

GUIDE TO LOSING PAIN

ABSTRACT

The purpose of this document is to provide information, strategies, and techniques for reducing or managing pain. This document was created as an educational resource.

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<u>Disclosure</u>: I have orchestrated, organized, and edited the information in this document myself. Writing was done with the help of ChatGTP. I did not find it necessary to cite all the information contained herein, as it would have taken twice as long to complete. I've studied this material using evidence-based textbooks, scientific research articles, practice guidelines, etc... for over 15 years. I of course, can get things wrong, but as of the making of this document, I believe the information to be accurate and I am confident you can find it useful. - Dr. Levi G. Merritt, DC, CPT, CHC.

<u>Medical Disclaimer</u>: The information provided in this document is for general informational purposes only and is not intended as a substitute for professional medical advice, diagnosis, or treatment. Always seek the advice of your physician or other qualified health care provider with any questions you may have regarding a medical condition or treatment and before undertaking a new health care regimen, and never disregard professional medical advice or delay in seeking it because of something you have read in this document.

WHAT IS PAIN?

The International Association for the Study of Pain (IASP) defines pain as: "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage."

This definition emphasizes that pain is not just a physical sensation but also includes the emotional and subjective aspects of the experience. It recognizes that pain can arise from actual tissue damage or the potential for damage.

CLASSIFICATION

Pain can be classified in various ways. Duration and source are commonly used classifications of pain.

Duration: pain can be acute, subacute, or chronic.

- Acute Pain: refers to pain that typically lasts for a short duration and is usually associated with a specific injury, illness, or medical condition. It serves as a warning signal that something is wrong or damaged in the body. Acute pain is often sudden in onset and can be intense. It is usually proportional to the extent of tissue damage or injury. Acute pain is expected to resolve as the underlying cause heals or with appropriate treatment. Examples of acute pain include a sprained ankle, a surgical incision, or a toothache.
- 2. Subacute Pain: a transitional stage between acute and chronic pain. It typically lasts longer than acute pain but shorter than chronic pain, usually falling within a timeframe of weeks to a few months. The exact duration may vary depending on the specific condition or injury. Subacute pain may persist beyond the expected healing time or continue after the resolution of the initial injury. It can also be associated with ongoing inflammation.
 - Pain and inflammation are interconnected physiological responses that occur in the body, often as a result of injury, infection, or other underlying conditions. Inflammation is the body's natural response to injury or infection. It is a complex process involving various immune cells, chemical mediators, and blood vessels. The purpose of inflammation is to remove harmful stimuli, initiate the healing process, and restore tissue function. Typical signs of inflammation include redness, swelling, heat, pain, and sometimes loss of function in the affected area. Acute inflammation is a

short-term response, while chronic inflammation can last for an extended period and may contribute to various diseases.

 Inflammation can trigger pain by stimulating nerve endings or causing tissue damage that activates pain receptors. Conversely, pain can lead to inflammation as a result of tissue injury. However, it's important to note that not all pain is accompanied by inflammation, and not all inflammation causes pain.



If subacute pain persists and does not resolve, it may progress to chronic pain. Examples of subacute pain include post-operative pain during the healing phase or pain from a healing fracture.

3. Chronic Pain: characterized by pain that persists or recurs for an extended period, typically lasting beyond three to six months or longer. It may persist even after the initial injury or underlying cause has healed. Chronic pain can be caused by a variety of factors, such as chronic medical conditions, nerve damage, inflammation, or an unidentified cause. Unlike acute pain, chronic pain may not serve a protective function and can significantly impact a person's quality of life, leading to physical and emotional distress. Individuals can experience chronic pain even after the initial injury has healed. Examples of chronic pain conditions include fibromyalgia, chronic back pain, or arthritis.

Pain can also be classified, more usefully, by its source.

- 1. Nociceptive Pain: caused by the activation of pain receptors (nociceptors) in response to tissue damage or potential tissue damage. Nociceptive pain can be:
 - \circ somatic (arising from the skin, muscles, joints, or bones)
 - o or visceral (arising from internal organs).
- 2. Neuropathic Pain: resulting from damage or dysfunction of the nervous system. It arises due to nerve injury or abnormal nerve signaling. Examples include diabetic neuropathy, post-herpetic neuralgia, or nerve compression.

3. Neuroplastic Pain: Neuroplastic refers to the brain's ability to reorganize and adapt its structure and connections in response to learning, experience, or injury. It is a fundamental property of the nervous system. Pain itself can involve changes in neural pathways and brain structures. Chronic pain can lead to alterations in the nervous system, including increased sensitivity of pain receptors and changes in neural pathways involved in pain processing.

The transition between these categories of pain is not always clearly defined. It is very possible to suffer from more than one type of pain simultaneously. We'll cover this in more detail later. First, there are some basics we need to know about the nervous system, and how we experience pain.

THE NERVOUS SYSTEM

The body perceives pain through the nervous system.

The nervous system is divided into two main components: the central nervous system (CNS) and the peripheral nervous system (PNS).

1. Central Nervous System (CNS): consists of the brain and the spinal cord. It is the main control center of the body, responsible for processing and integrating information, initiating responses, and coordinating bodily functions. The brain is involved in complex cognitive processes, such as perception, thinking, memory, and emotion. The spinal cord serves as a pathway for communication between the brain and the peripheral nerves.



2. Peripheral Nervous System (PNS): comprises the nerves and ganglia located outside the brain and spinal cord. It is responsible for transmitting information between the CNS and the rest of the body. The PNS can be further divided into the somatic nervous system and the autonomic nervous system.

- Somatic Nervous System: controls voluntary movements and transmits sensory information from the body to the CNS. *It includes sensory neurons that carry information about touch, temperature, pain, and other sensations,* as well as motor neurons that control skeletal muscles.

- Autonomic Nervous System: regulates involuntary processes and maintains internal homeostasis. It controls functions such as heart rate, respiration, digestion, and glandular activity. The autonomic nervous system is further divided into the sympathetic and parasympathetic divisions, which have opposing effects on various physiological functions.

The CNS and PNS work together to enable communication and coordination throughout the body. The PNS collects sensory information from the environment and sends it to the CNS, which processes the information and generates appropriate responses. These responses are then conveyed back to the peripheral tissues and organs via the PNS to initiate motor actions.

HOW THE BODY PERCEIVES PAIN.

- Nociceptive pain is the type of pain experienced when specialized nerve endings called nociceptors are activated in response to potentially harmful or damaging stimuli. These stimuli can include physical injury, inflammation, heat, cold, or chemical substances. The experience of nociceptive pain involves several processes that occur in the body:
 - Transduction: Nociceptors, which are primarily found in the skin, muscles, and internal organs, detect and respond to harmful stimuli. When these stimuli exceed a certain threshold, nociceptors generate electrical signals or action potentials.
 - Transmission: The action potentials generated by the nociceptors travel along peripheral nerves towards the spinal cord.
 A-delta fibers and C fibers are the two main types of nerve fibers responsible for transmitting nociceptive signals. Adelta fibers are myelinated and conduct signals more



rapidly, leading to the initial sharp, acute pain sensation. C fibers are unmyelinated and conduct signals more slowly, resulting in a slower, duller, and longer-lasting pain sensation.

• Modulation: In the spinal cord, nociceptive signals can be modulated or altered by inhibitory and facilitatory pathways. Various neurotransmitters, such as endorphins and enkephalins, can either dampen or enhance the pain

signals before they reach the brain. This modulation process can influence the intensity and perception of pain.

- Perception: The processed nociceptive signals are transmitted from the spinal cord to different regions of the brain, including the thalamus and somatosensory cortex. The brain interprets these signals and generates the subjective experience of pain. The perception of pain is influenced by various factors, including past experiences, emotions, attention, and cognitive processes.
- Integration: Pain perception is integrated with other sensory information and cognitive processes in the brain. This integration allows individuals to localize and evaluate the pain, as well as to generate appropriate behavioral and emotional responses.

Nociceptive pain serves a protective function by alerting the body to potential harm or injury.

- 2. Neurogenic pain is a type of pain caused by abnormal functioning or damage to the nervous system itself. It can arise from various conditions such as nerve compression, nerve injuries, nerve diseases, or dysfunctional signaling within the nervous system. The experience of neurogenic pain involves specific mechanisms in the body:
 - Abnormal Excitability: In neurogenic pain, there is often an increased excitability of nerves, leading to exaggerated or spontaneous signaling. This can result from nerve damage, inflammation, or changes in ion channels and receptors on the nerve cells.
 - Peripheral Sensitization: Nerves in the affected area may become hypersensitive, meaning they require less stimulation to trigger pain signals. This hypersensitivity can occur due to increased release of certain chemicals, such as substance P and calcitonin gene-related peptide (CGRP), which can sensitize and activate nociceptors.
 - Spontaneous Pain: Neurogenic pain can manifest as spontaneous pain sensations without any external stimulation. Nerves may generate pain signals even in the absence of a noxious stimulus, causing constant or intermittent pain.
 - Radiating or Shooting Pain: In some cases, neurogenic pain may follow a specific pattern, such as radiating or shooting pain along the path of the affected nerve. This can occur when a nerve is compressed or injured, leading to abnormal nerve signaling along its course. Neurogenic pain is often accompanied by other neuropathic symptoms such as tingling, numbness,

burning sensations, or hypersensitivity to touch. These symptoms reflect the dysfunction or damage to the nerves involved.

- 3. Neuroplastic pain. Chronic pain can lead to alterations in the central nervous system, including the brain, which can contribute to the persistence and amplification of pain signals. Here are some key aspects of how the body perceives chronic pain:
 - Neuroplastic Changes: Prolonged exposure to pain can lead to structural and functional changes in the central nervous system. This includes alterations in the excitability of neurons, changes in synaptic connections, and modifications in the processing of pain signals. These neuroplastic changes can contribute to the persistence of pain even after the initial injury or cause has healed.
 - Central Sensitization: Chronic pain conditions often involve a phenomenon called central sensitization. It refers to an increased responsiveness and sensitivity of neurons in the central nervous system, including the spinal cord and brain, to pain signals. This heightened sensitivity can result in a lower pain threshold, increased pain intensity, and the spread of pain to areas beyond the initial site of injury.



- Altered Pain Processing: Chronic pain can affect the way the brain processes pain signals. The brain may become more attentive and responsive to pain, amplifying the perception of pain and making it more noticeable. Moreover, emotional and cognitive factors can play a significant role in the experience of chronic pain. Anxiety, depression, fear, and anticipation of pain can further shape the perception and experience of pain.
- Changes in Pain Modulation: Chronic pain can disrupt the normal painmodulating systems in the body. These systems involve the release of endogenous opioids, such as endorphins, which help to inhibit pain signals. In chronic pain conditions, there can be a dysfunction in these pain modulation pathways, leading to decreased pain inhibition and increased pain transmission.

 Long-Term Effects: Persistent pain can have broader effects on an individual's physical and psychological well-being. It can lead to reduced mobility, sleep disturbances, mood disorders, and decreased quality of life. These factors, in turn, can further contribute to the experience and perception of chronic pain.

MANAGEMENT OF PAIN.

CONSERVATIVE VS. INVASIVE APPROACHES

When treating pain, there is a wide range of options available, from conservative approaches to more invasive interventions. In most circumstances, a person should start with conservative approaches, and then work through more invasive procedures only if conservative measures have failed.

Here is an overview of the continuum of pain treatment from conservative to invasive:

- Conservative Approaches:
 - Rest and activity modification: Avoiding activities that worsen the pain and allowing the body to heal naturally.
 - Manual therapy: Procedures by which the hands directly contact the body to treat the joints and/or soft tissues.
 - Physical therapy: Exercise, stretching, and strengthening programs designed to improve mobility, flexibility, and function.
 - Heat and cold therapy: Applying heat or cold packs to the affected area can provide temporary pain relief.
 - Topical treatments: Creams, gels, or patches containing pain-relieving substances (non-medicated) that can be applied directly to the skin for localized relief.
 - Lifestyle modifications: Adopting healthy habits such as maintaining a balanced diet, utilizing supplements, managing stress, and getting enough sleep can contribute to overall pain management.
- Pharmacological Interventions:
 - Over-the-counter (OTC) medications: Non-prescription pain relievers like acetaminophen (Tylenol) or nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (Advil, Motrin) can help manage mild to moderate pain.

- Prescription medications: If over-the-counter options are ineffective, doctors may prescribe stronger analgesics, muscle relaxants, or nerve pain medications.
- Topical treatments: Creams, gels, or patches containing analgesic or antiinflammatory medications can be applied directly to the skin for localized pain relief.
- Injections: Corticosteroids or anesthetics may be injected into specific areas to reduce inflammation, numb nerves, or alleviate pain.
- Interventional Procedures:
 - Nerve blocks: Injection of an anesthetic or medication near a specific nerve or nerve group to block pain signals.
 - Radiofrequency ablation: Using heat generated by radio waves to disrupt the nerve signals and provide long-lasting pain relief.
 - Spinal cord stimulation: Implantation of a device that delivers electrical impulses to the spinal cord, altering pain signals before they reach the brain.
 - Intrathecal drug delivery systems: Implantation of a pump that delivers pain-relieving medications directly into the spinal fluid.
- Surgical Interventions:
 - Surgery may be considered for conditions where conservative and noninvasive treatments have failed to provide relief. Examples include joint replacement surgery, spinal fusion, or decompression surgeries to relieve nerve compression.

It's important to note that the appropriateness of each treatment option varies depending on the individual case, and decisions should be made in consultation with healthcare professionals who can evaluate the specific needs and circumstances of the patient.

I'm a Chiropractor, and chiropractors practice conservative therapy, without the use of drugs or surgery. Both medications and surgical procedures have their place in the treatment of pain, but since this is outside my fund of knowledge, and scope of practice, our focus will be on pain management through the use of conservative approaches.

ASCENDING VS. DESCENDING INHIBITION

Pain can be managed conservatively using two different approaches: Ascending inhibition, and descending inhibition.

<u>Ascending inhibition</u> of pain refers to a mechanism in the body's pain perception system that helps control or suppress the transmission of pain signals from the periphery (such as injured tissues) to the brain. Ascending inhibition takes a "down-up" approach to pain control. It involves the activation of neural pathways that inhibit or dampen the pain signals, ultimately resulting in a reduction in the perception of pain.

Ascending inhibition of pain is congruent with the gate control theory of pain.

The gate control theory of pain is a well-known theory in the field of pain perception that was first proposed by Ronald Melzack and Patrick Wall in 1965. According to this

theory, the perception of pain is not solely determined by the activation of specialized pain receptors, but rather, it is influenced by a balance of signals from both pain and non-pain pathways.

The theory suggests that there is a "gate" mechanism located in the spinal cord that can modulate or control the transmission of pain signals to the brain. This gate can either allow or inhibit the passage of pain signals, depending on the balance of input from various

sources. The key components of the gate control theory are as follows:

- Pain Fibers: Nociceptors, specialized nerve fibers that respond to painful stimuli, carry pain signals from the body to the spinal cord.
- Non-pain Fibers: Other sensory nerves, such as those involved in touch or pressure, also send signals to the spinal cord.
- Gate Control Mechanism: The gate control theory proposes that there is a neural "gate" in the spinal cord that can either open or close, allowing or inhibiting the transmission of pain signals to the brain.



Gate Control Theory of Pain



• Activation of Gate: When pain fibers are stimulated, they send pain signals to the brain. This alone would result in the perception of pain. However, non-pain fibers, such as those involved in touch, can also send signals to the brain. These non-

pain signals have the ability to activate the gate and close it, thus inhibiting the transmission of pain signals.

In summary, the gate control theory suggests that the perception of pain can be modulated by the interaction of pain and non-pain signals at the level of the spinal cord (ascending inhibition). By understanding and manipulating this gate mechanism, it is possible to influence the perception of pain and potentially provide pain relief. This theory has had a significant impact on the development of pain management techniques and therapies.

<u>Descending inhibition</u> of pain refers to a mechanism in the body's nervous system that helps modulate or suppress the transmission of pain signals. It involves the "top-down" regulation of pain signals from the brain to the spinal cord and can be considered a form of endogenous pain control.

Ascending inhibition can be thought of as manipulation of the body to inhibit pain. Whereas descending inhibition can be thought of as manipulation of the brain to inhibit pain. Ascending and descending inhibition are not mutually exclusive, and defining which pain control technique belongs to which approach gets blurry. Since the experience of pain is multifactorial, best practices would be to use multiple tools from within each technique to help control your pain.

MANAGING PAIN USING ASCENDING INHIBITION

- COLD THERAPY, also known as cryotherapy, is a therapeutic technique that involves the application of cold temperatures to the body or specific areas. It is commonly used to reduce pain, inflammation, and swelling in various conditions. Cold therapy works by constricting blood vessels, reducing blood flow to the area, and numbing nerve endings, thereby providing temporary relief. Here are some common methods of cold therapy:
 - Ice packs or cold packs: These are commonly used for localized cold therapy. Ice or a cold pack wrapped in a thin cloth is applied to the affected area for around 15-20 minutes at a time. It can be repeated several times a day, allowing a gap of at least one hour between applications.
 - Ice massage: Ice is directly applied to the skin by rubbing it over the affected area in a circular motion. Ice massage is typically performed for 3-5 minutes or until the area becomes numb.
 - Cold baths or showers: Immersion in cold water or taking a cold shower can help reduce overall body temperature and provide generalized cold

therapy. It is particularly useful for relieving muscle soreness after intense physical activity.

 Cold compression therapy: This method combines cold therapy with compression. Specialized devices or wraps that deliver cold temperatures and apply pressure to the affected area can be used. These are often used for joint injuries, such as sprains or strains.

It's important to note that cold therapy is generally used for acute injuries or as a temporary measure for managing pain and inflammation. It is not suitable for everyone, and certain conditions, such as Raynaud's disease or cold hypersensitivity, may warrant caution or avoidance of cold therapy. Additionally, cold therapy should not be applied directly to an open wound or on areas with impaired sensation or poor circulation without medical guidance.

- HEAT THERAPY, also known as thermotherapy, is a therapeutic technique that involves the application of heat to the body or specific areas. Heat can help relax muscles, increase blood flow, and alleviate pain and stiffness. It is commonly used for various conditions, such as muscle strains, joint stiffness, and chronic pain. Here are some common methods of heat therapy:
 - Heating pads or hot packs: Electric or microwavable heating pads or hot packs are commonly used for localized heat therapy. It's important to follow the instructions provided with the heating pad or hot pack to avoid burns or overheating the area. Typically, heat is applied for about 15-20 minutes at a time, and it can be repeated multiple times throughout the day.
 - Warm water baths or showers: Immersing the body or the affected area in warm water can provide generalized heat therapy. It helps relax muscles and joints and promotes overall relaxation. For localized heat therapy, you can use a basin or tub to soak the specific body part in warm water.
 - Heating pads are devices specifically designed to provide heat therapy to the body. They provide a consistent and controlled amount of heat to the affected area. They are commonly used for localized heat application to relieve muscle aches, stiffness, and other types of pain. Heating pads are available in various sizes, shapes, and types, and they typically consist of a pad or a wrap with an embedded heating element

It's important to consider certain precautions when using heat therapy:

 Avoid applying excessive heat or using heat therapy for prolonged periods, as it can lead to burns or skin damage.

- Use a protective barrier, such as a cloth or towel, between the heat source and your skin to prevent direct contact and potential burns.
- Do not use heat therapy on areas of the body with impaired sensation or poor circulation without medical guidance.

If you have an acute injury or inflammation, it's generally recommended to use cold therapy initially before transitioning to heat therapy.

- 3. TOPICAL ANALGESICS are medications or substances that are applied to the skin to provide pain relief. They work by acting locally on the site of application to reduce pain, inflammation, or both. Topical analgesics are available in various forms, including creams, gels, ointments, sprays, and patches. They can be purchased over the counter (OTC) or prescribed by a physician.
 - <u>Medicated</u> Nonsteroidal anti-inflammatory drugs (NSAIDs): These include products containing active ingredients like diclofenac, ibuprofen, and ketoprofen. They work by inhibiting the production of prostaglandins, which are substances that contribute to pain and inflammation.
 - <u>Medicated</u> Lidocaine: This is a local anesthetic that blocks pain signals by numbing the area where it is applied. Lidocaine creams, gels, or patches are commonly used for temporary relief of minor pain.
 - <u>Non-medicated</u> Menthol: Menthol is a cooling agent that produces a numbing sensation. It is often found in creams, gels, or sprays used for muscle and joint pain relief.
 - <u>Non-medicated</u> Capsaicin: Derived from chili peppers, capsaicin creams or ointments can be applied topically to provide pain relief. Capsaicin works by depleting the neurotransmitter substance P, which transmits pain signals to the brain.

It's important to follow the instructions provided by the manufacturer or consult a healthcare professional before using any topical analgesic. They may have specific recommendations regarding usage, dosage, and potential side effects, especially if you have any underlying health conditions or are taking other medications.

4. PHARMACOLOGICAL INTERVENTIONS: Nonsteroidal Anti-Inflammatory Drugs (NSAIDs): These medications help reduce inflammation, relieve pain, and reduce fever. Examples include ibuprofen (Advil, Motrin), naproxen (Aleve), and aspirin. NSAIDs work by inhibiting the production of certain chemicals in the body that cause inflammation. It's important to follow the recommended dosage and duration of use. Remember to read the labels, follow the recommended dosage, and be aware of any potential side effects or interactions with other medications you may be taking. If your symptoms persist or worsen, it's important to seek medical advice from a healthcare professional. It's worth noting that long-term and high-dose use of NSAIDs can increase the risk of side effects, including gastrointestinal problems like stomach ulcers or bleeding, cardiovascular issues, and kidney problems. Therefore, it is recommended to use the lowest effective dose for the shortest duration necessary to manage symptoms.

- 5. NUTRITIONAL SUPPLEMENTS: Several natural supplements are believed to have anti-inflammatory properties. While these supplements are generally considered safe, they can still have side effects and may interact with medications or medical conditions. It's always a good idea to consult with a healthcare provider before starting any new supplement. Here are some natural supplements that are commonly used for inflammation:
 - Turmeric/Curcumin: Turmeric contains a compound called curcumin, which has potent anti-inflammatory properties. It is often used in cooking and can be taken as a supplement. However, curcumin is not easily absorbed by the body, so it may be helpful to consume it with black pepper or choose a supplement with enhanced bioavailability.
 - Ginger: Ginger has long been used for its medicinal properties, including its anti-inflammatory effects. It can be consumed fresh, as a tea, or as a supplement.
 - Omega-3 Fatty Acids: Omega-3 fatty acids, found in fatty fish like salmon, mackerel, and sardines, as well as in flaxseed and chia seeds, have been shown to have anti-inflammatory effects. If you don't consume enough omega-3-rich foods, you may consider taking fish oil supplements or vegan alternatives like algae oil.
 - Bromelain: Bromelain is an enzyme found in pineapple that has antiinflammatory properties. It can be taken as a supplement, but be aware that some people may be allergic to bromelain.
 - Boswellia: Also known as Indian frankincense, Boswellia is derived from the resin of the Boswellia serrata tree. It is believed to have antiinflammatory properties and is available as a supplement.
 - Devil's claw is a plant native to southern Africa, and its root has been used traditionally for various medicinal purposes, including pain relief. Devil's claw contains active compounds called harpagosides, which are believed to have anti-inflammatory and analgesic (pain-relieving) effects.

Remember that natural supplements are not regulated in the same way as prescription medications, so it's important to choose reputable brands and consult with a healthcare professional to determine the appropriate dosage and ensure they are safe for you to use.

- 6. ASSISTIVE DEVICES: The use of assistive devices such as braces, splints, or orthotics can provide support and relieve pain in specific areas. It is beneficial to consult with a healthcare professional who can evaluate your condition and provide recommendations on the most suitable type of orthopedic support or brace for your specific needs. Proper fitting and usage of these devices are crucial to ensure optimal support and pain relief.
- 7. TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS): A TENS unit is a small, battery-operated device that delivers low-voltage electrical currents to the body via electrodes placed on the skin. TENS units are primarily used for pain relief and are based on the theory that electrical stimulation can block or modify pain signals before they reach the brain.
 - TENS units work by sending electrical impulses through the skin to stimulate the nerves. These impulses can help to disrupt or mask pain signals, providing temporary pain relief.
 - The electrical currents are delivered through electrodes that are placed on or near the area of pain. The electrodes are connected to the TENS unit by wires. The TENS unit allows you to adjust the intensity, frequency, and duration of the electrical impulses according to your comfort level and the nature of your pain.
 - TENS units are commonly used to manage acute or chronic pain conditions, such as musculoskeletal pain (e.g., back pain, joint pain), neuropathic pain, arthritis, and postoperative pain. They are often used as a non-invasive, drug-free alternative for pain management and can be used alongside other treatments or therapies.

TENS units are available for home use and are generally considered safe when used correctly. However, they may not be suitable for everyone, such as individuals with pacemakers or certain medical conditions.

- 8. KINESIOTAPE: also known as kinesiology tape or elastic therapeutic tape, is a thin, stretchy, and adhesive tape that is used for therapeutic purposes. It is often applied to the skin over muscles, ligaments, or joints to provide support, stability, and pain relief.
 - Kinesiotape is primarily used to support and stabilize muscles and joints through proper movement, and provide pain relief. It is believed that kinesiotape may help improve blood circulation and lymphatic drainage, potentially reducing swelling and inflammation in the taped area.
 - Kinesiotape is applied directly to the skin by trained professionals, such as physical therapists, chiropractors, or athletic trainers. However, there are also resources available for self-application.

- 9. MANUAL THERAPY refers to a hands-on approach used by healthcare professionals, such as physical therapists, chiropractors, osteopaths, or massage therapists, to diagnose and/or treat musculoskeletal conditions. It involves various techniques that aim to alleviate pain, improve mobility, restore function, and promote overall well-being. There are different types of manual therapy, and the specific techniques used may vary depending on the practitioner's training and the patient's needs. Here are some common forms of manual therapy:
 - Joint Mobilization and Manipulation: These techniques target the joints of the body, such as the spine, shoulders, hips, or knees. Joint mobilization involves gently moving the joints within their normal range of motion to improve flexibility, reduce stiffness, and enhance joint function. Manipulation, on the other hand, involves applying a quick, controlled force to a joint to restore its mobility.
 - Neural mobilization: or nerve mobilization, is a technique used in manual therapy to address conditions involving the nervous system, such as nerve impingements or nerve-related pain. It involves gently mobilizing and stretching the nerves to restore their normal mobility, reduce tension, and alleviate symptoms.
 - Manual Traction: This technique involves gently stretching the spine or limbs to relieve pressure on the joints and discs. Manual traction can be used to treat conditions like herniated discs or nerve impingements by creating space and reducing compression on the affected structures.
 - Soft Tissue Mobilization: This technique focuses on treating soft tissues, including muscles, tendons, and fascia. It can involve various methods such as cross friction massage, myofascial release, or trigger point therapy. Soft tissue mobilization aims to improve tissue flexibility, release muscle tension, and promote healing.
 - Massage Therapy: This involves manipulating the soft tissues of the body, such as muscles, tendons, and ligaments, using various techniques like stroking, kneading, and applying pressure. Massage therapy can promote relaxation, relieve muscle tension, improve circulation, and enhance overall physical and mental well-being.
 - Passive and Active Stretching: These techniques involve the therapist either moving the patient's body through passive stretching or guiding the patient to perform active stretches. Stretching helps improve flexibility, increase joint range of motion, and reduce muscle imbalances.

It's important to note that manual therapy techniques should be performed by qualified professionals who have received appropriate training and are licensed or certified in their respective fields. The specific approach and techniques used will depend on the individual's condition, assessment findings, and the practitioner's expertise. While it's generally recommended to consult with a qualified healthcare professional for a proper diagnosis and personalized treatment plan, there are some manual therapy techniques that you can safely perform at home:

- You can use your hands, a foam roller, or a tennis ball to apply pressure and knead your muscles. Focus on areas that feel tight or sore, and use gentle, circular motions or long, sweeping strokes.
- Perform gentle stretching exercises to improve flexibility and reduce muscle tightness.
- 10. STAY ACTIVE: Staying active and exercising are similar, but not the same. Staying active after an injury is often encouraged, while exercise may or may not be recommended. Staying active involves engaging in regular movement within the boundaries of your pain, while striving to gradually increase your activity level with each day. The concept of staying active after injury is based on the understanding that some level of movement can be beneficial for the healing process. Exercising after an acute injury, or during acute pain, can be performed as long as it is done under the guidance of a healthcare professional.

MANAGING PAIN USING DESCENDING INHIBITION

- EXERCISE: Engaging in <u>moderate</u> exercise, such as jogging, swimming, and resistance training, can trigger the release of endorphins and other endogenous opioids. These substances act as natural painkillers and activate descending inhibitory pathways, reducing pain perception.
- 2. ACUPUNCTURE: This traditional Chinese medicine practice involves inserting thin needles into specific points on the body. It has been shown to stimulate the release of endorphins, serotonin, and norepinephrine, which can modulate pain signals and promote analgesia.
- 3. COGNITIVE AND EMOTIONAL FACTORS: Cognitive and emotional processes can influence the perception of pain by modulating descending inhibition. For example, distraction techniques, positive emotions, and engaging in pleasant activities can activate descending pathways and reduce pain intensity.
 - a. Meditation and mindfulness: Techniques like meditation and mindfulness can promote relaxation and shift the focus away from pain. They can activate descending inhibitory pathways, leading to a reduction in pain perception.
 - b. Cognitive-Behavioral Therapy (CBT): CBT focuses on identifying and modifying negative thoughts and behaviors associated with pain. It can help individuals develop effective coping strategies, manage stress, and improve their overall well-being.
- 4. PHARMACOLOGICAL INTERVENTIONS: Certain medications can activate descending inhibitory pathways to alleviate pain. For instance, opioids such as morphine and

codeine act on opioid receptors in the brain and spinal cord, activating descending pathways that inhibit pain transmission. For acute pain resulting from surgery, injury, or medical procedures, opiates may be prescribed for a few days to a couple of weeks. It's essential to note that the prescription duration for opioids should be determined on an individual basis, taking into account the patient's specific needs, the nature of the pain, and the risks associated with long-term opioid use. Regular communication and close monitoring with a healthcare professional are crucial when using opioids to ensure that the benefits outweigh the risks and to evaluate the ongoing need for these medications.

5. LIFESTYLE MODIFICATIONS: Certain lifestyle changes can positively impact pain management. These may include maintaining a healthy weight, eating a healthy diet, improving posture, quitting smoking, getting adequate sleep, and managing stress levels, as these factors can influence pain perception.

TIMING OF TREATMENTS.

Equally as important of the type of pain reduction tool you use, is the timing in which you use it. For example, exercise is typically not advantageous during acute pain situations, but is extremely valuable in treating chronic pain conditions. Whereas inflammation control is not as useful in chronic pain conditions, but often quite useful in acute care situations.

	Acute	Subacute	Chronic
Ascending Inhibition			
Cold	\square	\boxtimes	
Heat			\boxtimes
Topical analgesics	\square	\square	\square
Pharmacy	\square	\square	\square
Supplements	\square	\square	\square
Assistive devices	\square	\square	\square
TENS	\square	\square	\square
Kinesiotape	\square	\square	
Manual Therapy	\square	\square	\boxtimes
Stay Active	\square	\square	
Descending Inhibition			
Exercise (moderate)		\boxtimes	\boxtimes
Acupuncture	\square	\boxtimes	\boxtimes
Cognitive processes			\boxtimes
Pharmacy		\boxtimes	
Lifestyle			\boxtimes

THE LOSE PAIN PLAN

(The following is an example of how you can put a Lose Pain plan together for yourself).

Dr. Merritt's Lose Pain Plan.

Step 1: Understand the reason for your pain. Seek medical advice when you're unsure about your pain or when it is causing significant discomfort or affecting your daily life. A healthcare professional can provide an accurate diagnosis and recommend appropriate treatment options.

Specific Diagnosis: Right sacroiliac joint dysfunction Or General: Low back pain

Step 2: Lose the pain.

My pain is: Acute (0-4 weeks), Subacute (4-12 weeks), Chronic (beyond 12 weeks).

My pain is: \Box Nociceptive (most common), \Box Neurogenic (10%), \boxtimes Neuroplastic (chronic).

A medical professional can help you determine which type of pain you have. It is not unusual to suffer from one or more different types of pain simultaneously. Ex: You may have chronic low back pain that is prone to recurrent flare-ups. Likely you would be suffering neuroplastic pain, that becomes acute nociceptive pain when the back is reaggravated. If you have a "flare up" of a chronic problem, treat it as acute or subacute according to the approximate time frames listed above.

Acute and subacute pain. Nociceptive.

- □ Cold therapy
- □ Topical Analgesics (menthol or medicated)
- □ Pharmacy*
- \Box Supplements
- \Box Assistive Devices
- \Box TENS \Box Kinesiotape
- □ Manual Therapy
- Exercise (gentle)

Acute and subacute pain. Neurogenic.

- \Box Cold therapy
- □ Topical Analgesics (capsaicin or medicated)
- □ Pharmacy*
- □ Supplements (for inflammatory component)
- \Box Assistive Devices
- □ Manual Therapy
- □ Exercise (gentle/rehabilitative focused)

Chronic, neuroplastic pain.

 \square Cold therapy \square Heat Therapy – Ice low back with ice pack, 20 mins on/off and repeat as needed.

- **I** Topical Analgesics (menthol, capsaicin, or medicated) Biofreeze as needed.
- □ Pharmacy**
- □ Supplements
- Manual Therapy Foam rolling and tennis ball massage, low back and glutes, during exercise sessions.
- Exercise (moderate) Resistance training, 30 mins, 2-4x/week. No deadlifts. + lunges and hip thrusters.
- □ Cognitive Processing
- □ Lifestyle (maintain healthy weight, diet, sleep, stress reduction, quitting smoking)

* It's crucial to read and understand the disclaimers and labeling information for any medication you plan to use, even if it's available over the counter. Additionally, if you have specific questions or concerns about a particular medication or its usage, it's always best to consult a healthcare professional or pharmacist for personalized advice.
 ** Patients should carefully read and understand the disclaimers provided with their prescribed medications and consult with their healthcare professionals if they have any questions or concerns.

Specific Dr.'s instructions: "A physician who treats himself has a fool for a patient." (3)

Lose Pain Plan.

Step 1: Understand the reason for your pain. Seek medical advice when you're unsure about your pain or when it is causing significant discomfort or affecting your daily life. A healthcare professional can provide an accurate diagnosis and recommend appropriate treatment options.

Specific Diagnosis: _______ Or General: ______
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- □ Pharmacy*
- □ Supplements
- □ Assistive Devices
- \Box TENS \Box Kinesiotape
- Manual Therapy
- □ Exercise (gentle)

Acute and subacute pain. Neurogenic.

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- □ Topical Analgesics (capsaicin or medicated)
- □ Pharmacy*
- □ Supplements (for inflammatory component)
- Assistive Devices
- □ Manual Therapy
- □ Exercise (gentle/rehabilitative focused)

Chronic, neuroplastic pain.

- \Box Cold therapy \Box Heat Therapy
- □ Topical Analgesics (menthol, capsaicin, or medicated)
- □ Pharmacy**
- \Box Supplements
- □ Manual Therapy
- □ Exercise (moderate)
- □ Cognitive Processing

□ Lifestyle (maintain healthy weight, diet, sleep, stress reduction, quitting smoking)

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Specific Dr.'s instructions: ____

Lose Pain Plan.

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Specific Dr.'s instructions: ____

Additional Resources

I hope you find this document useful. Additional resources can be found on my website at <u>www.DocLevi.com</u>.

Finally,

Good luck on your journey to lose pain. If you should have any questions, feel free to contact me.

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