

# FLEX CEUs



## Mindfulness Interventions in Physical Therapy



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# Introduction

Mindfulness is a mental practice that involves bringing attention to the present moment, without judgment or attachment to thoughts, emotions, or sensations. Mindfulness practice involves being fully present in the current moment, accepting whatever is happening in that moment, with an open attitude. The practice of mindfulness and one's mindset can impact a physical therapy plan of care tremendously. Throughout the course, participants will explore the principles of mindfulness, its evidence-based benefits on physical and mental health, screening tools, and its applications in various physical therapy scenarios. PTs and PTAs will discover how to create a supportive and compassionate environment that fosters a mindfulness practice for patients coping with various conditions including chronic pain, injuries, and stress-related disorders.

## Section 1: Background

Mindfulness began as an ancient contemplative practice rooted in Buddhist traditions, as a means of achieving awareness and insight. In modern times, it has become a scientifically validated approach to enhancing human well-being. It has evolved into a powerful tool that offers profound benefits across psychological, emotional, and physical domains. With roots dating back millennia, mindfulness has come to the forefront in contemporary society, finding its place in spiritual contexts and within modern psychology, healthcare, education, and beyond. This section delves into the historical evolution of mindfulness practice, its foundational principles, and its journey into modern society.

## What is Mindfulness? <sup>1</sup>

In order to apply mindfulness-based interventions, physical therapists and assistants should understand mindfulness as a general concept. Mindfulness originates from ancient contemplative traditions and is a mental practice that involves cultivating a heightened awareness of the present moment. It invites participants to engage with their experiences in a deliberate and non-judgmental manner, fostering a deeper understanding of the mind-body connection and promoting overall well-being.

There are several components of mindfulness as a concept that lay the foundation for its practice. Each domain is described below.

**Present-Moment Awareness.** Participants of mindfulness intentionally shift their attention to the present moment, recognizing the unfolding of experiences without being preoccupied by past regrets or future concerns.

**Non-Judgmental Observation.** Mindfulness involves impartially observing thoughts, emotions, and sensations as they arise, cultivating an attitude of openness and curiosity rather than evaluation.

**Acceptance and Equanimity.** Individuals practicing mindfulness learn to accept their experiences without resistance or attachment, fostering a balanced and compassionate response to both pleasant and unpleasant circumstances.

**Focused Attention.** Participants of mindfulness often start by anchoring their attention to a specific point of focus, such as the breath or bodily sensations, which serves as a foundation for mindfulness.

**Thought Awareness.** Mindfulness involves becoming attuned to the continuous stream of thoughts passing through the mind, without becoming entangled or lost in them.

**Mindful Activities.** Beyond formal meditation, mindfulness can be integrated into everyday activities by engaging the senses fully, savoring the richness of each moment.

Empirical research has provided compelling evidence for the positive effects of mindfulness on mental and physical well-being. Neuroscientific studies reveal structural and functional changes in the brain associated with improved attention, emotional regulation, and empathy. Mindfulness-based interventions have demonstrated efficacy in reducing symptoms of anxiety, depression, post-traumatic stress disorder (PTSD), and chronic pain. Furthermore, mindfulness has been linked to increased emotional resilience, enhanced interpersonal relationships, and a greater sense of life satisfaction.

Mindfulness is a skill honed through consistent practice. Formal mindfulness meditation involves finding a quiet space, focusing on the breath or another anchor point, and gently redirecting attention when the mind wanders. Gradually, this practice extends to informal moments throughout the day, infusing ordinary activities with heightened awareness. It is a transformative practice that bridges ancient wisdom with contemporary understanding, where individuals explore the depths of their experiences, cultivate resilience, and foster a profound sense of connection to the present moment and the world around them.

## **The Origins of Mindfulness** <sup>2-5</sup>

Mindfulness finds its roots in various cultures, including Buddhism, Hinduism, Taoism, and Stoicism. Mindfulness is a core component of meditation practices aimed at developing self-awareness, insight, and spiritual growth. This section explores the foundation of mindfulness so physical therapists and assistants can better understand its evolution into mindfulness-based intervention.

## ***Buddhism Origin and Timeline***

The teachings of Buddhism trace back to the sixth to fourth century BC. At this time, Siddhartha Gautama, later known as the Buddha, began his teachings in ancient India, which began to spread around other communities. By the third century BC, the reign of Emperor Ashoka spread Buddhist teachings across India. From the first to seventh centuries CE, mindfulness and compassion focused on the context of Buddhism developed, and the teachings spread to neighboring areas, like China. By the 11<sup>th</sup> to 13<sup>th</sup> centuries, mindfulness and Zen schools began pairing mindfulness and meditation practices. By the 19<sup>th</sup> to 20<sup>th</sup> centuries, the movement gained momentum in the western hemisphere as a strategy for stress reduction and healing. In the 2000s, mindfulness and meditation began to be integrated into mindfulness-based interventions in western healthcare.

## ***Key Buddhism Teachings***

The Four Noble Truths serve as the foundational framework of Buddhist teachings, encapsulating the essence of the Buddha's insights into human existence and the path to liberation:

### **Dukkha (Suffering)**

The first truth acknowledges the existence of suffering and dissatisfaction in life. It emphasizes the impermanent and transient nature of worldly experiences.

### **Samudaya (Cause of Suffering)**

The second truth identifies the cause of suffering as attachment, craving, and clinging. These attachments lead to a cycle of suffering and dissatisfaction.

### **Nirodha (Cessation of Suffering)**

The third truth offers hope by stating that the cessation of suffering is attainable through the cessation of craving and attachment. This cessation leads to a state of profound peace and liberation.

### **Magga (Path to the Cessation of Suffering)**

The fourth truth outlines the Noble Eightfold Path, a comprehensive guide to ethical and mental development that leads to the cessation of suffering. This path includes the right understanding, right intention, right speech, right action, right livelihood, right effort, right mindfulness, and right concentration.

## ***Hinduism, Taoism, Stoicism Mindfulness Origins***

### **Hinduism**

In Hinduism, the practice of mindfulness is deeply intertwined with the concepts of self-realization, meditation, and self-awareness. While not referred to explicitly as "mindfulness" in ancient texts, the practice shares similarities with the concept. In Hinduism, practices like Dhyana (meditation) and Jnana Yoga (path of knowledge) encourage self-awareness, concentration, and introspection. Mindfulness-like practices involve focusing the mind on a single point, such as the breath or a mantra, to cultivate a state of deep concentration and self-awareness. The Bhagavad Gita, a revered Hindu scripture, also emphasizes the importance of self-control and awareness of one's thoughts and actions as a means to achieve inner harmony and spiritual growth.

### **Taoism**

In Taoism, mindfulness can be understood through the lens of Wu Wei, which translates to "effortless action." This concept encourages individuals to align themselves with the natural flow of life and to act in accordance with the Tao (the underlying principle of the universe). Mindfulness in Taoism involves being fully

present in each moment and allowing things to unfold naturally, without force or resistance. Taoist practices like meditation, qigong, and tai chi aim to cultivate a state of centered awareness, where one is attuned to the present moment and in harmony with the rhythm of nature.

## **Stoicism**

Stoicism, a philosophy that originated in ancient Greece and later influenced Roman thought, emphasizes the development of virtue, wisdom, and inner resilience. While not identical to mindfulness, Stoicism shares some common principles. Stoic philosophers advocated for self-awareness, rationality, and acceptance of things beyond one's control. The practice involves acknowledging and examining one's thoughts, judgments, and emotions to cultivate a calm and rational mindset. The Stoics encouraged individuals to focus on what is within their control, leading to a sense of inner tranquility regardless of external circumstances.

While these three traditions may not use the term "mindfulness" as explicitly as Buddhism, they offer valuable insights and practices that align with the philosophy of present-moment awareness, self-awareness, and conscious living. Each tradition provides a unique approach to cultivating mindfulness and enhancing overall well-being and serves as a foundation to mindfulness-based interventions of modern times.

## **Section 1 Key Words**

**Buddhism** – A major world religion that encompasses a range of beliefs and offers a path to personal transformation, enlightenment, and ending suffering

Taoism – A spiritual tradition that originated in China and includes a diverse range of beliefs, practices, and texts that emphasize living in harmony with the natural order of the universe

Stoicism – A philosophy of life with origins in Greece and Rome, aimed at achieving inner tranquility, wisdom, and virtue through the cultivation of reason and ethical principles

Hinduism – An ancient religion originated in the Indian subcontinent and encompasses a vast array of beliefs, practices, rituals, and philosophy

## **Section 1 Summary**

Mindfulness historically and modernly has been a powerful tool for self-discovery, self-mastery, and connection to the deeper purpose of existence. By understanding the origins of mindfulness across the traditions of Buddhism, Hinduism, Taoism, and Stoicism, providers have gained a broader perspective on its evolution and applications. This background lays the foundation for appreciating the depth and diversity of mindfulness interventions in modern contexts, forging connections between ancient wisdom and mindfulness-based interventions.

## **Section 2: Physical Therapy and Mindfulness**

Mindfulness-based interventions (MBIs) are structured programs and approaches that incorporate mindfulness practices as a central component to promote well-being, reduce stress, manage emotions, and enhance various aspects of psychological and physical health. These interventions draw on the principles and techniques derived from mindfulness traditions, particularly Buddhism, and adapt

them to modern contexts. MBIs have gained significant popularity in clinical, educational, and self-help settings including the field of physical therapy.

## **What are Mindfulness-Based Interventions <sup>1,6</sup>**

Around 20 percent of adults in the US live with a mental illness which impacts outlook on health and health behaviors. Mindfulness-based interventions (MBIs) in physical therapy involve integrating mindfulness practices into rehabilitation programs to enhance physical recovery, manage pain, and improve overall well-being. These interventions recognize the interconnectedness of physical health and mental well-being, and they utilize mindfulness techniques to support patients in their healing journey. Mindfulness-based interventions can be applied in the context of physical therapy in many ways that do not always involve a referral to another provider. This section will detail some of those contexts.

### ***Interoception***

Interoception is the sense of perceiving and interpreting internal bodily sensations. It is closely related to the concept of meta-awareness which is the experience of observing thoughts of the mind without judgment. It's the awareness of the physiological signals that the body sends, such as heartbeat, respiration rate, muscle tension, hunger, and more. Interoception plays a crucial role in regulating bodily functions and emotions, and it's closely related to mindfulness practices. Physical therapists may integrate this concept in their practice in many ways. First of all, practicing body awareness and focusing on the present moment during exercises is a great way to focus a patient's attention to their body rather than other intrusive thoughts. Any emotions or thoughts that come up can be addressed by acknowledging them and understanding how the physical and mental state of the body are interconnected. Physical therapists may

coach patients by having them narrate what is occurring in their body during exercises and encouraging them to let the thoughts pass and stay connected to the present moment.

### ***Decentering***

Decentering in mindfulness refers to the ability to observe thoughts, emotions, and sensations from a more detached and objective perspective. It involves creating a mental distance between one and one's experiences and seeing them without becoming entangled or overly identified with the experiences. This process can provide a sense of perspective and reduce the emotional intensity of thoughts and feelings. Physical therapists should coach their patients to observe thoughts, create distance from thoughts, regulate emotions, create perspective, and to practice compassion for oneself. This process takes time and effort, but in a physical therapy context, this may be applied to difficulty with certain exercises or movements that create fear or anxiety.

### ***Reperceiving***

Reperceiving involves shifting one's perspective to see things in a new light, often challenging automatic or habitual ways of perceiving and interpreting experiences. It's a process that helps individuals break free from rigid viewpoints, leading to a broader and more open-minded understanding of their thoughts, emotions, and situations. Physical therapists may at first have patients verbalize their thought processes behind opinions or judgments and offer different perspectives. The goal of reperceiving is stopping reactivity to stress or negative situations and instead shifting to a different mindset and the present moment.

## ***Nonjudgment and Nonreactivity***

Nonjudgement as a mindfulness-based intervention is not allowing oneself to feel things like guilt or shame around one's thoughts and emotions. Nonreactivity is not allowing oneself to develop patterns of negative or habitual thinking around an experience. For example, a patient with chronic pain who normally thinks of their pain as self-limiting may be coached to tolerate higher levels of discomfort, as long as it is not physically harmful.

## ***Meditation***

Meditation is a mental practice that involves focusing one's attention and eliminating the stream of jumbled thoughts that may be crowding the mind. Mindfulness meditation involves paying non-judgmental attention to the present moment, observing thoughts, sensations, and emotions as they arise without getting entangled in them.

*Body Scan Meditation* involves systematically directing attention to different parts of the body, tuning to sensations, and promoting relaxation. Physical therapists may direct patients to progressively relax areas of tension by first bringing awareness to each point of tension through tuning into the present moment, directing attention to each specific muscle and trying to release the tension through breath work. Progressive muscle relaxation involves contracting taut muscles for a few seconds and relaxing them paired with exhalation.

*Breath Awareness Meditation* is the practice of attention on the breath to observe the inhales and exhales. Specific breathwork techniques that are helpful in physical therapy practice include but are not limited to diaphragmatic breathing, 4-7-8 breathing, and box breathing. Breathwork can be used for muscle relaxation, centering oneself mentally, and can lead to improved pain tolerance among other benefits.

*Diaphragmatic Breathing (Deep Breathing)* involves consciously breathing deeply, expanding the diaphragm with inhalation, and contracting the diaphragm with exhalation. It promotes relaxation, reduces stress, and increases oxygen intake. It can also help tremendously with patients with rib dysfunction and excessive accessory respiration muscle activity (such as those with lung pathology).

*4-7-8 Breathing (Relaxing Breath)* involves inhaling through the nose for a count of four, holding for a count of seven, and exhaling through the mouth for a count of eight. It's known for inducing a calming effect and can help center oneself in times of stress and poor tolerance of discomfort.

*Box Breathing (Square Breathing)* involves inhaling, holding, exhaling, and then holding again, each for the same count (typically four counts each). It promotes relaxation and focus and creates a rhythmic pattern resembling a box.

*Guided Meditation* is a meditation practice where the participant follows verbal guidance of a meditation teacher or recorded audio that leads one through a specific meditation experience. It's a helpful approach, especially for beginners, as the guidance provides instruction, visualization, and prompts that can make the meditation process more accessible and engaging. Guided meditations can cover a wide range of topics and techniques, from relaxation and stress reduction to self-discovery and mindfulness. There are several phone apps and videos available on this topic that are even free to access for patients.

### ***Self-Compassion***

Self-compassion is a mindfulness technique that involves accepting and being at peace with oneself when negative thoughts or emotions do come up. It can be paired with other mindfulness techniques to remove feelings of guilt and negativity at the fact that these feelings come up.

## ***Mindful Movement and Body Awareness***

Mindfulness emphasizes being fully present in the moment, and this approach can greatly enhance physical therapy exercises. Physical therapists and assistants should educate patients to pay attention to their body's movements, sensations, and alignment during exercises. This increased body awareness can help improve movement quality, prevent compensation patterns, and promote proper form, reducing the risk of injury and enhancing the effectiveness of rehabilitation.

Mindfulness-based interventions integrated into physical therapy practice have many benefits. Mindfulness can reduce stress and anxiety with treatments and recovery, improve the relationship and rapport of the patient to provider through trust and communication, encourage acceptance without judgment of recovery rates, and promote improved long-term wellness. Mindfulness-based interventions are an excellent way for physical therapists and assistants to promote both physical and mental health through physical therapy bouts of care. These interventions offer a holistic approach that considers the physical, emotional, and psychological aspects of healing, contributing to better outcomes and improved quality of life for patients.

## **Statistical Support for Mindfulness Benefits <sup>7</sup>**

Mindfulness-based interventions have gained support in recent studies, backed by statistical analysis. Studies on statistical support for mindfulness benefits have been conducted in mental health settings, but when implemented correctly, can be used in physical therapy settings as well. Of course, physical therapists and assistants should refer patients who need mental healthcare to a licensed mental health professional.

Acceptance and Commitment Therapy, Mindfulness-based Cognitive Therapy, and Mindfulness-based Stress Reduction have both been proven to lower clinical

anxiety by large effect sizes, in short term studies. As far as long term, the evidence suggests ACT or MBSR are not statistically different in outcomes than usual treatment. As far as patient rated anxiety, ACT reveals no extra benefit than usual treatment in both short and long term follow-up intervals. MBCT shows short term significant improvements in patient related anxiety than usual treatment, but not at long-term intervals. MBSR and ACT are superior to usual treatment and psychoeducation in short term intervals for patients with depression. In terms of quality of life measures, MBCT and MBSR reveal significantly higher quality of life outcome measure scores than usual treatment.

The benefits of mindfulness in long term and physical therapy settings need to be studied more. However, integrating mindfulness-based interventions into practice reveals at least significant short-term benefits (around two months), which is equal to many bouts of physical therapy care. Therefore, utilizing mindfulness techniques in physical therapy practice can improve patients' outlook on their injury/condition, exercise compliance, quality of life, home exercise compliance, and many other factors.

## **How to Integrate into Practice and Document Effectively <sup>6</sup>**

The integration of mindfulness-based interventions requires a gradual introduction and consistent follow through both with intervention strategies and through documentation. Physical therapists and assistants should never attempt to perform mental health interventions like cognitive behavioral therapy or counseling. However, they may integrate mindfulness techniques for patients struggling to cope with their condition or with high levels of anxiety, for example.

## ***Assessment and Plan of Care***

The integration of mindfulness-based interventions into physical therapy practice should begin at the assessment. Physical therapists should conduct a thorough assessment of the patient's medical history, physical condition, and rehabilitation needs. They should educate the patient about the concepts of mindfulness, its benefits in physical therapy, and how it can complement their rehabilitation journey. Then, with the patient, they should collaboratively set specific goals for physical improvement and overall well-being. Documentation should include any discussions about integrating mindfulness and the patient's willingness to engage in mindfulness practices.

## ***Gradual Incorporation and Integration***

Physical therapists should start integration with simple mindfulness practices, such as diaphragmatic breathing or body scan meditation. Using mindful breathing during warm-ups or cool-downs to promote relaxation and focus and incorporate body awareness techniques during exercises to enhance posture, alignment, and movement quality are great strategies to integrate these concepts into treatment. Physical therapists should gradually introduce more advanced practices like mindful movement or progressive muscle relaxation. Documentation should include the comprehensive treatment plan, including the integration of mindfulness practices with specific frequency, duration, and specific mindfulness techniques that were used.

## ***Home Practice Recommendations***

Physical therapists should provide the patient with resources like guided meditation recordings, written instructions, or mindfulness apps. It is helpful to assign specific mindfulness exercises for daily home practice, focusing on

consistency and gradual progress with physical exercises in the home program. Documenting these as part of the education and plan of care is essential to keeping a comprehensive treatment record.

### ***Outcome Assessment***

Physical therapists should use and document the outcomes of mindfulness integration with standardized outcome measures. These are helpful to measure improvements in pain management, physical function, stress reduction, and overall quality of life. Use standardized assessment tools, where applicable, to quantify changes.

### ***Final Assessment and Summary***

Physical therapists should conduct a final assessment at the end of the therapy period to evaluate the overall impact of mindfulness practices on the patient's rehabilitation journey. This should summarize the patient's progress, focusing on both physical outcomes and their experience with mindfulness practices.

### **Outcome Measures <sup>6</sup>**

Outcome measures help to objectively capture patient data to document progress throughout a plan of care. There are several tools providers can use to also track the progress of outcomes related to implementing mindfulness-based interventions. Some of these tools are the State Mindfulness Scale for Physical Activity, the Chronic Pain Acceptance Questionnaire, the Values-Living Questionnaire, the Five Facets of Mindfulness, and the Philadelphia Mindfulness Scale. It is also helpful to screen for anxiety and depression with the Generalized Anxiety Disorder Scale and Patient Health Questionnaire-9.

## State Mindfulness Scale for Physical Activity <sup>8</sup>

This is a scale of six questions addressing mindfulness of the body and six addressing mindfulness of the mind. It should be used right after completing an exercise or movement.

<b>We are interested in what you just experienced during [insert activity]. Please indicate how much you experienced each of the following by circling one number.</b>						
		<b>Not at all</b>	<b>A little</b>	<b>Moderately</b>	<b>Quite a bit</b>	<b>Very much</b>
1.	I was aware of different emotions that arose in me.	0	1	2	3	4
2.	I noticed pleasant and unpleasant emotions.	0	1	2	3	4
3.	I noticed pleasant and unpleasant thoughts.	0	1	2	3	4
4.	I noticed emotions come and go.	0	1	2	3	4
5.	I noticed thoughts come and go.	0	1	2	3	4
6.	It was interesting to see the patterns of my thinking.	0	1	2	3	4
7.	I focused on the movement of my body.	0	1	2	3	4
8.	I felt present in my body.	0	1	2	3	4
9.	I listened to what my body was telling me.	0	1	2	3	4
10.	I was aware of how my body felt.	0	1	2	3	4
11.	I noticed the sensations in my body.	0	1	2	3	4
12.	I was in tune with how hard my muscles were working.	0	1	2	3	4

## Chronic Pain Acceptance Questionnaire <sup>9</sup>

This questionnaire is either eight or twenty items and measures how a patient accepts pain and at what level chronic pain is impacting their daily life.

### Chronic Pain Acceptance Questionnaire 8 (CPAQ-8)

Directions: Below you will find a list of statements. Please rate the truth of each statement as it applies to you by circling a number. Use the following rating scale to make your choices. For instance, if you believe a statement is "Always True", you would circle the 6 next to that statement.

Never true	Very rarely true	Seldom true	Sometimes true	Often true	Almost always true	Always true
0	1	2	3	4	5	6

1.	I am getting on with the business of living no matter what my level of pain is	0	1	2	3	4	5	6
2.	Keeping my pain level under control takes first priority whenever I am doing something	0	1	2	3	4	5	6
3.	Although things have changed, I am living a normal life despite my chronic pain	0	1	2	3	4	5	6
4.	Before I can make any serious plans, I have to get some control over my pain	0	1	2	3	4	5	6
5.	I lead a full life even though I have chronic pain	0	1	2	3	4	5	6
6.	When my pain increases, I can still take care of my responsibilities	0	1	2	3	4	5	6
7.	I avoid putting myself in situations where my pain might increase	0	1	2	3	4	5	6
8.	My worries and fears about what pain will do to me are true	0	1	2	3	4	5	6

## Values-Living Questionnaire <sup>10</sup>

The VLQ investigates how important ten domains of mindful living are to the patient. It captures the patient's perspective on how they value things like family, friendship, work, education, and spirituality on a ten-point scale. This can help

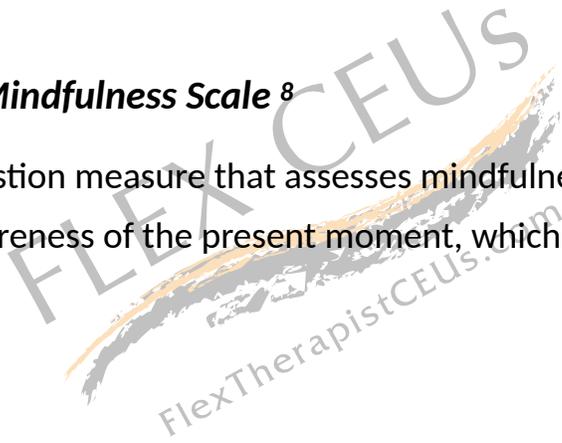
providers find aspects of patients' lives that motivate them and find deeper purpose.

### ***Five Facets of Mindfulness*** <sup>11</sup>

This is a 39-question outcome measure with five subscales that represent certain aspects of mindfulness. The subscales are observing, describing, acting with awareness, non-judging of inner experience, and nonreactivity to inner experience. It is helpful to assess baseline and follow-up measures in physical therapy practice to determine the success of integrating mindfulness-based interventions.

### ***The Philadelphia Mindfulness Scale*** <sup>8</sup>

This tool is a 20-question measure that assesses mindfulness in terms of acceptance and awareness of the present moment, which are two subscales of the questionnaire.



<b>We are interested in what you just experienced during [insert activity]. Please indicate how much you experienced each of the following by circling one number.</b>						
		<b>Not at all</b>	<b>A little</b>	<b>Moderately</b>	<b>Quite a bit</b>	<b>Very much</b>
1.	I was aware of different emotions that arose in me.	0	1	2	3	4
2.	I noticed pleasant and unpleasant emotions.	0	1	2	3	4
3.	I noticed pleasant and unpleasant thoughts.	0	1	2	3	4
4.	I noticed emotions come and go.	0	1	2	3	4
5.	I noticed thoughts come and go.	0	1	2	3	4
6.	It was interesting to see the patterns of my thinking.	0	1	2	3	4
7.	I focused on the movement of my body.	0	1	2	3	4
8.	I felt present in my body.	0	1	2	3	4
9.	I listened to what my body was telling me.	0	1	2	3	4
10.	I was aware of how my body felt.	0	1	2	3	4
11.	I noticed the sensations in my body.	0	1	2	3	4
12.	I was in tune with how hard my muscles were working.	0	1	2	3	4

Outcome measures should be utilized at initial visits, progress, and discharge to see the effect of mindfulness along with physical based measures.

## **Referrals <sup>12</sup>**

Referrals to licensed mental health professionals, like licensed counselors/psychologists and psychiatrists are often helpful in the holistic care of patients with positive mental health screening.

## ***Psychologists/Counselors***

Mental health professionals who focus on Mindfulness-Based Stress Reduction, Acceptance and Commitment Therapy, and Mindfulness-Based Cognitive Therapy are excellent choices for referral for mindfulness therapy. Clinicians trained in these techniques will offer both a top-down and bottom-up comprehensive approach for patients.

In a top-down approach, interventions primarily target higher-level cognitive processes, thoughts, and beliefs. The focus is on using cognitive control to influence emotions and behaviors. Mindfulness practices applied in a top-down manner often involve conscious awareness and regulation of thoughts and emotions. This approach assumes that by changing cognitive processes, one can influence emotional and physiological responses. In a bottom-up approach, interventions target sensory and physiological experiences first, with the assumption that these experiences will influence cognitive and emotional processes. This approach focuses on regulating physiological responses and sensory experiences to influence emotional states and thoughts. Physical therapists may collaborate with mental health professionals to incorporate some of the strategies they learn in counseling to cope with chronic pain and difficult exercises or tasks.

## ***Psychiatrists***

For patients who screen positive for mental health disorders, like depression or anxiety, referral to psychiatry is necessary. Psychiatrists will help patients with an expert mental health diagnosis, medication management, if necessary, crisis management, and connecting patients to excellent counselors.

## **ACT Model for Health Behavior Change <sup>6</sup>**

The Acceptance and Commitment Therapy (ACT) Model for Health Behavior Change is an excellent tool to help providers promote behavioral change in patients. It is a form of cognitive-behavioral therapy that combines mindfulness and behavior change strategies. ACT does not aim to eliminate distress or negative emotions. Instead, it focuses on changing the relationship individuals have with their internal experiences. Through mindfulness, acceptance, and commitment to values-based actions, individuals learn to create a meaningful and purposeful life, even in the presence of challenges.

The ACT (Acceptance and Commitment Therapy) model can be adapted to facilitate health behavior change by addressing the psychological barriers and challenges that often arise when individuals attempt to adopt healthier habits. This section will explore how the core processes of the ACT model can apply to health behavior change and how physical therapists and assistants may incorporate concepts such as mindfulness-based intervention.

### ***Human Experience***

In the context of health behavior change, this process involves becoming more aware of one's thoughts, emotions, sensations, and triggers related to health behaviors. Mindful awareness allows individuals to identify the factors that influence their behaviors, such as cravings, stress, or negative self-talk. Physical therapists may inquire what thoughts and emotions occur before patients make certain health behavior decisions. For example, inquiring about what thoughts occur before a patient skips their exercise program for a week may give insight into how to adjust the treatment plan or educate the patient.

## ***Experiential Avoidance***

Experiential avoidance in health behavior change refers to avoiding uncomfortable sensations associated with making changes. For example, someone trying to lose weight may avoid the discomfort of exercising regularly. In ACT, individuals learn to approach these discomforts with an attitude of acceptance and mindfulness, acknowledging that temporary discomfort can lead to long-term benefits.

## ***Values***

Clarifying one's values in the context of health behavior change involves identifying what aspects of health and well-being are truly important. This might include values like vitality, longevity, being an active parent, or being present for family milestones. Aligning behavior changes with these values provides intrinsic motivation and a deeper sense of purpose and physical therapists can facilitate this thought process by inquiring about what motivates a patient.

## ***Acceptance***

Acceptance in health behavior change means acknowledging that setbacks, cravings, and challenges are part of the process. This is especially true in the nonlinear process of recovery in physical therapy. Instead of becoming discouraged by slip-ups, individuals can accept them as natural occurrences and use them as opportunities for learning and growth.

## ***Fusion***

Fusion, or cognitive fusion, can manifest as believing negative self-talk or self-limiting beliefs about one's ability to change. For health behavior change, fusion might involve thoughts like "I'll never be able to do this" or "I'm not disciplined

enough." ACT helps individuals recognize these thoughts as mental events and not absolute truths, allowing them to take actions in line with their values despite such thoughts.

### ***Larger Self***

Developing a sense of self beyond the immediate discomfort or urges related to health behaviors is crucial, whether recovering from physical challenge in physical therapy or any other challenge. By connecting with a larger sense of self that prioritizes well-being, individuals can distance themselves from immediate gratification and make choices that align with their long-term goals.

Applying the ACT model to health behavior change involves guiding individuals to be more mindful of their experiences, fostering acceptance of discomfort and setbacks, clarifying values that drive healthy choices, and creating a psychological space to make committed actions toward health goals. This approach helps individuals develop resilience, persistence, and a more balanced relationship with the challenges of adopting and maintaining healthy behaviors.

### **Section 2 Key Words**

Interoception – The sensory and cognitive process that involves perceiving and understanding the internal sensations of the body

ACT – Acceptance and Commitment Therapy; focuses on promoting psychological flexibility and enhancing individuals' ability to live a meaningful life

MBSR – A structured mindfulness program designed to help individuals manage stress, anxiety, pain, and various psychological and physical challenges

MBCT - An evidence-based therapeutic approach that combines principles of mindfulness with techniques from cognitive therapy

## **Section 2 Summary**

Mindfulness-based interventions (MBIs) encompass structured programs and methods that prominently feature mindfulness practices at their core. These practices are harnessed to foster overall wellness, alleviate stress, regulate emotions, and enrich diverse facets of mental and physical health. They have benefits for physical therapists and physical therapist assistants to implement into practice with many patients.

## **Section 3: The Impact of Mindfulness on the Body**

Mindfulness has many physical health and mental health benefits, as long as patients are receptive to trying various techniques. This section will explore those benefits and the application of mindfulness for chronic pain, sports performance, stress management, and overall well-being.

### **Physical Benefits**

Physical benefits of mindfulness occur in the nervous, immune, digestive, cardiopulmonary, and lymphatic systems. This section will explore the benefits of each of these systems, making mindfulness a practice that has a positive effect on the entire body.

## **Nervous System** <sup>13</sup>

Mindfulness practices have profound effects on the autonomic nervous system (ANS), the vagus nerve, and neurocognitive functions. These effects contribute to improved emotional regulation, stress reduction, and overall well-being.

The autonomic nervous system (ANS) controls involuntary bodily functions like heart rate, digestion, and respiratory rate. Mindfulness impacts the ANS by promoting a balance between its two branches: the sympathetic (fight or flight) and parasympathetic (rest and digest) systems. Mindfulness helps regulate the sympathetic nervous system, reducing its overactivation. This leads to lowered stress responses, decreased heart rate, and reduced release of stress hormones like cortisol. Mindfulness activates the parasympathetic system, promoting relaxation and lowering heart rate. This is linked to the vagus nerve, often referred to as the "vagal tone," which influences the parasympathetic response. The vagus nerve is a main contributor in the parasympathetic nervous system and is associated with relaxation, emotional regulation, and overall well-being. Mindfulness practices increase vagal tone, which improves parasympathetic activity. A higher vagal tone is linked to better emotional regulation, stress resilience, and heart health.

Mindfulness practice induces changes in brain structure and function, impacting neurocognitive functions. Mindfulness activates the prefrontal cortex, responsible for executive functions like attention, impulse control, and decision-making. This leads to improved cognitive control and emotional regulation. Mindfulness enhances emotion regulation by strengthening connections between the prefrontal cortex and the amygdala. This reduces emotional reactivity and promotes a more balanced response to stressors. Mindfulness helps create neuroplasticity, allowing the brain to rewire itself based on experiences. This can lead to improved learning, memory, and adaptability. Regular mindfulness

practice has been associated with increased gray matter density in brain regions linked to emotional regulation, attention, and perspective-taking.

### ***Immune System*** <sup>14</sup>

The immune system is impacted by mindfulness interventions in many ways. First of all, it can reduce chronic stress. Chronic stress can suppress the immune system, making the body more susceptible to illnesses. Mindfulness practices promote relaxation and reduce the production of stress hormones like cortisol. By managing stress, mindfulness helps maintain a more robust immune response. Mindfulness has been linked to reduced inflammation in the body. Chronic inflammation is associated with various health issues, including autoimmune diseases and chronic conditions. By reducing inflammation, mindfulness indirectly supports immune system function. Some studies suggest that mindfulness practices can enhance the activity of immune cells like natural killer cells and lymphocytes. These cells play key roles in identifying and targeting pathogens. Mindfulness might enhance the body's response to vaccines. Research has shown that individuals who practice mindfulness have better vaccine-induced immune responses. Mindfulness practices can influence the production of cytokines, which are signaling molecules that regulate immune responses. Balanced cytokine levels contribute to a well-regulated immune system. Mindfulness also has impacts on the lymphatic system through the reduction of systemic inflammation, the regulation of stress hormones, and breathing to stimulate lymphatic flow.

### ***Digestive System*** <sup>15</sup>

The gut and brain are closely interconnected through the gut-brain axis, and mindfulness can influence various aspects of digestion. Mindfulness practices reduce the production of stress hormones like cortisol. Chronic stress can

negatively impact digestion by causing issues like slowed transit time, indigestion, and altered gut microbiome composition. By reducing stress, mindfulness supports a healthier digestion. Mindfulness practices can regulate gut motility and help to prevent issues like constipation or diarrhea that may arise due to stress-related disturbances in gut motility. Mindfulness may improve nutrient absorption by promoting a relaxed state during meals. Stress can lead to blood flow redirection away from the digestive system, affecting nutrient absorption. Mindful eating allows for optimal nutrient uptake and less of a tendency for emotional eating.

### ***Cardiopulmonary System*** <sup>16</sup>

Mindfulness practices can have positive effects on the cardiopulmonary system. Mindfulness practices promote relaxation, stress reduction, and overall cardiovascular and respiratory well-being.

Mindfulness practices activate the parasympathetic nervous system, leading to reduced heart rate. This contributes to overall heart health and lowers the risk of cardiovascular issues. Mindfulness helps regulate blood pressure by reducing stress-induced vasoconstriction and promoting relaxation of blood vessels. Mindfulness enhances heart rate variability, the variation in time between consecutive heartbeats. High heart rate variability is associated with better cardiovascular health, indicating a flexible and adaptive heart rate response. Chronic stress is linked to inflammation, which can contribute to cardiovascular disease. Mindfulness practices lower stress and reduce inflammation markers, supporting heart health.

Mindfulness practices encourage deep, diaphragmatic breathing. This helps regulate respiratory rate and enhances oxygen exchange, leading to more efficient breathing patterns. Mindfulness encourages full and conscious breaths, promoting

optimal lung expansion and preventing shallow breathing patterns that can affect lung health. Mindfulness can help manage stress-related breathing disorders like hyperventilation or shallow breathing. By promoting relaxation and breath awareness, these practices enhance respiratory function.

## **Mental Health Benefits** 7,14

The mental health benefits of mindfulness are quite profound and researched since the origins of mindfulness practice, in ancient times. Beyond improving mental health disorders like depression, anxiety, panic disorders, and more, this section will outline other positive effects.

### ***Stress Reduction***

Mindfulness practices activate the relaxation response, reducing the production of stress hormones like cortisol. This leads to decreased physiological and psychological stress, helping individuals manage the challenges of daily life more effectively.

### ***Emotion Regulation and Reduced Impulsivity***

Mindfulness enhances emotional regulation by increasing awareness of emotional triggers and responses. This allows individuals to respond skillfully to emotions rather than reacting impulsively.

### ***Improved Concentration and Attention***

Mindfulness training enhances attention and focus by training the mind to stay present. This is particularly valuable in a world filled with distractions.

## ***Cultivation of Resilience and Pain Tolerance***

Mindfulness supports psychological resilience by helping individuals adapt to stress and adversity. By developing a non-reactive attitude, individuals can navigate challenges with greater ease, including improving pain tolerance.

**Body-Mind Connection:** Mindfulness helps individuals connect with their bodies, fostering a sense of embodiment. This connection contributes to improved self-care and overall well-being.

## ***Sleep Improvement***

Mindfulness techniques promote relaxation and reduce rumination, leading to improved sleep quality and reduced sleep disturbances. Improved sleep is linked with better outcomes in physical therapy due to improving physical and mental health.

## **Chronic Pain and Sports Performance** <sup>17,18</sup>

The benefits of mindfulness may be applied to specific populations, including those with chronic pain and those participating in high-level sports. Physical therapists integrating mindfulness-based interventions and/or referring these patients to mental health professionals will likely see better outcomes through physical therapy care.

## ***Chronic Pain Management***

Chronic pain is a common concern for many patients undergoing physical therapy. Mindfulness-based interventions offer tools to manage pain by promoting a shift in the perception of pain. Through mindfulness practices, individuals learn to

observe pain sensations without judgment, reduce their emotional reaction to pain, and develop a greater sense of control over their experience. This can lead to increased pain tolerance, improved coping strategies, and a better ability to engage in rehabilitative exercises.

### ***Sports Performance***

Athletes who incorporate mindfulness techniques into their training regimen through guidance from a healthcare provider often experience improved concentration, reduced anxiety, and better emotional regulation. Mindfulness cultivates present-moment awareness and helps athletes focus on the task at hand. This heightened concentration is particularly valuable in sports that require split-second decision-making and precise execution. Mindfulness practices can reduce anxiety and nervousness around competition. In addition, athletes may experience better post-game recovery by promoting relaxation and reducing muscle tension and improved chronic pain tolerance related to injury.

### **Section 3 Key Words**

Vagal Tone - Reflects the balance between the sympathetic nervous system and parasympathetic nervous system activity

Gut-Brain Axis - Refers to the communication pathway between the gastrointestinal (GI) tract and the central nervous system

### **Section 3 Summary**

By fostering a deeper awareness of the present moment, mindfulness has the power to improve various physiological systems, ultimately contributing to enhanced overall health and vitality. It can help improve everything from mental

health to sleep quality, and emotional regulation. Patients who are exposed to mindfulness in physical therapy may utilize it in other aspects of their lives beyond injury recovery.

## Case Study

Sarah, a 45-year-old office worker, has been struggling with chronic lower back pain for the past five years. Despite multiple treatments, her pain remains persistent, impacting her daily activities and overall quality of life. Sarah arrives at a physical therapy evaluation frustrated by her history of back pain and her years of trying physical therapy, chiropractic services, and other pain-relieving techniques. Sarah mentions that she is quite stressed on a daily basis, raising three children, and working long hours.

## Reflection Questions

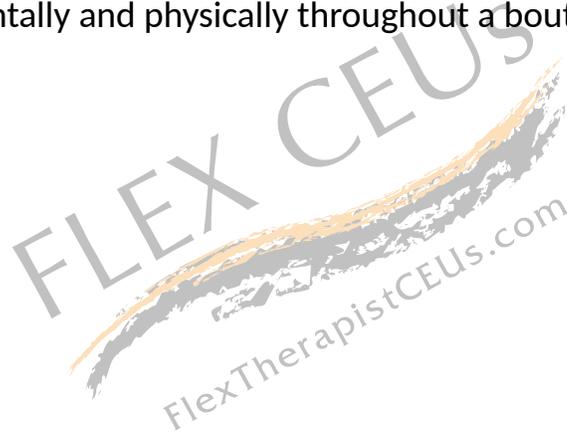
1. What outcome measures might a physical therapist use to capture Sarah's outlook on her pain?
2. What mindfulness-based interventions would be particularly useful in Sarah's case?
3. What additional intervention could Sarah's physical therapist make given Sarah's high level of stress and pain?
4. What outcomes at the end of Sarah's physical therapy bout of care for her chronic pain would indicate a successful integration of mindfulness-based intervention?

## Responses

1. The PT could use the CPAQ to capture Sarah's chronic pain outlook, traditional functional based back pain measures like the Oswestry Disability Index, and mindfulness-based outcome measures due to Sarah's focus on her pain, like the Five Facets of Mindfulness and the Philadelphia Mindfulness Scale.
2. Body scan meditation without judgment would allow Sarah to focus individually on different body parts, widening her focus away from her back. Breath work and awareness would help promote muscular relaxation and connecting to any emotional basis for pain. Other concepts the physical therapist could train Sarah in are decentering and self-compassion. Over time, Sarah should be able to accept her back pain, turn her focus away from it, and experience far less frustration with her pain.
3. Sarah may benefit from a referral to mental health professionals (counseling and/or psychiatry) if she screens for mental health disorders like anxiety and depression. In addition, Sarah's PT should assess Sarah's openness to mindfulness-based interventions to ensure she would see value in integrating these techniques into physical therapy care.
4. Sarah scoring well in mindfulness outcome measures and both objective and subjective improvement in her outlook, narrative surrounding her back pain, and improved mental health outcomes would all demonstrate success in utilizing mindfulness-based interventions. Improvements in her chronic pain levels, especially due to several years of no improvement, would also point to the success of using mindfulness in her plan of care.

## Conclusion

Mindfulness is a mental practice that has benefits for mental health, physical health, and wellbeing. As explored in this course, there are many paths to mindfulness practice. Physical therapists and physical therapist assistants who integrate mindfulness principles into their physical therapy practice offer another avenue for patients to build awareness around their recovery process. Patients who benefit most from mindfulness-based interventions include those with chronic pain conditions, poor stress management or high stress levels, and those who screen positive for mental health disorders. Therapists should build knowledge of mindfulness-based interventions to offer another strategy for patients to heal mentally and physically throughout a bout of physical therapy care.



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