

## Self-Management of Chronic Pain

An Integrative Health approach to self-management of chronic pain incorporates cognitive behavioral therapies, progressive muscle relaxation, meditation, biofeedback, hypnosis, autogenic training, and other integrative practices. The approach also emphasizes clinician-patient communication and goal setting strategies.

Integrative Health emphasizes mindful awareness and patient self-care along with conventional and integrative approaches to health and well-being. The Circle of Health highlights eight areas of self-care: Physical Activity, Surroundings, Personal Development, Nutrition, Recharge, Family Friends, & Co-Workers, Spirit & Soul, and Mind and Emotions. The narrative below shows what an Integrative Health clinical visit could look like and how to apply the latest research on complementary and integrative health to the self-management of chronic pain.

### Meet the Patient

Matt is a 30-year-old man who has been struggling for the past several years with depression, unexplained back pain and headaches, as well as PTSD. He is married and has two young children at home. On some nights, when his headaches and back pain keep him from sleeping, he thinks about his traumatic past. Occasionally, he still has nightmares.

Matt has a good deal of social support including his wife, his parents, two sisters, and a few good friends. His primary care clinician referred him to a therapist to address his traumatic experiences and also recommended that he speak with a chaplain. He has been willing to talk with his therapist about his struggles and has worked on telling his story. While this has helped his PTSD, it did not resolve all of his symptoms. His therapist suggested Cognitive processing therapy for his nightmares, which has helped. In general, his mood-related symptoms have improved over the past few months, and he is feeling less depressed.

Matt's focus now is his pain—headaches and back pain. His headaches have waxed and waned over the last 5 years, but they have become increasingly persistent in the last year. He has tried a number of different treatments for his headaches and back pain, including chiropractic care and medications. He finds that he gets minimal relief from these treatments and does not feel that his pain is well controlled.

Matt experiences increasing frustration and irritability when he gets headaches and his back pain flares. Matt can sometimes be short-tempered with his family when he gets home from work. He feels guilty about his behavior, as he wants to be a good father to his children. During the past year he has become more isolated from his friends. On occasion, Matt has had to cancel plans and miss work due to pain flares. He is having difficulty coping with his pain and wants to learn more about non-pharmacological approaches to pain management.

Matt's Personal Health Inventory (PHI) indicated that he had no strategies other than medication to manage his pain. Discussing this with his care team, Matt realized that he needed to make his health more of a priority and spend some time learning self-management tools.

## Personal Health Inventory

On his PHI, Matt rates himself as a 3 out of 5 for his overall physical well-being and a 2 for overall mental and 3 for overall emotional well-being. When asked what matters most to him and why he wants to be healthy, Matt responds:

*"My family. I want to be able to play with my children, spend time with my wife, and enjoy hunting and fishing again."*

For the eight areas of self-care, Matt rates himself on where he is and where he would like to be. He decides to first focus on the area of Mind and Emotions by learning how to manage his pain using breathing exercises, imagery or other non-drug approaches.

For more information, refer to [Matt's PHI](#).

## Introduction

### Self-Management of Pain Matters

Pain—especially chronic pain—is a complex problem. Most interventions for chronic pain aim to reduce or eliminate pain; however, complete and lasting elimination of chronic pain is rarely achieved.<sup>1</sup> Despite this fact, both patients with pain and their clinicians often approach treating this condition by looking for a medical cure without emphasizing the need for self-management on the part of the patient.<sup>2</sup>

Comprehensive treatments for chronic pain need to include not only biomedical approaches, but also psycho-social-spiritual approaches. Helping patients become more aware of potential tools that can assist them in the self-management of their pain condition is important for improving the quality of their lives, decreasing reliance on medical care, and strengthening a sense of empowerment around their health. The limited efficacy of conventional medicine for treating these conditions means that patient and family education, instruction in disease self-management, lifestyle modification, and emotional and social support have become increasingly important elements of chronic disease management.<sup>3-6</sup>

Chronic pain is difficult to address, and it is all too easy to adopt the mindset of wanting to turn it off. Unfortunately, medications and other interventions are not always successful in this regard. Teaching techniques for patients to work with the pain themselves is central to Integrative Health care for people with chronic pain.

### Supporting Clinicians Treating Chronic Pain

Burnout for clinicians treating individuals with chronic pain is a legitimate concern. (For more information on burnout, refer to "[Burnout and Resilience: Frequently Asked Questions](#).")

Matthias and colleagues conducted in-depth interviews of primary care practitioners at a VA Medical Center.<sup>7</sup> The authors found that 3 broad themes emerged for clinicians:



1. The importance of the patient-clinician relationship was emphasized as essential for good pain care.
2. Common difficulties when treating chronic pain include feeling pressured to treat with opioids, as well as worries about secondary gain and diversion.
3. Taking care of patients with chronic pain took an emotional toll on clinicians, who often reported feeling frustrated, ungratified and guilty.

The authors concluded that clinicians need support, both instrumental and emotional, around the care of individuals with chronic pain. In addition, they concluded that enhancing patient-centered communication and empathy, as well as focusing on shared decision-making, hold promise for alleviating the strain on clinicians.

Part of the importance of promoting self-management for pain is not only that it can empower patients to proactively address their pain, but also shifts how patients and clinicians relate to one another. It has the potential to make the management of chronic pain much less burdensome to clinicians.

## Effective Communication about Chronic Pain

One of the key elements of self-management of a chronic pain condition is forming a successful patient-clinician relationship.<sup>7</sup> Research has found that feeling believed and having pain acknowledged by clinicians was very important to pain patients and promoted more effective coping behaviors.<sup>8</sup> Active listening, validation, and managing expectations can have a remarkable impact on helping patients stop trying to find a cure when this is not possible, stop struggling to be understood, and to feel assured that their conditions do not have dire consequences.<sup>9</sup> Effective communication helps foster an increase in patients' motivation to acquire the skills and confidence to manage their pain conditions.

Refer to "[Communicating about Chronic Pain: Instructions for Clinicians](#)" for information on how clinicians can communicate more effectively with pain patients.

## Educating Patients About Self-Management

A chronic pain condition requires day-to-day management by the patient. Clinicians are in a powerful position to encourage the use of self-management techniques. They can educate patients and refer them to a variety of self-management tools. A clinician's authority can do much to increase willingness to give these tools a try. Working collaboratively with patients on goals can increase compliance.<sup>10</sup> A clear agreed upon treatment plan with concrete tasks to accomplish between appointments will assist patients with pain in moving forward in adopting a self-management mindset. Setting functional goals can encourage movement toward improving quality of life despite the pain.

## Clinicians Can Promote Self-Management

1. **Provide** chronic pain patients with a **rationale** for adopting a self-management approach to their pain. Highlight the connection of the mind and body. This can validate patients' pain experience and open them up to the possibility that they can take action to decrease the pain.
2. **Redefine the problem.** Emphasize that pain is a complex experience and their thoughts, feelings, and behaviors can influence their perception of pain.

3. Help patients understand that their chronic pain may be a lifelong condition with the goal being **pain management, not necessarily pain elimination**. With management as the focus, clinicians can discuss what approaches are available from a medical management perspective and how effective they are. Medical management is not more important than teaching the patient what they can do for self-management.
4. Educate the patients on the **limitations of pain medications** and manage patients' expectations around their use. Research has demonstrated that using them for over a year does not lessen pain and may actually decrease overall functioning. In the well-known Danish Health and Morbidity survey of over 16,000 individuals, opioid usage was associated with moderate, severe, or very severe pain, as well as poor self-rated health, higher rates of unemployment, higher use of health care system resources, and poorer quality of life.<sup>11</sup>

## Comorbidities of Chronic Pain

Chronic pain has been shown to be associated with stress, negative affect, anxiety, and depression.<sup>12-16</sup> As noted above, depression is the most common psychological comorbidity, and studies typically report prevalence rates of depression between 30% and 60% in patients with chronic pain. About 35% of those with chronic pain and depression meet criteria for Major Depressive Disorder.

Grief and loss are major themes to emerge in patients with chronic pain and can contribute to depression. Some typical losses include changes in occupational and social activities, physical functioning, financial security, interpersonal relationships, sense of self-worth, as well as a losing hope about the future.<sup>17,18</sup> In one study, the number of roles and personal attributes lost as a result of the pain condition predicted depression scores.<sup>19</sup> Refer to "[Coping with Grief](#)," "[Screening for Complicated Grief](#)," "[Grief Reactions, Duration, and Tasks of Mourning](#)" and "[Health Care Professional as Griever: The Importance of Self-Care](#)." for more information on how grief can influence health.

Anger and irritability are also frequently associated with chronic pain, and it is suggested that there might be a connection between pain sensitivity and suppression of anger, with inhibition of anger possibly a factor in increased perceived pain.<sup>20,21</sup>

Individuals with pain who are struggling with difficulties of loss, depression, and anger may benefit from psychotherapy, working with psychological pain specialists and/or group treatment. Individuals who perseverate on what they used to be able to do may need help in moving from loss to acceptance. Certainly, antidepressants might prove helpful to many patients in pain.

## Self-Efficacy

Self-efficacy is a concept that generally refers to an individual's belief that he or she can perform a certain behavior and achieve a desired outcome. From a health standpoint, there are certain thoughts that determine whether or not behavior change will even be initiated, if negative behavior will be inhibited, how much energy will go into a particular change, and how long that effort will be sustained in the face of the pain, fatigue or other obstacles. For example, individuals have a higher level of self-efficacy if they follow their clinicians' instructions to start a walking program and maintain or increase it over time, even with the inevitable flare-ups of pain that can occur with a chronic pain condition. A patient's perceptions of self-efficacy affect self-



management activities, making and maintaining behavior changes, and ultimately health outcomes.<sup>6</sup> It is likely that people with chronic pain who have low self-efficacy have a poorer prognosis,<sup>22</sup> greater disability,<sup>23,24</sup> and more psychological distress.<sup>25-27</sup>

A meta-analytic review found that self-efficacy is a robust correlate of key outcomes related to chronic pain.<sup>28</sup> 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. Self-efficacy has been found to be helpful across health outcome measures, including increasing the likelihood that patients will achieve physical activity goals,<sup>29</sup> have lower levels of pain, reduce fatigue, and have better physical functioning, mood, and quality of life.<sup>25,26,30,31</sup>

Self-efficacy levels can likely be enhanced, and the following suggestions may be useful to the clinician to encourage this in patients with pain:

- **Provide positive feedback** for any reported attempts at self-management such as in exercise, depression, anxiety, sleep, improving the quality of life, and other factors impacted by pain. Your positive comments can be a powerful reinforcement.
- **Involve significant others**, such as a spouse or family members to encourage self-management behaviors outside of the clinician's office.
- **Discuss realistic and attainable goals**, with action plans. Suggest small changes in the desired direction. Refer to "[Goal Setting for Pain Rehabilitation](#)."
- **Discuss self-management of flare-ups in advance** so that the patient does not give up when these inevitably occur.
- **Create/utilize multiple opportunities** for education and encouragement for the individual in pain such as the following:
  - Pain management groups
  - Group programs that encourage people to work the body, including exercise, tai chi, walking meditations, or other offerings specific to your setting
  - Interdisciplinary pain programs
  - Support groups that encourage self-efficacy
  - Shared medical appointments that include educational and support elements
  - Pain psychology or other specialists who work with pain
  - Printed materials that advocate self-management

When working with management of chronic pain, do all you can to enhance self-efficacy. It is similar to trying to bring about behavior change in other areas, such as diet, substance use, or exercise. A series of successes that give patients a sense that what they do truly makes a difference will do much to help them effectively manage chronic pain by changing their thoughts, behaviors, and attitudes.

## Fear-Avoidance Behaviors and Self-Management

The Fear-Avoidance model provides a framework for understanding how complex psychological processes, including negative appraisals and fear (e.g. the worry that pain will be worse with activity) influence how people express and respond to their pain.<sup>32</sup> In the acute phase, initially avoiding painful stimuli (such as activity) is useful and natural, but trying to get away from the pain might be a maladaptive response if the pain is chronic.

Fear and avoidance behaviors (FAB) appear to be associated with disability and impaired physical performance in chronic pain. A meta-analytic review indicated a robust, positive association between pain-related fear and disability, which the authors classified as moderate to large in magnitude.<sup>33</sup> A systematic review found fear avoidance beliefs to be a prognostic factor for poor outcome in subacute low back pain.<sup>34</sup> Fear of pain and avoidance behaviors are also tied to more sick leave used in acute injury situations,<sup>35-37</sup> predicted more severity and disability with headache,<sup>38</sup> and are also linked to the risk of future occurrence of back pain in a healthy population.<sup>39</sup>

Interestingly, it may not only be patients with pain who have fear-avoidance beliefs. A systematic review found that there is strong evidence that health care providers' beliefs about back pain are associated with the beliefs of their patients.<sup>40</sup> Further, they found moderate evidence that health practitioners with elevated fear avoidance beliefs are more likely to advise patients to limit work and physical activity, less likely to adhere to treatment guidelines, have more sick leave prescriptions.

In summary, FABs influence chronic pain treatments and outcomes. When their fear of pain is high, individuals with chronic pain may benefit from the following:

- **Discuss the difference between “hurt” versus “harm.”** Just because they are hurting (experiencing an unpleasant sensation) does not mean the body is being harmed or damaged as a result of activity.
- **Provide graded exercise.** Individualize treatment with a physical therapist, and titrate exercise up gradually to build their confidence.
- **Refer to a pain psychologist or other specialist** in pain management to utilize cognitive behavioral interventions to address FABs.<sup>32</sup>

## Chronic Pain and Effective Goal Setting

Goal setting is a fundamental element of a successful individualized pain rehabilitation plan.<sup>41,42</sup> Schulman-Green and colleagues pointed out that using a method to facilitate goal-setting can be useful in our current medical culture.<sup>42</sup> A specific method can 1) serve as a rapport builder, 2) give structure to goal setting conversations, 3) make goal setting a fixture within the medical encounter as part of routine paperwork, and 4) improve the quality of health care, because information can be shared with other clinicians, thereby reducing fragmentation in care. They note the importance of developing a goal setting instrument, training clinicians in its use, and encouraging patient participation. Collaboratively setting goals with patients' input leads to higher compliance levels than provider-mandated goals.<sup>10</sup> Goal setting helps create a successful individualized pain rehabilitation plan,<sup>41,42</sup> and improves provider-patient communication.<sup>43</sup>



McCracken states that the best management strategies for chronic pain involve setting goals around decreasing the impact of pain; the focus should be on the patient's emotional, physical, and social role functioning, not on the rating of pain severity.<sup>9</sup> Given that pain levels may or may not change, setting goals to increase level of functioning is a better marker of patients' level of progress with their pain rehabilitation plans.

Help patients with chronic pain avoid getting bogged down in their descriptions of their pain or in how pain limits their activity. Use goal setting to focus on what they can do, and emphasize their accomplishments as the true indicator of how they are doing.

**Active coping strategies** (versus passive coping approaches) are useful for managing chronic pain. They are psychological or behavioral responses that are geared to alter the source of stress (pain) or how one thinks about it. Active coping strategies are associated with better outcomes and might include regular exercise, maintaining daily activities, ignoring pain sensations (when appropriate), developing adaptive thinking (i.e., decreasing catastrophizing, fear-avoidance beliefs and increasing pain self-efficacy beliefs), or practicing relaxation exercises and guided imagery.<sup>31,44</sup> Passive coping strategies, which do not involve taking action in response to the pain, are associated with poorer outcomes. Examples include venting emotions, using medication, increasing clinician visits (seeking someone else who can do something to make the pain go away), and avoiding activity.<sup>31,45-47</sup>

Below is a list of six common areas patients might choose to incorporate into their self-management plans as they set their goals:

1. Exercise (strengthening, stretching, aerobics)
5. Relaxation/meditation/quieting response
6. Social support/social activity
7. Meaningful life activities (work, volunteer, responsibilities to family/church, etc.)
8. Pleasurable activities (hobbies, interests, diversions, distractions, social)
9. Attitude/mood/thinking

The SMART goal-setting acronym is recommended to help patients set effective goals. Patients may be more successful if they set goals that are attainable, realistic, and can be achieved in a short period of time. The SMART acronym stands for:

**S** = Specific      **M** = Measurable      **A** = Action-Oriented      **R** = Realistic      **T** = Timed

Refer to "[Goal Setting for Pain Rehabilitation](#)," for more information on how to incorporate the SMART goal-setting tool with your pain patients.

## Self-Care

### Physical Activity

#### Exercise for the Self-Management of Pain

Physical activities are a safe, low-cost way of managing pain, and they reduce anxiety and depression, improve physical capacity, increase functioning and independence, and reduce morbidity and mortality.<sup>48</sup> When applied appropriately to the chronic pain condition, physical activity significantly improves pain and related symptoms.<sup>49-51</sup>

Exercise and movement is covered in [“Physical Activity,”](#) [“Yoga,”](#) [“Prescribing Movement,”](#) [“Improving Flexibility,”](#) [“Chronic Pain,”](#) [“Non-Drug Approaches to Chronic Pain,”](#) [“Low Back Pain,”](#) and [“Physical Activity in Chronic Pain: What Clinicians Need to Know.”](#)

#### Activity Pacing for Pain Management

Activity pacing (AP) is a strategy found as a component of cognitive-behavioral and interdisciplinary pain management programs. AP focuses on modulating an individual's level of activity rate as needed, through behaviors such as going slower, taking breaks, maintaining a steady pace and breaking tasks into manageable pieces.

To date, research is inconclusive concerning the efficacy of AP as a treatment for chronic pain<sup>52,53</sup> although pacing has been found to be associated with less disability in fibromyalgia.<sup>54,55</sup> AP done to reduce the impact of pain, rather than to reduce pain level, is more likely to be successful.<sup>56</sup>

## Mind and Emotions

### The Cognitive-Behavioral Perspective on Chronic Pain

Cognitive behavioral therapy (CBT) is at present the most widely used psychotherapeutic treatment for adults with chronic pain. CBT-based treatments for chronic pain and secondary depression and anxiety promote personal control and self-management strategies and use of structured techniques involving multiple methods to modify cognition and behavior. These include 1) increasing knowledge about pain, 2) addressing beliefs that may interfere with engagement in activities, 3) improving patients' skills and change their behavior and 4) improving physical and social activity. It is typically considered a short-term treatment which promotes active coping strategies. Patients learn how to identify and change negative, maladaptive thought patterns that have a negative influence on behavior.

Systematic reviews and meta-analyses provide strong evidence for the efficacy of CBT protocols for patients suffering from chronic pain conditions, including the following as noted in a review by Waters and colleagues:<sup>57</sup> arthritis pain,<sup>58-61</sup> cancer pain,<sup>62-65</sup> headaches,<sup>66-68</sup> temporomandibular pain,<sup>69</sup> persistent low back pain,<sup>70-72</sup> sickle cell disease pain,<sup>73</sup> and mixed chronic pain syndromes.<sup>74</sup>

Several meta-analyses examining the benefits of CBT have shown that it yields moderate to large effects for cognitive coping responses and small to moderate effects for pain outcomes relative to controls.<sup>75,76</sup> Morley et al. conducted a meta-analysis of the efficacy of CBT for a wide range of persistent pain conditions, including arthritis pain, low back pain, and mixed pain syndromes.<sup>74</sup> He used data from 25 controlled studies and found that cognitive-behavioral



treatment, compared to physical therapy, occupational therapy or educational therapy, had significant benefits for pain experience, pain behavior, and coping and appraisals. There are several systematic reviews of CBT for chronic pain concluding that these approaches can produce significant benefits, such as reduced pain and improved daily functioning.<sup>74,77-80</sup>

Researchers have asserted that CBT may be efficacious through therapeutic mechanisms that involve fostering a sense of control over pain and encouraging the developing and strengthening of self-management skills.<sup>81,82</sup> Results from longitudinal designs also suggest that treatment may be efficacious through altering maladaptive pain-related appraisals such as pain helplessness,<sup>83</sup> pain catastrophizing,<sup>84-88</sup> perceived pain control,<sup>84,85,87</sup> and other pain-related beliefs.<sup>84,89</sup>

Researchers have also examined the effect that CBT has had on areas of the brain implicated in the experience and anticipation of pain. For example, an 11-week CBT intervention for coping with chronic pain resulted in increased cerebral gray matter volume or density in prefrontal and somatosensory brain regions, as well as increased dorsolateral prefrontal volume associated with reduced pain catastrophizing. Increased cerebral gray matter volume in the prefrontal and posterior parietal cortices is suggestive of greater top-down control over pain and cognitive reappraisal of pain and changes in somatosensory cortices reflects alterations in the perception of noxious signals.<sup>90</sup>

## Thinking and Chronic Pain

The role of cognition is an important area of self-management in chronic pain.<sup>91</sup> Pain catastrophizing, a common thinking pattern for most patients with chronic pain, has been found to be one of the most important psychological factors contributing to perceived pain intensity and emotional distress.<sup>48,92</sup> People who catastrophize about their pain tend to have exaggerated worry, overestimate the likelihood of unpleasant outcomes, and think more helpless and distress-amplifying thoughts in response to pain.<sup>93</sup>

Several studies have shown that patients with high levels of catastrophizing, a negative and pessimistic orientation toward pain, are at increased risk for prescription opioid misuse.<sup>94-97</sup> Patients who are high in catastrophizing have been found to ruminate about pain, experience feelings of helplessness when in pain, and magnify the threat value of pain, even after controlling for variables such as substance use disorders, depression and anxiety symptoms and levels of pain severity.<sup>48,97-100</sup>

Pain catastrophizing is a strong predictor of disability, analgesic use, increased pain and illness behaviors, greater use of health care services, and longer hospital stays. This is true even after controlling for depression, level of pain,<sup>48,101</sup> psychological distress,<sup>102</sup> and increased fear reactions, and avoidance behaviors.<sup>103,104</sup>

Patients with a more positive attitude toward life appear to be able to cope better and have less distress, avoidance, and disability than those who tend to take a more negative view.<sup>105</sup> Consider referring patients with chronic pain to see a specialist in CBT to work in-depth on making automatic thoughts about their pain more balanced and helpful.

Refer to [“Working with Pain-Related Thoughts”](#) for information on some simple cognitive exercises clinicians can incorporate into patient care.

## The Tool of Acceptance

In recent years, there has been increasing research in acceptance-based therapies, such as acceptance and commitment therapy (ACT) and mindfulness-based cognitive therapy (MBCT). The focus of these approaches is not so much on control or suppression of pain, but rather on acceptance of pain. In contrast to the focus in CBT on challenging and changing distorted thoughts around controlling pain, the focus in acceptance based treatments is on increasing individuals' capacity to be both aware and nonjudgmental of present moment experiences, including pain and their reaction to pain.<sup>106</sup> The basis for these therapies is the idea that it is perhaps misguided to assume that negative internal experiences such as chronic pain will resolve. In fact, assuming that pain will resolve may actually contribute to greater distress and interfere with healing.<sup>107</sup>

The mechanism used in ACT treatment is presumed to be acceptance, in contrast to control-orientated treatments (e.g. controlling your thoughts) found in CBT. Hayes and colleagues defined psychological acceptance within the ACT paradigm as the willingness to remain in contact with thoughts and feelings without having to follow them or change them.<sup>108</sup> Acceptance of pain involves the following:<sup>109</sup>

- Disengagement from the struggle with pain
- Grieving the loss of a pain free life
- Adopting a realistic approach to pain
- Re-engagement in activity without trying to avoid, restrict or control pain.

Patients are encouraged to adopt a “new normal,” and in doing so, they figure out how to take value-based actions that increase a sense of meaning and purpose in life despite the pain condition.

A meta-analysis of randomized clinical trials of acceptance-based treatment for chronic pain indicated small improvements in pain and depression and small to moderate improvements in physical well-being relative to education controls or treatment as usual.<sup>110</sup> This study concluded that these acceptance-based treatments appear at least equally effective as traditional CBT.

Additionally, several randomized controlled trials provided support for the use of ACT for chronic pain.<sup>107,111-115</sup> Findings suggest that ACT yields positive effects such as increased physical and social functioning and decreased pain-related medical visits, even three years following treatment.<sup>116</sup>

A large randomized controlled trial comparing ACT to CBT for chronic pain found that both treatments improved pain interference, depression, and pain-related anxiety in individuals with chronic pain. ACT was rated more satisfactory by patients than CBT.<sup>107</sup> ACT was also found to be associated with less pain, lower disability and distress, better overall functioning, and greater psychological well-being.<sup>117-119</sup> ACT-based treatments for chronic pain have also been found to produce benefit even when administered in the form of a self-help book.<sup>120</sup>



Refer to "[Working with Pain-Related Thoughts](#)" for more information on how to teach these approaches to patients.

## Relaxation Training

There is extensive research on the benefits of relaxation therapies, which include favorable influences on the physiology of the body, stress reduction, and improved mood. For example

- The National Institutes of Health (NIH) states that evidence is strong for the effectiveness of relaxation therapies in reducing chronic pain in a variety of medical conditions. Research has demonstrated significant relationships between the experience of stress and both the incidence and severity of pain-related conditions.<sup>121,122</sup>
- Relaxation training attempts to break the pain–muscle tension–pain cycle and helps lower stress levels. A number of breathing, imagery based, and muscle tension-based exercises designed to reduce physical and emotional tension have shown benefit.

Relaxation training helps patients learn to recognize signs of tension and stress and work on reducing nervous system arousal. Relaxation training typically has two components:

1. Repetitive focus on a word, body sensation, or muscle activity; and
2. Adoption of a passive attitude towards thoughts unrelated to one's attentional focus.

Relaxation exercises can be a particularly useful tool for managing flare-ups and improving sleep, as chronic pain often disrupts sleep patterns.

Refer to "[Recharge](#)" and related Integrative Health tools for more information on improving sleep. Refer to "[Mind and Emotions](#)" and related Integrative Health tools for more information on relaxation strategies.

## Breathing Techniques

Breathing techniques include rhythmic breathing, deep breathing, abdominal breathing, or diaphragmatic breathing. Breathing techniques can be a useful introduction to self-management strategies. They are generally safe, portable and useful in a variety of situations, including during stress or a pain flare, as a way to manage painful procedures, and as a form of positive distraction away from a pain sensation. Breathing techniques can easily be taught in the clinic or other setting. In a review, the authors found moderate evidence for the use of breathing for the treatment of low back pain, as well as improving quality of life.<sup>123</sup>

## Key concepts related to breathing strategies

- Shallow breathing can often accompany psychological difficulties that can result from anxiety and stress.
- Stress and anxiety are common problems for individuals with chronic pain.
- Shallow breathing can be a result of sympathetic hyperarousal, often referred to as "fight or flight response."
- Through slower deeper breathing, a person can develop a way to minimize the physiological response to stress and activate more parasympathetic activity.
- Breathing techniques focus awareness on breathing rate, rhythm, and volume.

In summary, breathing exercises are frequently taught to patients with chronic pain to quiet arousal, create physical relaxation, manage stress, and to provide a positive distraction. They can be used in a variety of situations and are excellent tools for people to use in self-management of their pain. When combined with relaxation, breathing practice may benefit the individual with chronic pain.<sup>124</sup>

For more information, refer to "[Breathing](#)."

### **Progressive Muscle Relaxation**

Progressive Muscle Relaxation (PMR) was developed in the late 1920s by Edmund Jacobson. It is a systematic relaxation method that involves activating and releasing tension in various muscle groups. PMR for chronic pain involves tensing and releasing muscles in a very subtle manner, so as not to injure the body or exacerbate pain sensations. PMR helps people differentiate feelings of tension from relaxation, and they learn to apply these skills in stressful situations.

PMR has been extensively studied for treatment of insomnia and headaches. A meta-analysis of 29 PMR studies on a variety of conditions found PMR to be an effective treatment for tension and migraine headaches and tinnitus.<sup>125</sup> There is also evidence that PMR is an effective treatment in improving well-being in patients with inflammatory arthritis and irritable bowel syndrome.<sup>126-128</sup>

For more information, refer to "[Progressive Muscle Relaxation](#)."

### **Progressive Relaxation**

An adaptation of PMR is Progressive Relaxation (PR), which includes sequential relaxation of muscles, *without* muscle contraction. For some individuals, the muscle tightening process of PMR will be difficult due to the pain, or because of a specific situation such as recent surgery, a fibromyalgia flare-up, etc. For others, PR is preferable as it may be uncomfortable to contract muscles that are already tense. For more information, refer to "[Progressive Relaxation](#)."

### **Biofeedback**

Training in biofeedback can help patients self-manage their pain through modifying their physiological activities. Depending on the nature of their pain, a patient might be trained with the equipment to lower muscular tension, decrease heart rate, change brainwaves, alter skin temperature, etc.

A meta-analysis on tension-type headaches found that biofeedback treatment yielded a medium to large effect compared to being placed on a wait list.<sup>129</sup> Compared to placebo it produced a medium effect. For migraine headaches, biofeedback treatment yielded small to medium effects overall, compared with wait-listed controls and placebo. Other pain problems have been studied as well, and it appears that biofeedback can be a helpful treatment for chronic pain and temporomandibular joint dysfunction.<sup>130-133</sup> A systematic review found EMG biofeedback to lower muscular tension significantly reduced pain intensity in patients with fibromyalgia.<sup>134</sup>

Biofeedback also has the secondary benefit of encouraging self-efficacy, creating an active learning environment, and developing important skills for use in a pain patient's self-



management toolbox. For more information on biofeedback refer to “[Mind and Emotions](#)” and related Integrative Health tools and “[Biofeedback](#).”

## Imagery

Imagery can also promote self-management of the pain experience. It is an ideal self-management tool because it is patient-centered and because, after initial training, a patient can do it outside of a clinical setting. Many psychotherapists and psychologists can assist patients with using imagery. Other clinicians who may incorporate imagery into their work include physical and occupational therapists, psychiatrists, nurses, and integrative medicine clinicians.

Guided imagery is a process in which a person imagines, and experiences, an internal reality in the absence of external stimuli.<sup>135</sup> Mental imagery may be used to alter a person’s physiologic process, mental state or behavior.<sup>136</sup> Typically the images are a mental representation of something real or imaginary that includes the senses of sight, sound, sense of movement, smell and taste and is experienced within a state of relaxation with a specific outcome in mind.<sup>137</sup>

For self-management of pain, imagery is generally used in two ways:

1. To induce relaxation and improve stress management and coping. For example, an individual might imagine a peaceful and beautiful location where they could experience rest and well-being.
2. To help a person focus on a desired outcome. For example, a patient might imagine her or his pain as being large and bright red, and then shift the image to decrease the image’s size and modify its color.

Using imagery, a person with pain can learn to reinterpret pain sensations and direct attention away from them.<sup>138-140</sup> Guided imagery can also help decrease levels of perceived stress and anxiety, reduce fatigue and depression, improve physical function, improve sleep and enhance a sense of self-efficacy and active coping for managing symptoms related to chronic pain conditions.<sup>141-144</sup>

Posadzki and colleagues completed systematic reviews of both guided imagery for musculoskeletal pain,<sup>145</sup> as well as for non-musculoskeletal pain.<sup>137</sup> For both reviews, they concluded that the data is encouraging but not conclusive. Lewandowski found that in a randomized trial of older adults, the guided imagery group showed a significant reduction in self-reported pain.<sup>146</sup> A randomized control trial found benefit on chronic tension type headaches.<sup>147</sup>

There is suggestion that imagery or guided imagery may be an important self-management technique for individuals with chronic pain. Due to the quality of the studies, most systematic reviews indicate that data is inconclusive to date. Refer to “[Guided Imagery](#)” for more information.

## Hypnosis

Hypnosis involves accessing a trance state of inner absorption, concentration, and focused attention. This is established by using an induction procedure that usually includes instructions for relaxation, designed to produce an altered state of consciousness and includes a suggestion component with specific outcome goals (e.g. pain relief) that are outlined in advance.<sup>148</sup>

Hypnosis has been used to treat every type of pain condition imaginable over centuries and across cultures.<sup>149</sup> According to Jensen and Patterson, (2014)<sup>150</sup>, clinical outcome studies on acute and chronic pain along with neurophysiological studies in the laboratory have shown that hypnosis has three potential effects on chronic pain. First, hypnosis is effective above and beyond placebo treatment resulting in substantial reductions in average pain intensity that is maintained for up to 12 months in some patients. Second, hypnosis teaches self-management skills patients can use regularly that can result in temporary pain relief. Third, hypnosis has measurable effects of activity in brain areas known to be involved in processing pain.

A meta-analysis by Montgomery and colleagues indicates that hypnosis provided substantial pain relief for 75% of clinical pain studied including burns, coronary disease, cancer, headache and experimental pain inductions (i.e., cold pressor, ischemic pain, and focal pressure). The researchers concluded that it is an effective analgesic.<sup>151</sup> Jensen and Patterson reviewed 19 controlled trials of hypnosis for chronic pain for such conditions as headache, cancer-related pain, fibromyalgia, osteoarthritis, low back pain, temporomandibular pain disorder, disability-related pain, and mixed chronic pain problems.<sup>152</sup> The authors concluded that hypnosis resulted in more pain reduction than no treatment; the pain reduction was maintained at 12 month follow-up in several studies.

Similarly, a meta-analysis by Adachi et al. (2014) found that when compared to standard care, hypnosis for non-headache chronic pain provided moderate treatment benefits and also showed a moderate superior effect as compared to other psychological interventions.<sup>153</sup> Some studies have shown that approximately 70% of individuals with chronic pain are able to experience a short-term reduction in chronic pain during a hypnosis session and between 20% and 30% achieve more permanent reductions in daily pain.

A systematic review of meta-analysis found that hypnosis is effective for the treatment of irritable bowel syndrome, a disorder often involving pain.<sup>154</sup> Hypnosis also may have benefits beyond pain relief, including improved positive affect, relaxation and increased energy.<sup>155</sup>

Neuroscience is providing a better understanding of the mechanisms of hypnosis. Some of the pain-related brain domains associated with hypnotic suggestions are listed by Jensen and Patterson(2014),<sup>150</sup> as intensity and quality (sensory cortices), bothersomeness or unpleasantness (ACC), a sense of comfort and physical integrity (insula), reduced threat value and negative implications of the pain (prefrontal cortex), and the ability to tune out discomfort and allow in comfortable sensations (spinothalamic tract).

For more information, refer to "[Clinical Hypnosis](#)."

## **Autogenic Training**

Autogenic Training (AT) is a relaxation technique developed by the German psychiatrist Johannes Heinrich Schultz in 1932. It involves a series of simple, self-instructed mental exercises that a person can do to increase relaxation without relying on help from someone else. A meta-analysis of 60 studies conducted by Stetter and Kupper found significant positive effects of AT treatment when compared to controls for clinical outcomes over a number of diagnoses, including tension headache, migraine, somatoform pain disorder (unspecified type), and Raynaud's disease.<sup>156</sup> Refer to "[Autogenic Training](#)."



## Meditation

Meditation practices are becoming more popular for individuals with pain, especially for patients seeking ways to actively cope with their situation. The popular eight-week mindfulness-based stress reduction (MBSR) program teaches a number of meditation techniques. Mindfulness-based cognitive therapy (MBCT) is an adaptation of the MBSR program for depression relapse.

Meditation appears to assist with psychological well-being, stress, and coping with pain.

In a systematic review, Arias and colleagues stated that *“the strongest and most beneficial effects of meditative practices occur in the domain of psychological health/functioning, as well as in the physical parameters of disease conditions that are strongly influenced by emotional distress and where the physical symptoms can perpetuate emotional distress.”*<sup>157</sup>

In a systematic review and meta-analysis Goyal and colleagues found mindfulness meditation helpful to improving pain.<sup>158</sup> Chronic pain is also often accompanied by problems with depression and/or anxiety. Other reviews and meta-analyses have found meditation to be beneficial for anxiety and mood.<sup>159-161</sup> MBCT prevents relapses of major depression.<sup>162,163</sup>

In summary, meditation is a safe and potentially efficacious complementary method for treating certain health problems including pain, stress related difficulties, and non-psychotic mood and anxiety disorders. For more information, refer to [“Mindful Awareness”](#) and related Integrative Health tools.

## Creative Arts Therapies

*Art, dance, and music therapy are a significant part of complementary medicine in the twenty-first century. These creative arts therapies contribute to all areas of health care and are present in treatments for most psychologic and physiologic illnesses. Although the current body of solid research is small compared with that of more traditional medical specialties, the arts therapies are now validating their research through more controlled experimental and descriptive studies. The arts therapies also contribute significantly to the humanization and comfort of modern health care institutions by relieving stress, anxiety, and pain of patients and caregivers. Arts therapies will greatly expand their role in the health care practices of this country in the twenty-first century.*<sup>164</sup>

Puetz and colleagues conducted a review regarding the use of creative arts therapies on pain, psychological symptoms, and quality of life in individuals with cancer.<sup>165</sup> They found that pain was significantly reduced, as were anxiety and depression. Overall quality of life improved. Several reviews of the literature have found art therapy helpful in reducing adverse physiological and psychological outcomes of cancer.<sup>166,167</sup> Further research will illuminate whether art therapy can be helpful managing pain and the mental health issues associated with it.

In a systematic review of dance therapy, Strassel and colleagues found therapeutic benefits of dance therapy in most studies, although these results are based on generally poor-quality evidence.<sup>168</sup> Listening to music has been shown to reduce pain intensity levels and opioid requirements, but the magnitude of these benefits is small and, therefore, its clinical importance is unclear.<sup>169</sup> However, there are many advantages to incorporating music therapy into a program of self-management, as it is inexpensive, accessible and has few side effects.

For more information, describing the types of creative art therapies, history and other research, refer to [“Mind and Emotions”](#) and [“Mind and Emotions: Additional Resources.”](#)

## Recharge

### Sleep and Self-Management of Pain

There is growing literature addressing the link between sleep disturbances and chronic pain. Research suggests that chronic pain is frequently associated with sleep disturbances,<sup>16</sup> with developing insomnia in the future,<sup>170,171</sup> and that poor nighttime sleep is associated with increased pain and disability.<sup>172-175</sup>

Pain causes changes in sleep continuity and sleep architecture as well as increased sleepiness during the daytime, for example. Current theories posit that sleep deprivation and sleep disruption can increase pain sensitivity and vulnerability to pain<sup>172</sup> and may create a vicious cycle with sleep difficulties and pain maintaining and augmenting each other.<sup>176,177</sup> Improving sleep quality may also be associated with long term improvements in pain.<sup>178</sup> 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.<sup>179</sup>

For more information on sleep, refer to [“Recharge”](#) and related Integrative Health tools.

## Complementary Approaches

### Variability of Pain/Pain Flares

Pain flares are considered exacerbations of pain above an individual’s typical level. The term “breakthrough pain” is often used interchangeably but can also signify situations when prescribed medication is either not working effectively or not lasting sufficiently.

Rather than static, it appears that pain is a dynamic experience. It changes over the course of a day or week for many patients with pain. Fluctuations are a debilitating aspect of the chronic pain experience. Variability of pain is associated with severity of depression, as well as decreased work productivity.<sup>180</sup> A survey of 634 individuals with non-specific back pain (two years after an initial visit with primary care) found 51% of that group experienced flare-ups.<sup>181</sup> Those individuals with flare-ups experienced more disability and were more likely to engage in passive coping.

Pain flares are common and can benefit from self-management plans, which may or may not include taking additional medication. This is often individualized based on the patient’s situation. For example, the Sample Flare-Up Management Plan, adapted from Turk & Winter’s [The Pain Survival Guide: How to Reclaim Your Life](#), recommends the following:<sup>182</sup>

- Change activity—rest cycle to decrease activities by one half.
- Cut back on physical exercises by a certain amount—check with a physical therapist to determine amount.
- Over three days, gradually increase activities up to a level prior to flare-up
- Practice relaxation and controlled breathing exercises twice as often when flare-ups occur.



- Increase use of other pain coping skills such as distraction, imagery, and positive thoughts.
- Increase frequency of relaxing activities.
- Inform family that you are having a flare-up and what you will be doing about it.
- Tell significant others what they can do to help you during the flare-up.

For more information, refer to "[Pain Flare Management Plan: Suggestions to Offer Patients.](#)"

## Personal Health Plan

Matt agreed to arrange appointments with various specialists who could help him learn how to self-manage his chronic pain. Originally, he had hoped that he could start several of the above suggestions immediately. He found, however, that his busy life made it difficult to attend so many appointments each week, and it ended up being easier for him to focus on one thing at a time. He chose to start with pain psychology training.

Over 6 sessions, Matt learned a great deal about habitual muscular tension that he usually had but of which he had not been aware. By engaging in relaxation and breathing exercises, he found that he could minimize the physical and emotional tension he was experiencing, manage stressors better, and decrease the impact of his pain problem. His irritability improved as he learned CBT techniques to address the "catastrophizing" thoughts that occurred with his pain, as, "This will just get worse and worse" and "I'm a terrible dad." He also began developing a "flare-up plan," and he found that even when his pain flared, he became more skilled at using coping and adaptive thinking.

After 6 sessions of pain psychology treatment, he began physical therapy. His physical therapist developed a plan to strengthen his core and identified various stretches for him that he has now been using for quite some time. He eventually became interested in a gentle back yoga program through his local YMCA on Saturday mornings. He was also taught how to develop an ergonomic setup for his computer at work by his physical therapist and experienced less back and neck strain during the workday. (Refer to "[Improving Work Surroundings Through Ergonomics.](#)")

As he was nearing the end of physical therapy, his therapist encouraged him to begin an aerobic exercise program and helped him come up with a simple walking plan. Although at first hesitant to begin a walking exercise program due to fears of flaring up his pain, Matt eventually found that slowly increasing his walking time became a source of pride and a great stress reliever. He recognized that this demonstrated to his children the importance of balance and self-care of one's health. Sometimes the family even joins him on his walks.

## Integrative Health Tools

- [Communicating about Chronic Pain: Instructions for Clinicians](#)
- [Diaphragmatic Breathing to Assist with Self-Management of Chronic Pain](#)
- [Goal Setting for Pain Rehabilitation](#)
- [Physical Activity in Chronic Pain: What Clinicians Need to Know](#)
- [Pain Flare Management Plan: Suggestions to Offer Patients](#)
- [Working with Pain-Related Thoughts](#)



## Author(s)

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