



Enhancing Pain Relief: Understanding Trauma Physiology

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Purpose Statement

A continuing education course to explore the intimate relationship between trauma, stress, and pain for better patient outcomes.



If you are a healthcare provider, you have likely encountered a client with trauma.



If you are a healthcare provider who works with chronic pain, there is a high likelihood you'll encounter clients with trauma.

“Trauma–Stress–Pain Trifecta”



What are our objectives?

Objectives

- Recall how stress and the vagus nerve impact pain sensitivity.

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- Identify how our psychology can impact pain and recovery.

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- Identify how our psychology can impact pain and recovery.
- Define neuroplastic pain and how it can present.
- Define somatics and how to implement it for greater pain relief.



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Jess Mather, CPT, LPTA, SFG, FRCms, FMS, is a strength and rehabilitation professional dedicated to helping individuals experience less limitation, pain, fear, and insecurity in their bodies. With over 13 years of experience, she has supported thousands of clients aged 9 to over 99, witnessing firsthand the body's remarkable ability to adapt, strengthen, and heal.

Since 2015, Jess has operated a successful telehealth practice, offering private coaching, courses, and group programs to clients in over a dozen countries. Her expertise extends to educating other therapists and healthcare providers on effectively supporting patients with complex chronic pain, trauma, and stress.

I want this content to fundamentally change
how we look at complex cases of pain.

Chapter Review

Chapter 1: Trauma and Pain Sensitivity

- Diving into the connections between trauma, stress, and complex chronic pain

Chapter 2: Pain Perception

- Reviewing the complexities of chronic pain and how we can shift a body from a state of alarm to a state of ease

Chapter 3: Psychology of Pain

- Diving into the psychology behind pain and human behavior to help our clients move forward consistently

Chapter 4: Somatic Practices for Regulation

- Taking a look at how somatic practices work to regulate the nervous system

Chapter 5: Resilience in Movement

- Discovering the principles and strategies to help clients move with less limitation and pain

Let's begin!

Chapter 1:

The Trauma–Stress–Pain Trifecta

Chapter 1: The Trauma–Stress–Pain Trifecta



Diving into the connections between trauma, stress, and complex chronic pain



The Biopsychosocial Model



“The biopsychosocial approach describes pain as a multidimensional, dynamic integration among physiological, psychological, and social factors that influence one another.”

The BPS model was touted heavily by George L. Engel in 1977, who specialized in chronic inflammatory diseases.

“All three levels —biological, psychological, and social, must be taken into account in every health task.”

“The biopsychosocial model has led to the development of the most therapeutic and cost-effective interdisciplinary pain management programs, and makes it far more likely for the chronic pain patient to regain function and experience vast improvements in quality of life.”

—*Robert Gatchel, PhD*



The biopsychosocial model takes a trauma-sensitive approach by “regard for the human being carrying the pain around.”

When applying the BPS model, the inquiry might be, “is this just a physical or structural problem, or could there be something else going on?”



The BPS model is referenced in the International Classification of Diseases and applies to all pain-related conditions.



Chronic pain means pain in one or more body systems or site that persists or recurs for longer than 3 months.



Chronic pain, or pain that persists for longer than 3 months, is a condition that impacts **billions** of people across the world.



Pain is a message, not a damage meter.



“The alarm bells of pain.”

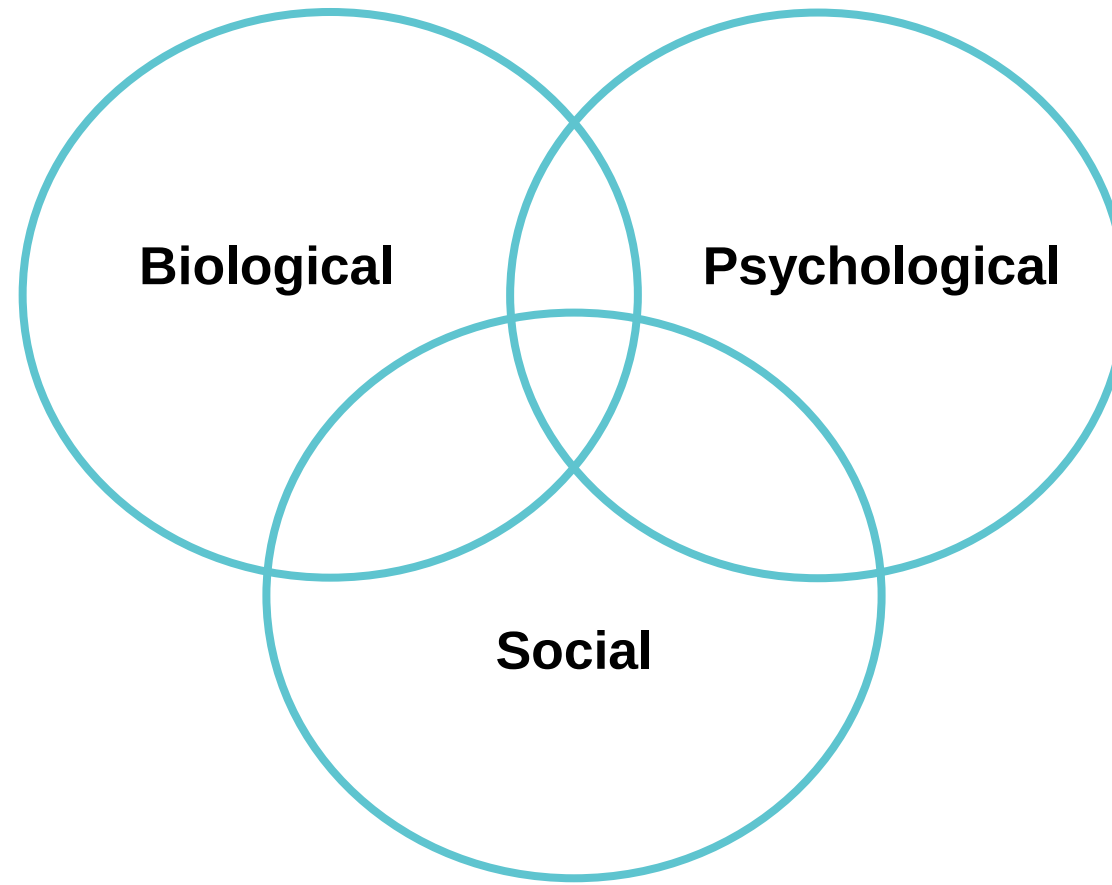


Pain is an action signal—it asks us to change something.



Pain causes us to seek help, avoid danger, or rest.

The Biopsychosocial Model



Biological Factors

- Biomechanics
- Physical fitness
- Genetics
- Tissue injury
- Damage or disease
- Physical health problems

Biological Factors

- Immune function
- Neurobiology or neurochemistry
- Medication effects
- Sex differences and hormones
- Nervous system characteristics
- Lifestyle (sleep, alcohol use, weight)

Psychological Factors

- Mood
- Depression
- Anxiety
- Perceived injustice
- Personality
- Anger
- Expectations

Psychological Factors

- Distress
- Coping styles
- Fear
- Catastrophizing
- Beliefs
- Self-efficacy
- Acceptance

Social Factors

- Social expectations
- Social support
- Education status
- Living status
- Work factors
- Financial issues
- Substance abuse
- Stigma

Social Factors

- Loneliness
- Social disadvantage
- Cultural barriers
- Isolation
- Past pain experiences
- Health insurance
- Disability compensation
- Discrimination

“The pain is not where the problem is.”

—*Dr. Perry Nickelston, DC*

Gate Control Theory

Gate Control Theory

- **Gate control theory was founded in 1965 and explored our perception of pain.**
- If you've ever bumped your leg into something and experienced an acute painful sensation, you might have naturally rubbed that area. This is gate control theory at work.

Gate Control Theory

- When a painful stimulus occurs, information is rapidly sent to the spinal cord. When we rub the painful area, we begin to stimulate various therapeutic touch receptors.
- This could be pressure, vibration, massage, foam rolling, or light touch.
- As this new stimulation comes in, the spinal cord suddenly is contending with new information. Our touch stimuli triggers a chemical release, interrupting the pain stimulus and naturally modulating our perception of it.

Gate Control Theory

- **This interruption of the pain stimulus is referred to as “closing” the pain gate.**
- There are multiple non-noxious stimuli that can “close” these gates and lessen the experience of pain.
- There are a variety of noxious stimuli that can “open” these gates, increasing pain sensitivity.

Gate Control Theory



Closing the gate = less pain



Opening the gate = more pain

Gate Control Theory

- **Stress, anxiety, anger, worry, loneliness, hopelessness, frustration, or depression can “open” these pain gates.**
- Other factors that allow for more pain signaling would be lack of activity, injury, muscle tension, and poor fitness.

Gate Control Theory

- **To “close” these gates, and therefore decrease pain signaling, relaxation and regulation are a primary objective.**
- Having hope and a positive outlook has also been shown to decrease pain perception.
- Physical activity, touch, acupuncture, and massage are other modalities that also help to “close” these pain gates.

Gate Control Theory

- **Having these metaphorical “gates” that open and close, which are neurological receptors in action, guard us from experiencing pain.**
- This is a helpful survival mechanism to give us the ability to escape from a predator or threat without being consumed with pain.

Neuromatrix Theory of Pain



Pain is caused by nerve impulse patterns generated by a neural network called the “body–self neuromatrix.”



The areas of the brain involved in pain and subsequent behavior are extensive.



Neuron loops between the thalamus, cortex, and limbic system form a “neuromatrix.”

Cognitive-Evaluative

- Personality
- Past experiences
- Cultural learning
- Attention
- Expectation
- Anxiety
- Depression

Sensory-Discriminative

- Cutaneous sensory input
- Somatic input (trigger points)
- Visceral, visual, or vestibular input

Motivational-Affective

- HPA system
- Noradrenalin-sympathetic system
- Immune system
- Cytokines
- Limbic system
- Endogenous opiates



A major clue to the relationship between stress and pain is that many autoimmune diseases are also pain syndromes.

Pain Perception

- Cognitive-evaluative perception
- Sensory-discriminative perception
- Motivational-affective perception

Action Programs

- Involuntary action patterns
- Voluntary action patterns
- Social communication
- Coping strategies

Stress-Regulation Programs

- Cortisol levels
- Noradrenalin levels
- Cytokine levels
- Immune system activity
- Endorphin levels

“The stress regulation system, with its complex, delicately balanced interactions, is an integral part of the multiple contributions that give rise to chronic pain.”



What is trauma?



How does trauma happen?



The American Psychological Association states, “A traumatic event is one that threatens injury, death, or the physical integrity of self or others and also causes horror, terror, or helplessness at the time it occurs.”



Trauma isn't necessarily the event itself, but the response that our body, brain, and nervous system have to that event.



Trauma changes us.



“Trauma is not what happens to you, it's what happens inside of you as a result of what happened to you.”

—*Dr. Gabor Maté*



Trauma occurs when a stimulus, stress, or threat exceeds a system's capacity to withstand it.



The National Council for Mental Well-Being states that 70% of adults in the United States have experienced some type of traumatic event at least once in their lives.



At least 223.4 million people in America have experienced trauma.



The National Council for Mental Well-Being reports that in public behavioral health, over 90% of clients have experienced trauma.



Two in three patients who experience a traumatic injury have chronic pain for at least 1 year following.



Approximately 15% to 35% of patients with chronic pain also have PTSD.



Survivors of physical, psychological, or sexual abuse are at higher risk for developing chronic pain later in life.

The Role of Early Life Trauma in Chronic Pain Patients

Completed Stress Cycle

Stressful event



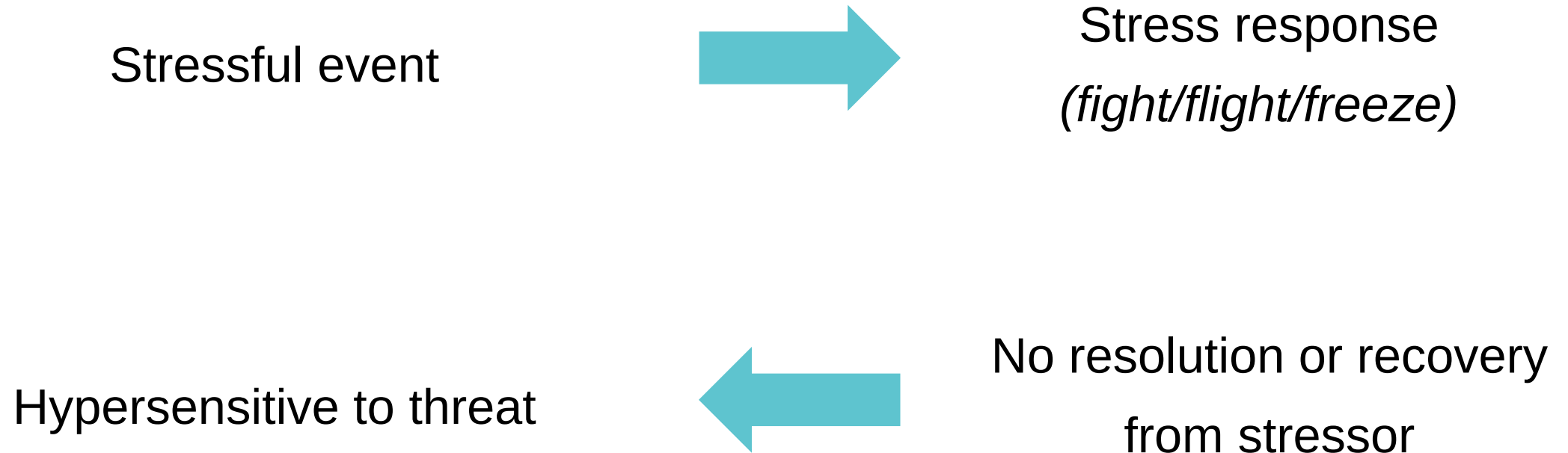
Stress response
(fight/flight/freeze)

Return to safety/homeostasis



Successful survival
(biological completion)

Incomplete Stress Cycle





Events that can leave a traumatic imprint are occurrences where our physiology didn't get an opportunity to complete the stress response.



When this stress response doesn't get completed or if it's prolonged, our physiology remains functioning under a state of threat.



Chronic and unconscious orientation toward protection



Living in a state of survival



According to the neuromatrix theory of pain, treatment focuses on reassurance that the body is not in danger.



The body seeks safety.



It also involves “re patterning” the neuromatrix to reduce or eliminate pain.



Chronic pain and trauma are old protective patterns.



Repatterning loops of protection and pain to safety and relief



Studies have demonstrated that chronic inflammatory diseases are associated with reduced parasympathetic and increased sympathetic activity.

The PPP Method



Chronic pain is a psychological, physiological, and physical event.



“The Body Keeps the Score.”

Psychological



What is the story our client is telling themselves about their pain?

- “I’m broken.”
- “I need to be fixed.”
- “My body is screwed up.”
- “My body is damaged.”
- “This can’t get better.”
- “I’m too far gone.”



They might be hyper-focused on their “slipped disc,” their “jacked up knee,” or their “spinal damage.”

“Bad” side > Affected side

“Weak” side > Less strong side



When clients are educated on the many facets that can play a role in pain, it can provide a new window of hope and relief.

The “What Is” Practice



What is factual? What is story?

“My back has damage.”

“My back has damage so I can never be pain-free.”



Give them *hope*.



Give them *evidence*.

“Whether you think you can or can’t, you’re right.”

—*Henry Ford*



Pain is complex.

“The body is under no obligation to make sense to us.”

—*Perry Nickelston, DC*

Physiological

How can we support the autonomic nervous system and subcortical brain structures to decrease stress, inflammation, and pain sensitivity?



How can we bring their body back to safety and decrease the “alarm bells” of pain?

Exploring the Vagus Nerve

Exploring the Vagus Nerve



“A vegetative function”

Exploring the Vagus Nerve

- **Vagus nerve stimulation (VNS)** is being studied for its benefits in pain, inflammation, and stress.
- **Invasive protocol:** Placing an electrode around the cervical vagus nerve, which connects to an implanted generator
- **Noninvasive protocol:** Stimulating the cervical vagus nerve through the skin

Exploring the Vagus Nerve

- Decreases RA disease activity
- Limits fatigue in Sjoren's syndrome
- Limits fatigue in systemic lupus
- Decreases fibromyalgia pain
- Decreases pain in osteoarthritis
- Alleviates refractory epilepsy
- Relieves depression symptoms

Exploring the Vagus Nerve

1. The vagus nerve connects to brain regions associated with pain processing.
2. The vagus nerve has anti-inflammatory properties that may provide pain-inhibitory effects.



The vagus nerve is part of the parasympathetic branch of the nervous system, emerging directly from our brain stem rather than through our spinal cord.



Researchers are currently studying VNS parameters such as duration, intensity, or optimal stimulation routes through many clinical trials.



“Autonomic equilibrium could be restored by stimulation of the vagus nerve.”



To find the vagus nerve, place your fingers in the soft space right below and behind your ear lobes.

To continue following this nerve's route, trace your hands down the sides of your neck and down to your collarbones where it travels underneath.



From there, trace your hands down your chest toward your heart, your lungs, and down your trunk to your spleen, intestines, liver, and kidneys.



The vagus nerve innervates with all of the internal organs in your abdominal cavity except for the adrenal glands.

Since the vagus nerve is part of the parasympathetic branch of the autonomic nervous system, it has a “slowing down” quality by inhibiting excessive sympathetic activity.

Evidence-Based Practice: Slow Breathing Techniques

Slow breathing techniques improve the coordination between the autonomic nervous system, brain function, and psychological flexibility, connecting parasympathetic and central nervous system activities involved in emotional regulation and overall well-being. These techniques appear to favor the parasympathetic autonomic system over the sympathetic system, with this effect mediated by vagal activity (Zaccaro et al., 2018).

Exercise:

- Parasympathetic Breath Cycles

Exercise:

- Vagus Nerve Tapping

Healthcare Consideration

Chronic stress reduces vagal tone, leading to increased pain sensitivity. Understanding this connection allows for more effective pain management strategies. Healthcare providers should focus on enhancing vagal tone through slow breathing, relaxation techniques, and other vagal toning exercises to reduce stress and pain in patients.

Physical

How can we support the physical body to move with less tension, compensation, and pain?



“It’s hard to move well when you’re used to moving from survival.”

—*Perry Nickelston, DC*

The PPP method states we need to repattern how the brain, nervous system, and body are **perceiving** and therefore *responding* to input so we don't activate and *reinforce* the old neural protective patterns of pain.

Chapter 2:

Pain Perception

Chapter 2: Pain Perception



Reviewing the complexities of chronic pain and how we can shift a body from a state of alarm to a state of ease.



A man goes to the hospital because he stepped on a huge nail at work that penetrated through his shoe ...



He is in hysterics and terrible pain. He goes to the hospital to get evaluated and treated.



The doctor took off his shoe to reveal that the nail never penetrated his skin —it went right between his toes.



“Pain is like the light on top of the Christmas tree —there is a lot going on in and under the tree.”



Nociception: The detection of painful stimuli



How is pain processed?



Nociceptors are nerve endings that begin the process of experiencing pain.

- **Cutaneous nociceptors:** Respond to mechanical and thermal stimuli through the skin (burning your hand, smashing your finger)
- **Muscle and joint nociceptors:** Respond to mechanical stimuli (joint stretching, pressure applied to the capsule)
- **Visceral nociceptors:** Respond to mechanical, heat, and chemical stimuli in the organs (distention)
- **Silent nociceptors:** Respond to tissue injury through a noxious stimuli (1/3 of nociceptors innervating the skin, joints, and viscera are silent)

- **A-Delta Fibers (high intensity mechanical):** Sharp, more localized fast pain (initial perception of pain)
- **C Fibers:** Dull, burning, aching, diffused, slow pain

Four Phases of Pain Processing

- Transduction
- Transmission
- Modulation
- Perception

- You hit your head.
- That input is transmitted by specific nerves to the spinal cord.
- The primary afferent nociceptor, which involves the sensitive nerve ending in the tissue and the nerve attached to it, contacts second-order pain transmission neurons in the spinal cord.

- The second-order cells send the message to higher centers, including the brain stem, thalamus, somatosensory cortex, and limbic system.
- Pain perception may primarily involve the thalamus and cortex.

- Transduction is when tissue-damaging stimuli activates nerve endings (peripheral input).
- Transmission is when this message is sent up the spinal cord to the brain.
- Modulation is a neural process that helps reduce activity in the transmission system.



Perception is the subjective analysis of these sensory signals where our brain makes a decision about what we feel.



We are always working in one of these four processes when using any pain modality.



“Pain is an opinion of the brain.”

- Attention
- Expectation
- Past experiences
- Limbic system



It's harder to feel hurt when you feel safe, happy, and loved.



How does your client perceive their pain?



Feel free to close your eyes and picture your full body.
When you get to the body parts that are painful, what do
you see or notice?



“A cord wrapping around my neck.”



“My knee feels huge.”



“Fire all across my back.”

Is it neuroplastic pain?



We know structural damage is not always correlated to the amount of pain someone is in.

“Neuro” refers to the brain and nervous system.

“Plastic” refers to an ability to change or develop.



“Neurons that fire together, wire together.”

- Have medical treatments been ineffective or only given temporary relief?
- Did the pain come on during a stressful time in life?
- Do you have (or have had) symptoms in multiple parts of the body?
- Is your pain inconsistent in terms of where and when it appears and how severe it is?

- Do you think about the pain often or all the time? Does it worry you throughout the day?
- Does your pain ebb and flow depending on your stress?
- When your symptoms first started, did they come out of nowhere?
- Is your pain chronic and persisted beyond the expected time frame for healing?

- Does your pain flare from triggers that have nothing to do with your body?
- Is your pain symmetrical?
- Do you have delayed pain?
- Do you have a history of childhood trauma or chronic feelings of being unsafe and unprotected as a child?

- Are you a perfectionist, a people-pleaser, or anxious?
- Is there no physical diagnosis that can explain the symptoms?
- **“We can’t find anything wrong.”**



“It’s all in your head.”

- The pain is not always where the problem is.
- Pain does not always point to a structural problem or that something's "wrong."
- Chronic pain can be seen as a **conditioned protective response**.

- Pain is more likely when the area affected is closely tied to our well-being.
- For example, musicians have been found to experience more pain from a finger prick than others who don't depend on their fingers as much.

Many studies have reported that pain-free people live with a whole host of physical damage. In fact, 52% of individuals without pain had at least one MRI abnormality.

There have been studies that observed imaging in pain-free participants on their hips, knees, shoulders, and backs.

Large portions of these individuals displayed abnormalities, tears, and degeneration that were absent of pain.

Case Study

- Sarah is a 42-year-old woman who had chronic back pain for years without any clear answers from her medical team and no significant findings on her imaging. Treatments like physical therapy or chiropractic care did not provide her long-lasting results, ramping up feelings of fear and hopelessness. Through learning about neuroplastic pain and adopting somatic techniques to down-regulate the threat response, her pain significantly diminished, and she regained her mobility.

Self-Reflective Question

What was the key factor that helped Sarah reduce her chronic back pain?

- A.** Focusing solely on physical therapy exercises
- B.** Avoiding any movement that caused discomfort
- C.** Understanding that her pain was linked to the brain's response to perceived danger
- D.** Continuing to search for a physical cause for her pain

Self-Reflective Question

What was the key factor that helped Sarah reduce her chronic back pain?

- C. Understanding that her pain was linked to the brain's response to perceived danger**

Self-Reflective Question

What was the key factor that helped Sarah reduce her chronic back pain?

C. Understanding that her pain was linked to the brain's response to perceived danger

Emotions like fear or hopelessness increase the stress response, spiking pain sensitivity and reinforcing the fear–pain cycle. Through pain education, Sarah was able to take a novel approach to relieve her symptoms.

Case Study

- John is a 50-year-old man who sustained a shoulder injury and later developed chronic pain even after the injury healed. John could not find answers with his doctors and was told to just take pain medication to relieve the symptoms since he was not a candidate for surgery. Through learning about neuroplastic pain, John worked on repatterning his thoughts and fear responses to reduce his pain and feel safe with movement again.

Self-Reflective Question

What was the critical step John took to alleviate his chronic shoulder pain?

- A. Ignoring his pain and pushing through physical activities**
- B. Associating movement with safety rather than danger**
- C. Relying exclusively on pain medication**
- D. Restricting all movement in the affected shoulder**

Self-Reflective Question

What was the critical step John took to alleviate his chronic shoulder pain?

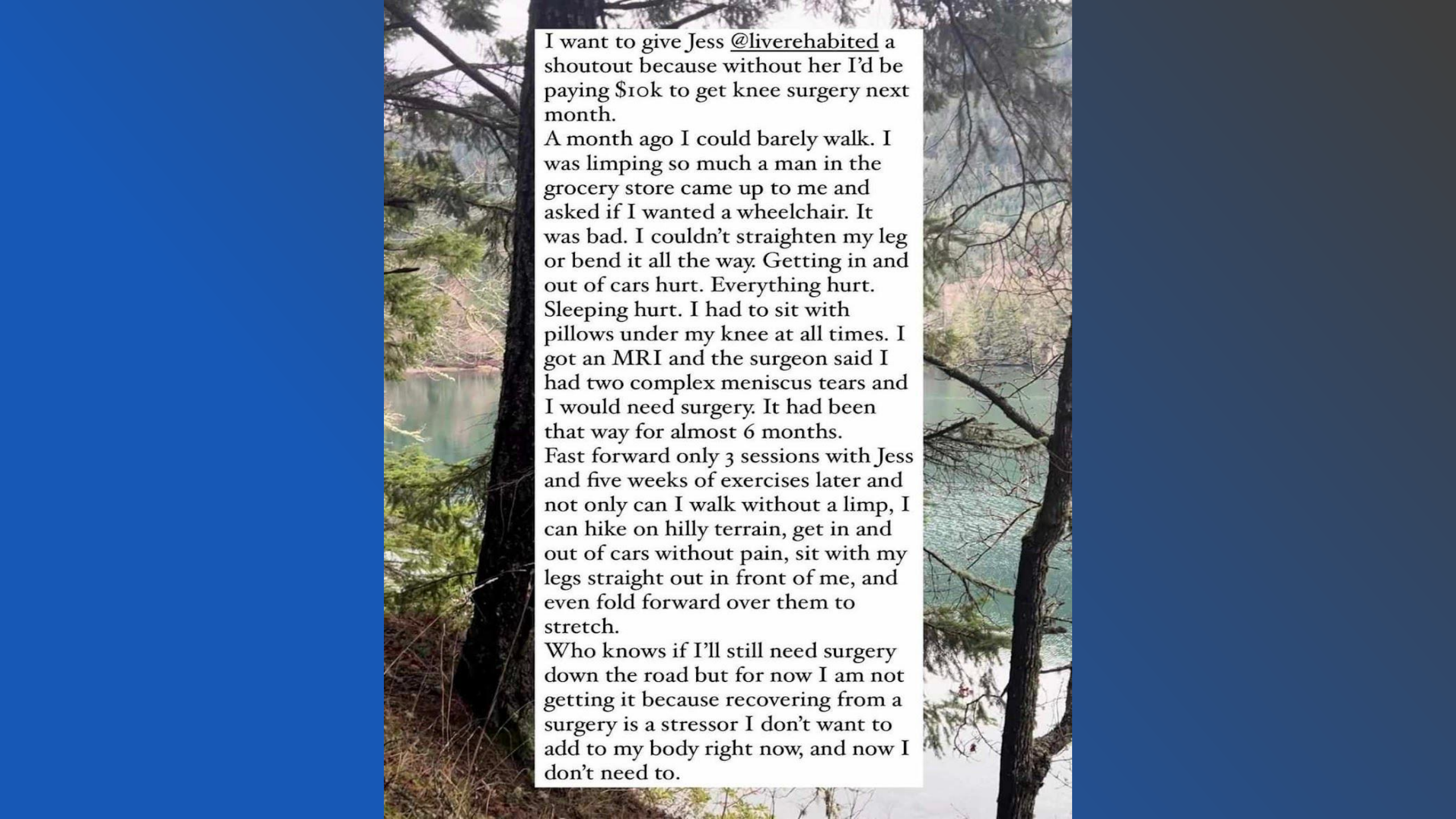
B. Associating movement with safety rather than danger

Self-Reflective Question

What was the critical step John took to alleviate his chronic shoulder pain?

B. Associating movement with safety rather than danger

By creating safety with movement, John was able to down-regulate the patterned sympathetic response (protective response) associated with physical activity to create a new experience in his body.



I want to give Jess [@liverehabited](#) a shoutout because without her I'd be paying \$10k to get knee surgery next month.

A month ago I could barely walk. I was limping so much a man in the grocery store came up to me and asked if I wanted a wheelchair. It was bad. I couldn't straighten my leg or bend it all the way. Getting in and out of cars hurt. Everything hurt. Sleeping hurt. I had to sit with pillows under my knee at all times. I got an MRI and the surgeon said I had two complex meniscus tears and I would need surgery. It had been that way for almost 6 months.

Fast forward only 3 sessions with Jess and five weeks of exercises later and not only can I walk without a limp, I can hike on hilly terrain, get in and out of cars without pain, sit with my legs straight out in front of me, and even fold forward over them to stretch.

Who knows if I'll still need surgery down the road but for now I am not getting it because recovering from a surgery is a stressor I don't want to add to my body right now, and now I don't need to.

- “What if I’m the one who can’t get better?”
- “What if I have to live with this forever?”
- “What if the pain comes back?”
- “What’s wrong with my body?”



It's hard to move forward if you're attached to the belief that something is wrong with your body.

Trauma–Stress–Pain Trifecta



“You don’t have a pain problem, you have a
preoccupation problem.”



Fear drives the stress response.

Completed Stress Cycle

Stressful event



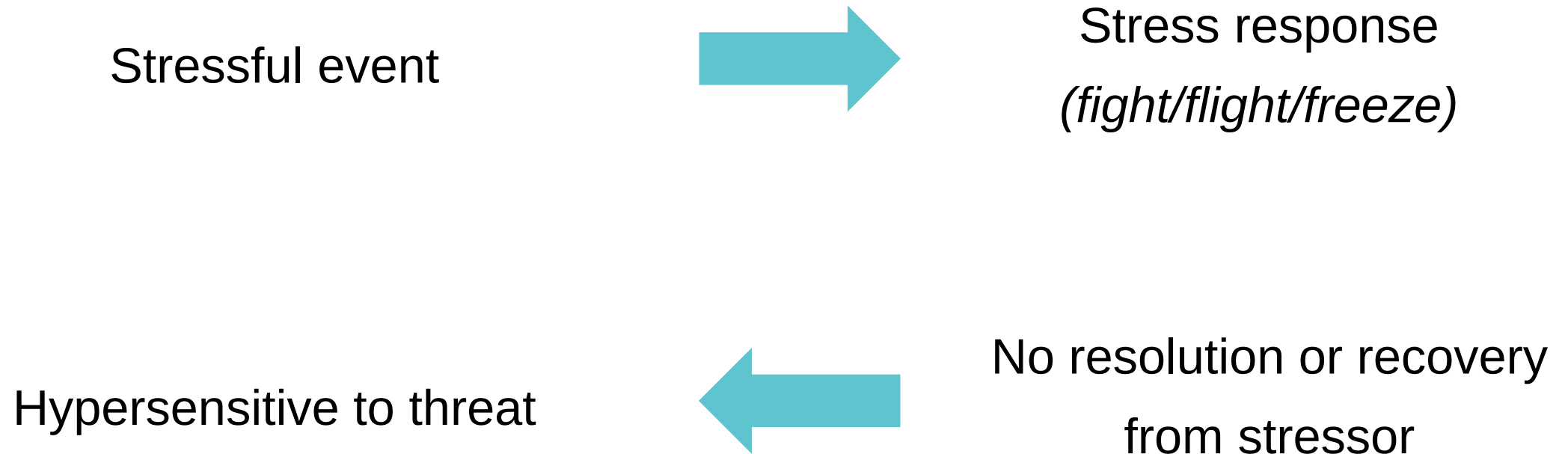
Stress response
(fight/flight/freeze)

Return to safety/homeostasis



Successful survival
(biological completion)

Incomplete Stress Cycle





Pain is a protective response.



Pain is a danger signal or alarm bell.



Our physiology becomes hypersensitive to input.



A group of researchers played with this connection of fear, stress, and pain using hot probes and terrifying images...

Participants got hot pulses to the skin while looking at a series of photos. Although the pulses were the same, their pain perception was higher when looking at the scary photos.

Even when participants were not actively getting hot pulses, they still concluded they felt pain when looking at the scary photos.

There was a study performed where they placed people in an MRI machine and were told when a red light turned on, they would receive a shock. When they saw the red light, their brain responded as if they were in pain, even though there was no shock being administered.



Stress, fear, and trauma can create or heighten the perception and experience of pain.



Current stressors or past stressors, positive or negative



Worrying



Putting pressure on oneself



Self-criticism



Constantly checking in or “testing” (is it there? Is it not there? Is it getting better? Is it going to start?)



Gradual



Stress-induced



Injury-induced



Gradual: A patient who has lived their life in constant worry and started developing tension headaches.

Stress-induced: A patient who encountered a single stressful event or series of stressful events that prompted stubborn pain.

Injury-induced: A patient who sprained an ankle, the injury healed, but the patient became fixated on the pain, and it continued to persist.

Stress and fear drives **neuroplastic pain** by increasing hypervigilance and preoccupation, which cause neurophysiological and behavioral changes and patterns.

- Increase in muscle tension
- Compensation patterns
- Altered breathing mechanics
- Decreased parasympathetic activity
- Increase in inflammation
- Compromised sleep and recovery
- Unhealthy coping behaviors
- Shame or guilt



“You behave and you create your pain.”

—*Dr. Stuart McGill*

The Somatic Memory of Pain

Highly emotionally charged stressful or painful memories can be stored as “somatic memories” or “state-dependent memories.”

- These memories are made up of sensations, images, behaviors, or other bodily changes, even if a cognitive memory might not be retrievable in that moment. If a current external stimulus or environment provokes the same bodily state that the painful memory was formed in, it can activate this “state-dependent” or “somatic” memory.
- Provoking stimuli might be postures, movements, sounds, smells, taste, a particular touch, an image, a tone of voice, or other various inputs.

This is an example of how “trauma lives in the body”—a traumatic or painful event is stored and can later be re-experienced in the body under provoking conditions.



“Pain-fear cycle.”

Is it fear?



Frustration, desperation, despair, annoyance, anxiety ...



“Do you think this feeling (annoyance, despair, anxiety, etc) makes your brain perceive more danger or less danger?”



Just like those living with unprocessed trauma, these individuals are experiencing their world through a lens of danger.



Their brain makes pain mean something, but that meaning isn't always correct.



How can we help our clients perceive their pain through the lens of safety?

Exercise:

- Somatic Tracking

While the pain our clients experience is very real for them, it might not actually mean that there is tissue damage, a need for surgery, or a need for the most complicated exercises.

Regardless of whether a client's pain “makes sense” or is “warranted” given their physical tests or imaging, how they feel in their body is ultimately what matters.



“We are regarding for the human being carrying the pain around.”

Healthcare Consideration

Best practices for healthcare providers when navigating neuroplastic pain include recognizing these patterns, educating patients about neuroplastic pain, and using trauma-informed approaches that address physical, psychological, and physiological aspects to ultimately help reduce pain and improve outcomes.

Chapter 3:

Psychology of Pain

Chapter 3: Psychology of Pain



Diving into the psychology behind pain and human behavior to help our clients move forward consistently.



In this chapter, we'll be looking at the psychology of human behavior, motivation, and subconscious thought to get a deeper understanding of why our clients might not be following through, and how we can effectively bridge that gap.



You may have heard before that the subconscious mind accounts for 95–98% of our mental real estate.



The term “unconscious” was originally based on our unintentional actions.



Why did I do that thing?



Why can't I do that other thing?



Why am I struggling so much to make decisions that are in my benefit?



We have limited “willpower” over our subconscious mind.
We can only force ourselves to change so much before
collapsing back into old habits.

Recall that someone living with the impacts of trauma or chronic pain may be living in a survival state.

Their body and brain may be constantly on guard, utilizing an enormous amount of internal resources.

A human who has had to function in a chronic stress state is going to be depleted, which means there's less energy available for much else. They might have the time to do your exercises or recommendations, and they likely even consider doing them, but **they lack the capacity.**

The subconscious mind adores safety and familiarity.

When you witness a client operate in ways that you both know are unhelpful and unhealthy, they are doing what their subconscious brain perceives as familiar and safe or they are getting a need met.



Our subconscious mind has “needs” to ensure it sustains this sense of familiarity and safety.

The trouble brews when our subconscious mind has needs that conflict with the behaviors or actions we consciously want to take.

If we have a strong subconscious need to be comfortable, for example, but we're aiming to consciously train at the gym with increasingly uncomfortable loads, we'll be in an internal struggle.

Let's consider this in the context of chronic pain.

Perhaps someone has chronic pain and wants to get better, but staying in pain is satisfying a subconscious need for familiarity.

Or perhaps this person has a strong subconscious need for connection with others, which they've satisfied through the extra love and support while being in pain.



“Who would I be without pain?”

In those moments where we might be confused, impatient, or frustrated with our clients for not following through, remembering that they are likely acting from their subconscious mind or previous traumas can help bring **greater compassion.**



Lovingly holding them accountable.



Working with our client's subconscious mind can help us achieve greater trust and compliance, while reducing their feelings of shame or defeat for not following through perfectly.



Needs = Survival



If we don't have our needs met, we can adopt *cop**ing*
mechanisms.



Core Needs



Personality Needs



Moment-to-Moment Needs

We can be more “intrinsically motivated” to do things when they’re linked to our needs.

When it comes to your client, accounting for their personality and learning about what drives them in life can be helpful to keep them on track.

Core Needs

- Connection
- Growth
- Certainty
- Uncertainty
- Significance
- Contribution

Personality Needs

- Approval
- Spirituality
- Health
- Romantic relationships
- Helpfulness
- Adventure
- Community
- Exploration

Personality Needs

- Expression
- Creativity
- Social
- Novelty
- Nature
- Fitness
- Achievement
- Power

Personality Needs

- Leadership
- Education
- Comfort
- Competition
- Connection
- Learning
- Family
- Discovery

Moment-to-Moment Needs

- Acceptance
- Affection
- Appreciation
- Belonging
- Cooperation
- Communication
- Closeness
- Companionship
- Compassion
- Consideration

Moment-to-Moment Needs

- Love
- Mutuality
- Nurturing
- Respect/self-respect
- Touch
- Warmth
- Inspiration
- Certainty
- Needs
- Choice

Moment-to-Moment Needs

- Stability
- Support
- Food
- Movement/exercise
- Rest/sleep
- Trust
- Peace
- Movement
- Change
- Excitement

Moment-to-Moment Needs

- Beauty
- Joy
- Playfulness
- Humor
- Flow
- Self-development
- Self-realization
- Progress

Moment-to-Moment Needs

- To create
- To write
- To nurture
- To assist
- To be present
- To support
- Presence

Moment-to-Moment Needs

- Admiration
- Participation
- Infatuation
- Purpose
- Integrity
- Integration
- Awareness
- To be understood

Personality Needs

- Approval
- Spirituality
- Health
- Romantic relationships
- Helpfulness
- Adventure
- Community
- Exploration

Personality Needs

- Status
- Entertainment
- Wealth
- Attention
- Service
- Personal growth
- Emotional connection
- Autonomy

Personality Needs

- Expression
- Creativity
- Social
- Fun
- Novelty
- Nature
- Fitness
- Achievement



What are our top personality needs?

- What do you spend the most time thinking about?
- What do you love doing in your free time?
- What do you care about?
- What do you do in your life that doesn't take much motivation? (Where do you show up naturally?)
- What are some of your non-negotiables in your life? (Live somewhere warm, close to family, need to be an entrepreneur, etc.)



What motivates them? What are their highest values and needs in life?



What do you feel would give you a “win”?



A collaborative effort by “regarding for the human being carrying the pain around.”

- Simply asking what they might need in that moment can be a simple, caring gesture that enhances their success.
- They might not know what they need—and that's okay, too.
- Helping them to feel safe, heard, and acknowledged can still help improve their trust in us and their healing.

The Stories We Tell Ourselves.





When we think the same thoughts, they become beliefs.



We can have beliefs about the world, who we are, how that person is, our healing capabilities, our condition, and more.



A thought becomes ingrained into our subconscious if we keep repeating the same thought and repeating an associated feeling behind the thought.



This is why positive affirmations don't always go the way we hope—speaking something we don't actually feel we believe in doesn't work.

***The Biology of Belief: Unleashing the Power of
Consciousness, Matter & Miracles*** by Bruce H. Lipton, PhD

When our clients land in a negative mental loop (“spiral”), they’re often mentally repeating an old story about themselves or their pain, and then feeling bad about it.

A whole host of chemical reactions are going off due to the associated feeling behind the thought, further grounding this negative belief.



What is the story they're telling themselves?

Our subconscious mind can be reprogrammed, similar to how we might repattern a client's squat technique.

They might occasionally slip into old unhealthy squat mechanics, but their newfound awareness helps them consistently redirect to what is healthier.



The subconscious mind is reprogrammed through the combination of two things: repetition and emotion.

For a client with chronic pain, attempting to think, feel, and believe differently about their healing journey can be a monumental feat because they might not have any evidence of the contrary.

- Gradually helping them shift their language and perspective about their experience can pave the way.
- How do we speak to our clients?
- What is the language we use?
- What are we reinforcing?

“A physical therapist must never let her patients go without hope. And I don’t mean false hope. A physical therapist must be healthy in mind, in body cheerful, for those things are infectious.”

—*Mary McMillan: The Mother of Physical Therapy*

Healthcare Consideration

Psychological factors greatly influence pain and recovery. Negative emotions like anxiety and depression can heighten pain, while positive coping strategies, such as optimism and cognitive-behavioral techniques, can reduce it. Healthcare providers should assess and address both psychological and physical aspects of pain to improve recovery.

The hope we sustain for our clients is critical to help them return from their negative loops, or “spiral,” and populate them with new, healthier thoughts that can shape their internal beliefs about themselves and their abilities. **Believing in our clients can often be the most therapeutic asset we can provide.**

Chapter 4:

Somatic Practices for Regulation

Chapter 4: Somatic Practices for Regulation



Taking a look at how somatic practices work to regulate the nervous system



People in trauma or pain often feel disempowered and disconnected from their body.



“I don’t sense much from the neck down.”



“My body feels like a burden.”

“Most people try to get away from their bodies as fast as they can because their bodies stir them up. The body is where the panic is—the fear and the rage.”

—*Bessel van der Kolk, trauma researcher*

- Disconnect
- Dissociate
- Dominate
- Destroy

We want to help our clients get in contact with their body (embodied).

When they're able to understand their own body, there's greater clarity and awareness.



When there's more clarity and awareness, there's more choice.



Learning the *language* of the body.



We *want* to support our client's autonomy.



Your body knows best.



Soma: relating to the body



“Somatics is the language of what it is to be alive and to be in a body.”

“Somatics is what it means to be human.”

Somatics is the exploration and experience of a story.



Living in patterns of protection and pain changes our experience of life, ourselves, and our body.



Somatic practices provide the opportunity to be mindful of what's actually happening in the present.

It allows us to “be with what is, as it is.”

When someone is living with trauma or chronic pain, bringing them into the safety of the *present moment* can help turn down the alarm bells of threat.



For those in chronic pain, this allows them to be present with their sensations through the lens of safety.

How can I learn to relate with “what is” in a way that leaves me feeling empowered?

This is relevant regardless of the trauma.



If physical exercise develops our connection to our external environment, somatic exercises develop our connection with our internal environment.



This awareness of our internal environment helps to rebuild, sustain, and refine the connection we have to our body and nervous system. From this place, we're able to make more informed choices about what we need to feel safe, healthy, and resilient.



Somatic exercises provide a new **anchor** to safety.

Evidence-Based Practice: Mindfulness

Research has demonstrated that meditation-based tools such as meditation using focused attention, mindfulness-based stress reduction, and mindfulness-based cognitive therapy have been shown to lower anxiety, minimize symptoms of PTSD, and reduce depression, blood pressure, cortisol levels, and stress markers (Behan, 2020).

Exercise:

- Grounding Meditation

Similar to physical exercises, somatic exercises work best when done regularly.

We don't need a ton of variety, but we do require the right exercises consistently. Sometimes, it might not feel like anything is happening or changing.

Introducing “**glimmers**” as “small moments when our biology is in a place of connection or regulation, which cues our nervous system to feel safe or calm.”

Recall that people with trauma and pain can be used to living in survival states.

They might say, “I don’t feel stressed,” even though they will also tell you, “I know my body is stressed.” They may have trouble identifying when they’ve last felt good, happy, or peaceful.

Somatic practices also help to expand our window of tolerance, or **capacity**. We can learn how to be with “what is” without collapsing into a survival response, trigger, or flare.

We’re able to be more present with the fluctuations of activation and deactivation, riding the waves of this “pendulation.”

Somatic exercises also help us with **resilience**, or our ability to come back to baseline.

When a client is stuck in a survival response or a pain cycle, it can be hard for them to see a way out. Somatic exercises are a tool to **anchor them back to safety**.

Somatic exercises also help us rely less on coping mechanisms since we have new tools to keep us in our **window of tolerance**.

We can “catch” ourselves before we “fall off the cliff” into dysregulation, and have the skills to tend to ourselves in that moment.



People with trauma, chronic stress, or pain often have “always” or “never” experiences.

- I “always” feel this neck pain.
- I “always” feel tight.
- I “always” feel weak.
- I “never” feel strong.
- I “never” feel good.

People in pain typically have the experience that it's there all the time.

“Pain-identified.”



How can we provide them with a new experience of their body?

“The most striking thing about trauma is later having a hateful relationship to your body.”

—*Dr. Bessel van der Kolk*



“You will always struggle to heal if you view your body as the enemy.”

Exercise:

- Orientation to Blue

Exercise:

- Orientation to Red

Exercise:

- Contrast Tapping

I can channel my focus to what's “blue” while still being present with the “red.”

Both can coexist without a story attached to it or excessive emotional charge.



We want to help our clients “live in the purple.”

Healthcare Consideration

Somatics involves increasing body awareness to alleviate pain and improve well-being by exploring new sensations through a lens of safety instead of danger. Healthcare providers should incorporate somatic practices into pain management, encouraging their use alongside traditional treatments for better outcomes.



Somatic practices are also appropriate for *us* as the provider.



Compassion Fatigue



Vicarious Trauma



Burnout



“Why can’t I breathe?”

Case Study

- Dr. Patience, a primary care physician in a busy clinic, was feeling overwhelmed, fatigued, and emotionally drained due to high patient volume and job demands, which affected her empathy and focus. Recognizing her stress as a normal response, she prioritized her physiological well-being through breathwork and somatic techniques. After several weeks, Dr. Patel felt more energized, focused, and emotionally balanced, leading to more empathetic patient interactions and improved clinical outcomes. Her interactions with patients became more meaningful, as she was able to listen more attentively and respond with greater empathy. Dr. Patel's improved well-being also positively impacted her clinical outcomes, as she could think more clearly and make better-informed decisions.



When we're regulated, we feel capable and have better access to our needs, values, and boundaries.



We aren't reactive; we are appropriately responsive and responsible.

Exercise:

- Signs of Threat

Chapter 5:

Resilience in Movement

Chapter 5: Resilience in Movement



Discovering the principles and strategies to help clients move with less limitation and pain



For many clients, **movement equals pain.**



“You can never do xyz again.”



And, movement is almost always the answer.

Movement Is Survival.



Our brain exists to produce adaptable and complex movements to survive.



“To understand movement is to understand the whole brain.”



Movement and play profoundly impact learning, creativity,
and stress management.



Those with childhood trauma may not have had these opportunities for movement and creative play in a safe and encouraging way.



“I don’t like being or moving in my body.”



It's hard to move differently if we're always moving from a place of survival.



Nonconscious weakness: The nervous system limits neural drive and mitigates strength to prevent future injury



Pain can make us **weak and immobile** because of the nervous system.

“Titration”

What would moving an extra 1% be like? What would an extra 1% improvement in their pain be like?

Exercise:

- Graded Motor Imagery

We'll explore how to leverage our knowledge of the nervous system and pain neuroscience to make movement feel therapeutic for even our most complex cases.

Since complex cases are nuanced, we'll be covering **guiding principles.**

Principle 1:



Learning the language of the body

- Culturally, we are frequently told what to do with our bodies. We are told what to eat, how to exercise, and what we should look like.
- Most of us don't grow up being encouraged to listen to our own body, but rather that others know best. When childhood trauma is present, this ability to connect with what we need, and ask for it, can be challenging.

For those with chronic pain, they may have been conditioned to put all their trust in doctors or other health authorities, **overriding their own thoughts and feelings about their situation.**



Helping our clients “learn the language of their body” can happen through supporting their autonomy, creating a safe environment for them to ask questions, and prioritizing a collaborative relationship.

Exercise:

- Following Impulse

Principle 2:



The body always seeks safety

When a stimulus is perceived as threatening (physical, physiological, or psychological), it's natural for the body to protect itself by creating pain or other symptoms to avoid further damage.



Pain is a request for change.



Helping our clients “come back to safety” can happen through repatterning their protective patterns and tending to the nervous system to bring down the “alarm bells” of pain.

Exercise:

- Neck CARs

Exercise:

- Supine Flat Back

Principle 3:



The body knows best

When we override our body's messages, this is often where we see “one step forward, two steps back.” We're pushing too fast, too soon without respecting the body's pace.



Pace and capacity.



Helping our clients understand “their body knows best” can happen by helping them be present with themselves, collaborating on their plan of care, and asking open-ended questions about their experience.



Watch for signs and symptoms that communicate a
“green light.”

“Green lights” are signs of safety.

- Spontaneous sigh/exhale
- Relaxed eyes, hands, and toes
- Fluid movement or ease of movement
- Greater range of motion
- Greater motor control
- Curiosity

Exercise:

- Regulatory Movement

Exercise:

- Systema Walking

Exercise:

- Regulatory Breath

Principle 4:



Movement matters, mindset masters

If we expect pain, weakness, or inability, we'll experience more of that.

A client might be “pain-identified,” focused only on what hurts and attaching to their limitations.



“You can never do xyz again.”



Helping our clients with their mindset can occur by identifying their core motivators and needs, pacing appropriately, and using supportive language.

Principle 5:



Strength heals

Strength Creates Safety.

It creates stability in the body, decreases fall risk, improves kinesthetic awareness and movement confidence, improves motor control, decreases feelings of fragility and vulnerability, reinforces healthy movement patterns, builds our movement variability, and eliminates weakness.

Exercise:

- Body Wake-Up

Exercise:

- Seated Flat Back



Movement is for *every* body.



The body is *self-healing* when we create the correct and safe environment for that individual.



Jess Mather



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You have completed the course: Enhancing Pain Relief: Understanding Trauma Physiology

Thank you!