Module I

What causes pain?

Pain: A personal, private, emotional experience unrelated to the amount of tissue damage. Pain is an unpleasant feeling that is first received by nociceptors and conveyed by sensory neurons to the centers of conscious recognition. Everyone has nociception all the time. It is an unconscious perception until it is recognized by the brain, only then can we appreciate the sensation of pain. The discomfort signals the presence of actual or potential injury to the body. However, pain is more than a sensation, or the physical awareness of pain; it also includes perception, the subjective interpretation of the discomfort.

Various pains have a very specific description, in which case the doctor can more readily understand the neurological pathways of its realization. A throbbing pain might be vascular; a cramping pain might be muscular; a sharp pain may be neurological, etc. Alternatively, the patient might not be able to give much information other than they know they are suffering. In either case, the patient's explanation of their pain is essential to the doctor's understanding of their condition.

Decreased potentiation of normal reciprocal movement impairs human performance.

Most of us were taught about Melzack and Wall's gait theory of pain (Science. 1965 Nov 19;150(3699):971-9), the fundamentals of which are still recognized in the explanation of pain control. The bottom line is that joint motion knocks out pain, so when a joint hurts we move it in hopes that the pain will ease. However, while joint motion might influence pain's perception, there is more to the picture.

The secret to managing and even curing structural pain is *reciprocity*. The corollary to the gait theory of pain is that *reciprocal joint motion* knocks out pain. Since muscles move joints—and not the other way around—muscle function is the key to treating structural pain.

The Receptor Dependent Nervous System

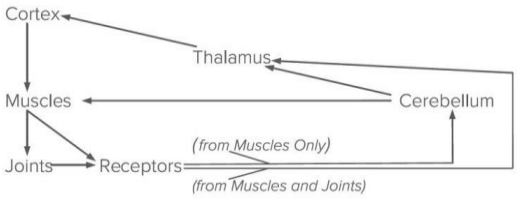
The human brain is receptor dependent. The greatest majority of incoming signals to the brain is from muscles. Every muscle contraction sends sensory afferents ("proprioception") to the cord at 120 meters (greater than the length of an American football field) per second. That's almost 270 miles per hour! And since the distance to the brain averages six feet, that proprioception is practically instantaneous. On the other hand, pain signals (more appropriately called "nociception") reach the cord at about 0.5 meters per second—about 18" per second. The point is that proprioception keeps nociception under control.

The weakest link in this whole process is the human response to gravity. Gravity constantly influences all neurological function, and that includes the brain. If all muscle contraction were symmetrical then the brain's input would be balanced. However, because of the great potential for some muscles to pull stronger than others because of handedness, for example, brain input is never symmetrical. Therefore, the sensory afferents can have an increased propensity of one side over the other, which leads to an asymmetrical motor response, eventually creating movement disorders.

Here is one more example: the vestibular input from the semicircular canals housed in the bone vault of the cranium has its influence on the muscles of the cervical spine. Any head tilt

secondary to an imbalance of these cervical muscles will cause cerebellar aberrance and its consequential structural instability. When movement breaks down so do the proprioceptive afferents and that can lead to the experience of pain through an inability to presynaptically inhibit nociceptive reflexogenic afferents.

The best management of spinal pain is treatment that encourages the reciprocal joint motion that eliminates the perception of pain. Ninety-nine out of 100 low back cases can be managed non-pharmaceutically and non-surgically simply by improving spinal mechanics. The only people who need drugs, shots, or surgery are those who suffer from cancer, fractures, serious infection such as TB or staph, or the one in 100 disc cases that does not respond to musculoskeletal therapy.



Schematic of the receptor based nervous system

Module I will teach you some of the newest manual muscle testing techniques and functional neurological principles that can revolutionize your practice:

• **The Receptor Based Nervous System**: Your patient's nervous system depends on the receptor input that comes from their muscles and joints.

When their sensory system is intact their brain will work at a higher level of efficiency. Learn how to better understand and use your patient's receptor based pathways to optimize their brain's performance.

• **Deafferentation, "Pinched Nerves" and the Structural Adjustment**:

Pain control depends upon nociceptive inhibition. Discover the most efficient pain control mechanisms in the human system. Learn the difference between a broken-down sensory input and a "pinched nerve," and how to treat each one.

• **An Overview of the Clinical Aspects of Vertebral Coupling**: Your hands are the key to both pain control and your patient's overall neuromusculoskeletal healing. You will learn the basic strategies that ensure functional brain stimulation and appreciate the secrets to coupled motion that influences the dynamics of human performance.

You will also learn how to:

1. **Map a physiological blind spot** before and after treatment and its significance to brain function

2. Examine six physiological reflexes

    • **Deep tendon,** myotatic or stretch reflexes on various muscles

    • Two types of **tonic neck reflexes** on upper and lower extremities

    • **Tonic labyrinthine reflex** on supine and prone patients

    • **Flexor withdrawal reflex**

    • **The Spinal Galant reflex**

If necessary, Dr. Allen will teach you the basic manual muscle tests needed for this and future class:

- *Pectoralis major (clavicular division)*
- *Deltoid*
- *Latissimus dorsi*
- *Hamstrings*
- *Rectus femoris*
- *Gluteus medius*