

Does Hanna Somatics belong in Personal Training?

Island Conference 26!

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1

Xwsepsum(ko-SAP- sum) (Esquimalt) and Songhees



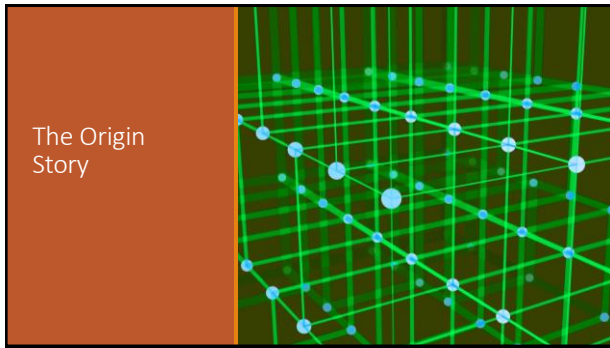
BRIAN JUSTIN 2020 2

2

Objectives

Who is Thomas Hanna?
History & Philosophy of Somatics Exercises
Sensory Motor Amnesia and Pandiculation
The Three Reflexes
Somatic Movement Patterns meets Anatomy Trains
Where does this fit in Personal Training

3



4

Who is Thomas Hanna Ph.D.? What is Hanna Somatics?

Thomas Hanna was the Chair of the Department of Philosophy at the University of Florida (1965-1970) and later moved on to be the Director of the Humanistic Psychology Institute in San Francisco and later Co-founded the Novato Institute.

He is the founder of Hanna Somatics Education – This is the use of sensory-motor learning to gain greater voluntary control of one's physiological process. It is "somatic" so the learning occurs within the individual as an internalized process (Peterson, 2015).

5

History & Philosophy of Somatics

Somatics is not a magical pill.

It was born from the work of Moshe Feldenkrais, Elsa Gindler, and F. Matthias Alexander.

F. Matthias Alexander (1869-1955): Developed his method losing his voice while acting. No practitioner could help him. He noted his head and neck position affected his vocal chords when reciting. He changed this and his voice was normalized.

Elsa Gindler (1885 – 1961): A PE Teacher in Germany utilized breathing exercises to help return lung function from tuberculosis patients.

Moshe Feldenkrais (1904-1984): A Physicist and Martial Artist (judo). He developed a system of movement to help recover his badly injured knee. He integrated Gindler and Alexander's work into his system.

Thomas Hanna (1928-1990): A Philosophy professor interested in human potential as well as a Feldenkrais practitioner. He integrated Feldenkrais' work with Hans Selye (Stress pioneer) showing how the body adapted to stress in both positive and negative ways.

6

Bennett, B. (2020). The Somatic Work of Thomas Hanna, Tai Chi, and Kinesiology. *Kinesiology Review*, 9, 236-244

Historical Origin of HSE

By employing three techniques called "means-whereby" (Alexander technique – **where you focus on the means and not the end to perform movement consciously** – how are you **getting to point B**), "kinetic mirroring" (Feldenkrais technique – **bringing the origin and insertion closer together for 30 sec. to induce muscle relaxation**), and "pandiculation" (Hanna technique) where the **control over the muscles can be brought about and tone decreased**.

7

History and Philosophy of Somatics

You are working with the "Soma" not just a client's body. When the human being is observed from the first-person viewpoint with their own proprioceptive senses (**self sensing and self regulating – "to sense what is happening within the soma is to act upon it"**) = Soma. This unity is built into the spinal column – descended motor nerves and ascending sensory nerves) - **"The body experienced from within" – a unified mind-body system.**

When it is observed from a third person viewpoint then it is just the **body** being observed.

As CPT's you have potentially two sets of data coming at you: your clients first person observations and your third person observations.

8

Sensory Motor Amnesia (Peterson, 2016)

Sensory Motor Amnesia, as defined by Thomas Hanna, PhD, refers to a condition in which muscles become habitually tight in response to injuries (e.g., soft-tissue injuries), physical shocks (e.g., falls or blows), repetitive use (e.g., overtraining) or on-going stress. **Those afflicted with SMA lose their ability to release and relax muscles and move freely. This is the target of Hanna Somatics.**

SMA occurs in reflexive, full body patterns of contractions that alter voluntary coordination, balance, tighten joints and cause muscular pain. In SMA, the feedback loop between the brain and muscles goes into what can be described as "cruise control" or "auto-pilot," and makes it difficult to control these muscles freely. **Typically, all the muscles along that specific kinetic chain tighten in compensation.**

9

Sensory Motor Amnesia (SMA)

The following information was observed by Hanna over the course of 20 years of clinical practice working with people of all ages and abilities.

- Sensory motor amnesia occurs when the muscles are so tense that they won't relax.
- If massage/chiropractor/physical therapy/heat and cold/ won't help for the long term you likely have sensory motor amnesia.
- What does this happen from? **Muscles can hold significant tension** from physical and emotional stress, bracing after injury, surgery or trauma, or from holding certain postures (ex: computer work, playing musical instruments, etc.) for extended periods. SEE INSULTS – Upcoming slide.
- What are your personal or reflexive bodily responses to stress? Somatics can develop one's ability to sense this.

The Brain is the target organ to alleviate this.

10

Importance of Movement: To nullify the insults to the body (Loupos, 2011)

Insult: Any experience, real or imagined, that (dis)stresses or offends the organism.

Minor level (frequent but less impactful):

Slumping posture
Sub-optimal nutrition
Stressful day at work
Restless sleep
Carrying a bag over one shoulder only

Medium Level: (rarer than minor but not uncommon)

Sprains/strains
Coccyx impact
Slow to resolve emotional trauma
Jarring and bruising from sporting events
Deane Juhan (book Job's Body) – "locomotor patterns become individualized by one's unique pattern of experiences" or "repeated gestures become postures, and sustained postures become structures".

11

Importance of Movement: To nullify the insults to the body (Loupos, 2011)

Major Insults (infrequent):

Broken bones
Surgeries
Automobile accidents
Failed marriages
Ruined careers
Strokes

Combination of the Minor + Medium + Major insults – Client's **Lifestyle** management = YOUR CLIENT/PATRON's movement behaviour and work capacity.

12

Huang, Q., & Babgi, A. (2022). Effect of Hanna Somatic Education on Low Back and Neck Pain Levels. *Saudi Journal of Medicine and Medical Sciences*, 10, 266-71.

This retrospective study of 103 patients by Huang and Babgi (2022), examined the effect of Hanna Somatic Education (HSE) on **low back and neck pain levels**. The results showed that completing a **mere 2.8 sessions of HSE** significantly reduced pain (measured by the FACES Pain Rating Scale) and pain medication use 6 months after HSE implementation. Additionally, the mean number of **doctor visits for pain management significantly reduced in the 6 months before HSE to 6 months after.**

Mechanism: The **eccentric contraction used in HSE decreases the firing of the motor units leading to reduced muscle tonus and relief of soreness.** A limitation of the study is the lack of other functional metrics such as range of motion, posture, and gait changes.

13

Case studies –My own Experience

4 Case Studies come to mind to give you an idea of the type of outcomes one can have with Somatics:

Client with Friedrich's Ataxia (Neurological condition) – Reported feels better and moves with more control when she does her somatic exercises versus when she skipped them for the day.

National level water polo player – Therapist reported that her shoulder was aligning much better from somatics exercises and the athlete reported less tension.

Boxing athletes reported a great relaxation response following a 45 minutes session of somatics exercises. Some did not realize that it had been 45 minutes.

My own experience – I was having problems with trigger points/tender tissues in my calves after I had injured them some time ago. After using the back lift somatics exercises my gluteus/hip function was improved which then downregulated my periphery (calves). This took approximately a week and has not returned by just maintaining it 2-3 times per week.

14

The 3 Neuromuscular Stress Reflexes of Hanna Somatics

Green Light Reflex vs. Red Light Reflex

Stems from Selye's "eustress and "distress"

Red Light Reflex – The withdrawal (fear) reflex.

Green Light Reflex – The Landau Reaction (effort).

Trauma Reflex – Usually as a result of injury/surgery.

Reflexes focus around the middle of the body where the COG is.



15

Red Light (Startle) Reflex

Withdrawal Response (fear) – Quick and effective

Similar to the “Computer user posture” (not an emotional response)

Scenario: Woman hears an explosion behind them (full red light reflex):

1. Within 14 m/sec. jaw muscles contract.
2. At 20 m/sec. eyes and brow contract.
3. At 25 m/sec. the trapezius contracts raising the shoulder and brings head forward.
4. At 60 m/sec. elbows bend/hands pronate/abdominals contract bringing trunk forward and pulling rib cage down stopping breathing/knees bend and point inward/Crotch tightens (perineal)/ankles roll her feet in



16

Red Light Reflex Con't.

Response to distressful events.

Results of a prolonged or **habituated** response:

- ☐ Poor breathing
- ☐ Stooped posture/Depressed rib cage
- ☐ “Old age” posture with knees bent leading to achy knees and legs?
- ☐ Visceral pressure (leading to “frequent urination”, digestive and elimination issues)
- ☐ Is it the “old age posture” or is it a poorly managed red light reflex?
- ☐ Long term issues: TMJ disorder/neck pain/respiratory problems/tinnitus/abdominal discomfort/hip, knee, & shoulder issues. Not to mention blood vessel geometry changes.

(Peterson, 2011, Bowman, 2014, & Hanna, 1980)



17

Green Light (Landau Reflex) Reflex

“Call to action” reflex (eustress). **Effort response** which occurs in the back of the body.

Neurodevelopmental – **3rd month** – Baby lifts up its enormous head when lying prone = more exploration and adventure! At **5 months** can arch the back.

At roughly between **5-6 months** the baby can lift its head, arch its back and extend their legs (when held prone) = Landau reaction –

Looks like Superman pose! It can now push the floor to move itself. The beginning's of locomotion!



18

Green Light Reflex Con't.

Very similar to the open scissor syndrome DNS and PRI discusses. Diaphragm and pelvic floor are in poor position for effective core stability.

Results of a prolonged or habituated response:

- ❑ Rib flare
- ❑ Anterior tilt
- ❑ Military like posture

Long term issues: Neck pain/back pain/sciatica/shoulder pain



19

Trauma Reflex

This reflex occurs in response to injury or accidents. It is an **avoidance maneuver** as it is the body's attempt to rotate away from the injured side to avoid more damage.

See a tilting and or rotating in the body by uneven contraction of the waist or core musculature.

Prolonged or habituated response leads to:

- ❑ Improper leg length
- ❑ Uneven gait
- ❑ Tight and painful hips
- ❑ Spinal misalignment



20

Somatic Movement Patterns / Weight-training

Green Light Reflex	Red- Light Reflex	Trauma Reflex
Posterior Chain SBL	Anterior Chain SFL/ DFL	Lateral / Rotation Chain Spiral Line / Functional Line
Deadlifts Rows Calf raises	Abdominal training Squats / Lunges Bench press	Woodchops/ Torso Rotations Carries Lateral Flexion exercises
Arch and flatten Back Lift Arch and Curl	Arch and Flatten The Flower	Side bend / Wash rag Arch and Curl Diagonal Walking 1



21

Pandiculation: The “Main” Technique of Somatics

Pandiculation helps alleviate muscle tightness from Sensory Motor Amnesia(SMA).

Gentle but intentional technique.

What do you do in the morning? That is a pandiculation. Our fascia shrinks 5% overnight and makes us feel tight in the morning.

Animals pandiculate when they get up from rest roughly 42 times per day.

Pandiculation Technique:

1. Tighten a specific muscle or muscle groups tighter than it already is.
2. Slowly lengthen and release that muscle(s) to their full comfortable length.
3. Completely relax the muscles.

22

Anatomy of Pandiculation

Muscle Spindle – **Gamma bias** – Muscle spindle is on stand-by ready to detect changes in muscle length.

Normal muscle contraction - the brain sends signals via the alpha (extrafusal fibers) and gamma (intrafusal fibers) motor neurons (MNs) **equally** – “alpha/gamma co-activation”.

If alpha and gamma motor neurons fire at different rates, the length of the spindle cells **reset** causing a **change in muscle tone**. This is thought to lead to SMA. **This is based on Irvin Korr’s theory of Somatic Dysfunction on Muscle Spindles.**

23

Gamma Gain – What causes the alpha and gamma to be out of balance?

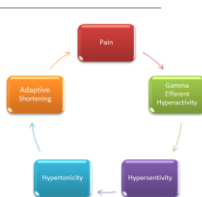
Gamma gain – the alpha-gamma activation is out of balance. There is more discharge from the gamma efferent neurons **creating a muscle spindle that is hypersensitive**. This resultant is a muscle that becomes **hypertonic**.

What causes gamma gain? **The causes have not been fully answered.**

A few thoughts on causes are **pain, sympathetic hyperactivity (stress) and overstretching**.

Pandiculation arrests this by having the client actively contract the muscle. This shortens both the muscle and spindle to a theoretical “0”. And **decreases efferent activity**.

Then as the client **slowly** lengthens out the muscle and spindle begin to calibrate together. **The little jumps they may feel when lengthening indicate it is not quite there and needs further reps.**



24

Anatomy of Pandiculation

Pandiculation begins with a **conscious contraction** of the muscles.

When the muscle is fully contracted both alpha and gamma motor neurons fire at the same rate **resetting it back to "0"**.

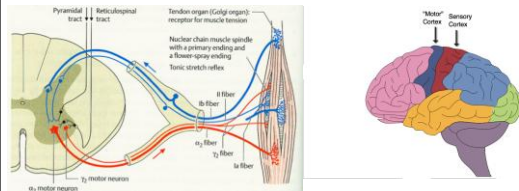
Then the muscle is slowly lengthened - **By going slowly, the muscle is able to calibrate the alpha and gamma at the same time.**

Conscious and voluntary control is returned back to the muscle.

A new "tone" is set for the muscle, and the alpha/gamma co-activation is reset.

25

The Brain! AWARENESS is KEY!



26

Research behind mechanisms

A class or session in Hanna Somatic Education will involve the following:

Breathing techniques

Interoception

Eccentric contractions

27

Lepley, L., Lepley, A., Onate, J., & Grooms, D. (2017). Eccentric Exercise to Enhance Neuromuscular Control. *Sports Health*, 9(4), 333-340.

Eccentric exercise has been found to remodel morphology (i.e. sarcomere additions making it more strain resistant), create greater cortical excitability improving muscle recruitment, induce greater cerebellar activity for precision, and **down-regulates the muscle spindle feedback** which allows for muscle lengthening during eccentric contractions.

28

Taneja, S., Singh, V., & Kapil, B. (2012). Comparison of effect of Eccentric Training Versus Static Stretching on Hamstring Flexibility. *Indian Journal of Physiotherapy and Occupational Therapy*, 6 (4), 149-153.

The results showed that the ECC group and SS group equally showed significant gains in flexibility as measured by the modified sit and reach and 90/90 knee extension tests over the CON group which was consistent with other studies.

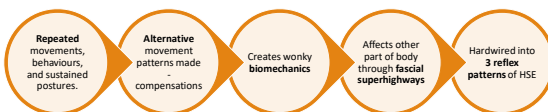
The increase in length and number of sarcomeres was suggested for the increase in ROM from the ECC group.

29

How does HSE align with personal training?

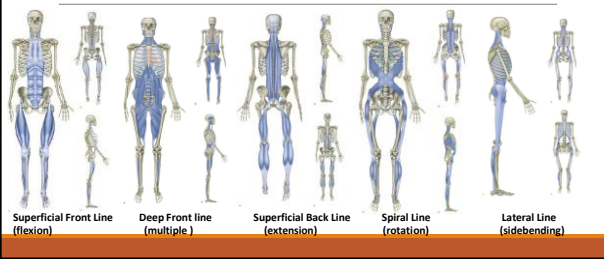
It involves Functional Linking (Olderman, 2025).

Let's summarize a bit:



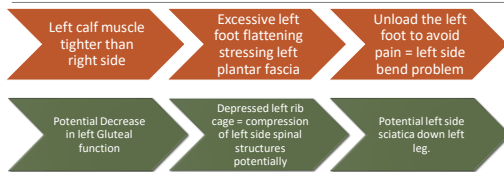
30

Fascial Superhighways (Tom Myers)



31

Functional Link Example (Olderman, 2025)



This may develop over time with a scan showing a disc bulge or facet joint arthritis. - but when did it start is the question!

32

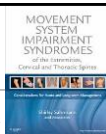
Systems Thinking

Dr. Shirley Sahrmann – Movement system impairment categorization for movements that cause pain.

For Back Pain:

- **Extension biased pain problems** – pain when the spine moves into extension (most common)
- **Flexion biased pain problems** – pain when the spine moves into flexion (disc in nature)
- **Rotation/sidebending problems** – pain with rotation (if someone has a **left side bend** where the left side pelvis is elevated it **drives rotation into the opposite side** (**Fryette's first law** when standing in neutral) which in this case is right. So, this person will have trouble rotating to the left and will find rotating right to be easier and less painful.

Hmmm..... Do all of these look familiar?



33

Fascial Superhighways Cont'd.

Spatial Medicine – The study of how we develop, how we stand, handle loads, perceive our bodily selves, move through our environment, and occupy space.

- ❑ Network of connections – gives rise to regional interdependence.
- ❑ **Deep Front line** – There is no movement that is strictly the role of the DFL but there is no movement that is outside its influence. It's a deep supporter of the other fascial lines and if it is dysfunctional over time could lead to chronic pain or movement impairments.
- ❑ **Myofibroblasts** – Type of cell in fascia that has contractile properties but not at the strength to change local biomechanics. **Can generate small forces that are sustaining.** Thoracolumbar fascia has a lot of these.
- ❑ **When an area is not moving well, or subjected to repeated stress** myofibroblasts develop in greater numbers in that area to support it.
- ❑ Myofibroblasts respond to transforming growth factor Beta 1 (TGF-B1) due to an immune response from SNS from stress (physical and emotional) etc.
- ❑ This leads to fascial tension along the superhighways. (i.e. chronic anxiety will lead to the SNS releasing TGF-B1 again and again leading to chronic tension).



34

5 Main Somatic Patterns I use

Arch and Flatten (Green light correction) / (Red light Reflex Correction)

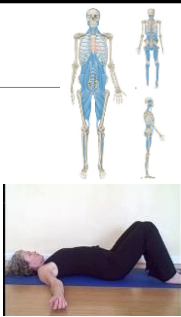
Anatomy Train Line: Deep Front line (DFL)/SFL/SBL

Applicable roles of the DFL:

Supports the lumbar spine from the front.

Stabilizing the chest while allowing the expansion and relaxation of breathing

Balancing the fragile neck and heavy head atop it all



35

5 Main Somatic Patterns I use

Back Lift (Green Light Reflex correction)

Anatomy Train Line: Superficial Back Line

Applicable Roles of the SFL

Creates extension (with exception of flexion from the knees down)

Posterior Chain

The Back lift exercise is very relaxing for this whole fascial line.



36

5 Main Somatic Patterns I use

Side Bend (Trauma Reflex Correction)

Anatomy Train Line: Lateral Line

Applicable Roles of the LL:

Lateral body bends (lateral flexion/hip abduction/foot eversion)

Mediates forces among the SFL and SBL

Stabilizes trunk and leg to buttress buckling



37

5 Main Somatic Patterns I use

The Wash Rag (Corrects Trauma Reflex)

Anatomy Train Line: Spiral Line / The Front and Back Functional Line

Applicable Roles of the FFL and BFL:

Cross body movements (kicking or throwing a ball) – Rotary motion.

This exercise – “Think long not rotation”



38

5 Main Somatic Patterns I use

The Flower (Red light Reflex Correction)

Anatomy Train Line: Deep and Superficial Arm Lines / SFL/DFL

Applicable Roles:

Push things away

Push, stabilize our own body like in a plank or push up position hold



39

Where does this fit in Personal Training?

Fitness Mantra:

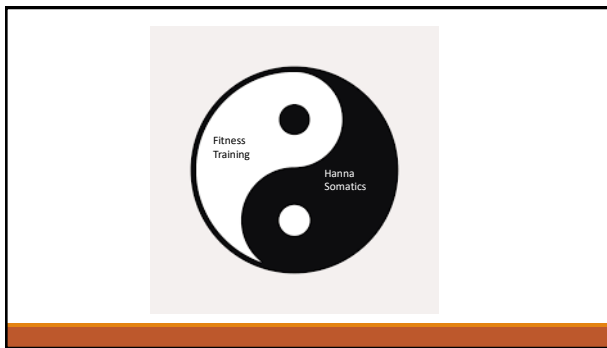
**BIGGER – STRONGER –
FASTER!**

Somatics Mantra:

**SUBTLE - FOCUSED -
SLOWER**

- “To regain good form, we must re-train the brain. In learning to overcome SMA, the client becomes more self-sensing, balance improves, and the client regains better coordination and control of his/her own actions. In addition, recovery time from injuries and training is shortened”. (Peterson, 2016).
- **If you can't sense it is hard to strengthen it.**
- It also helps with stress management and management of trauma.

40



41

F.I.T.T. Formula for Somatics

Frequency: As often as needed. Minimum every other day.

Intensity: Move gently and slow at the speed of a yawn. “Speed covers up compensations” - Dr. Mark Cheng.

Be mindful and **do not** force any movement. The slower you go the more your brain perceives. Stay away from pain.

Time: Usually, 4-6 reps per exercise but the choice is yours.

Type: Movement patterns that address mobility or habituated reflex needs.

42

Where in a session can you put these movements?

1. As a session on its own. Recovery Day.

2. As part of the cooldown.

3. As part of a warm-up.

4. In a class situation with multiple people.

43

Practical - Mini HSE Assessment - If time

1. Check Pelvic height. If one side is higher is the shoulder on that side lower?

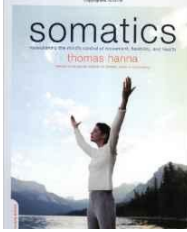
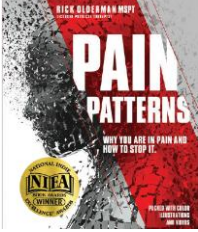
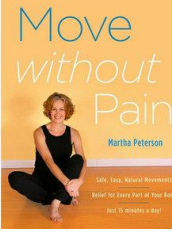
2. Palpate the erector spinae. Assess tone.

3. Multisegmental flexion – (Green light)
- is spine curve uniform (or is lumbar curve flat?) / Sacrum angle > 70 deg. / knee is straight / posterior weight shift present?

4. Multi-segmental extension – (Red light)
- ASIS past toes / scapula spine behind heels / spine curve uniform / 170 deg. of shoulder flexion

5. Multi-segmental Rotation (Trauma reflex)
- Pelvis turns 50 deg./ T-spine moves a further 50 deg. / 1:1 ratio of T-spine to pelvis / 100 deg. met (can see opposite shoulder)

44



For more info

45
