing too much on a “good day” and not doing anything on a “bad day.” Knowing their patterns can allow clinicians to support them more effectively.

- Have them describe a typical weekday and a typical weekend.
- If they appear to be fairly low-functioning, consider doing the following:
- Work with them on setting small, progressive goals for exercise that incorporates functional goals.
- Encourage any positive activity, however minimal.
- You might include family members or significant others to assist with encouraging activity and providing positive reinforcement when activity occurs.

Activity Pacing (sometimes simply referred to just as *pacing*). Functional disability can be avoided if patients effectively manage their energy level and pain during activity. Pacing might begin with analyzing an activity to determine how it might best be accomplished. Options might include slowing down, breaking the task into manageable pieces, adding appropriate rest and activity intervals, etc. The goal is to find the right balance.

If people appear to attempt to do “too much,” discuss:

- Pacing activities to optimize energy use and avoid flare-ups. It is best not to let activity levels fluctuate too greatly.
- Breaking activity into smaller tasks. For example, plan to mow half the lawn today, and half tomorrow.
- Taking breaks or rest. Refer to the [“Taking Breaks: When to Start Moving, and When to Stop”](#) Integrative Health tool.
- Alternating activity periods with rest.
- Setting time limits for activities that lead to overdoing. For example a person can set aside 30 minutes (or whatever time frame will not cause them to have increased pain) for lawn mowing, rather than stopping only when the entire lawn is mowed. After a rest period, they can engage in another round of time-based activity, followed by more rest, until the task is complete.
- Asking family and friends for help might be appropriate when it comes to tasks that are difficult or might exacerbate pain.

Topic 3: Depression

Depression is a common pain comorbidity. So are stress and anxiety.²¹⁻²⁵ Consider the following:

- Is depression impacting activity? Fatigue and low motivation can be symptoms of depression.

- A depression screening tool, such as the PHQ9, may be useful.
- If depression seems to be having an impact, the patient might benefit from:
 - Anti-depressant medications.
 - Counseling for issues related to loss.
 - Pain psychology to address the impact of pain on mood.
 - Joining a pain management and/or coping group to decrease isolation and increase coping skills.
 - Engaging in aerobic exercise.

Refer to the “[Depression](#)” overview for more information.

Topic 4: Pain Flare-Up

A flare-up of pain is an exacerbation of more typical levels of pain. Pain flares can be used interchangeably with “break-through pain,” although this term may be used more specifically for instances when pain medications are not working effectively for pain management. Rather than being static, pain is commonly a dynamic experience; it changes over the course of a day or week for many individuals. Pain fluctuations are associated with higher levels of depression, as well as decreased work productivity and more disability.²⁶ Certainly, both unpredictability of pain and pain flares can interfere with physical activity.

- Encourage self-management of pain flares. This can create more self-reliance for the patient and decrease reliance on emergency department and clinic visits, not to mention medication use.
- If pain flares are a problem, help the patient create Pain Flare Management Plan. For more information refer to the tool, “[A Pain Flare Management Plan: Suggestions to Offer Patients.](#)”
- If a flare or fluctuating pain levels interferes with patients’ progress toward their goals, do not encourage them to stop an activity; rather, have them cut back for a few days and then slowly increase activity again.

Topic 5: Fear of Pain—Part A

If someone continually avoids reasonable activities, it may be from fear of the pain. Avoiding painful stimuli initially with pain onset is natural, but can prove to be a maladaptive response when continued over time.²⁷⁻³¹ Avoidance can lead to decreased functioning, increased disability, more days off work, and impaired physical performance.^{32,33}

Clinicians can help by exploring with them why they are avoiding activity. If they are concerned about hurting themselves when they engage in movement, it may help to review the concept of “Hurt versus Harm.” They may be experiencing hurt (unpleasant physical sensations) but it is not causing harm (lasting damage). Reassure them and encourage them to continue with activity.

Topic 6: Fear of Pain—Part B

Some individuals may need specialized assistance to help them with the fear of their pain. Consider referring them to one of the following:

- A physical therapist who can assist with graded increases in activity and/or develop an individualized plan for them to ramp up movement.
- An interdisciplinary pain program, if available.
- A behavioral health specialist or pain psychologist skilled in cognitive behavioral therapy, who can explore maladaptive thought patterns. Research is clear that pain catastrophizing (overestimating the probability of an unpleasant outcome, feeling helpless, and having distress-amplifying thoughts about pain) are detrimental for a patient with chronic pain.^{34,35} Unfortunately, it appears to be a common occurrence.^{15,36} Catastrophizing is closely associated with disability level and pain intensity.^{15,37,38} Treatment approaches that focus on increasing activity rather than avoiding activity lead to better outcomes.¹

Topic 7: The Role of Sleep

Explore the role of sleep as a contributing factor in the ability to stay active. Chronically painful conditions are frequently associated with sleep disturbances,²⁴ including changes in sleep continuity and sleep architecture as well as increased sleepiness during waking hours. Sleep deprivation and sleep disruption may increase pain sensitivity and vulnerability to pain.³⁹ It may also create a vicious cycle between sleep difficulties and chronic pain where one augments the other.

- Address basic sleep hygiene with chronic pain patients (refer to the “[Recharge](#)” overview) to improve patients’ dysfunctional habits surrounding sleep.
- Explore what occurs when they cannot sleep. If a patient tends to ruminate at night, a referral to a psychotherapist for anxiety treatment might be helpful.
- Provide relaxation strategies that can be used at bedtime or when awoken in the middle of the night.
 - Patients might benefit from meeting with a behavioral specialist, such as a pain psychologist.
 - Clinicians can instruct them in breathing exercises as appropriate. For more information refer to the Mind and Emotions tool, “[Breathing.](#)”

Consider whether sleep aids are needed, or if the patient may benefit from a referral for cognitive behavior therapy (CBT) or CBT-I (CBT for insomnia). Many providers are surprised to learn that these treatments, which include sleep hygiene intervention, have been shown to produce comparable, and sometimes better, results than medications.⁴⁰⁻⁴²

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References

1. McCracken L. Psychology and chronic pain. *Anaesthesia and Intensive Care*. 2007;9(2):55-58.
2. Busch AJ, Webber SC, Richards RS, et al. Resistance exercise training for fibromyalgia. *Cochrane Database Syst Rev*. 2013;(12):Cd010884. doi:10.1002/14651858.cd010884
3. Kelley GA, Kelley KS. Exercise improves global well-being in adults with fibromyalgia: confirmation of previous meta-analytic results using a recently developed and novel varying coefficient model. *Clin Exp Rheumatol*. Nov-Dec 2011;29(6 Suppl 69):S60-2.
4. Landmark T, Romundstad PR, Borchgrevink PC, Kaasa S, Dale O. Longitudinal associations between exercise and pain in the general population--the HUNT pain study. *PLoS One*. 2013;8(6):e65279. doi:10.1371/journal.pone.0065279
5. Hoffman MD, Hoffman DR. Does aerobic exercise improve pain perception and mood? A review of the evidence related to healthy and chronic pain subjects. *Curr Pain Headache Rep*. Apr 2007;11(2):93-7.
6. Koltyn KF. Analgesia following exercise: a review. *Sports Med*. Feb 2000;29(2):85-98.
7. Koltyn KF. Exercise-induced hypoalgesia and intensity of exercise. *Sports Med*. 2002;32(8):477-87.
8. Nichols DS, Glenn TM. Effects of aerobic exercise on pain perception, affect, and level of disability in individuals with fibromyalgia. *Phys Ther*. Apr 1994;74(4):327-32.
9. Naugle KM, Fillingim RB, Riley JL, 3rd. A meta-analytic review of the hypoalgesic effects of exercise. *J Pain*. Dec 2012;13(12):1139-50. doi:10.1016/j.jpain.2012.09.006
10. Solberg Nes L, Roach AR, Segerstrom SC. Executive functions, self-regulation, and chronic pain: a review. *Ann Behav Med*. Apr 2009;37(2):173-83. doi:10.1007/s12160-009-9096-5
11. Brown GK, Nicassio PM. Development of a questionnaire for the assessment of active and passive coping strategies in chronic pain patients. *Pain*. Oct 1987;31(1):53-64.
12. Epker J, Gatchel RJ. Coping profile differences in the biopsychosocial functioning of patients with temporomandibular disorder. *Psychosom Med*. Jan-Feb 2000;62(1):69-75.
13. Langhorst J, Klose P, Dobos GJ, Bernardy K, Hauser W. Efficacy and safety of meditative movement therapies in fibromyalgia syndrome: a systematic review and meta-analysis of randomized controlled trials. *Rheumatol Int*. Jan 2013;33(1):193-207. doi:10.1007/s00296-012-2360-1
14. O'Connor SR, Tully MA, Ryan B, et al. Walking exercise for chronic musculoskeletal pain: systematic review and meta-analysis. *Arch Phys Med Rehabil*. Apr 2015;96(4):724-734.e3. doi:10.1016/j.apmr.2014.12.003
15. Sullivan AB, Scheman J, Venesy D, Davin S. The role of exercise and types of exercise in the rehabilitation of chronic pain: specific or nonspecific benefits. *Curr Pain Headache Rep*. Apr 2012;16(2):153-61. doi:10.1007/s11916-012-0245-3
16. Woodman JP, Moore NR. Evidence for the effectiveness of Alexander Technique lessons in medical and health-related conditions: a systematic review. *Int J Clin Pract*. Jan 2012;66(1):98-112. doi:10.1111/j.1742-1241.2011.02817.x
17. Little P, Lewith G, Webley F, et al. Randomised controlled trial of Alexander technique lessons, exercise, and massage (ATEAM) for chronic and recurrent back pain. *BMJ*. 2008;337:a884. doi:10.1136/bmj.a884
18. Jackson T, Wang Y, Wang Y, Fan H. Self-efficacy and chronic pain outcomes: a meta-analytic review. *J Pain*. Aug 2014;15(8):800-14. doi:10.1016/j.jpain.2014.05.002
19. Knittle KP, De Gucht V, Hurkmans EJ, et al. Effect of self-efficacy and physical activity goal achievement on arthritis pain and quality of life in patients with rheumatoid arthritis. *Arthritis Care Res (Hoboken)*. Nov 2011;63(11):1613-9. doi:10.1002/acr.20587
20. Somers TJ, Kurakula PC, Criscione-Schreiber L, Keefe FJ, Clowse ME. Self-efficacy and pain catastrophizing in systemic lupus erythematosus: relationship to pain, stiffness, fatigue, and psychological distress. *Arthritis Care Res (Hoboken)*. Sep 2012;64(9):1334-40. doi:10.1002/acr.21686
21. Keefe FJ, Lumley M, Anderson T, Lynch T, Studts JL, Carson KL. Pain and emotion: new research directions. *J Clin Psychol*. Apr 2001;57(4):587-607.



22. Keefe FJ, Rumble ME, Scipio CD, Giordano LA, Perri LM. Psychological aspects of persistent pain: current state of the science. *J Pain*. May 2004;5(4):195-211. doi:10.1016/j.jpain.2004.02.576
23. Aaron LA, Burke MM, Buchwald D. Overlapping conditions among patients with chronic fatigue syndrome, fibromyalgia, and temporomandibular disorder. *Arch Intern Med*. Jan 24 2000;160(2):221-7.
24. Morin CM, Gibson D, Wade J. Self-reported sleep and mood disturbance in chronic pain patients. *Clin J Pain*. Dec 1998;14(4):311-4.
25. Banks SM, Kerns RD. Explaining high rates of depression in chronic pain: A diathesis-stress framework. *Psychol Bull*. 1996;119(1):95.
26. Schneider S, Junghaenel DU, Keefe FJ, Schwartz JE, Stone AA, Broderick JE. Individual differences in the day-to-day variability of pain, fatigue, and well-being in patients with rheumatic disease: associations with psychological variables. *Pain*. Apr 2012;153(4):813-22. doi:10.1016/j.pain.2012.01.001
27. Picavet HS, Vlaeyen JW, Schouten JS. Pain catastrophizing and kinesiophobia: predictors of chronic low back pain. *Am J Epidemiol*. Dec 1 2002;156(11):1028-34.
28. Linton SJ, Vlaeyen J, Ostelo R. The back pain beliefs of health care providers: are we fear-avoidant? *J Occup Rehabil*. Dec 2002;12(4):223-32.
29. Vlaeyen JW, De Jong JR, Onghena P, Kerckhoffs-Hanssen M, Kole-Snijders AM. Can pain-related fear be reduced? The application of cognitive-behavioural exposure in vivo. *Pain Res Manag*. Fall 2002;7(3):144-53.
30. Boersma K, Linton SJ. Screening to identify patients at risk: profiles of psychological risk factors for early intervention. *Clin J Pain*. Jan-Feb 2005;21(1):38-43; discussion 69-72.
31. Jensen JN, Karpatschof B, Labriola M, Albertsen K. Do fear-avoidance beliefs play a role on the association between low back pain and sickness absence? A prospective cohort study among female health care workers. *J Occup Environ Hyg*. Jan 2010;52(1):85-90. doi:10.1097/JOM.0b013e3181c95b9e
32. Wertli MM, Rasmussen-Barr E, Weiser S, Bachmann LM, Brunner F. The role of fear avoidance beliefs as a prognostic factor for outcome in patients with nonspecific low back pain: a systematic review. *Spine J*. May 1 2014;14(5):816-36.e4. doi:10.1016/j.spinee.2013.09.036
33. Zale EL, Lange KL, Fields SA, Ditre JW. The relation between pain-related fear and disability: a meta-analysis. *J Pain*. Oct 2013;14(10):1019-30. doi:10.1016/j.jpain.2013.05.005
34. Keefe MR. The impact of infant rooming-in on maternal sleep at night. *J Obstet Gynecol Neonatal Nurs*. Mar-Apr 1988;17(2):122-6.
35. Thorn BE, Clements KL, Ward LC, et al. Personality factors in the explanation of sex differences in pain catastrophizing and response to experimental pain. *Clin J Pain*. Sep-Oct 2004;20(5):275-82.
36. Keogh E, Asmundson GJ. Negative affectivity, catastrophizing and anxiety sensitivity. In: Asmundson GJ, Vlaeyen J, Crombez G, eds. *Understanding and Treating Fear of Pain*. Oxford University Press; 2004.
37. Burns JW, Kubilus A, Bruehl S, Harden RN, Lofland K. Do changes in cognitive factors influence outcome following multidisciplinary treatment for chronic pain? A cross-lagged panel analysis. *J Consult Clin Psychol*. Feb 2003;71(1):81-91.
38. Cook AJ, Brawer PA, Vowles KE. The fear-avoidance model of chronic pain: validation and age analysis using structural equation modeling. *Pain*. Apr 2006;121(3):195-206. doi:10.1016/j.pain.2005.11.018
39. Lautenbacher S, Kundermann B, Krieg JC. Sleep deprivation and pain perception. *Sleep Med Rev*. Oct 2006;10(5):357-69. doi:10.1016/j.smrv.2005.08.001
40. Jacobs GD, Pace-Schott EF, Stickgold R, Otto MW. Cognitive behavior therapy and pharmacotherapy for insomnia: a randomized controlled trial and direct comparison. *Arch Intern Med*. Sep 27 2004;164(17):1888-96. doi:10.1001/archinte.164.17.1888
41. Morin CM, Colecchi C, Stone J, Sood R, Brink D. Behavioral and pharmacological therapies for late-life insomnia: a randomized controlled trial. *JAMA*. Mar 17 1999;281(11):991-9.



42. Perlis ML, Smith MT, Cacialli DO, Nowakowski S, Orff H. On the comparability of pharmacotherapy and behavior therapy for chronic insomnia. Commentary and implications. *J Psychosom Res.* Jan 2003;54(1):51-9.