TTAPS PART 1

COURSE NAME:

USE OF REFLEXES TO RESOLVE BIOMECHANICS OF CHRONIC NEURO-MUSCULAR-SKELETAL DIAGNOSES

COURSE COORDINATOR:

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COURSE DESCRIPTION: **P.A.C.E APPROVED 16 CEs**

USE OF MYOTATIC, POSTURAL, RECIPROCAL, WITHDRAWAL, AND CROSSED EXTENSOR REFLEXES TO RESOLVE PAIN AND BIOMECHANICS OF CHRONIC NEURO-MUSCULAR-SKELETAL CONDITIONS

EDUCATIONAL OBJECTIVES:

- DISCUSSION OF NORMAL FUNCTION OF MYOTATIC REFLEXES
- DISCUSSION OF CAUSES OF FACILITATED NERVES RELATING TO WITHDRAWAL REFLEXES CAUSING CHRONIC NEURO-MUSCULAR-SKELETAL CONDITIONS
- DISCUSSION OF VARIETIES OF WITHDRAWAL REFLEXES
- DISCUSSION OF AND WORKSHOP OF REINSTATING NORMOTONUS OF HYPERTONIC NERVES AND MUSCLES THROUGH REFLEX INHIBITION UTILIZING MYOTATIC REFLEXES

TEACHING METHODS: VERBAL, OVERHEAD PROJECTOR, HANDOUT OF COURSE OUTLINE AND POSSIBLY THE OVERHEADS THAT AREN'T COPYRIGHTED, INSTRUCTOR WATCHING AND CRITIQUING THE STUDENTS PERFORMING THE TREATMENTS

RECOMMENDED READING: GUYTON'S TEXTBOOK OF MEDICAL PHYSIOLOGY, 5TH & 9TH ED.; CHUSID'S CORRELATIVE NEUROANATOMY AND FUNCTIONAL NEUROLOGY; MAZION'S ILLUSTRATED MANUAL OF NEURO/ ORTHO/PHYSIOLOGICAL TESTS; THE CHALLENGE OF PAIN BY MELZACK; AND WALL; ACUPUNCTURE, THE ANCIENT CHINESE ART OF HEALING AND HOW IT WORKS SCIENTIFICALLY BY FELIX MANN, MB; CUNNINGHAM'S TEXTBOOK OF ANATOMY, 11TH ED; DORLAND'S ILLUSTRATED MEDICAL DICTIONARY, 25TH ED

1st hour:

All-or-none law

The all-or-none law is the principle that the strength by which a nerve or muscle fiber responds to a stimulus is independent of the strength of the stimulus. If that stimulus exceeds the threshold potential, the nerve or muscle fiber will give a complete response; otherwise, there is no response.

It was first established by the American physiologist Henry Pickering Bowditch in 1871 for the contraction of heart muscle. According to him, describing the relation of response to stimulus,

"An induction shock produces a contraction or fails to do so according to its strength; if it does so at all, it produces the greatest contraction that can be produced by any strength of stimulus in the condition of the muscle at the time."

The individual fibers of **both skeletal muscle and nerve** respond to stimulation **according to the all-or-none principle.**

Mazion's Illustrated Manual of Ortho/Neuro/Physio Clinical Diagnostic TechniquesFor Office Procedure [Revised ed.], Mazion and Haynes

P. 189

"The deep reflexes, also called tendon reflexes…the **stretch** or myotatic **reflex**…"

Correlative Neuroanatomy & Functional Neurology,Chusid, 16th ed, P. 163-5, 72-5

Hyperkinesias and **hypertonic states** (rigidity) are with a few exceptions due to **involvement of the extrapyramidal system**. It includes all descending pathways exclusive of the pyramidal tract which act **directly or through internuncial neurons** on primary motor neurons.

Muscle tonus is a state of **continuous mild contraction** of muscle dependent upon the integrity of nerves and their central connections and the complex properties of muscles such as contractility, elasticity, ductility, and extensibility. **[i.e., no all or none going on here]**

Atonic muscles are soft and flabby; hypertonic muscles are rigid and spastic. Normal muscle at rest has a certain resilience rather than absolute flabbiness; when muscle is passively stretched by a joint movement, a certain amount of involuntary resistance is encountered.

The **stretch reflex** is considered **essential in maintaining muscle tonus** and can produce increased tension of certain muscle groups so as to provide a background of postural muscle tonus against which voluntary movements can occur.

Most reflex arcs include at least one **internuncial neuron** between the afferent and efferent fibers, the **stretch reflex** has no such internuncial or intermediary neuron and the **afferent neuron makes direct contact with the efferent neuron across a single synapse in the spinal cord**.

Stretching a muscle stimulates its muscle spindles. Afferent nerve fibers from muscle - spindles enter the spinal cord through dorsal root nerves and go anteriorly through the gray matter of the spinal cord to reach the anterior horn, where synapses with motor cells are made. Higher supraspinal motor centers are believed to send impulses to skeletal muscle by 2 routes-one involving large alpha motoneuron cells and the other small **gamma motoneurons**.

The **gamma neuron** may be stimulated by afferent dorsal root fibers coming from the muscle spindles so as to cause **contraction of intrafusal muscle fibers** via a **stretch reflex**. This appears adequate to activate the main muscle mass so that gamma innervation may serve as a "starter" for activation of **alpha motoneurons** and the main muscle mass.

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The "gamma loop" is the circuits to and from the spinal cord involving the muscle spindle with its gamma efferent fibers. [safety pin cycle]

Steady voluntary or postural contraction may be considered a result of **tonic innervation** and **facilitation** of alpha motoneurons via this loop.

Reflex rigidity may be due to sensory irritation.

*Tone is lost or ***diminished*** **when the reflex arc is interrupted.* [*diminished* means the "all or none" principle doesn't always apply!]**

Rigidity: **Local reflex rigidity** occurs with **peripheral irritative lesions**.

The **spinal cord** is the seat of the **stretch reflex** which **functions in the maintenance of tone or "static activity."**

The impulses pass through **the simple reflex arc**, which includes the neuromuscular spindles, afferent nerves, and spinal cord connections, to the anterior horn cells, and the efferent nerves.

Neuromuscular or idiomuscular activity depends upon the contractility, elasticity, irritability, ductility, and extensibility of the muscle itself.

Signs of Disturbed Tonus & Increased Movements:

Rigidity: Generalized hypertonicity of the muscles occurs with extrapyramidal lesions…which has affinity for the basal ganglia.

Local reflex rigidity: occurs with peripheral irritative lesions.

Dystonia: characterized by bizarre twisting movements of the body and trunk, some of the muscles being hypertonic, usually referring to mobile spasms of the axial and proximal muscles of the extremities. Torsion spasm, with resulting twisting or turning movements, is included, and spasmodic torticollis is the most commonly encountered torsion spasm.

A nerve fiber may be excited from its own cell body or by a variety of **mechanical**, thermal, chemical or electric stimuli **applied anywhere along its course**. The energy for transmission is derived from the substance of the nerve fiber or its ensheathing tissue.

The primary function of a nerve cell or neuron is to conduct an impulse.

2nd hour:

Excitatory or Inhibitory postsynaptic potential (EPSP, IPSP) can be detected by the depolarization or hyperpolarization of the postsynaptic membrane. This potential can be clearly differentiated from the signal reaching the synapse and the **all-or-none** impulse originating in the postsynaptic element and thence conducted through the **axon**.

Stimulation of presynaptic fibers may initiate a hyperpolarizing response in spinal motor neurons. During this potential the excitability of the neuron to other stimuli is decreased so that this potential is referred to as an **Inhibitory Postsynaptic Potential (IPSP)**.

Stimulation of some sensory nerve fibers may produce EPSPs in some motor neurons and IPSPs in others. Usually EPSPs are produced in motor neurons to which the sensory fibers pass directly and IPSPs result in motor neurons separated by a single interneuron (Golgi bottle neuron). Thus **excitatory stimuli may be converted into inhibitory stimuli** by interposing a single golgi bottle type neuron between the excitatory ending and the spinal motor neuron.

In the neuromuscular junction, spontaneous miniature end-plate potentials exist. In this special type of synapse, the postsynaptic membrane is electrically unexcitable. the 2 essential types of synaptic actions, the excitatory and inhibitory, are believed to be produced by a flux of ions across the synaptic cleft which leads, respectively to **depolarization or hyperpolarization of the postsynaptic membrane**., preceded by discharge of a chemical transmitter at the synaptic cleft.

Dendrites of neurons are believed to produce graded electric responses, in contrast to the **all-or-none responses of the axon or cell body**. Such graded responses characteristically have no absolute refractory period, so that a second response may overlie the first. The intensity and time course of such

graded responses of dendrites are directly related to the stimulus, and the graded response is essentially a local response of postsynaptic membrane.

Skin areas are supplied by the dorsal (posterior) roots of a single segment.

The motor unit is made up of the anterior horn cell of the spinal cord and the muscle group it innervates, having a cell body, dendrites, axon and end-plates. Dendrites receive impulses from many posterior roots and many levels of the spinal cord and brain. **The axon begins at the axon hillock and extends via the anterior (ventral) nerve root to the peripheral nerve and muscle.**

The segmental spinal reflex involves the afferent neuron and a motor neuron at the same level. Motor units of many spinal segments may be excited by one afferent neuron. Patterns of movement rather than specific muscle contractions are concerned in the simplest reflex reactions.

Motor nerve fiber axons terminate at a specialized portion of the muscle fiber called the **end-plate**.

3rd hour:

CONVERGENCE AND SUMMATION

***Spatial summation**, in which a recipient neuron **receives almost simultaneous impulses from many afferent neurons,** is believed to play an important role in synaptic transmission of impulses.**

[most doctors and therapists are totally unaware of this]

Temporal summation refers to the repeated stimuli occurring within a short excitable period of the synapse, is not believed to play a significant role in synaptic transmission.

***Inhibition** refers to **the prevention or diminution of a reflex muscle contraction** and is believed to be produced in or near anterior horn cells. Two types of central inhibition have been recognized: Indirect inhibition refers to inhibition consequent to subnormal period of recovery nerve; **direct inhibition** is said to be **due to polarization of adjacent neurons essential to the transmission of the reflex which is inhibited**.*

Flexion reflex represents a withdrawal mechanism by means of which an extremity may be removed from a harmful stimulus. **A single afferent nerve may stimulate many motor units;**

***in general**, **the smaller nerve branches to the skin are more effective than the deep sensory nerves in exciting flexor motor units**. **[skin changes muscle tone and joint movement]** ***

Continued discharge of motor neurons after cessation of the afferent stimulus in the simple spinal reflex is designated as **after-discharge** and is presumably due to **continued discharge** among **internuncial reflex circuits**.

*__Chronic__ **semiflexed postures, with __atrophy__ of the relaxed, reciprocally innervated extensors***, may be observed in **arthritis of the knee joint**.

__Extensor reflexes__ are concerned with resisting the action of gravity upon body posture. The stretch (myotatic) reflex, whose receptors are in muscle, is the basis for the extensor reflex. During intervals of constant stretch, **__stretch reflexes__** may produce **__continued prolonged muscle tension without alteration or fatigue__**. Upon increased stretch, more motor units are brought into action.* **__When extensor muscles contract, antagonistic flexor muscles relax.__***

The **__final common pathway__** refers to motor units **upon which there is __convergence__ from __many__ afferent sources**. Thus, sensory impulses from many segments, involving many types of receptors, may influence the anterior horn cells for a time.

When reflexes produce the same pattern of movement, they may be classed as **allied reflexes**. Such reflexes may be active simultaneously or successively. The **__stretch reflex__** and the positive supporting reaction, both of which produce sustained extensor muscle contraction, are allied reflexes. **__Antagonistic reflexes__** are those which **__produce opposite effects__**. __When stimuli act which would produce different or opposing reflexes,__ **__the resultant response depends upon which stimulus is the more powerful__**.*

In general, **__nociceptive reflexes__** are dominant.

Nociceptive reflexes are initiated by **painful stimuli**.

***Proprioceptors in the skin** inform the CNS of weight-bearing pressure on the skin.* **[palms of feet, hands]**

__4th hour:__

Wikipedia

Ruffini endings, respond to deep, sustained pressure and **__stretch of the skin__**. The **Bulbous corpuscle** or **Ruffini ending** or **Ruffini corpuscle** is a class of **__slowly adapting__ __mechanoreceptor__** thought to exist only in the **__glabrous dermis__** and **__subcutaneous tissue__** of humans.

This spindle-shaped receptor is **__sensitive to skin *stretch*__**, and contributes to the kinesthetic sense of and control of finger position and movement. It is believed to be useful for monitoring slippage of objects along the surface of the skin, allowing modulation of grip on an object. **__[tapping or stroking the skin stretches it]*__**

Ruffini endings are **located in the deep layers of the skin**, and **register mechanical deformation within joints, more specifically angle change**, with a specificity of up to 2 degrees, as well as continuous pressure states. They also act as thermoreceptors that respond for a long time, so in case of deep burn there will be no pain as these receptors will be burned off. **[as you saw previously, skin stimulation changes muscle tone and joint angulation]***

Muscle memory has been **used synonymously with motor learning**, which is a form of procedural memory that involves consolidating a specific motor task into **memory through repetition**. When a movement is repeated over time, a long-term muscle memory is created for that task, eventually allowing it to be performed without conscious effort.

Muscle memory consolidation

Muscle memory consolidation involves the continuous evolution of neural processes after practicing a task has stopped. The exact mechanism of motor memory consolidation within the brain is controversial; however, most theories assume that there is a general redistribution of information across the brain from encoding to consolidation. **Hebb's rule** states that **"synaptic connectivity changes as a function of repetitive firing."** In this case, that would mean that the high amount of stimulation coming from practicing a movement would cause the repetition of firing in certain motor networks; presumably leading to an increase in the efficiency of exciting these motor networks over time.

Though the exact location of muscle memory storage is not known, studies have suggested that it is the inter-regional connections that play the most important role in advancing motor memory encoding to consolidation, rather than decreases in overall regional activity. These studies have shown a weakened connection from the cerebellum to the primary motor area with practice, it is presumed because of a decreased need for error correction from the cerebellum. However, the connection between **the basal ganglia** and the primary motor area is strengthened, suggesting the basal ganglia plays an important role in the motor memory consolidation process.

Law of Facilitation

It is one of the Neurological Laws. The Law of Facilitation states:

When an impulse has passed once through a certain set of neurons (known as the "facilitated section") to the exclusion of others, **it will tend to take the same course on a future occasion. And, each time that impulse traverses this path, on all future occasions, the resistance will be less.**

Spinal facilitation does occur and can be seen following musculoskeletal injuries. It is well established that inflammation produces both peripheral sensitisation of the afferents (such as free nerve endings) and **central sensitisation within the spinal cord** (Dunbar & Ruda 1992, Hylden et al 1989, Cook et al 1987, Woolf & Walters 1991). *This **sensitisation** means that **the threshold of different neurons is reduced**, so **they respond to mechanical stimuli to which they were impervious before injury**.* This process tends to **spread laterally in the spinal cord** *but in a selective way; **not all neurons are sensitised***. The selectivity of the spread seems to be functional in character supporting the process in some way. For example, lateral sensitization **has been shown to spread to the motoneurons which supply the muscles in the affected area** (He et al, 1988). This may have a functional role in the muscle guarding

often observed at the site of damage. It is very difficult to imagine what would be the functional role of a lateral spread to autonomic-visceral centers in musculo-skeletal damage. It should also be noted that the **sensitization** process seems only to take place when nociceptors are excited by pain or inflammation and **not when proprioceptors are stimulated, such as during a manual treatment**.

A similar sensitization phenomenon was demonstrated by Korr and his co-workers (1962), by introducing chemical insults to different spinal structures. They demonstrated that this lateral spread **could alter sympathetic activity to the segmental sweat glands**. This change only took place when pain was inflicted. However, **the spread was not always 'neatly' segmental**; **some of the changes were general or remote from the segmental distribution**. This finding is not surprising in the light of what has been discussed about afferent divergence within the spinal cord. These changes in sympathetic activity may not necessarily have been due to facilitation. They may arise as a secondary functional physiological process, e.g. to support changes in muscle activity or the inflammation process at the site of damage. Furthermore, such sympathetic changes in sudomotor activity have no clinical relevance to osteopathic practice. More important clinically are changes in motoneuron threshold by spinal sensitization as described by He et al (1988).

All the changes that were demonstrated were during separate studies on different individuals: one study showed that in normal subjects there may be a variable pattern of muscle **response to pressure** (Denslow, 1947). Another showed **changes in skin conductivity** (Price & Korr, 1957), and a third showed **variability of vasomotor tone** (Wright & Korr, 1960).

Structure and Function of the Musculoskeletal System, second Ed., James Watkins, 2010, p. 222

Proprioceptors: There are two main types of proprioceptors in joint capsules: Ruffini end organs/corpuscles, and Pacinian corpuscles. Ruffini end organs appear to be mainly responsive to tension. Pacinian corpuscles appear to be responsive to compression.

The proprioceptors in ***skin*** are similar to those found in joint capsules, but there are few in skin compared with the number in joint capsules.

Tension in skin can be **caused by movement in a number of directions** and proprioceptors may make a **significant contribution to joint stabilization** in reflexive muscular activity.

* and ***skin proprioceptors***, including Meissner's corpuscles, are **located superficially in the skin and respond rapidly to transient movements of the skin** between 5 Hz and 40 Hz.[3] Pacinian corpuscles are **found deeper in the subdermal layer of the skin**. ***Pacinian corpuscles*** **respond quickly to high-frequency transient *movements of the skin*** between 60 Hz and 300 Hz.[4] It is believed that these ***mechanoreceptors connect to the cortex and modify activity of the limbs***. **Joint** and **skin receptors** also **facilitate the vestibular apparatus to stabilize the extremities during gait by stimulating the necessary muscles to contract more forcefully and efficiently**.*

3. Martin JH, Jessell TM. Modality Coding in the Somatic Sensory System. In: ***Principles of Neural Science, 3rd Edition***. Kandel ER, Schwartz JH, and Jessell TM (Eds). Norwalk, CT: Appleton & Lange, 1994:341-352.

4. Lynn B. Cutaneous Sensation. In: ***Physiology, Biochemistry and Molecular Biology of the Skin, Second Edition***. Goldsmith L (Ed). New York: Oxford University Press, 1991:341-352.

Skin proprioceptors** identify environmental changes and ***provide information about your body's postural alignment.*

The ***Ruffini corpuscles*** are oriented with their long axes parallel to the surface of the skin and are ***most sensitive to skin stretch***. **Stretching the skin** (Figure 2.17) stretches the collagen fibers within the Ruffini corpuscle, which ***compresses the axon terminals***. As the collagen fibers remain stretched and the axon terminals remain compressed during the skin stretch, the Ruffini corpuscle's 1° afferent axon produces a sustained slowly adapting discharge to maintained stimuli.

Ruffini corpuscles **in skin are considered to be **skin stretch sensitive receptors** of the discriminative touch system. They also **work with the proprioceptors in joints** and muscles to **indicate the position and movement of body parts**.**

Reflex: The sum total of any particular involuntary activity.

5th hour:

GUYTON

REFLEXES:

- Somato-Somatic (External body to external body)
- Somato-Visceral (External body to internal organ)
- Somato-Cutaneal (muscle to skin)
- Viscero-Visceral (Internal organ to internal organ)
- Viscero-Somatic (Internal organ to external body)
- Viscero-Cutaneal (Internal organ to skin)
- Cutaneo-Somatic (Skin to muscle)
- Cutaneo-Visceral (Skin to Internal organ)
- Cutaneo–Cutaneal (Skin to other skin area)

Neurosensory: Pertaining to a sensory nerve.

NERVE STRETCHING

Neurotony: The stretching of a nerve, chiefly to relieve pain, also called nerve stretching.

Neurotrauma: Mechanical injury of a nerve.

Neururgic: Pertaining to nerve action.

Neurovisceral: Neurosplanchnic.

HOW I DISCOVERED TTAPS:

- 4 YEARS OF SEVERE KNEE PAIN, STAIRWAY WALK, SITTING ON COUCH

FIRST PATIENT: 13 YEAR OLD WITH GORILLA STANCE:

- SHOULDERS INTERNAL ROTATION WITH TOES POINTED OUT

***Phenomenon:** Any sign or objective symptom; **any observable occurrence or fact**.*

Brake Phenomenon: The tendency of a muscle to maintain itself in its normal resting position.

REFLEXES, LAWS, PHENOMENA

Dorland's Medical Dictionary

ARNDT-SCHULTZ LAW/HORMESIS: Used in acupuncture and homeopathy

1) **Weak stimuli excite physiologic activity**
2) Moderately strong ones favor it
3) Strong ones retard it
4) Very strong ones arrest or abolish it

ORTHOPEDIC DIAGNOSES:

- RANGE OF MOTION, SPINE
- RANGE OF MOTION, SHOULDERS
- RANGE OF MOTION, ELBOWS
- RANGE OF MOTION, WRISTS
- RANGE OF MOTION, FINGERS
- RANGE OF MOTION, HIPS
- RANGE OF MOTION, KNEES
- RANGE OF MOTION, ANKLES
- RANGE OF MOTION, TOES
- MILGRAM'S
- LASEQUE'S
- BRAGGARD'S
- FAJERZTAJN'S
- FEBERE-PATRICK
- SOTO-HALL
- CERVICAL COMPRESSION

- KEMPS
- CARPAL AND ULNAR TUNNEL: PHALEN'S, REVERSE PHALEN'S, TINEL'S, TEATHERING
- THORACIC OUTLET: **ADSON'S**
- **PINWHEEL**
- **VIBRATION** SENSE [WRISTS, HANDS, FINGERS, ANKLES, FEET, TOES]

POUPART'S LIGAMENT

Geigel's Reflex**: On **stroking** of the inner anterior aspect of the upper thigh there is a contraction of the muscular fibers at the upper edge of **Poupart's ligament.

***Obliquus Reflex:** Stimulation of the **skin** below **Poupart's ligament** contracts a part of the external oblique muscle.*

***Suprapubic Reflex**: Stroking the abdomen **above Poupart's ligament** causes deviation of the linea alba toward the side that is stroked.*

Supine Tap to Poupart's Ligaments: [it **MUST** be a SHARP, DEEP tap!]

90° Internal and External Rotation of: **Feet**

90° Rotation of:

- **Neck** [85% comes from Occiput-C2], drag toward turn in upper neck first, anterior or lower if necessary
- **X** Mid and Low Back, SI's **dragging both ways, anterior and sides if necessary**

SCIATICA:

- ORTILANI'S AND BARLOW MANUEVER

Shoulder tap to Internal Humeral Heads: [the tap **MUST** be to the inner humerus head, NOT the deltoid or other muscle, and directed 45° posterior and lateral!]

Internal rotation till palms up, **tap external rotators if necessary**

External Rotation till palms face out, **tap rotator teres and quadrates if necessary**

6th hour:

OBJECTIVE DIAGNOSIS AND TREATMENT OF TRIGGER POINTS, ACU- AND MOTOR POINTS:

- WHAT ARE THEY? **MUSCLE KNOTS** [TRAVELL], **SCAR TISSUE** [CYRIAX, MYOFASCIAL MANIPULATION], **PERIOSTEUM** [MANN], **DILATED LYMPH** [ME], **FAT** [TRAVELL]
- WHERE DO THEY REFER? MOST AFFECT **WHAT THEY'RE NAMED FOR AND WHERE THEY COURSE TO** [AMARO]
- HOW ARE THEY DIAGNOSED? **TENDER POINTS** [MANN]

- **<u>HOW ARE THEY TREATED?</u> TAPPING, DRY OR OTHER NEEDLING, DIGITAL PRESSURE, ELECTRICAL STIMULATION, MANIPULATION, HEAT, COLD, ETC., THE METHOD IS SECONDARY [TRAVELL, AMARO, MANN, GUYTON]**

<u>MY POSTULATION OF LYMPHATIC CONGESTION: INTESTINAL DILATION, ORGAN REFERRED PAIN ZONES</u>

<u>WHERE ARE LYMPHATICS LOCATED IN ORGANS OR CELLS?</u> ON SURFACES OF ORGANS, NONE IN MUSCLES OR BONE.

VISCUS CAN CAUSE REFERRED PAIN.

VISCUS CAUSES PAIN FROM DILATION, WHICH COMPRESSES BLOOD VESSELS ON IT'S SURFACE, PROBABLY CAUSING PAIN FROM ISCHEMIA.

TRIGGER POINTS CAN BE IN A WEAK OR A STRONG MUSCLE [NIMMO]

<u>MUSCLE WANTS TO</u> FINISH A CONTRACTION OR RELAXATON: **BE IN PROPER TONUS**

OPPOSITE SIDE/OPPOSITE END OF BODY <u>50% RULE</u> [AMARO, TRAVELL], BOTH BEST [PENNELL AND HEUSER]

<u>OPPOSITE OR SAME ARM OR LEG, HIP OR SHOULDER</u>: [GOODHEART]: BASICALLY **<u>GAIT REFLEXES</u>**

MOST OF THE **<u>ENDS OF THE MERIDIANS ARE AROUND THE EYES AND AT THE FINGERTIPS AND TOETIPS</u>**

<u>LI-4</u> [HOKU]-MOST UTILIZED POINT IN BODY, ESPECIALLY FOR HEADACHES

WHAT IS **<u>FIBROMYALGIA</u>**? – FORMERLY 11 OF 18 HIGHLY SENSITIVE POINTS [TRAVELL] – NEW DEFINITION [AM COL OF RHEUMATOLOGY] PAIN ALL OVER

<u>ROTATOR CUFF OR FROZEN SHOULDER</u> [INABILITY TO RAISE ELBOW ABOVE SHOULDER TO THE SIDE OR PUT HAND BEHIND HIP] **maneuvers**

<u>INTERNAL ORGAN MANIPULATION:</u>

***<u>LAW OF AVERAGE LOCALIZATION</u>**: Visceral pain is most accurately localized in **<u>the least mobile viscera</u>** and **least accurately in the most mobile* [this supports <u>VISCERAL MANIPULATION</u>]**

STOMACH MANIPULATION FOR:

- STOMACH PAIN
- HEART PAIN
- PAIN BETWEEN THE SHOULDERS
- HEADACHES

CONSTIPATION AND DIARRHEA

- ILEOCECAL MANIPULATION
- LARGE INTESTINAL MANIPULATION

SWALLOWING DIFFICULTY

- PRESSURE ON TONGUE
- PRESSURE AROUND CARTILAGE
- SUPERIOR MEDIASTINUM

7th hour:
CRANIAL NERVES:

I: OLFACTORY

OLFACTORY REFLEXES

THE EMBRYOLOGY, DEVELOPMENT, AND ANATOMY OF THE NOSE, PARANASAL SINUSES, NASOLACRIMAL PASSAGEWAYS, AND OLFACTORY ORGAN IN MAN. SCHAEFFER, 1920

p. 287-300

Nerve impulses…are transmitted by sympathetic efferent nerves. Both the cranial and the thoracolumbar sympathetic have to do with the nasal supply…the facial nerve and the thoracolumbar…it is believed that certain impulses from the nasal mucous membrane reach the cerebrospinal nervous system over sympathetic afferent nerves.

The term "sympathetic" is used advisedly since it is a term generally understood to apply to that portion of the peripheral nervous system which innervates the smooth or visceral muscles whereber located…The reader is referred to special treatises on the subject…the efferent (motor) side of the sympathetic system there are two orders of neurons connecting the cerebrospinal axis with the tissue or organ supplied. The neurons of the first order (preganglionic) have their cell bodies within either the brain or the spinal cord…(axons) terminating by synapsing in sympathetic ganglia with the cell bodies of the neurons of the second order (postganglionic), whose…axons extend to the parts to be acted upon…stands in contrast to the single lower motor neurons of the somatic series of nerves in which the cell bodies are also located within the cerebrospinal axis, but whose axons go directly to the striated or voluntary muscles without further synapse. Furthermore, it is essential to recall that the vast majority of the cell bodies or perikaryons of the afferent or sensory sympathetic neurons are located in the ganglia on the dorsal roots of the spinal nerves and in homologous ganglia of certain cranial nerves. Cell bodies of a **few afferent sympathetic neurons are apparently located in the extra-centrally placed sympathetic ganglia**…

While vasodilator fibers are fewer and less frequently seen in action, they do exist—striking illustrations are the chorda tympani in its action on the submaxillary gland; the nervi ertgentes in the erection of the penis, clitoris, etc.; and the nerves to the erectile tissue of the nasal fossae….

When, for example, the normal unanesthetized mucous membrane is stimulated with an applicator brush, or an irritant gas is inhaled, there immediately and before consciousness can be a factor a reflex twitching of the facial muscles, movements of the eyeball, a movement of the head to one side, and an elevation of the arm in an effort to remove the offending brush or gas…

The reflex movements of the striped muscles of the face, neck, arm, etc., are due to **the central connections** between the **somatic sensory neurons of the trigeminal nerve and the somatic motor neurons of various cranial and spinal nerves**…

…sneezing…The **afferent channels are the internal nasal branches** of the trigeminus and at times the olfactory (the latter in case of intense odors)…The efferent or motor paths lie in **the nerves of the muscles of expiration**…inhibited by compressing the medial nasal nerve below the septum mobile nasi. Here we have the operation of **antagonistic reflexes**…

It must, however be recalled that, even though the turgescence and depletion of the nasal mucosa is commonly a simple reflex phenomenon, under certain conditions the erectile tissue of the nose is readily influenced by psychic states…the exteroceptive arcs are most closely connected with the skeletal musculature and interoceptive with the visceral, and that seemingly some resistance to conduction from one to the other exits…the unstriped muscle of the blood-vascular areas is readily influenced by stimulating either the interoceptive or the exteroceptive fields.

Turgescence of the cavernous tissue of the nasal mucous membrane is essentially a vasodilator phenomenon, just as…shown for the erection of the penis and clitoris, and is due either to a reflex excitation of the vasodilator centers and fibers or to a reflex inhibition of the tonic activity of the vasoconstrictor center.

…reflex nasal manifestations…respiratory tract…sneezing, coughing and sasthma…directly traceable to nasal disorders. Reflex phenomena in the ear referable to nasal disesase are not uncommon. Lacrimation due to turgescence of the inferior nasal concha has been reported. Migraine and neuralgias may be referred manifestation due to conchal lesions…Gastralgia, indigestion and vomiting have been recorded as produced reflexly by intranasal disease. Alteration of the cardiac rhythm and numerous sexual phenomena frequently have a definite nasal reference. The reverse may also be true, *e.g.,* nasal phenomena have a definite sexual origin.

…it has been demonstrated that experimental irritation of certain portions of the nasal mucous membrane results in an alteration of the heart beat. Moreover, it has been reported that some typical cases of so-called cardiac neuroses and arrhythmias were cured by the treatment of hypertrophied nasal conchae and deflected nasal septa…nasal impulses may follow reflex axons…to the dorsal nucleus of the vagus nerve…located in the medulla and which contains the cardio-inhibitory center. In all probability connections are also established with the predominant cardio-accelerator center located in the medulla and…the high thoracic cord.

Naso-sexual Relations--…the olfactory sense is very intimately connected with sexual reflexes…some nasal disorders seemingly are the result of sexual irritation or disease. Indeed, there are

some striking anatomic and physiologic analogies between certain portions of the sexual organs and the nose. Menstrual life may be established by the occurrence of nasal bleeding. Turgescence of the erectile tissue of the nasal fossae may regularly accompany menstruation in women with normal nasal mucous membranes…reflex sneezing, engorgement of the nasal erectile tissue, coryza, hypertrophic changes in the nasal fossae have been reported as concomitants of sexual excesses.

…**Priapism** [persistent abnormal erection of the penis, usually without sexual desire] is according to some apparently authentic cases occasionally caused reflexly by nasal disease. The removal of the nasal irritant with a concomitant cure of the priapism seems to establish the nasal source of the reflex.

…Fleiss in 1895 and 1897 called the attention…to what he considered an important relationship between certain areas of the nasal mucous membrane and the female genitalia and adnexa…applying a…solution…to an exceedingly small area of mucous membrane on the tuberculum septi, directly opposite the mid-portion of the middle nasal concha, and to the mucous membrane over the ventral portion of the inferior nasal concha that pains in the back and abdomen incident to dysmenorrheal ceased after five- to eight-minute applications and did not return until the effect of the drug had disappeared…that if the anterior portion of the inferior concha on either side of the nose was touched the headache ceased…Fleiss designated these areas of the nasal mucosa the ***genital spots***.

p. 285-6

The main sensory nucleus receives the short ascending branches; the descending branches collectively forming the tractus spinalis which ends by terminals and collaterals in the several portions of the several portions of the nucleus of the spinal tract, extending through the pons, medulla and spinal cord to the level of the **second cervical segment**.

p. 340

The studies of Herrick have led him to believe that in the epithalamus the olfactory nervous impulses are correlated with those of the **somatic sensory centers** of the thalamus (optic thalamus), especially the **optic** and the **tactual systems**; while in the hypothalamus they are correlated with the **gustatory** and the **various visceral (sympathetic) sensory systems**. *Introduction to Neurology,* Philadelphia, 1916

p. 357

It has long been observed that obvious important relationships exist between the olfactory and the sexual organs…the olfactory sense is intimately connected with the sexual reflexes…There exists also apparently a physiologic and pathologic relationship between the non-olfactory nasal mucosa and the sexual organs. It is said that inflammations of the nasal fossae and the paranasal sinuses exercise a marked influence over the sexual functions. (See Chapter X)

The author recently learned of a few individuals in whom during every sexual excitement the glands of the nasal mucous membrane pour forth a voluminous amount of mucous which subsides at once with the completion of the sexual act…a cortical center which acts on the glandulosecretory and vasolodilator centers. (p. 293)

p. 358

Functional anosmia is occasionally encountered. Wheeler in the Bulletin of the Canadian Army Medical Corps, records an interesting case of complete functional loss of smell…Following electrical treatments the olfactory function returned and the patient was again able to recognize odors. His foods once more "tasted" normal and appetizing.

II: OPHTHALMIC

SCOTOPIC VISION:

TESTING:

Eyes open, then **eyes closed**: This is the ONLY time to tap into the direction of rigidity.

- Look to right
- Left
- Superior
- Inferior
- up and right
- up and left
- down and right
- down and left

PUPIL

Ciliospinal Reflex: Painful stimulation of the **skin** of the neck **dilates the pupil**.

Cutaneous Pupillary Reflex: Dilatation of the pupil on pinching the **skin** of the cheek or neck.

Platysmal Reflex: The act of **nipping the platysma contracts the pupil**.

Skin Pupillary Reflex: Dilatation of the pupil produced by irritation of the **skin** of the neck.

III, IV, VI:

NYSTAGMUS [ALSO WORKS ON STRABISMUS]

***FLOURENS' LAW**: Stimulation of the **semicircular canal causes nystagmus** in the plane of that canal*

Motor coordination

Motor coordination is the combination of body movements created with the kinematic (such as spatial direction) and kinetic (force) parameters that result in intended actions. Motor coordination is achieved when subsequent parts of the same movement, or the movements of several limbs or body parts are combined in a manner that is well timed, smooth, and efficient with respect to the intended goal. This involves the integration of proprioceptive information detailing the position and movement

of the musculoskeletal system with the neural processes in the brain and spinal cord which control, plan, and relay motor commands. The cerebellum plays a critical role in this neural control of movement and damage to this part of the brain or its connecting structures and pathways results in impairment of coordination, known as ataxia.

Properties

Nonexact reproduction

Examples of motor coordination are the ease with which people can stand up, pour water into a glass, walk, and reach for a pen. These are created reliably, proficiently and repeatedly, but these movements rarely are reproduced exactly in their motor details, such as joint angles when pointing[1] or standing up from sitting.[2]

Combination

The complexity of motor coordination can be seen in the task of picking up a bottle of water and pouring it in a glass. This apparently simple task is actually a combination of complex tasks that are processed at different levels. The levels of processing include: (1) for the prehension movement to the bottle, the reach and hand configuration have to be coordinated, (2) when lifting the bottle, the load and the grip force applied by the fingers need to be coordinated to account for weight, fragility, and slippage of the glass, and (3) when pouring the water from the bottle to the glass, the actions of both arms, one holding the glass and the other that is pouring the water, need to be coordinated with each other. This coordination also involves all of the **eye–hand coordination** processes. The brain interprets actions as spatial-temporal patterns and when each hand performs a different action simultaneously, **bimanual coordination** is involved.[3] Additional levels of organization are required depending on whether the person will drink from the glass, give it to someone else, or simply put it on a table.[4]

Types

Inter-limb

Inter-limb coordination concerns how movements are coordinated across limbs. J. A. Scott Kelso and colleagues have proposed that coordination can be modeled as coupled oscillators, a process that can be understood in the HKB (Haken, Kelso, and Bunz) model.[13] The coordination of complex inter-limb tasks is highly reliant on the temporal coordination. An example of such temporal coordination can be observed in the free pointing movement of the eyes, hands, and arms to direct at the same motor target. These coordination signals are sent simultaneously to their effectors. In bimanual tasks (tasks involving two hands), it was found that the functional segments of the two hands are tightly synchronized. One of the postulated theories for this functionality is the existence

of a higher, "coordinating schema" that calculates the time it needs to perform each individual task and coordinates it using a feedback mechanism. There are several areas of the brain that are found to contribute to temporal coordination of the limbs needed for bimanual tasks, and these areas include thepremotor cortex(PMC), the parietal cortex, the mesial motor cortices, more specifically the supplementary motor area(SMA), the cingulate motor cortex (CMC), the primary motor cortex (M1), and the cerebellum.[14]

Intra-limb

Intra-limb coordination involves the planning of trajectories in the Cartesian planes.[4] This reduces computational load and the degrees of freedom for a given movement, and it constrains the limbs to act as one unit instead of sets of muscles and joints. This concept is similar to "muscle synergies" and "coordinative structures." An example of such concept is the Hogan and Flash minimum-jerk model,[15] which predicts that the parameter that the nervous system controls is the spatial path of the hand, i.e. the end-effector (which implies that the movement is planned in the Cartesian coordinates). Other early studies showed that the end-effector follows a regularized kinematic pattern[16] relating movement's curvature to speed and that the central nervous system is devoted to its coding.[17] In contrast to this model, the joint-space model postulates that the motor system plans movements in joint coordinates. For this model, the controlled parameter is the position of each joint contributing to the movement. Control strategies for goal directed movement differ according to the task that the subject is assigned. This was proven by testing two different conditions: (1) subjects moved cursor in the hand to the target and (2) subjects move their free hand to the target. Each condition showed different trajectories: (1) straight path and (2) curved path.[18]

Eye–hand

Eye–hand coordination concerns how eye movements are coordinated with and affect hand movements. Typical findings relate to the eye looking at an object before the hand starts moving towards that object.[19]

Eye–hand coordination (also known as **hand–eye coordination**) is the coordinated control of eye movement with hand movement, and the processing of visual input to guide reaching and grasping along with the use of proprioception of the hands to guide the eyes. Eye–hand coordination has been studied in activities as diverse as the movement of solid objects such as wooden blocks, archery, sporting performance, music reading, computer gaming, copy-typing, and even tea-making. It is part of the mechanisms of performing everyday tasks; in its absence most people would be unable to carry out even the simplest of actions such as picking up a book from a table or playing a video game. While it is recognized by the term *hand–eye coordination*, without exception medical sources, and most psychological sources, refer to *eye–hand coordination*.

Neural mechanisms

The neural control of eye–hand coordination is complex because it involves every part of the central nervous system involved in vision: eye movements, touch, and hand control. This includes the eyes themselves, the cerebral cortex, subcortical structures (such as the cerebellum, basal ganglia, and brain stem), the spinal cord, and the peripheral nervous system. Other areas involved in eye–hand coordination that have been studied most intensely are the frontal and parietal cortex areas for the control of eye saccades and hand-reach. Both of these areas are believed to play a key role in eye–hand coordination and the planning of movements during tasks.[*citation needed*]

A more specific area, the parieto occipital junction, is believed to be involved in the transformation of peripheral visual input for reaching with the hands, as found via fMRI.[8] This region in particular has subdivisions for reach, grasp, and saccades. In additional to the parieto–occipital junction, the posterior parietal cortex is believed to play an important role in relating proprioception and the transformation of motor sensory input to plan and control movement with regards to visual input.[9]

Many of these areas, in addition to controlling saccades or reach, also show eye position signals that are required for transforming visual signals into motor commands. In addition, some of the areas involved in reach, like the medial intraparietal cortex, show a gaze-centered remapping of responses during eye movements in both monkeys and humans. However, when single neurons are recorded in these areas, the reach areas often show some saccade-related responses and the saccade areas often show some reach related responses. This may aid in eye–hand coordination or hint at the ability of cells to wire together as they're used more frequently.

Research into foot-eye coordination

By measuring how people respond when a stepping stone suddenly shifts its position mid-step, researchers at the Institute of Neurology in London have shown that a powerful visual process controls the stepping foot – a process similar to that used for manual reaching, in which the hand is rapidly and automatically driven by visual information.

This level of control may facilitate successful locomotion over unpredictable terrain; it must also be coordinated with balance, for example, when soccer players rapidly intercept a ball with their foot.

It is known that a strong visual process drives the hand as it reaches for an object. If the object moves as the hand homes in on it, the limb trajectory is automatically adjusted and the hand seems magnetically drawn towards the shifted object. These adjustments occur surprisingly quickly and are thought to involve fast visuo-motor pathways operating below the level of the cerebral cortex and conscious perception in the brain. The process ensures rapid target interception and may have evolved through its advantage for catching prey.

In the new work, Brian Day and Raymond Reynolds of University College Londonshow that the foot is under the control of an equally fast visual process. Leg muscle activity is altered

one tenth of a second after a stepping-stone movement, driving the foot towards the shifted target. This effect was unexpected because of the potential threat to balance. Balance is normally maintained during a step by a pre-step "ballistic throw" of the body that is tightly coupled to intended foot placement. Mid-step deviation of the foot would upset this coupling and could lead to a fall.

However, no subjects fell, suggesting visuo-motor and balance processes are fully integrated. This may be advantageous for bipedal locomotion over unpredictable terrain, which requires fast reactions from the leg based on immediate visual information, without loss of balance.

Source:

http://www.cell.com/

V,VII:

JAW/MOUTH

Corneo-mandibular reflex: Movement of the **lower jaw** toward the side opposite the eye whose **cornea is lightly touched**, the mouth being open.

CHIN

Corneomental Reflex: Unilateral **wrinkling of the muscles of the chin** when pressure is applied to the **cornea**.

Palm-Chin Reflex: twitching of the chin produced by stimulating (scratching) the palm.

Chin Reflex: **Stroking of the chin** causes closing of the mouth.

CHVOSTEK'S SIGN:

Tapping the facial muscles over the parotid gland or Facial Nerve results in spasmodic contraction of the ipsilateral facial muscles.

GLABELLA REFLEX:

Lightly tap the forehead either between the eyebrows or upon the supraorbital ridge, with a resulting persistent tonic spasm of the Orbicularis Oculi muscle with closing of the eyes.

SNOUT REFLEX:

Sharp tapping of the nose or of the middle of the upper lip produces an excessive grimace or an exaggerated reflexion contraction of the lips.

Facial reflex/bulbomimic reflex

In a case of coma from severe apoplexy, **pressure on the eyeballs** causes contraction of the facial muscles of expression on **the side opposite** to the lesion; if coma results fromdiabetes, uremia, or other toxic cause, the reflex is present on **both sides**.

Cochleopalpebral Reflex

Contraction of the orbicularis palpebrarum muscle resulting from a **sudden noise** produced near the ear.

McCarthy's supraorbital reflex

Percussion above arcus superciliaris (the supraorbital nerve) causes contraction of orbicularis palpebrarum with closure of lids unilaterally or bilaterally.

VIII:

Audito-Oculogyric reflex

The sudden turning of the head and eyes toward an **alarming sound**.

Auditory reflex

Any reflex produced by stimulation of the auditory nerve, esp. blinking of the eyes at the **sudden unexpected production of a sound.**

HEARING:

- **5 TUNING FORKS** FOR HEARING
- **TRAGUS** IN OR OUT
- TYPICALLY HAVE DIFFICULTY HEARING IN A RESTAURANT, OR WHEN BACKGROUND NOISE ON A PHONE

IX:

Gag

X:

Swallow

XI:

Shoulder shrug

XII:

Tongue in cheek

8th hour:

COLD NOSE, HANDS, FEET, EARS, LIPS:

Why I first used a prod:

- To get in to **small joints of the fingers and toes to break up scar tissue—use the smallest-tipped stylus for this**

PROD USE

Generally use the **SMALLEST** end of the prod. It MUST be stuck UNDER the nails to where the nail and the **QUICK** meet.

Otherwise, poke down with the prod angled, so as to have little chance of puncturing the skin. Tap **LIGHTLY**, just deep enough till the underlying tissue stops the tap.

Let rest about 15-20 seconds, then come back to extinguish any tender points that remain.

PROD RATIONALE

*__ELLIOTT'S LAW__: The activity of epinephrine (adrenalin) **is due to a stimulation of the endings of the sympathetic nerve**, and adrenalin acts upon those structures innervated by sympathetic nerve fibers

Guyton's Physiology:

Sympathetic tone is.5-2Hz

Mechanical Stimulation: Crushing, pinching or **pricking** a nerve fiber can cause…an action potential.

The arteriovenosus anastamoses are found principally in the **volar surfaces of the hands and feet**, the **lips**, the **nose**, and the **ears**. Walls of these have strong muscular coats innervated by **sympathetic vasoconstrictor nerve fibers**.

ACUPUNCTURE, TRIGGER AND MOTOR POINTS

Felix Mann:

Acupuncture points can be found in any square mm of skin.

Janet Travell:

Trigger Points can be found anywhere and refer symptoms anywhere.

Melzack and Wall:

Acupuncture points, Trigger points and Motor points are the same entities.

SEIZURES:

- Between nose and upper lip
- Midline chin to mid-forehead

MOST USED POINT:

- Li-4, meaty aspect of hand 1st dorsal interossei in middle by tip of thumb crease, point towards pisiform

WHOLE SPINE PAIN:

- Wu Chung (Middle of Man): middle of knee crease

SWELLING FROM SURGERIES:

- Lu-7: 1/3 in from volar radial styloid

ARCH PAIN:

- LONGITUDINAL ARCH: SAME OR OPPOSITE SIDE
- TRANSVERSE AND CUBOID ARCHES: ACROSS PALMAR KNUCKLES OF HANDS AND BLADE OF HANDS, OPPOSITE SIDE

LOW BACK PAIN:

- S2 spinous tip

EUSTACHIAN TUBE FILLED WITH **HARDENED PUS:**

- TOE TIPS AND UNDER NAILS

REGIONAL PAIN syndrome [FORMERLY RSD]:

- Tap with prod over area of pain, opposite side, opposite corresponding limb, or corresponding area of skull

BURNING TONGUE syndrome:

- Pinch finger webs up to first joint

BURNING IN LOWER BODY AND GENITALS:

- TOE WEBS

DRY NEEDLING:

- **ANTIBIOTIC STONES**
- **FALLEN ARCH**

STROKE

LEG RIGIDLY STRAIGHT: **STROKE POSITION:**

- PRONE: TAP MIDDLE OF KNEE AT CREASE

SHOULDER AND ARM

Infraspinatus Reflex**: Obtained by **tapping** a certain spot over the shoulder blade, on a line bisecting the angle formed by the spine of the bone and its inner border; **outward rotation of the arm occurs, with simultaneous straightening of the elbow.

Any rigidity left, lightly tap the triceps while gently extending the arm.

Clasp left, lightly tap the palm of the hand with prod while extending the fingers.

Consensual Reaction**: **Excited by reflex stimulation**. A reaction that **takes place independently of the will.

Coupled Reaction: A series of linked reactions.

Skin Reflex:** A reflex which occurs on stimulation of the **skin.

Spinal Reflex: Any reflex whose arc is connected with a center in the spinal cord.

Static Reflex: The reflex pose and **righting of the body**.

Superficial Reflex: Any reflex provoked by a superficial stimulation.

Tonic Reflex: The passing of an appreciable period of time after the occurrence of a reflex before relaxation; a reflex which maintains the reflex contractions that are the basis of posture and attitude.

Neurapraxia: Nerve injury in which paralysis occurs in the absence of structural changes.

Neuratrophic: Atrophy of the nerves.

Neurergic: Pertaining to or dependent on nerve action.

Neuriatry: the treatment of nervous diseases.

Nervimotion: Motion effected through the agency of a nerve.

Nervimotility: Susceptibility to nervimotion.

Neuroanastomosis: The operation of forming an anastomosis of nerves.

Neurocutaneous: Pertaining to the nerves and the skin; the cutaneous nerves.

Neurogenous: Arising in the nervous system; arising from some lesion of the nervous system.

Neuromotor: Involving both nerves and muscles; pertaining to nervous impulses to muscles.

***Neuromuscular**: Pertaining to muscles and nerves.*

Neuropathy: A general term denoting functional disturbances and/or pathological changes in the peripheral nervous system.

Cogwheel Phenomenon: When a hypertonic muscle is passively stretched it resists, sometimes with an irregular jerkiness.

Muscle Phenomenon**: The tendency of striated muscle to contract in hard lumps upon ***tapping.*

[This is what Dr. Coffman says he noticed when discovering PNT]

***Release Phenomenon: The unhampered activity of a lower center when a higher inhibiting control is removed.**

[This is what happens when TTAPS corrects a Central Lesion]

Antalgic Reaction: A bodily reaction or response **having the purpose of avoiding pain**.

[This is a form of Withdrawl and Avoidance, but the body gets stuck in a partial contracture or spasm]

***Immediate Reaction**: A reaction, such as an allergic reaction, occurring seconds to minutes after exposure to an inducer; called also immediate response.

[This is what occurs when TTAPS works, when there is not heavy scar tissue or permanent deformity]

9th hour:

*PFLUGER'S LAWS:

LAW OF UNILATERALITY: **If a mild irritation is applied to one or more sensory nerves**, the movement will take place usually on **one side only**, and **that side which is irritated**

***LAW OF SYMMETRY**: **If the stimulation is sufficiently increased, motor reaction is manifested, not only by the irritated side, but also in similar muscles on the opposite side of the body**

***LAW OF INTENSITY**: Reflex movements are usually more intense **on the side of irritation**; **at times the movements of the opposite side** equal them in intensity, but they are usually less pronounced

LAW OF RADIATION: If the excitation **continues to increase**, it is **propagated upward**, and **reactions take place through efferent nerves (those that cause muscles to contract and glands to secrete) coming from the cord segments higher up**

***LAW OF GENERALIZATION**: When the **irritation becomes very intense, it is propagated in the medulla oblongata, which becomes a focus from which stimuli radiate to all parts of the cord, causing a general contraction of all muscles of the body** (See NCA Journal, April, 1961—Stone)

MELTZER'S LAW OF CONTRARY INNERVATION: All living functions are continually controlled by two opposing forces: augmentation or action on the one hand, and inhibition on the other.

[this is the law of acupuncture/meridian therapy]

SHERRINGGTON'S LAW:

1) Every posterior spinal nerve root supplies a special region of the **skin**, although **fibers from adjacent spinal segments may invade such a region**
2) ***When a muscle receives a nerve impulse to contract, its antagonist receives simultaneously an impulse to relax***

BELL/MAGENDIE LAW: The **anterior roots** of the spinal nerves are **motor roots**, and the **posterior are sensory**

ABDOMEN

Barkman's Reflex: Contraction of the **rectus abdominis** muscle on the same side after stimulation of the **skin** just below one of the nipples.

Bekhterev's Reflex, Hypogastric: Contraction of the **muscles of the lower abdomen** on **stroking the skin** of the inner surface of the thigh.

Brissaud's Reflex: Contraction of the tensor muscle of **fascia lata** on **tickling the sole**.

Epigastric Reflex: Contraction of the **abdominal muscles** caused by stimulating the **skin** of the epigastrium or over the fifth and sixth intercostal spaces near the axilla.

Kocher's Reflex: Contraction of the abdominal muscle on compression of the testicle.

BACK

Dorsal Reflex: Contraction of the back muscles in response to stimulation of the **skin** along the erector spinae.

Erector Spinae Reflex: Contraction of the erector spinae muscle on irritation of the **skin** along its border.

LEG RAISE

***Grasset's Phenomenon**: Inability of a patient to raise both legs at the same time, though he can raise either alone.

10th hour:

CARDIAC REFLEXES

ARCHIVES OF INTERNAL MEDICINE, vol. 30, 1922, Studies on the Visceral Sensory Nervous System, XIV. The Reflex Control of the cardia and Lower Exophagus in Mammals, Carlson, Boyd and Pearcy,

p. 409,

"…the cardia and the lower end of the esophagus are provided with motor and inhibitory efferents both via the vagi and the splanchnic nerves. We now know that in the swallowing act the vagi efferents are controlled by afferent impulses both from the pharynx (primary peristalsis) and the wall of the esophagus (secondary peristalsis). Furthermore, the cardia and the part of the esophagus made up of smooth musculature and Auerbach's nervous plexus are capable of local coordination, that is, local automatism or reflex action, independent of afferent and efferent connections with the central nervous system."

p. 411

"…dog was use for the study of reflexes to the cardia from the mouth, pharynx, and stomach…"

p. 414

"A. *Cardia Reflexes From Skeletal Afferents.*—When both vagi and the splanchnic nerves are intact, stimulation of the central end of the sciatic nerve with the tetanizing current usually produces inhibition of the tonus of the cardia and the lower exophagus…This is particularly true if the cardia is in strong tonus. But in some experiments contraction of the cardia followed the sciatic stimulation. Both the contractions and the inhibitions usually last for a considerable period beyond the stimulation."

p. 415

" B. *Cardia Reflexes From the Mouth and Pharynx.*—…mechanical…stimulation fo the tongue and mouth inhibits the tonus of the cardia. The inhibition may be followed by increased tone at the end of the stimulation.

p. 416

"If the cardia is atonic, mechanical stimulation f the pharynx usually causes contraction of the cardia and lower esophagus. If the cardia is in strong tone the stimulation causes primary inhibition followed by contraction. Similar effects are produced by tetaniztion fo the central end of the glossopharyngeal nerve.

p. 419, 422

"C. *Cardia Reflexes via the Vagi Afferents.*—The cardia and lower esophagus…are very sensitive to mechanical stimulation of the vagi trunks in the neck. The prevailing effects of traction on the intact vagus by pulling on the carotid artery is a spasm of the cardia and lower esophagus. This is probably partly due to mechanical stimulation of the motor fibers in the vagi, and is in part **a reflex via the vagi afferents**…If one vagus is left intact stimulation of the central end of the other vagus usually causes a temporary inhibition of the cardia followed by a prolonged spasm. This reflex usually involves **inhibition of the gastric tonus**…it is evident that this motor response is mainly due to the mechanical stimulation of the vagi motor nerve fibers to the cardia…it is evident that this motor response is mainly due to the mechanical stimulation of the vagi motor nerve fibers to the cardia…the spasms of the cardia, induced reflexly or by direct stimulation of the motor efferents, usually appear as hypertonus with superimposed rhythmical contractions. This is especially true of spasms of the cardia induced via the vagi motor efferents. Direct stimulation of the splanchnic motor system may induce hypertonus of the cardia with less marked rhythmical pulsations. These rhythmical contractions of the hypertonis cardia were noted over sixty years ago by Basslinger, and are sometimes referred to a s "Bassinger's pulse.

…the contractions of the cardia following stimulation of the central end of the recurrent laryngeal nerve…is a reflex through the spinal cord and the splanchnic motor fibers."

p. 423

"D. *Cardia Reflexes From the Stomach.*—…sudden stretching of the stomach wall by inflation and collapse of a condom balloon in the stomach induces hypertonus or spasms of the cardia…This degree of distension of the empty stomach does not cause pain or distress. Similar distention of the stomach in man is felt as fullness, without distress or pain…the hypertonicity of the cardia following sudden tension on the walls of the stomach extends to the striaed musculature of the esophagus. It is, therefore, in part, a long reflex.

"…The primary effect on the cardia, of water, acids, and alkalies, when introduced into the empty stomach, is the same as on the stomach itself, that is, inhibition…in the normal animal the tonus of the cardia parallels the gastric tonus even when the stomach is empty.

"…The primary effect of water, acids or alkalies, introduced directly into the stomach, is a decrease in tonus and contraction of the stomach. This "receptive relaxation" is…primarily a local action, probably reflex."

p. 427, 431-2

"F. *Cardia Reflexes From the Abdominal Viscera.*--…mechanical stimulation of the gallbladder (rubbing between the fingers, pinching with forceps)…or the common bile duct leads to very marked hypertonus

or spasm of the cardia…It is…essentially a long reflex involving the vagi and splanchnic efferents. In a few experiments the gallbladder stimulation caused relaxation of the cardia…

"Strong distension or compression (pinching, crushing) of the urinary bladder or of the large or small intesting induces predominantly cardia hypertonus or spasm outlasting for a long time the period of stimulation. The splanchnic nerves are the main afferent paths, and, in part, the efferent paths for the reflex. Very strong reflexes into the cardia are induced by mechanical or electrical stimulation of the central end of one splanchnic nerve…The motor reflex into the cardia via the splanchnic efferents may involve stronger contraction of the cardia and lower esophagus than that caused by direct stimulation of the peripheral end of the splanchnic nerve…

"Stimulation of the sympathetic trunk in the chest…causes hypertonus or spasm of the cardia…It is therefore essentially a reflex via the visceral afferents in the thoracic sympathetic trunk…

"The motor control of the cardia and lower esophagus involves local automatism and reflexes via the Auerbach's plexus, long reflexes via the vagi efferents and long reflexes via the splanchnic efferents. **The long reflex mechanisms can, apparently, be thrown into activity by the stimulation of any sensory nerve in the body. The response of the cardia and lower esophagus in this reflex may be either relaxation or contraction, depending in part on the state of the tonus of the cardia at the time of stimulation. If the cardia is in feeble, tonus the contraction reflex prevails; if it is in strong tonus, the inhibition reflex usually predominates…But, on the whole,…the inhibition reflex seems to be evoked more readily via the vagi efferents, and the motor reflex via the splanchnic efferents.**

"While it is true that the **cerebrospinal reflexes into the cardia can be initiated by the stimulation of almost any afferent nerve, nevertheless…**the **afferents from the upper end of the alimentary tract (mouth, pharynx, esophagus)** and from the **viscera supplied by the splanchnic system**, are in the closest reflex relation to the cardia efferents. The cardia reflexes evoked by stimulation of the sensory nerves to the **mucous membrane in the mouth, the pharynx, the esophagus and the stomach are primarily inhibitory, the cardia reflexes initiated by the splanchnic afferents are predominantly motor (spasm of the cardia).**

"…the disturbance in the afferent side of this mechanism that may lead to spasm, may apparently occur almost anywhere in the body, particularly in the viscera. Conditions leading to hyperirritability in the regions of the medulla and thoracic cord whence the motor neurons emerge will, of course, induce spasm of the cardia by excessive activity of these efferents, provided the inhibitory efferents are not rendered hyperactive at the same time."

CARDIAC

Bregmo-cardiac Reflex: Pressure upon the **bregmatic fontanel slows the action of the heart**.

Carotid Sinus Reflex: Pressure on or in, the carotid artery at the level of its bifurcation causing reflex **slowing of the heart rate**; this reflex originates in the wall of the sinus of the internal carotid artery.

Oculocardiac Reflex: A **slowing of the rhythm** of the heart following compression of the eyes or pressure on the carotid sinus. A slowing of from 5 to 13 beats per minute is normal; one of from 13 to 50

or more is exaggerated; one of from 1 to 5 is diminished. If ocular compression produces acceleration of the heart, the reflex is called *inverted.*

"Cardiac Arrhythmia" Trigger Point phenomenon: Located in the right pectoralis major muscle below the lower border of the fifth rib that lies midway between the sterna margin and the nipple line.

Psychocardiac Reflex: Increase in the pulse rate on recalling an individual emotional experience.

Ruggeri's Reflex: **Acceleration of the pulse** following strong convergence of the eyeballs toward something very close to the eyes, indicating sympathetic excitability.

Eyeglasses

EVALUATE EYEGLASSES [PUPILOMETER] FOR UNEXPLAINED:

- WEAK MUSCLES
- ADHD
- CRAMPING MUSCLES
- HEART ISSUES
- UNEXPLAINED SYMPTOMS

EYES

EYELIDS

Conjunctival Reflex: Closure of the **eyelid** when the **conjunctiva is touched**.

Corneal Reflex: **Irritation of the cornea** results in reflex closure of the **lids**.

ORBICULARIS OCULI

McCarthy's Reflex: Contraction of the **orbicularis oculi** muscle on **tapping** the supraorbital nerve.

FINGERS AND TOES

Grasp Reflex: A reflex consisting of a grasping motion of the fingers or of the toes **in response to stimulation**.

TONGUE TRIGGER POINTS

11th hour:

FOOT/FOOT DROP

Mazion: Strumpell's Tibialis Anterior Sign: Patient supine, place one hand under the patient's knee in the popliteal space and the other hand over the middle anterior tibial third, **strongly flex hip** on pelvis and **firmly flex knee** with the other hand, causing **dorsiflexion** and possibly **adduction**.

My procedure is to firmly flex knee in Yeoman's Femoral Stretch position.

Hirschberg's Reflex: **tickling** of the sole at the base of the great toe causes adduction of the foot.

Strumpell's Reflex: Leg movement with **adduction of the foot produced by stroking the thigh or abdomen.**

GLUTEI

Gluteal Reflex: A stroke over the **skin** of the buttock contracts the glutei muscles.

INTESTINES

Somatointestinal Reflex: **Inhibition of intestinal motility** when the **skin** over the abdomen is stimulated.

LAW OF THE INTESTINES (STARLING): **The presence of a bolus in the intestine induces contraction above and inhibition below the stimulus**, thus producing a progression of the intestinal contents

KNEE EXTENSOR

Philippson's Reflex: Excitation of the knee extensor in one leg induced by inhibition in the knee extensor of the other leg.

LEG

Frontal Tap Reflex: A tap on the **skin** over the muscles of the extended **leg** contracts the **gastrocnemius**.

McCormac's Reflex: **Percussing** the patellar tendon produces **adduction** of the **opposite** leg.

LIMBS

Vertebro Prominens Reflex**: **Pressure upon the last cervical vertebra** of an animal ***reduces the tone of all four limbs.*

PERITONEUM AND CEREBROSPINAL

Morley's peritoneocutaneous Reflex: When any of the cerebrospinal nerve endings in the **peritoneum or subperitoneal tissues** are irritated, pain will be referred to the corresponding segmental **skin** area.

RENAL

Renorenal Reflex: A reflex pain or anuria in a sound kidney in cases in which the **other** kidney is diseased.

RIBS

Hypochondrial Reflex: Sudden inspiration caused by **quick pressure** beneath the lower border of the ribs.

SCAPULAE

Interscapular Reflex: A **stimulus** applied between the scapulae contracts the scapular muscles.

SCROTUM

Scrotal Reflex: A slow, vermicular contraction of the dartos muscle obtained by **stroking the perineum** or by applying a cold object to it.

TESTES

Cremasteric Reflex: Stimulation of the **skin** on the front and inner side of the thigh retracts the testis on the same side.

THIGH

Patello-adductor Reflex: **Crossed adduction of the thigh produced by tapping** the quadriceps tendon as in the patellar reflex.

TOES

Flexor Reflex, Paradoxical: Dorsiflexion of the **great toe or of all the toes** when the deep muscles of the calf are pressed upon.

Plantar Reflex: Irritation of the sole contracts the **toes**.

Remark's Reflex: Plantar **flexion of the first three toes** and sometimes of the foot, with extension of the knee on **stroking of the upper anterior surface of the thigh**.

VISCERA

Visceromotor Reflex: Contraction of abdominal muscles (abdominal rigidity) **over a diseased viscus**.

Viscerosensor Reflex: A region of sensitiveness to pressure on some part of the body **due to disease of some internal organ.**

Viscerotrophic Reflex: Degeneration of any **peripheral** tissue **as a result of chronic inflammation of any of the viscera.**

WILDER'S LAW OF INITIAL VALUE: **The more intense the function** of a **vegetative organ**, the weaker its capacity for being excited by stimuli and **the stronger its reaction to depressing factors;** with extremely high or low initial value, **there is marked tendency to paradoxic reactions (reversal of direction of reaction)**

***Loven Reflex**: General vasodilatation of an **organ** when its **afferent nerve is stimulated**; this secures a maximal supply of blood to the organ, together with a general rise of blood pressure.*

Anal Reflex: Contraction of the anal sphincter on irritation of the skin of the anus.

***Antagonistic reflexes**: **Reflex movements** occurring not in the muscle which has been **stretched** but **in its antagonist**.*

Attitudinal Reflexes: Those reflexes having to do with the **position of the body**.

Axon Reflex: A reflex resulting from a **stimulus applied to one branch of a nerve** which **sets up an impulse that moves centrally** to the point of division of the nerve where it is **reflected down the other branch to the effector organ**.

Chain Reflex: **A series of reflexes**, each serving as a stimulus to the next one, representing a complete activity.

Clasp-Knife Reflex: **Lengthening reaction**.

Concealed Reflex: One elicited by a stimulus but **concealed by a more dominant reflex** elicited by the same stimulus.

Conditioned Reflex: One that **does not occur naturally** in the animal but that **may be developed by an unrelated outside event**. Soon the physiological function starts whenever the outside event occurs.

Cranial Reflex: Any reflex whose paths are connected directly with the brain.

Long Reflex: Intestinal reflex of peristalsis

Gait Reflex: Such as walking or running or crawling

Deep Reflex: Any reflex elicited by irritating a **deep** structure.

Depressor Reflex: A reflex to stimulation resulting in decreased activity of the motor center.
[eg, AK muscle testing]

Direct Reflex: A contraction on the same side as that of the stimulation.

Motor Reflex: A reflex brought about by stimulation upon the periphery of the motor mechanism.

Muscular Reflex: A reflex movement due to the stretching of a muscle.

Nociceptive Reflexes: reflexes initiated by painful stimuli.

Pathologic Reflex: One which is not normal, but is the result of a pathologic condition, and may serve as a sign of disease.

Perception Reflex: A reflex movement occurring when a perception is formed in consciousness.

Pilomotor Reflex: The production of goose flesh on stroking the **skin**.

Postural Reflex: A reflex which consists of some assumption of posture.

Pressor Reflex: A reflex to stimulation resulting in increased activity of a motor center.

Proprioceptive Reflex: **A reflex that is initiated by stimuli** arising from some function of the reflex mechanism itself.

Psychic Reflex: A reflex aroused by a stored-up impression of memory.

Righting Reflex: The ability to assume optimal position when there has been a departure from it.

Segmental Reflex: a reflex controlled by a single segment or region of the spinal cord.

Simple Reflex: A reflex involving **a single muscle**.

Vasopressor Reflex: rise in pressure from reflex vasoconstriction.

Neuromyon: The neural elements in a muscle.

Neuropathogenesis: Development of disease of the nervous system.

Sherrington Phenomenon: The response of the hind limb musculature on **stimulation** of a **motor nerve which has previously been degenerated**.

Reaction: A reaction or response which occurs in a shorter time than is usual.

Accelerated Reaction: A reaction or response which occurs in a shorter time than is usual.

Bekhterev's Reaction: In cases of tetany the minimum of electric current needed to arouse muscular contraction needs to be diminished at every interruption or change of density in order to prevent tetanic contraction.

Biphasic Reaction: A reaction made up of two parts, as flexion followed by extension.

Bittorf's Reaction: In renal colic the pain produced by squeezing the testicle or pressing the ovary radiates to the kidney.

Conversion Reaction: a condition in which motor or sensory symptoms are used to symbolize intrapsychic conflict.

Defense Reaction: A mental reaction which shuts out from consciousness ideas that are not acceptable to the ego.

Delayed Reaction: A reaction, such as an allergic reaction, occurring **hours to days after** exposure to an inducer; called also delayed response.

***Freund's Reaction**: The **serum of noncancerous persons** destroys cancer cells, while that of cancer patients has no lytic effect.

***Immediate Reaction**: A reaction, such as an allergic reaction, occurring seconds to minutes after exposure to an inducer; called also immediate response.

Law: A uniform or constant fact or **principle**.

***LAW OF FACILITATION**: When an impulse has passed once through a certain set of neurons to the exclusion of others, it will tend to take the same course on a future occasion, and each time it traverses this path the resistance will be smaller. (when something goes wrong in the nervous system, it tends to stay wrong)

DAVIS' LAW: If muscle ends are brought closer together the pull of tonus is increased, which shortens the muscle (may even cause hypertrophy [increased size]), and if muscle ends are separated beyond normal, tonus is lessened or lost (thus becomes weak)

LAW OF DENERVATION: Denervation of a structure increases its sensitivity to chemical stimulation

MEYER'S LAW: The internal structure of fully developed normal bone represents the lines of greatest pressure or traction and affords the greatest possible resistance with the least possible amount of material

LAW OF REFERRED PAIN: Referred pain only arises from irritation of nerves which are sensitive to those stimuli that produce pain **when applied to the surface of the body**

VULPIAN'S LAW: When a portion of the brain is destroyed, the functions of that part are carried on by the remaining parts

WOLFF'S LAW: A bone, normal or abnormal, **develops the structure most suited to resist the forces acting upon it**

PLEASURE PRINCIPLE: In Freudian terminology, the automatic instinct or tendency to avoid pain and secure pleasure

REALITY PRINCIPLE: In Freudian terminology, the mental activity which develops to control the pleasure principle under the pressure of necessity or the demands of reality

BARUCH'S LAW: When the temperature of the water used in a bath is **above or below** that of the **skin** the effect is **stimulating**; when both temperatures are **the same** the effect is **sedative**

BARFURTH'S LAW: The axis of the tissue in a regenerating structure is at first perpendicular to the cut

RITTER'S LAW: Both the opening and the closing of an electric current produce stimulation in a nerve

RUBNER'S LAW: The rapidity of growth is proportional to the intensity of the metabolic process, and the "growth quotient" energy is utilized for growth

SCHROEDER VAN DER KOLK'S LAW**: The **sensory fibers** of a **mixed nerve** are **distributed to the parts moved by muscles** which are **stimulated by the motor fibers** of the **same nerve

MUELLER'S LAW OF SPECIFIC IRRITABILITY: Every sensory nerve reacts to one form of stimulus and gives rise to one form of sensation only, though ***if under abnormal conditions it is excited by other forms of stimuli, the sensation evoked will be the same***

EXERCISE FOR:

- MILGRAM'S-HIPS UP, FEET BEHIND HEAD, ASSISTED AT FIRST, ESPECIALLY IN WEAKEST POINTS. **DO NOT LET THEM DROP**. THIS IS THE WEAKEST PORTION OF THE MUSCLE.
- ROTATOR CUFF OR FROZEN SHOULDER
- **PEOPLE ON CANES/WALKER**-4 POSITIVE AND NEGATIVE RESISTANCE REPETITIONS, ENOUGH TO **SLIGHTLY** OVERPOWER QUADRICEPS EXTENSION THROUGH A FULL RANGE OF MOTION WHILE SEATED
- SUPRASPINATUS-ASSISTED THROUGH FULL RANGE
- ANY VERY WEAK MUSCLE

12th hour:

CRANIAL CORRELATIVE REFLEXES:

SKULL TO THORAX/BODY: UPPER-SAME SIDE, LOWER-OPPOSITE SIDE [80% CORRELATION, 20% OPPOSITE CORRELATION]. IF VERY SEVERE PAIN, IT REVERSES.

- TMJ TO HIPS
- TMJ TO SHOULDER AND HIP SOCKET
- HEEL AND KNEE TO ANGLE OF JAW PERIOSTEUM
- ARM AND LEG FLEXORS TO JAW FLEXORS, EXTENSORS TO JAW EXTENSORS
- JAW DIAPHRAGM CORRESPONDS TO DIAPHRAGM AND PELVIC DIAPHRAGM
- EAR EXTENSORS CORRESPOND TO DELTOIDS AND GLUTEUS MINIMUS AND MEDIUS
- TEMPORALIS CORRESPONDS TO PECTORALIS MAJOR AND GLUTEUS MAXIMUS
- FRONTALIS CORRESPONDS TO UPPER TRAPS AND QUADRATUS LUMBORUM
- TONGUE CORRESPONDS TO HANDS AND FINGERS, FEET AND TOES
- TONGUE TO ABDOMINAL ORGANS
- INFERIOR OF NASIUM TO C, T AND L SPINE
- CHEEKS CORRESPONDS TO LUNGS
- PERIOSTEUM UNDER CHIN CORRESPONDS TO UNDER 12TH RIBS
- BACK OF SKULL TO FRONT OF CHEST
- EXTERNAL OCCIPITAL PROTUBERANCE TO XYPHOID PROCESS AND COCCYX
- PARIETAL BONES TO SACRUM AND STERNUM

- TEMPORALS TO SIDES OF CHEST WALL
- CHEEK BONES TO INFRASPINATUS BONE OF SCAPULA AND ILIAC BONE
- ZYGOMATIC ARCH TO SPINE OF SCAPULA AND ILIAC CREST POSTERIOR
- EYES TO BREASTS, OPPOSITE SIDE AND FLIPPED [OPTIC CHIASM CROSSES AND VISION IS FLIPPED]
- CLAVICAL TO NUCHAL LINES AND POUPART'S LIGAMENT/ILIAC CRESTS
- POSTERIOR CERVICAL MUSCLES TO **6 PACK** OF ABDOMEN
- DELTOIDS TO GLUTEUS MINIMUS AND MEDIUS AND TO EAR EXTENSORS (3)
- EAR DRUM TO JOINT CAPSULE OF HUMERUS HEAD AND FEMURHEAD
- TONSILS TO KIDNEYS
- ADENOIDS TO ADRENALS

NOTE: MANY WOMEN ESPECIALLY HAVE A **SCAR UNDER THEIR CHIN**

THIGH NUMBNESS:

- UPPER MANDIBLE, FLAT SIDE

PLEURITIS

- CORRELATION WITH SKULL, SAME SIDE

BUTT OF HAND PAIN:

- ANGLE OF JAW

ELBOW PAIN:

- ANGLE OF JAW

KNEE PAIN:

- INFRAOCULAR NERVE [S-1]
- ANGLE OF JAW
- TOE TIPS 1-3
- OPPOSITE ELBOW

HEEL PAIN:

- ANGLE OF JAW

FINGER OR TOE ACTION OR PAIN:

- TONGUE

TUNNEL VISION:

- PROD: OPPOSITE AREOLAR TISSUE, OUTSIDE FOR OUTSIDE, INSIDE FOR INSIDE, FLIPPED

UNRESPONSIVE TAILBONE PAIN:

- PERIOSTEUM OF INFERIOR NASIUM

- PERIOSTEUM OF INFERIOR OF EXTERNAL OCCIPITAL PROTUBERANCE
- PERIOSTEUM OF INFERIOR OF XYPHOID PROCESS

UNRESPONSIVE SPINE OF SCAPULA PAIN:

- PERIOSTEUM OF ZYGOMATIC PROCESS, SAME SIDE

DRY VAGINA:

- TROUGH OF TONGUE [SALIVARY DUCTS]

VAGINISMUS, TESTICULAR AND PELVIC PAIN:

- FINGER PRESSURE TO TONGUE (ACUPUNCTURE CONNECTION FOR SPLEEN AND STOMACH)
- FINGER PRESSURE LENGTH OF PUBOCOCCYGEUS TRIGGER POINTS
- FINGER PRESSURE LENGTH OF ISCHIOCOCCYGEUS TRIGGER POINTS
- FINGER PRESSURE TO INNER BORDERS OF PERIOSTEUM OF ISCHII AND POSTERIOR BORDER OF PUBIC BONE

13th hour:

***Crossed Reflex:** Stimulation of **one side of the body** often also causes a corresponding **response on the other side**, especially in the eye.*

LAW OF AVALANCHE: Hypothetical law assumed by Ramonh Cajal, that **multiple sensations may be aroused** in the brain **by a simple sensation at the periphery**

[TTAPS introduces a simple sensation to make multiple changes in muscle weakness]

***LAW OF DIFFUSION**: **Any** process set up in the nerve centers **affects the organism throughout** by a process of diffused motion*

CARPAL, RADIAL AND ULNAR TUNNEL SYNDROMES:

- WRIST AND FINGER MANIPULATION AND TRACTION-ROTATION
- CONVERGENCE AND SUMMATION
- FINGER WEBS
- ADDUCTOR POLLICIS TRIGGER POINTS
- 1ST DORSAL INTEROSSEI MUSCLE TRIGGER POINTS
- SCALENE TRIGGER POINTS
- SCM TRIGGER POINTS
- PRONATOR TERES TRIGGER POINTS
- PALMARIS LONGUS TRIGGER POINTS
- PRONATOR QUADRATUS TRIGGER POINTS
- TONGUE TRIGGER POINTS AND STRETCH
- ANKLE PERIOSTEUM TRIGGER POINTS
- SERRATUS POSTICUS INFERIOR TRIGGER POINTS
- PECTORALIS MAJOR AND MINOR TRIGGER POINTS
- ETC.

FEVER:

- TRIGGER POINTS IN ARMPITS
- TRIGGER POINTS ALONG SACROSPINALIS

ASTHMA/BRONCHITIS/SWALLOWING ISSUES:

- **SUPERIOR MEDIASTINUM** SCAR TISSUE

UTERINE/VAGINAL PROLAPSE:

- TONGUE TRIGGER POINTS
- MANIPULATE UTERUS

LOSS OF CIRCULATION IN LEGS

- **SPONDYLOTHERAPY** AT C7/T7 [STELLATE/LOWER CERVICAL GANGLION], T6-L3
- SYMPATHETIC TONE [1/2 -2 HZ] [GUYTON'S]
- STOMACH MANIPULATION [SOLAR PLEXUS]
- TOE WEBS
- NOSE

UPPER CERVICAL TPs FOR:

- BODY PAIN
- STROKE SYMPTOMS

TOE TIP STIMULATION AND UNDER NAILS AT SKIN INTERFACE WITH PROD FOR:

- BODY PAIN
- EUSTACHIAN TUBE CONSTRICTION OR BLOCKAGE
- SINUSES
- **DRY EYE**
- ANY OTHERWISE UNRESPONSIVE CONDITION

DRY EYE:

- GRAB NOSE AND SHIFT IT TO EXTREMES TO BOTH SIDES
- PROD TO TOE TIPS

ALLERGIC CONDITIONS:

- CHOP DOWN SPINAL MUSCLES WHEN IN PRESENCE OF INCITOR

SINUSITIS:

- ZYGOMATICUS TRIGGER POINTS
- TOE PADS

PROLONGUED SORE THROAT AND LARYNGITIS:

- TRIGGER POINTS ON, AROUND AND UNDER HYOID BONE AND THYROID, CRICOID AND THYROID CARTILAGES
- LONGITUDINAL ARCHES [FLEXOR HALLUCIS BREVIS]
- PERINEUM
- LOW BACK TPs

EAR PAIN:

- EAR LOBE MANIPULATION
- INNER PTERYGOID TPs
- MASSETER TPs
- SCM TPs

CONSTIPATION OR DIARRHEA:

- ILEOCECAL VALVE
- FOLLOW LARGE INTESTINES

ANTIBIOTIC STONES:

- **PROD ON LOW BACK, THEN ACUPOINT PROLONGED STIMULATION, SEVERAL 30 MIN SESSIONS**

COMPACTED PUS IN EUSTACHIAN TUBES:

- PROD ON TOE TIPS AND UNDER NAILS, UP TO 30 MIN

HEADACHE PAIN:

- SUBOCCIPITAL TPs
- PROD IN TROUGH 1/3 DOWN BEHIND UPPER EAR
- PROD IN VOLAR SIDE OF DISTAL LARGE TOE JOINT
- SCM TPs
- UPPER TRAP TPs
- ABDUCTOR DIGITI MINIMI OF FOOT
- HIGH HEELS
- STOMACH
- SACRUM

14th hour:

THUMB/THENAR/1st DORSAL INTEROSSEOUS ASSOCIATION WITH CHEST AND SHOULDER

BREAST PAIN:

- OPPOSITE SIDE EYE, OUTSIDE FOR OUTSIDE, INSIDE FOR INSIDE, FLIPPED (AND VICE-VERSA FOR EYE PAIN)
- PECTORALIS TPs
- SERRATUS POSTICUS SUPERIOR TPs
- THENAR

STERNAL PAIN:

- LIFELINE, SAME SIDE
- A TO P STERNAL ADJUSTMENT

EYE PAIN:

- SURFACE OF EYES [CLOSED]
- PERIOCULAR MUSCLES
- ST-36
- OPPOSITE OCCIPITAL PROTUBERANCE
- OPPOSITE BREAST, FLIPPED

CHEST/BREAST PAIN:

- THENAR, SAME SIDE
- OPPOSITE EYE, FLIPPED

NIPPLE PAIN:

- PUPIL [EYES CLOSED]
- PROD TO MID THENAR
- PROD TO MID GLUTEUS MAXIMUS

FOOT PAIN/NUMBNESS/LACK OF CIRCULATION:

- TAP FEMURHEAD S TO I

THUMB WITH BALPEEN HAMMER:

- OPPOSITE LG TOE
- POSITIONAL PAIN

ELBOW PAIN AND SWELLING:

- MIDDLE TOE JOINTS

UNRESPONSIVE SHOULDER PAIN:

- OPPOSITE HIP
- TMJ TRIGGER POINTS, SAME SIDE

HAND REFLEXES:

- Mid palm for hyperhydrosis and polyhydrosis
- Lateral blade for headaches and dropped Cuboid arch of opposite foot
- Across palmar knuckles for Transverse arch of opposite foot

FOOT REFLEXES FOR NECK, BACK AND SHOULDER:

- Inner large toe: opposite neck
- Crease of large toe: opposite suboccipital area
- Knuckle and web of large toe: opposite shoulder

- Distal lateral 1st Dorsal Interosseus against 1st metatarsal shaft: thoracic
- Proximal lateral 1st Dorsal Interosseus against 1st metatarsal shaft: lumbar
- Proximal 1st Dorsal Interosseus at meeting of 1st and 2nd metatarsal shafts: sacral
- Pinch abductor digiti minimi for **headaches**
- Palmar aspect of foot for **difficulty standing and lack of energy** issues
- Thin skin against thicker skin at base of large toenail for **eye** issues
- Thicker skin toward knuckle for **face** issues

STONES

GALL BLADDER, PANCREATIC AND URETER PUMP:

- GALL STONES
- KIDNEY STONES
- PANCREATIC STONES

DIZZINESS:

- DIGASTRICUS
- SCM
- UPPER TRAPS
- SARTORIUS
- CORACOBRACHIALIS
- CHEEKBONES
- EAR LOBES
- EYES
- SEMICIRCULAR CANAL SWEEP

UNRESPONSIVE PAIN BETWEEN THE SHOULDER BLADES:

- PROD: AREOLAR TISSUE, SAME SIDE
- INNER HAMSTRING, SAME OR OPPOSITE SIDE
- TRIGGER POINTS BETWEEN CHEEKBONES AND NOSE, SAME SIDE

UNRESPONSIVE BODY PAIN, BURNING, NUMBNESS, TINGLING:

- PROD TO NOSE
- FINGER AND TOE WEBS
- TOE TIPS TO UNDER NAILS

SWELLING FROM TOOTH EXTRACTION AND DEVIATED SEPTUM SURGERY:

- LU-7

COLD HANDS AND FEET:

- TH-5

- NOSE
- VERTEBRAL PROMINENS
- SOLAR PLEXUS

SEIZURES:

- BETWEEN NOSE AND UPPER LIP: GV-28
- POINTS MIDLINE UP CHIN TO TOP OF FOREHEAD
- HIGH FAT DIET [AT LEAST 30%]

15th hour:

TOOTH PAIN:

- TEMPORALIS, UPPER
- MASSETER, UPPER AND LOWER
- DIGASTRICUS, LOWER
- **INTEROSSEOUS OF FEET, SAME SIDE**

TMJ PAIN:

- SOLEUS
- MASSETER
- BUCCINATOR
- INTERNAL PTERYGOID
- EXTERNAL PTERYGOID
- TEMPORALIS
- HIP
- SHOULDER

NOSE BLEED:

- SIMULTANEOUS PINCH OF THUMB WEBS
- BITE TONGUE AND HOLD FIRMLY

UNRESPONSIVE HIP SOCKET PAIN:

- ADDUCTOR MAGNUS TRIGGER POINTS
- **TAP OPPOSITE PATELLAR LIGAMENT**

ANKYLOSING SPONDYLITIS:

- PERIOSTEAL POINTS ALONG INFERIOR NASAL BONE EDGES: UPPER C, MID T, LOWER L
- PERIOSTEAL POINTS ALONG INNER BORDERS OF PUBIC BONES
- PUBIC SYPHYSIS: UPPER C, MID T, LOWER L

MENSTRUAL CYCLE PAIN:

- MEDIAL AND LATERAL BILATERAL CALCANEUS
- TRIGGER POINTS THAT FLARE DURING THE PERIOD, BUT NOT OTHERWISE

FEET:

- NECK AND SHOULDER PAIN
- SHOE EVALUATION: collapsible heel cup, level heel, no insole bumps, arches correct size, stand on it to make sure with weight-bearing
- **TRANSVERSE ARCH LIFTS: BUNION PAD**
- INNER LARGE TOE FOR NECK PAIN
- 1st DORSAL INTEROSSEOUS AGAINST TARSALS FOR LUMBAR AND THORACIC PAIN
- ADJUSTMENTS OF FEET FOR CHRONIC NECK AND SHOULDER PAIN
- INGROWN TOENAIL ADJUSTMENT-DISTAL JOINT OF LARGE TOE

DIARRHEA:

- MANIPULATE IC VALVE
- MANIPULATE LARGE INTESTINES
- TONGUE PRESSURE

CONSTIPATION:

- MANIPULATE IC VALVE
- MANIPULATE LARGE INTESTINES
- TONGUE PRESSURE

ULCERS:

- MIDDLE OF FOREARM
- T4 LEVEL BETWEEN SPINE AND SHOULDER BLADE
- TV TIPS OF L1 AND 2
- TV TIPS OF S2
- TONGUE PRESSURE

16th hour:

LEAKY BLADDER:

- TAP JUST ABOVE PUBIC SYMPHYSIS ON LOWER ABDOMEN

UNRESPONSIVE LOW BACK PAIN:

- PUBIC SYMPHYSIS
- ADDUCTOR LONGUS
- CHECK FOOT POSTURE WHILE WALKING [TURNED IN OR OUT TOO FAR: 10-15^{O} IS IDEAL]

PARKINSON'S

- PROD TO CRANIAL POINT
- BICEPS AND BRACHIORADIALIS
- LEG RESISTANCE EXERCISE

GUILLAN BARRE'S

- HIP ROTATION MANUEVERS

- PROD-BOTTOMS OF FEET, TOE TIPS, NOSE
- SCIATIC STRETCH

ULCER/STOMACH PAIN:

- MIDDLE OF FOREARM
- ST-36
- T4, L1-2 AND S2 TVP TIPS
- MANIPULATE STOMACH OR GALL BLADDER
- SUBOCCIPITAL TRIGGER POINTS
- TONGUE TRIGGER POINTS

EYE PAIN:

- PRESSURE TO EYEBALL
- PERIORBITAL MUSCLES
- ST-36

THROAT PAIN:

- PERINEUM
- LOW BACK TPs
- LONGITUDINAL ARCHES (FLEXOR HALLUCIS)
- TPs ON AND AROUND THYROID, CRICOID AND TRACHIAL CARTILAGES

UNEXPLAINED LACK OF ABILITY TO EXTEND THE NECK:

- TIP OF COCCYX

UNEXPLAINED LACK OF ABILITY TO ROTATE NECK

- ARCHES OF FEET