

Massage Therapy Concepts and Techniques Class

by InvictaButterfly

Every time that I touch something, I am as aware of the part of me that is touching as I am of the thing I touched. Tactile experience tells me as much about myself as it tells me about anything that I contact. I am constantly using the world to explore my reactions just as much as I am using my reactions to assess the world. My sense of my own surface is very vague until I touch; at the moment of contact two simultaneous streams of information begin to flow: information about an object, announced by my senses, and information about my body announced by the interaction with the object.

Thus I learn that I am more cohesive than water, softer than iron, harder than cotton balls, warmer than ice, smoother than tree bark, coarser than fine silk, more moist than flour, and so on. My tactile surface is not only the interface between my body and the world, it is the interface between my thought process and my physical existence as well.

By rubbing up against the world, I define myself to myself.

- Excerpt from Job's Body by Deane Juhan

Useful Terms:

- Homeostasis
 - Normal body function maintains a state of internal balance, an important characteristic of all living things. Such conditions as body temperature, body fluid composition, heart rate, respiration rate, and blood pressure must be kept within certain limits to maintain health. Homeostatic imbalance is when feedback loops fail.
- Negative and Positive Feedback Loops
 - Negative: Reverses any upward or downward shift in the body. Common.
 - For example, body temperature. If you get too hot you sweat to cool down, if you get too cold you shiver to warm up.
 - Positive: A given shift promotes more of the same shift. Less common.
 - For example, labor contractions start which releases oxytocin, which causes more and bigger contractions, which releases more oxytocin, etc. This continues until the stimulus is removed or some outside force interrupts the shift.
- Tensegrity
 - A structural principle based on a system of isolated components under compression inside a network of continuous tension.
 - The musculoskeletal system consists of a continuous network of muscles and connective tissues, while the bones provide discontinuous compressive support.
 - The tension-bearing members in these structures map out the shortest paths between adjacent members (and are therefore, by definition, arranged geodesically). Tensional forces naturally transmit themselves over the shortest distance between two points, so the members of a tensegrity structure are precisely positioned to best withstand stress. For this reason, tensegrity structures offer a maximum amount of strength.

Planes of Division in the Body:

- Frontal (Coronal)
 - Plane that goes through ears, down sides of hips.
 - Divides Anterior and Posterior.
- Sagittal
 - Plane that goes down our nose, down our sternum and pubic symphysis.
 - Divides us into Left and Right halves along the Midline.
- Transverse (Horizontal)
 - Plane that goes around our hips, pubic symphysis, and sacrum.
 - Divides us into Superior and Inferior.

Directions in the Body:

- Superior (Cranial) vs Inferior (Caudal) – Head vs Sacrum/Feet
- Anterior (Ventral) vs Posterior (Dorsal) – Front/Belly vs Back/Spine
- Medial vs Lateral – Closer to the Midline vs Away from the Midline

Movements of the Body:

- Flexion – Bends a joint or brings bones closer together.
- Extension – Straightens or opens a joint.
- Adduction – Brings a limb medially toward the body's midline.
- Abduction – Moves a limb laterally away from a body's midline.

Types of Tissues in the Body

- Epithelial – Covers surfaces, lines cavities, and forms glands.
- Connective Tissue – Supports and forms the framework of all parts of the body.
 - o Circulating – Blood and lymph
 - o Generalized – Areolar, Adipose, Irregular Dense, Regular Dense
 - Irregular Dense – Capsules around organs and glands
 - Regular Dense
 - Tendons – Connect Muscle to Bone
 - Ligaments – Connect Bone to Bone
 - Elastic – Vocal cords, respiratory passages, walls of blood vessels
 - o Structural – Cartilage, Bone
- Muscle Tissue – Contracts and produces movement.
- Nervous Tissue – Conducts nerve impulses.
 - o Sensory Reception
 - Two pathways transmit pain to the Central Nervous System (CNS). One is for acute, sharp pain, and the other is for slow, chronic pain. Thus a single strong stimulus produces the immediate sharp pain, followed in a second or so by the slow, diffuse, burning pain that increases in severity with time.
 - Myelinated send signals at ~20m/sec.
 - Non-myelinated and send signals at ~2m/sec.
 - Nociceptors - Sensory Receptors:
 - Mechanoreceptors
 - o Ruffini's End Organ – Skin Stretch
 - o End-Bulbs of Krause – Cold
 - o Meissner's Corpuscle – Light pressure, changes in texture, slow vibrations
 - o Pacinian Corpuscle – Deep pressure, fast vibrations
 - o Merkel's Disc – Sustained touch and pressure
 - o Free Nerve Endings – Pain, itch, and temperature change
 - Thermoreceptors – Temperature
 - Chemoreceptors – Chemicals. For example, capsaicin receptors in the tongue
 - Proprioception – Knowing where your body is in space and changes in body position.
 - Can be affected by various conditions including Ehlers-Danlos syndrome, Marfan's Syndrome, Autism Spectrum Disorder, ADD/ADHD, Parkinsons, physiological aging, and any condition that effects sensory reception, connective tissues, or neurologic pathways in the body.
 - Joint Receptors
 - o Low threshold mechanoreceptors embedded in joint capsules.
 - Muscle Spindle Fibers
 - o Muscle stretch receptors within skeletal muscles that primarily detect quick changes in muscle length.
 - o Muscle Stretch Reflex – A muscle contraction in response to stretching a muscle. Example: the "Knee-Jerk" or Patellar Reflex
 - Golgi Tendon Organ (GTO)
 - o AKA Neurotendinous Organ/Spindle –
 - o Lies at the interface between a muscle and its tendon, the musculotendinous/myotendinous junction.
 - o Triggers the Golgi Tendon Reflex when it senses changes in muscle tension.
 - o Golgi Tendon Reflex – An inhibitory effect on the muscle resulting from the muscle tension stimulating the GTO of the muscle, and hence it is self-induced. It is a negative feedback mechanism preventing too much tension on the muscle and tendon. When the tension is too much, the inhibition can be so great it overcomes the excitatory effect on the muscles alpha motoneurons causing the muscle to suddenly relax.

Membranes of the Body:

- Epithelial Membranes - Serous, Mucous, Cutaneous
- Connective Tissue Membranes
 - o Synovial – Thin, lines joint cavities, creates lubricating fluid to reduce friction.
 - o Fascia – Fibrous bands or sheets that support and hold everything in place.
 - Thixotropy of Fascia - “Sol-Gel” Property
 - Non-Newtonian Fluid, with force/sheer the solidity of the tissue can change from fluid (sol) to solid (gel).
 - Too dry fascia can feel like saran wrap against saran wrap.
 - Superficial fascia – Continuous sheet of tissue that underlies the skin and contains adipose tissue.
 - Deep fascia – Covers, separates, and protects skeletal muscles.
 - Fibrous pericardium – Forms the cavity that encloses the heart.
 - Periosteum – Membrane around bones.
 - Perichondrium - Membrane around cartilage.

Types of Muscle

- Smooth Muscle – Makes up the walls of the hollow body organs as well as those of blood vessels, respiratory passageways, and intestines.
- Cardiac Muscle – Makes up the heart wall, specialized to allow electrical impulses to travel more rapidly than typical muscle.
- Skeletal Muscle – Heavily striated, long cylindrical cells that can contract as a unit.

Tender vs Trigger Points

- A focus of hyperirritability in a tissue that, when compressed, is locally tender (Tender Point) and, if sufficiently hypersensitive, gives rise to referred pain and tenderness. (Trigger Point)

Swedish Massage Techniques

- Effleurage – Sliding, gliding, or circular strokes.
- Petrissage – Kneading, wringing, skin rolling, or lifting.
- Tapotement – Rhythmic percussion, beating, hacking, slapping, tapping, or cupping.
- Friction – Cross Fiber, with the fibers, or circular.
- Vibration – Shaking or rocking.

Hot/Cold Therapies

- Heat
 - o Vasodilator
 - o Relaxes and loosens muscles, tendons, and fascia.
 - o Draws in fluid/circulation/lymph
- Cold
 - o Vasoconstrictor
 - o Muscles contract
 - o Reduces pain signals
 - o Anti-inflammatory
 - o Pushes out fluid/circulation/lymph
- Contrast
 - o Heat then Cold then Heat then Cold etc.
 - o Can help body back to homeostasis
 - o Helps “pump” fluid/circulation/lymph into and out of an area

Lactic Acid – Fatigue or Fuel?

- Lactic Acid AKA Lactate (minus a hydrogen ion) or N-Lactoylphenylalanine (see figure below)
- Original article in 1922 by German physician Otto Meyerhof that electrocuted severed frog legs to show that lactic acid was formed via glycolysis. Which made people think that it was the culprit for muscle fatigue and pain. (Meyerhof)
- In 1985 physiologist Dr George A Brooks showed that lactate is a valuable fuel for our muscle fibers and then postulated that the hydrogen ion that is released when lactic acid becomes lactate is the problem. (Brooks)
- In 2004 Dr. Robert A Robergs showed that lactic acid is never created during anaerobic energy production. Instead, the hydrogen ions arise independently of the lactate. They showed that Lactic Acid isn't produced in the muscles so it cannot be the source of acidosis. Also Lactate decreases acidosis in muscle tissue both by consuming hydrogen ions and by pairing with them to exit the muscle fiber via transport proteins. (Robergs, Ghiasvand and Parker)
- Recent research by McKenna and Hargreaves states that "Fatigue during exercise can be viewed as a cascade of events occurring at a multi-organ, multi-cellular, and multi-molecular levels." (McKenna and Hargreaves)
- Lactate DOES NOT cause muscle soreness. Since lactate is a fuel source, it is utilized quickly and removed from both muscle tissue and blood soon after even intense exercise. It does not linger for days and is usually reduced to typical levels within an hour post exercise. (Caldwell)

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