

FLEX CEUs



Pain and Symptom Management



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Introduction

The experience of pain is the perception of sensations from tissue damage and the emotion associated with it. It is the body's signal system of tissue damage. However, the perception of pain is not always equivalent to actual tissue damage. This is typically the case with chronic pain. Everyone experiences pain differently in terms of various tolerances to pain, different responses to pain, and different approaches to recovery. Other symptoms that one may experience along with musculoskeletal pain include joint stiffness, short or stiff muscles, hypermobility, poor coordination, and joint crepitus. In this course, physical therapists and physical therapist assistants will learn strategies to help patients manage their pain and symptoms through behavior management, understanding the psychology of pain, pharmacological approaches, and stress management through course material and clinical scenarios.

Background on Pain

To best treat their patients with pain, physical therapists and assistants should be aware of the different types and presentations. Patients often need clarification on their pain for expected healing times, how pain could continue to affect their lives, and if it has the potential to improve. That being said, part of the role of PTs and PTAs is to empower patients to realize that pain is a powerful tool of signaling. Sometimes, pain can be exaggerated and not proportional to actual tissue damage. This is typical in cases of chronic pain. This section will detail the types of pain as a foundation for how PTs and PTAs can educate their patients about the physical, psychological, and behavioral aspects of pain.

How Pain Works ¹

Pain is a complicated process and how humans experience it has many theories. The pain pathway is crucial to understand in treating patients who have pain. In part due to the complexity of pain, there are many theories over the past centuries which describe pain. The most modern are the gate control theory, the neuromatrix model, and the biopsychosocial model.

The gate control theory was created by Patrick David Wall and Ronald Melzack in 1965 and was the first theory on pain that explained the connection from the mind to the body. Within the gate control theory, a stimulus that reaches the brain must first

travel through three parts of the spinal cord. This includes the substantia gelatinosa in the dorsal horn, the dorsal column, and transmission cells in the dorsal horn. The pain signal is modulated at these locations which act as a gate to let certain information to the brain. The gate can open or close based on intensity and is also connected to cortical regions of the brain. The cortical regions of the brain allow psychological and emotional factors to contribute to the experience of pain.

The neuromatrix model was introduced by Ronald Melzack in the 1990s and was built upon his experience working with people with phantom limb pain after amputation. Within the neuromatrix model, there are several parts of the central nervous system that result in pain signaling. These parts include the “body-self neuromatrix, the cyclic processing, and synthesis of signals, the sentinel neural hub, and the activation of the neuromatrix.”¹ The pathway begins with a painful stimulus, for example, trauma induced fracture to a bone. . Nociceptors are receptors for pain which recognize the painful stimulus and in turn send a signal along the peripheral nerves. These peripheral nerves then continue to send the signal to the dorsal horn of the spinal cord. From there, these impulses travel along the spinothalamic tract of the nervous system to the thalamus. The thalamic cells in the ventral posterolateral nuclei and the ventromedial nuclei receive this information and regulate how intense the signaling is to the higher processing areas of the brain (cortical). The areas of the brain that receive this information vary in humans based on a multitude of factors, but nearly always include the insula and the anterior cingulate cortex. These areas contribute to the subjective experiences of pain. Additional areas that can be stimulated after reaching the thalamic areas include the amygdala, basal ganglia, and hypothalamus.

The biopsychosocial model of pain is considered the most modern and thorough theory of pain. Generally, this model states that the experience of pain is a combination of biological, psychological, and sociological components. It was introduced as a collaboration between many professionals in the pain field and was accepted around 1977. It distinctly separated the ideas of nociception and pain. Nociception is the signaling from the body to the brain to identify a potential injury or damage of tissue. Pain is the experience that results from nociception and other factors such as pain behaviors and emotion associated with it. In this model, the emotional and psychological response to nociception is what regulates the intensity and the response to an original pain stimulus.

Viewing pain through the lens of the biopsychosocial model is powerful in understanding the complexity of chronic pain. Methods of treatment must address the physical, psychological, and social components of pain to be successful.

Types of Pain ¹

Pain is a multifactorial process. It begins typically with an acute injury with tissue damage. This injury progresses to the subacute and chronic phases if it is not resolved in the acute phase by an intervention or natural healing. The biological component of pain cannot be ignored, as it is a tool of communication from the brain to heal an injury. However, pain becomes much more complicated when there are emotions and behaviors associated with it. It is important to explore the different types of pain including the following: acute, subacute, chronic, neuropathic, nociceptive, and radicular pain.

Acute Pain ²

Acute pain is a sensory experience that occurs after some part of the body has potential for tissue damage. It tends to be concentrated and isolated to the injured body part, such as a broken bone or sprained ankle. When a person has an injury, they will feel acute pain until the body has healed or it transforms into a long-lasting, lingering issue from the psychological and social components of pain. Acute pain is a protective response to prevent more injury to the same area after the original injury. Acute pain lasts anywhere from days to twelve weeks. Its severity is modulated by a few different factors. Individuals have different emotional, cognitive, and social processing of pain and will experience pain severity differently.

There are different phases of tissue healing which include inflammatory, repair and remodeling. Acute pain occurs during the acute inflammatory phase. The inflammatory phase lasts up to a week and is characterized by the symptoms of redness, swelling, and heat over the area of injury. This phase represents the circulatory and cellular response to an injury, including the release of histamine and prostaglandins that allow healing.

The repair phase begins as early as day four and lasts up to six weeks. This phase often is grouped into subacute pain, not acute pain. In the repair phase, inflammation is leveled out and the body begins to repair by creating and depositing collagen fibers or “scar tissue”. The remodeling phase happens from three weeks up to years and

represents the final phase of healing where the scar tissue is more organized collagen fibers and progressing toward normal strength.

Subacute Pain³

Subacute pain represents the phase in which pain transitions from acute to chronic pain. It begins around six weeks after an acute injury, presents with more diffuse and dull pain than the acute phase, and tends to last for about three months. Some components of the acute phase and chronic phase of pain will be present. These include pain, inflammation, a reduced ability to participate in daily activities or exercise, and potentially psychological aspects of pain (frustration, sadness, etc.). The subacute phase (and acute phase) is a critical point to stop the original injury from becoming a chronic issue.

Chronic Pain³⁻⁵

Around twenty percent of Americans at any given time are experiencing chronic pain. Chronic pain is often the most difficult pain to treat. Chronic pain is the type of pain most affected by the psychological and social aspects of the biopsychosocial model. Chronic pain starts somewhere around three months after an injury or pain process and lasts an indefinite amount of time (months to years). The factor that sets chronic pain apart from acute is that it is the experience of pain without equivalent tissue damage. This means that after the original pain source is healed, a person still experiences pain in the area that should be gone from a physical and biological healing perspective. Acute pain can be considered protective while chronic pain is non-protective. Chronic pain lingers long past when an injury is physically healed, which highlights other components of pain, like psychological, emotional, behavioral, and social aspects. In fact, with higher levels of chronic pain and negative beliefs, and hyper focusing on pain, functional MRI results show that painful stimuli will show up with more intensity on the scan than if patients do not show psychological factors related to pain.

Nociceptive Versus Neuropathic Pain⁶

In addition to chronic, acute, and subacute pain types, it is important to distinguish nociceptive from neuropathic pain. Nociception is the result of processing a noxious stimulus. It is the most basic type of pain that nearly all organisms experience. Nociceptive pain results from definite tissue damage. It is caused by an injury like a

cut, burns, or broken bone. At a basic level, human bodies have several sensory neurons and nociceptors which are the primary way we experience pain. Pain stimuli activate ion channels for nociceptors which then are gated/graded and if the signal is strong enough it will produce action potentials. Pain will then reach the spinal cord and the brain, where it is interpreted as pain.

Unlike nociception, neuropathic pain has no protective function for the human body. Chronic pain can be thought of as either inflammatory pain or neuropathic pain. Somewhere around eight percent of the population experiences neuropathic pain. Neuropathic pain is typically the result of dysfunction in the somatosensory nervous system. This can occur anywhere in the nervous system where damage or dysfunction happens including the peripheral nerves of the spinal cord and the brain. An example of neuropathic pain is phantom limb syndrome that results after an amputation. In this case the brain continues to get pain messages from the nerves that are no longer present in the limb that was amputated. The nerves essentially do not fire correctly. This in turn causes pain that is felt by the cortical pain processors in the brain. Another example of neuropathic pain is peripheral neuropathy. Such may be the case commonly found in conditions such as Diabetes Mellitus Type 2, cancer, alcoholism or other neurologic conditions. In these cases, peripheral neuropathy pain may include symptoms of stabbing, burning, or tingling which are a result of excess pressure or nerve damage.

Radicular Pain ⁷

Radicular pain begins at a spinal nerve root and travels along a peripheral nerve distribution to innervated muscles. Radiculopathy can stem from compression at the cervical spine, the thoracic spine, or the lumbar spine. It creates symptoms of neurological deficits including reflex problems, numbness, and weakness. The most common reasons for this are disk pathologies such as disc herniation and spinal degeneration (foraminal stenosis, degenerative disc disease, etc.). Examples of diagnoses are sciatica and cervical radiculopathy, where symptoms would be coming from the lumbar spine with symptoms in the legs and the cervical spine with symptoms in the arms and hands, respectively.

The severity of these different pain types depends on physical, psychological, social and emotional factors.

Biological Aspects of Pain ^{4,8}

Under early pain theories, the biological (physical) aspect of pain was considered paramount, whereas with the biopsychosocial theory, other things besides biological factors are considered equally important. The biological component of pain involves the physiology of pain, explained by pain theory above and ultimately a stimulus reaching the brain that results in pain perception.

Several factors, like hormones, sex, and comorbid conditions contribute to the biological aspect of pain.

There are sex differences between men and women. Pain in women is more prevalent and they experience higher levels of chronic pain than men. Rheumatoid arthritis, orthopedic pain, intestinal pain, neuropathic pain, and headaches are much more common in women than men. Females also experience physiological pain differently than men. This physiological difference is due to a female's increased sensitivity to pain elicited reflexes, increased pupillary response, and higher levels of cerebellar activity following painful stimuli as compared to men. This is further explained by hormonal and endogenous opioid system differences. Females have a higher opioid receptor rate of binding at rest. Men however have a greater binding response to painful stimuli. This results in women having less of a natural response to acute pain versus men.

People with chronic pain typically have multiple comorbidities. Around three quarters of those with chronic pain have a comorbid condition. These include but are not limited to mood disorders, cardiovascular diseases, pulmonary diseases, Parkinson's Disease, and Multiple Sclerosis. While acute pain will happen to anyone at any time, it is clear that chronic pain rarely occurs independent of other factors.

Psychology of Pain 4

The biopsychosocial model of pain as described earlier in this section is the main theory behind the psychology of pain. In modern times the biopsychosocial model and multidisciplinary care teams have become pertinent ways to theorize chronic pain. Many psychological variables affect how someone experiences pain. Some psychological variables include catastrophizing, expectations, and coping with pain.

There is evidence to suggest that those with a predisposition towards having a negative affect are more likely to experience chronic pain than others. Negative effects include depression, anxiety, and emotional distress. People with negative affect are more likely to have physical disability, a work disability, higher healthcare

expenditures, mortality, and higher suicide risk. There is a powerful connection between depression, pain, and poor outcomes. Such has a strong correlation to occupational disability. This can be seen with postoperative lumbar fusion cases. People with depression after surgery were thirty percent less likely to return to work than those without depression.

Positive affect on the other hand is proven to be associated with less pain and poor functioning. Optimism actually decreases pain severity by decreasing pain catastrophizing in situations and reduces any fear of movement. In the case of low back pain, having a positive affect and a negative affect with certain topics is associated with less depression and better functional scores than those with only negative affect.

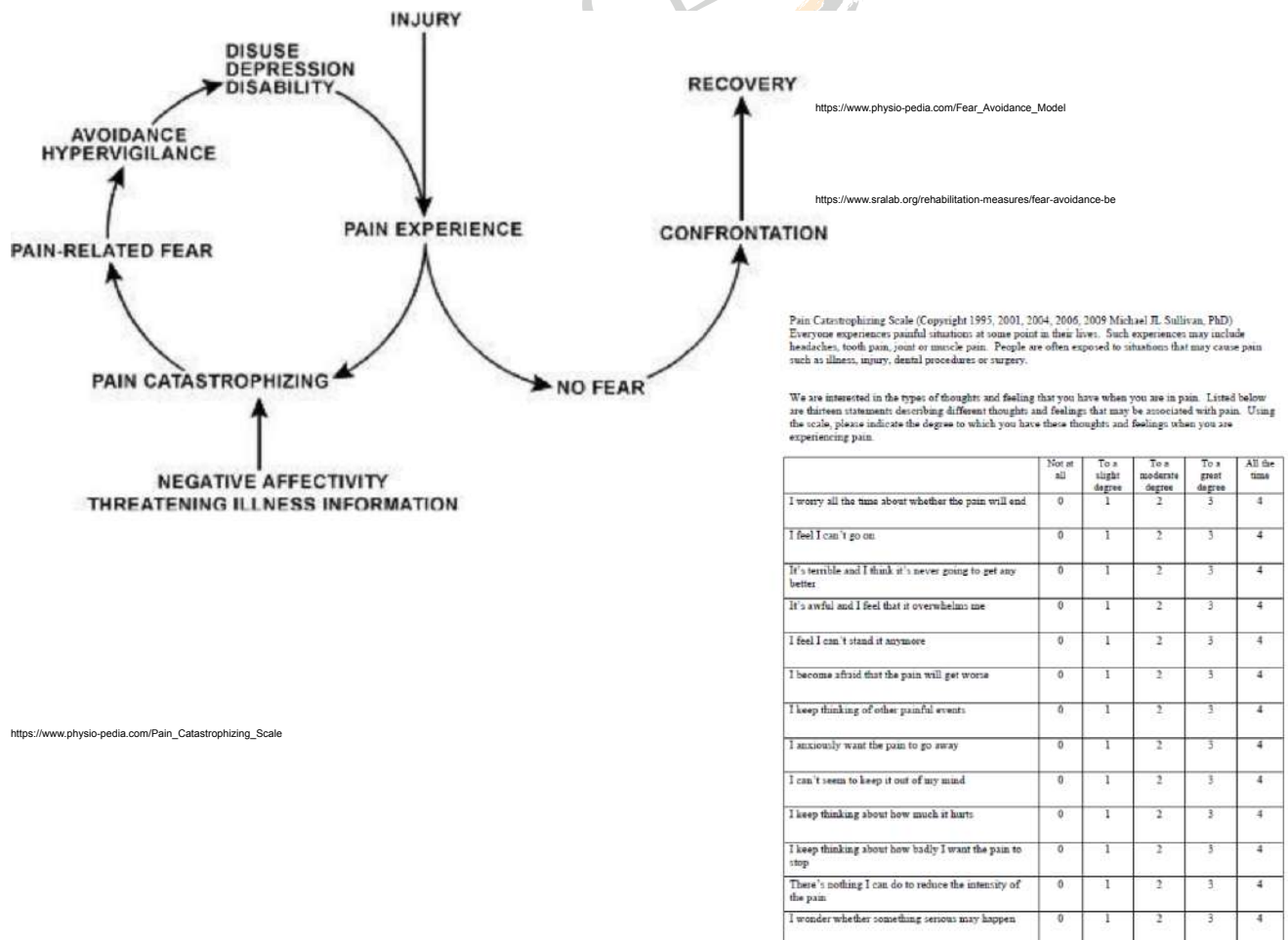
Trauma can be both physical and psychological. Trauma correlates with higher levels of pain intensity and longer-lasting pain. It is theorized that those with trauma have dispositional, cognitive, and behavioral responses to the trauma which modulate their pain intensity and response. Those that experience a traumatic event in childhood (physical, sexual, or psychological abuse, natural disasters, and more), are three times higher risk to develop chronic pain than others who have not experienced childhood trauma. People who experienced childhood trauma are more likely to develop irritable bowel syndrome, chronic pelvic pain, temporomandibular disorders, and fibromyalgia. The risk doubles for developing chronic pain in those children who have lost a family member or who were hospitalized. Another group subject to trauma and pain includes veterans. Somewhere around half to two-thirds of veterans with post-traumatic stress disorder also have chronic pain. PTSD is one of the most correlated single psychological factors connected to chronic pain. In addition to PTSD, brain injury is also linked to chronic pain. While this could be due to other injuries that were sustained during the traumatic brain injury, it could be independently linked to the development of chronic pain.

There are a few constructs regarding the psychology of pain and one's ability to manage it that need mentioning. These are pain coping, catastrophizing, expectations, and self-efficacy.

Pain coping is defined as the ability to manage pain or dysfunction with problem solving skills. Passive coping means that a person relies on others to help control or manage their pain. One may also use problem-focused or emotion-focused coping strategies. Problem-focused strategies use action-oriented attempts to directly cope, while emotion-focused involves attempts to manage the reaction to pain. Active

coping strategies which are problem-focused are linked to the lowest level of chronic pain, pain intensity, psychological distress, and physical symptoms. This is compared to emotion-oriented passive strategies which are associated with high chronic pain and disability levels both psychologically and physically.

Catastrophizing is defined as increased or exaggerated pain sensation from a thought based and emotional response to the pain. Another phrase related to pain catastrophizing is fear-avoidance. This means people intentionally avoid certain activities in fear of pain caused by them. Fear-avoidance can become a cycle where pain is misinterpreted as a catastrophe. The cycle involves misinterpretation and extreme fear of an injury or a reinjury, followed by a fear of movements related to the activity, and an avoidance of the activity altogether. Fear will activate the sympathetic nervous system and create a fight or flight response cycle, creating an influx of stress hormones and negative thoughts. The fear avoidance model is depicted below as well as an outcome measure, the Fear Avoidance Behaviors Questionnaire (FABQ). Higher scores on the FABQ indicate fear avoidance is at play, which is validated for patients with chronic pain.



Pain catastrophizing phrases include “This is the worst pain I’ve ever had”, “I wish I could do something to make this better”, or “All I think about is my pain”. This

is associated with feelings of helplessness and hopelessness, which are proven to increase pain severity, disability, and psychological stress independent of any other factor. Catastrophizing is a phenomenon also associated with depression and anxiety, which create an even higher disposition for chronic pain combined than any factor alone. The Pain Catastrophizing Scale (PCS) is a great tool to detect to what extent a patient may struggle with

chronic pain catastrophizing. It assesses rumination, magnification, and helplessness and higher scores indicate a higher degree of catastrophizing.

As simple as it may seem, expectations around pain, healing times, and functional status are also a contributor to one’s pain experience. If one expects an injury to heal and has optimism around it, a person will experience higher rates of function and lower pain levels due to feeling in control and through the use of higher rates of active coping strategies. This is also the concept behind the placebo effect – if a person believes an intervention will help, it will be based on positive expectations around it. The belief in one’s ability to perform a task or achieve an outcome is also related to chronic pain outcomes. This concept is called self-efficacy and is related to self-esteem and self-confidence, stretching beyond the context of pain psychology. It is related to active coping strategies in that someone who has a higher degree of self-efficacy will believe that they are in control and can act on strategies to help manage their pain. This is true in conditions ranging from fibromyalgia to chronic back pain and chronic headaches. High levels of pain are associated with low levels of self-efficacy and the ability to perform activities of choice. The idea of self-efficacy and having control over the response to pain is also linked to seeking increased pharmacological support rather than exercise-based support. These psychological factors will be present in many of the patients that seek physical therapy. The concept of multidisciplinary care for patients with chronic pain could not be more important for all providers to communicate to their patients.

Sociological Factors of Pain ⁴

According to the biopsychosocial model, sociological factors are paramount in pain perception. First of all, gender roles within society impact healthcare utilization and

pain perception. Males may more commonly accept pain as normal and follow the “masculine” high pain tolerance.

Women may admit to pain and seek help more often than men because it is not considered weak in the traditionally “feminine” role. Race also contributes to pain experiences and most literature compares the Black and White populations. Black individuals compared with White individuals experience a higher rate of sensitivity to pain. They also experience higher rates of pain after surgery, with arthritis, AIDS, glaucoma, and low back pain. This could be due to cultural factors and higher rates of chronicity of mental health conditions in Black versus White people. In addition, high rates of racial discrimination are associated with proportional rates of chronic pain adjusted for other factors.

High levels of financial stress and low socioeconomic status are also proven factors to have higher levels of chronic pain and a lower pain tolerance. Chronic stress heightens the arousal of the sympathetic nervous system which creates an overwhelming situation for the nervous system when pain stimuli add to this.

Section 1 Key Words

Nociception – the processing of stimuli which communicate pain on a biological basis

Neuropathic Pain – pain experienced as a result of nervous tissue damage

Radicular Pain – pain that originates from a compressed spinal nerve root and radiates down a limb

Pain Catastrophizing – the magnification of pain in relation to the physical component and original stimulus

Section 1 Summary

The biopsychosocial model of pain highlights biological, social, and psychological components as equally viable in pain theory. Physical therapists and assistants will be treating patients with acute, subacute, chronic, neuropathic, nociceptive, and radicular pain. They will also need to recognize psychological and social aspects of a multifactorial pain process to facilitate effective conversations and referrals as needed for the best possible patient care.

Pain Management

In order to best help patients with any type of pain, physical therapists and assistants should know coping strategies to help their patients process and cope with their pain. PTs and PTAs should never leave their scope of practice and intervene in the role of education or management of symptoms like a psychologist or pain prescriber would. They should however educate around the options for what is supported in the research to work for chronic pain as part of a multidisciplinary model of pain management.

Behavior Modification ⁹

Cognitive behavioral therapy (CBT) is an approach guided by licensed mental health professionals, people are able to reframe their thoughts and behaviors. In the context of chronic pain, when a person is having negative thoughts around their pain, they should recognize and work to change the original thought. They should avoid “all or nothing” thinking patterns which often feed into negativity. This should be done by scheduling activities that will produce positive and constructive thoughts rather than negative ones. This could be drawing, movement, listening to music, or anything else to create a positive association and frame of mind in response to the pain. For CBT to create cognitive and behavioral change, it should be led by a mental health professional.

Acceptance and Commitment therapy is related to CBT but has a different focus of transforming the relationship of thoughts and behaviors rather than modifying the original thoughts themselves. The goal of this is to be in tune with goals and values rather than be focused on pain.

Stress Management ^{10,11}

Managing stress is key to reducing pain. When the nervous system is heightened and in “fight or flight” after a painful or stressful event, the body releases adrenaline and cortisol. The hormones continue to be released after the original stress or injury is gone, which contributes to persistent, chronic pain. This is then intensified with fear avoidance coping as movement causes stress, fear, and pain. There are several strategies that combat chronic pain and stress associated with it. These are mindfulness, relaxation, and breathing.

Mindfulness allows the person in pain to focus on it through a new lens. The goal is to focus on reducing judgment and negative thoughts of the injury. This can be done with breathing exercises and picturing every part of the body in a positive light. The results of this can be measured with biofeedback including respiratory rate, blood pressure, and heart rate. Guided imagery is another type of mindfulness where one imagines relaxing images or positive thoughts while they complete deep breathing. These strategies should be done multiple times per day and especially when the person becomes aware of negative thoughts or more intense pain.

Relaxation strategies take many forms. Progressive muscle relaxation is a great strategy to reduce tension and promote deep relaxation throughout the body. With this relaxation strategy one would tense their muscles followed by deep breathing then progressively relax their muscles one by one. This has been shown to reduce stress and anxiety throughout the body and be associated with lower levels of pain afterwards. There are many types of things that people can do for relaxation. Physical therapists and assistants should educate their patients on the importance of relaxation and stress management on their chronic pain. They should encourage their patients to list a few activities or strategies that help them feel more relaxed and then encourage them to participate in these, especially when they are having days of more intense chronic pain or heightened stress. Activities that are creative like journaling, drawing or playing a musical instrument are also proven to clear the mind of stress response and therefore be helpful with reducing stress hormones and chronic pain.

Breathing is a part of mindfulness and relaxation strategies and is a powerful tool in managing stress and therefore managing chronic pain. Diaphragmatic and foursquare breathing are examples of controlling the breath and activating the parasympathetic nervous system to calm down the fight or flight sympathetic response. To teach diaphragmatic breathing, physical therapists should educate the patient to place one hand directly below their ribs in the other hand over their upper chest. They should be instructed to breathe into the lower hand that's below the ribs deeply and smoothly hold their breath for one count and then breathe out deeply and slowly for the same amount of time that they breathed in for. This will direct the breath and get as much air into the lungs as possible which we know will help calm the body by activating the rest and digest function of the parasympathetic nervous system. Foursquare breathing describes a technique where one would imagine a square as they breathe they would breathe in for a count of four seconds, hold for a count of four seconds, exhale to a count of four seconds and then hold again for a count of four. This is recommended to be repeated for about turn cycles of breath. With this

breathing strategy, like the diaphragmatic breathing, the goal is to activate the parasympathetic nervous system and reduce the fight or flight response. These breathing strategies are associated with lower levels of stress both felt by the person and notably reduced stress hormones of adrenaline and cortisol in the blood. Physical therapists and assistants should educate their patients that although these breathing techniques seem simple, they are very powerful and should be implemented throughout the day to see maximum results. Once a person practices these breathing strategies and uses them daily, they will see lower stress levels because the physiology within their body is less stressed.

Pharmacology ¹²

The use of opioids is only recommended for those in acute pain after surgery, trauma, or another injury. Opioids are incredibly addictive, and the medical community supports their use only for up to two weeks after an acute event like surgery. For chronic pain the following are supported for use in the literature: acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs) like ibuprofen, antidepressant serotonin norepinephrine reuptake inhibitors (SNRIs), anticonvulsants, muscle relaxants, topical agents, and medical cannabis. Acetaminophen/Tylenol can be used for pain reduction, but prolonged use can cause liver damage. NSAIDs allow pain and inflammation reduction but long-term use can cause intestinal damage. Antidepressants are helpful in reducing all sorts of pain, including fibromyalgia, low back pain, nerve damage, and arthritis. The exact mechanism is not well understood but they are theorized to increase central nervous system neurotransmitters that reduce pain signaling. Anticonvulsants may be used to help those with pain from damaged nerves. Muscle relaxants can help with muscle tension and spasms that contribute to chronic pain. Medical cannabis stimulates cannabinoid receptors in the brain which activates the brain's reward system to decrease pain.

Section 2 Key Words

Cognitive Behavioral Therapy (CBT) – focuses on identifying and challenging ideas and feelings to avoid “all or nothing” thinking patterns

Acceptance and Commitment Therapy (ACT) – a psychological reframing technique used to change the relationship to thoughts and feelings

Progressive Muscle Relaxation – a stress reduction technique which focuses on reducing muscle tension in the body, one part at a time

Section 2 Summary

Pain management takes a multidisciplinary approach and may involve PTs, pain specialists, and psychologists. It is important to look at patients as whole people needing care in many different avenues to reduce their pain, whether it be acute or chronic.

Clinical Application

Clinical application of pain and symptom management includes communication strategies through education and referrals. This section will detail each of these in order to help clinical decision making for both PTs and PTAs with respect to patient care.

Patient Communication ¹³

Patient communication with respect to pain and symptom reporting should always be neutral but encourage active coping strategies. The evidence supports the use of problem-oriented active coping strategies rather than passive emotion-oriented strategies. In action, this means using patient-centered language, including motivational interviewing strategies, to allow patients an active role in their recovery. Motivational interviewing is a goal-directed style of communication which aims to guide patients to their best interest. It has four elements including engaging the patient in a conversation to develop rapport and understanding, focusing on a dual purpose of the practitioner and patient, evoking a desire for change, and planning a goal-oriented strategy to achieve goals. With respect to pain and management of symptoms, this is done through a combination of motivational interviewing to discover a purpose and plan for change combined with decreasing any psychosocial aspects of pain.

It is important for PTs and PTAs to respond to patients effectively when patients are exhibiting pain catastrophizing and negative pain coping strategies.

Pain Neuroscience Education ^{14,15}

Pain neuroscience education, PNE, when combined with other treatments such as manual therapy and exercise has a tremendous benefit for patients with pain from all different dimensions. The goal of PE in chronic pain treatment is to communicate to the patient that just because they're having pain doesn't mean that tissue is being harmed. The goal here is to use phrases in communication with patients that validate their pain and never diminish their experience. An example of this is a statement such as "You can think of your pain as a way your body is protecting you. At this point your nervous system is very sensitive and it tells you that your body is damaged. However, that is not true anymore because Your original injury is now healed." The concept of pain does not equal harm will need to be taught to patients with chronic pain. From the beginning of PT treatment, at the evaluation, the physical therapist there should communicate that pain is normal to experience at any point in the healing process. However, the PT should mention research shows that there are psychological and sociological aspects and not just physical components pertaining to an injury itself. As the physical therapist continues to work with their patient, dialogue should include normalizing some pain as the patient progresses through mobility. Pain will likely accompany exercises to some degree, and it is important to decipher whether a chronic pain cycle is at play or whether the patient is experiencing a true exacerbation of physical injury from another source while going through rehabilitation. PNE is a helpful strategy in the wheelhouse of physical therapists and assistants when patients are catastrophizing their pain or have a negative affect towards it. In this case, practices such as mindfulness meditation, yoga, breathing exercises, and relaxing activities are very helpful in reducing overall stress, which may contribute to pain being more tolerable.

If pain neuroscience education is not enough, patients may need the help of a licensed mental health professional for counseling.

Referrals ¹⁶

The most helpful referrals for patients in pain include pain specialists, specialists in the management of comorbidities, and mental health professionals. In addition, community resources for financial, housing, and support groups may be beneficial in reducing social hardship relating to chronic pain.

Physician pain specialists may be able to offer prescriptions and injections to help manage pain. With the opioid epidemic, medical professionals can agree that strong painkillers are not effective in the management of chronic pain. However, they may have other options to help manage chronic pain in the short term to help empower the right patients into more active, long-term pain management strategies. Patients may need a referral to an orthopedic or neurological surgeon in some cases of joint and spinal pain as well. Patients should have all options on the table under the care of physical therapists but also be empowered through movement in their pain journey. Physicians who manage comorbidities, such as diabetes mellitus and heart disease, are crucial in the management of patients with chronic pain in the effort of comprehensive patient-centered care. Evidence suggests that improvements in all aspects of health will improve their tolerance to pain and even reduce the incidence of chronic pain.

Mental health practitioners are crucial in the management of psychological aspects of pain. This includes working through any trauma, depression, anxiety, poor coping strategies, or other mental health problems. Physical therapists should refer their patients after screening for mental health comorbidities to counselors who specialize in chronic pain and who practice cognitive behavioral therapy (CBT). The general steps of CBT are as follows: recognition of problematic thoughts, awareness of thoughts and emotions contributing to poor coping, identification of negative thinking patterns, and stopping the negative thoughts to replace them with constructive thoughts and action. Research demonstrates that CBT is the most effective counseling strategy for improving joint pain, back pain, and headaches.

Section 3 Key Words

Motivational Interviewing – the use of guided principles to evoke motivation and desire for a person to change a behavior

Pain Neuroscience Education – a strategy to educate patients in pain of the multidimensional nature of pain including the physical, sociological, and psychological factors

Section 3 Summary

All healthcare professionals should communicate with respect, patient-centered language, and empowerment to their patients in pain. Pain and symptom

management should be a multidisciplinary approach which may involve PTs, occupational therapists, psychologists, and specialist physicians.

Case Study

Julie is a patient who has suffered from one year of lower back pain. She is being evaluated by Rod, a physical therapist. Julie states her pain started from a muscle strain but has gotten better and worse at times in the past year. She was told by a physician at that time that nothing was damaged from imaging and there was no disc herniation or fracture. She has visited a chiropractor, an orthopedic specialist, and a pain and spine specialist, all who did not help her. She has had anxiety for years, had lost her husband two years ago to a car accident, and has three young children.

Reflection Questions

1. Applying the biopsychosocial model to Julie, what factors may be increasing Julie's predisposition for chronic pain?
2. How may Rod approach an initial conversation on chronic pain with Julie with respect to the biopsychosocial model?
3. How should Rod approach Julie's chronic low back pain treatment?

Responses

1. Biological factors include the original injury and female sex, which research supports a higher affinity for chronic pain. Psychological factors are anxiety and the trauma of losing her husband. Social factors could be isolation, her experience with other providers, and potentially financial strain with seeing multiple providers and having a single income with children.
2. Rod should begin the conversation with Julie by accepting the pain that she is feeling. However, Rod should explain that beyond the physical aspects of pain there are psychological and social aspects of pain that intensify the experience. He could explain that her original injury is beyond its expected healing time and other factors may be intensifying it. This means that with heightened stress, whether it is financial, psychological, or from social factors, pain is intensified because the fight or flight system is activated. By managing some of

this stress, Julie may be able to reduce her chronic pain due to its close relationship with the sympathetic nervous system.

3. Rod should treat Julie for her low back pain with a personalized approach to strength, stabilize, mobilize, and correct movement patterns in the area. However, he should also use strategies like deep breathing, motivational interviewing, and encourage an active role in Julie's recovery. He should explain that pain does not equal harm beyond the healing time for an injury. By doing this, he is reducing fear avoidance coping and implementing pain neuroscience education.

Conclusion

Pain is a complicated experience of combined biological, social, psychological, and behavioral components. Two individuals with the exact same injury may experience pain completely different from the acute to chronic phase based on things like their ability to cope and their stress levels. PTs and PTAs need to recognize the complexity of pain to have compassion for the experiences of their patients. However, they need to implement strategies of education around pain and symptom management to best empower their patients to take an active role in their pain management. As physical therapy helps to improve the physical aspects related to pain, such as mobility, flexibility, and muscle functioning, pain levels should decrease. If levels stay similar and patients have a difficult time dealing with their long-lasting pain, they may be experiencing a cycle of chronic pain. Physical therapists and assistants should then use pain neuroscience education and empower the patient to break this cycle.

Pain is complicated and everyone has experienced it in some form. In order to help their patients improve any pain experience, PTs and PTAs need to approach the situation with compassionate, patient-centered care. This approach will help them experience less acute or chronic pain by improving the ability to cope with the behavioral and psychological aspects of pain.

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Fear-Avoidance Beliefs Questionnaire (FABQ)
 Waddell et al (1993) *Pain*, 52 (1993) 157 - 168

Here are some of the things which other patients have told us about their pain. For each statement please circle any number from 0 to 6 to say how much physical activities such as bending, lifting, walking or driving affect or would affect *your* back pain.

	Completely disagree	1	2	3	4	5	Completely agree
1. My pain was caused by physical activity.....	0	1	2	3	4	5	6
2. Physical activity makes my pain worse.....	0	1	2	3	4	5	6
3. Physical activity might harm my back.....	0	1	2	3	4	5	6
4. I should not do physical activities which (might) make my pain worse.....	0	1	2	3	4	5	6
5. I cannot do physical activities which (might) make my pain worse.....	0	1	2	3	4	5	6

The following statements are about how your normal work affects or would affect your back pain

	Completely disagree	1	2	3	4	5	Completely agree
6. My pain was caused by my work or by an accident at work.....	0	1	2	3	4	5	6
7. My work aggravated my pain.....	0	1	2	3	4	5	6
8. I have a claim for compensation for my pain.....	0	1	2	3	4	5	6
9. My work is too heavy for me.....	0	1	2	3	4	5	6
10. My work makes or would make my pain worse.....	0	1	2	3	4	5	6
11. My work might harm my back.....	0	1	2	3	4	5	6
12. I should not do my normal work with my present pain.....	0	1	2	3	4	5	6
13. I cannot do my normal work with my present pain.....	0	1	2	3	4	5	6
14. I cannot do my normal work till my pain is treated.....	0	1	2	3	4	5	6
15. I do not think that I will be back to my normal work within 3 months.....	0	1	2	3	4	5	6
16. I do not think that I will ever be able to go back to that work.....	0	1	2	3	4	5	6

Scoring

Scale 1: fear-avoidance beliefs about work – items 6, 7, 9, 10, 11, 12, 15.

Scale 2: fear-avoidance beliefs about physical activity – items 2, 3, 4, 5.

Source: Gordon Waddell, Mary Newton, Iain Henderson, Douglas Somerville and Chris J. Main, A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain*, 52 (1993) 157 – 168, 166.

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