

Facilitated Segment

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based on the book, *Facilitated Segment: Missing Link in Treatment of Complex Chronic Pain*

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Logline

An insightful documentary looking into the process of successful treatment methods for complex chronic pain.

Documentary Premise

Many patients have struggled with complex chronic pain, which many physicians advise them to just live with. These patients often have difficulties connecting their current pain to past post-traumatic experiences. Many live limited lives because their pain affects functional capacity and is declared untreatable. Most institutions dismiss chronic pain as untreatable because there is no specific diagnosis and, therefore, no organized treatment plan.

This documentary is necessary for helping patients develop logical thinking to seek rational treatment for their pain. It helps patients understand the underlying biomechanical dysfunction that can be a pain driver.

This documentary emphasizes the importance of understanding the logic in the evolution of pain and the logic of an effective treatment plan. It highlights the effectiveness of the treatment approach of interventional medicine, which modulates the neural

signal and manual physical therapy to correct biomechanical dysfunction and eliminate the pain generator in a patient. This documentary shows that rehabilitation is possible even if other physicians dismiss chronic pain as untreatable.

Three Act Summary

Act One

- The documentary starts with an overview of the anatomy of injury and produces a simple explanation of the anatomical structures needed to perceive pain. It begins with the definition of pain and the connection of soft tissue injury to the trauma on the spine.
- Soft tissue injury is defined as trauma to tissue like a joint or muscle. More explanation on the movement of joints and the effects on an injury is given. The effects of stress and strain on a joint are explored.
- Next is the neurology of pain and the facilitated segment, with three kinds of sensory receptors highlighted in the body that transmit impulses when stimulated. It also indicates that there are four stages of nerve-mediated activity involved in pain stimulation.
- In the first stage, transduction, nerve receptors transmit information about the environment for the nervous system to adapt in a process known as plasticity. The second stage, transmission, occurs when the peripheral nerve receptor relays a signal to the CNS, which receives all sensory information and forms appropriate responses.
- The third stage is modulation, in which several mechanisms in the central and peripheral nervous system alter the original stimulus received. These three stages become less effective with the presence of chronic pain. The fourth stage is perception, which occurs in the cerebral cortex and characterizes the type of pain.

- Furthermore, the concept of the facilitated segment is explained. The facilitated segment is rooted in osteopathic medicine, which suggests that correcting facilitated segments will cause pain reduction and improve organ function.
- The next chapter centers on neural tension. This chapter highlights the role of the frequently overlooked indirect tension and direct nerve compression on the nervous system. This makes it necessary to locate the point and causation of tension during the physical examination before treatment begins. The treatment of neural tension includes exercises that stretch the nervous system to glide both the CNS and the peripheral nervous system. The clinical case of a patient with extreme neural tension is analyzed.
- The focus shifts to myofascial pain, which is a regular, treatable soft tissue disorder that makes up pain problems. A diagnostic test does not usually reveal myofascial pain syndromes, and diagnostic breakthrough comes from discovering the trigger point, which begins with a muscular overload.
- More insight is thrown into the development and maintenance of the trigger point. The difference between myofascial-related pain syndromes and other pain syndromes is highlighted. Patient education is described as indispensable in the management of this pain syndrome.
- Other sources of musculoskeletal pain like Myopathies, Arthritis, Tendonitis, and Bursitis are highlighted. The diagnosis of myofascial pain is made through physical examination. Treatment involves physical therapy involving the trigger point, and effective treatment approaches are described.
- The documentary quickly progresses into a description of the assessment process to diagnose the pain patient. First is the initial assessment, where the physician develops a relationship with the patient by taking their medical history and conducting a physical examination.

- The patient's medical history consists of all important information relating to the problems for which the patient seeks a solution. The patient shares the type of pain, information about their daily habit, as well as coexisting diseases. The physician uses a complete patient evaluation to create a treatment program that the patient can adapt to.
- Moving forward to physical examination, the physician identifies and documents structural and functional abnormalities that are treatable. The physical examination comprises a neurological evaluation to identify nerve root and spinal cord damage, nerve entrapments, and soft tissue and mechanical injury.
- Detailed examination of the patient's structural alignment follows. The physician also analyses the vertebrae for rotations or displacements that could cause deviation from normal spinal curvatures. Movement analysis evaluates the function of major muscle groups and the timing of muscle contractions. The initial examination marks the beginning of the rehabilitation process.

Act Two

- The process of providing pain relief through the combination of medications, behavioral modifications, injections, and physical therapy is described next. The clinical model of injections and manual physical therapy changes body mechanics, corrects segmental dysfunction, and is an effective treatment method.
- Certain patient differences that should be considered before medication and side effects are highlighted. The process of combined therapy as a treatment for myofascial pain, which includes trigger point injections with local anesthetic and manual physical therapy, is explained.
- Lumbar and Brachial plexus blocks are also necessary for rehabilitation to temporarily remove pain and facilitate

manual manipulation of an injured limb. The paravertebral injection is an important block that facilitates mobilization of the vertebral segments. Facet blocks are joint injections that articulate between two vertebrae and are performed with direct fluoroscopic guidance.

- Other therapy methods include nerve modulating procedures like radiofrequency nerve ablation technique, which cater to patients that experience pain from arthritic calcified facets, fixated facilitated segments, or degenerated chronically inflamed sacroiliac joints for which injections provide only temporary relief; spinal cord stimulator, which is used for patients suffering from failed spinal surgery; electrical interference which can relieve pain and increase enkephalins.
- Furthermore, the role of physical therapists is spotlighted. They perform physical therapy evaluations to evaluate the musculoskeletal and neurological systems from both structural and functional angles. Their findings confirm the physician's diagnosis while creating the trust which is necessary for treatment to begin because the therapist and the doctor create the unique treatment plan.
- The physical therapy evaluation tries to isolate the major pain generator and assist in providing an effective long-term solution. Physical therapists evaluate all body aspects for proper alignment from the feet up. The condition of a patient with complaints of headaches and neck and shoulder pain is observed. The case of another patient with postural asymmetry problems is discussed. The role of a physical therapist during the physical therapy evaluation is further emphasized.
- The physical evaluation also measures gait to understand how to maintain stability. The treatment goals highlight the other components of the evaluation, including collecting correct information and comprehensive analysis of the information gathered to treat the patient properly.
- Structural integrity needs to be considered when formulating a treatment plan. The ideal team responsible

for patient evaluation is described. And the team shares the treatment procedure for their clinic. Eventually, the treatment progress for complicated chronic pain is known to go through four phases which seem different but overlap in reality.

- For the clinic being studied, phase I, Manual Physical Therapy and Interventional Medicine, consist of manual physical therapy, a hands-on rehabilitation combined with injection therapy to modulate the neural signal and facilitate spinal mobilization.
- It further explains the occurrences during manual therapy while emphasizing that chiropractors often cannot move the facilitated segment in patients with chronic pain, which cancels them out as sole physicians for certain cases. This means they have to work hand in hand with a manual physical therapist.
- The first phase of treatment is described as the best time to correct certain conditions like a short leg which occurs when the length of the bone of one leg is shorter than the other. Other problems that must be corrected during the first phase of treatment are described.
- There's a further explanation of the science of manual physical therapy, which clearly explains how manual physical therapy works. Manual physical therapy fundamentally stimulates receptors found in the connective tissue and induces the release of specific neuropeptides that can deactivate pain receptors instrumental in maintaining complex chronic pain.
- The review of anatomy tries to explain spinal pain and how spinal mobilization is critical to patient rehabilitation before strength training or conditioning. It further explains that assessments need to be made to determine the best kind of manual technique to stimulate receptors indicating that a physical therapist must be skilled in various mobilization techniques.

- Myofascial release, muscle energy, craniosacral techniques, and mobilization of the spine are all examples of manual physical treatments used together with the blocks described earlier. The specific periods of a treatment process to introduce these methods are shown with examples of patients who have experienced them.
- When treatment proceeds to phase II, Neuromuscular Retraining, the correct muscles need to be isolated and strengthened. Neuromuscular retraining involves selectively recruiting muscles to optimize joint motion, provide postural support and maintain structural integrity. The physician works together with the patient to facilitate inhibited muscles until the patient can perform the exercise correctly on their own.
- The case of a patient whose pain reduced by 70% after completing phase I and subsequently participating in the retraining program is explored. Some light is thrown on the concept of proprioception which is the ability to sense the position of one's own body as this aids muscular retraining. It also discusses the devices used in neuromuscular retraining like the Swiss ball, rocker board, joint tape, and other devices, with pictorial examples of some patients using them.
- The phase II of treatment is Functional Retraining. This begins after normal alignment, mobility, and muscle recruitment have been achieved by a combination of injections and manual physical therapy in phase I. The phase III treatment process is duly explained as well as the outcome for the patient.
- Phase IV, Conditioning, improves the body's ability to function in coordinated patterns for sustained periods without physiologically overloading the body. It describes the programs involved in conditioning patients with complex chronic pain after going through the previous three phases.

Act Three

- Next to be explored are several conditions that trigger chronic pain. A detailed discussion on recognizing and treating short leg is given. When treating a short leg, the main concern is identifying the underlying perpetuating cause of the pain. X-ray bone scanogram is one of the least expensive and most underutilized diagnostic tests to determine leg length. A clinical case of a woman with this condition is reviewed.
- Treatment of the short leg condition is highlighted, with complete correction of leg discrepancy being recommended in cases where the spine does not reveal advanced degeneration. Treatment is usually achieved with interventional pain injections followed by manual physical therapy.
- Other extra procedures depend on the result of the patient's physical examination. The longer a perpetual underlying dysfunction exists, the more complicated the treatment plan becomes. However, in cases where surgical decompression is not needed, complex pain problems can be treated with a combination of interventional medicine, manual physical therapy, and a home exercise program.
- The book quickly delves into clinical examples beginning with the case of a fifteen-year-old adolescent with complaints of debilitating headaches, diffuse abdominal pain, cramping, and left knee pain from several specialists without a solution. However, physical examination and other tests reveal the patient has a short left leg. It also highlights the different treatment procedures employed to achieve patient recovery.
- Further emphasis on the importance of the thoracic spine in the successful treatment of complex chronic pain follows. This begins with an explanation of the function of the thoracic spine as a transmitter of axial rotational forces between the upper and lower extremities.
- The thoracic spine can be a source of pain because it is a component of the kinetic chain for the cervical and lumbar spine as well as for the upper and lower extremities.

Further explanation is given on the contribution of the thoracic spine to chronic pain. Treatment plan can incorporate the treatment of the thoracic spine to assist patient rehabilitation.

- Motor vehicle accidents are recognized as a cause of most chronic pain, especially as most direct and indirect effects do not start immediately but intensify later. Due to the late emergence of the pain, patients do not see it as the original source of their pain, and many practitioners overlook most of the injuries it causes.
- The major biomechanical problem from motor vehicle accidents is the thoracic spine and the cervical whiplash. Further discussion on how the mechanism of injury of a motor accident can change in different scenarios follows, as well as the several reasons why a physician can fail to understand the patient's pain.
- Next is an overview of another condition, the congenital thoracolumbar scoliosis of the spine, which might not cause pain in a scoliotic patient, making it a complicated issue if the patient gets involved in a motor vehicle accident.
- Another viewpoint is the rehabilitation process for breast cancer patients who have undergone mastectomy and other breast cancer treatment procedures, citing manual physical therapy as a source of relief. The process of rehabilitation for the patient is explained thoroughly. A clinical case of a patient who has undergone the process is discussed.
- Hypermobility is highlighted as a condition where people are born with exaggerated connective tissue elasticity. Hypermobility is more obvious in patients with Marfan's syndrome or Ehlers Danlos. The mechanism of pain in these types of patients is explained, as well as the treatment plan, which consists of tedious trigger point injections and manual physical therapy, ensuring that the patient's spine is first treated and mobilized. Other treatment programs continue after the patient is anatomically realigned.

- The focus moves to improving the function and reduction of pain in patients previously diagnosed with fibromyalgia. The process of physical examination for fibromyalgia patients to determine the several points of dysfunction is explored. Success has been recorded with fibromyalgia patients who were compliant and committed to their integrated treatment.