OMT WORKSHOP: Implementing a Neurovisceral Approach to Homeostasis

Integrating Polyvagal, Coherence & Social Engagement Strategies

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Thanks to SAAO Table Trainers
His Words to the “Wise”

“If you can learn all of Osteopathy in four years, I will buy you a farm and a wife to run it and boss you.”

-- A. T. Still, MD, DO

Introduction

Secret of Life Stuff: “It works even if you don’t know the mechanism ... but only if you DO it.”

Never mind that ... can you bend the spoon or not?
Abstract – Seeking Health: Osteopathic Neurovisceral Integration Workshop

- Extrinsic afferent neurons play essential roles in both sensation & reflex control of visceral organs; they are also important in modulating autonomic & hormonal mechanisms which affect mood & health generally. Some of this vital information originates from mechanoreceptors located in various somatic and visceral tissues.

- Thoughtful modulation of such input (for example) is now known to enhance heart rate variability (HRV) and promote other healthy physiological functions. Based upon this evolving evidence base, the program seeks to provide osteopathic practitioners and physicians-in-training with new insights & hands-on osteopathic approaches to effectively optimize health and homeostasis.

- Workshop is designed to support a unified osteopathic working approach that combines effective OMT techniques and patient advice with concepts from polyvagal theory (Porges) & the neurovisceral integration model (Thayer) and that builds upon the 3:3:3 Approach (Osteopathic Considerations in Systemic Dysfunction) which incorporates OMT techniques to implement neurological-autonomic & the respiratory-circulatory model goals.

- Participation should lead to a better understanding of how autonomic, attentional & affective systems interrelate with somatic & visceral inputs in clinical conditions to affect homeostasis and reduce allostatic load.

Philosophical Approach to Care
(Structure–Function : Homeostasis : Allostasis)

Mind-Body-Spirit: Reduce Allostatic Load
Physiology: Enhance Homeostasis
Anatomy: Maximize Structure-Function

Blood Memorial Lecture
ML Kuchera, DO (2009)
**BIOPSYCHOSOCIAL MODEL**

**IMPACT OF ALLOSTATIC LOAD**

- Reduced allostatic load (mind, body, spirit)
- Enhanced homeostasis (Physiology)
- Maximize structure and function (Anatomy)

**CAPSTONE:** Allostatic Load – Psychoneuroimmunology – Selye – Porges/Thayer/Lane

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**The Shift to Models of Osteopathic Health Care**

Adding Evidence-Base to Existing Models & Expanding/Modifying Paradigms

“A model is a *good model* if first it interprets a wide range of observations in terms of a simple and elegant model, and second if the model makes definite predictions that can be tested, and possibly falsified, by observation.”

--Stephen Hawking, PhD
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**APPLY OSTEOPATHIC STRATEGIES FOR NEUROVISCERAL INTEGRATION**

*Reduce Allostatic Load*

**OMT Applications for Health**
- Modulate Vagus Above & Below Diaphragm
- Enhance HRV
- Social Engagement & Patient Empowerment with Vagal Exercise

**Enhance Structure – Function**

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**“Biopsychosocial” Treatment Approaches More than that?**

**OMT – Does it Only Enhance ANS balance?**
- Remove somatic dysfunction & soft tissue OMT (Entire axial system) *(documented to ↓ sympathetic tone)*
- Suboccipital inhibition; CV4 *(documented to enhance HRV)*
- Condylar decompression, OM Suture V-Spread (esp right), C2 *(affects vagal and ANS balance)*
- Maximize Primary Respiration *(changes in Traube-Hering-Meyer; documented changes in intracranial vascular compliance & drainage; inherent motion synchrony)*
- Collateral ganglion inhibition (linea alba) & Balanced tension at gut sphincter site – “East meets West”
- **documented improvements**

**Lab Integrates Polyvagal Theory into distinctive Osteopathic Neurovisceral Integration Approach**
**Polyvagal Theory** (Porges)

**Myelinated “Smart” Vagus (‘Mammalian” Response)**
- Linked to other cranial nerves involved with expressing emotion to foster social engagement response → feelings of “safety” & “support”
- Differs from unmyelinated vagus below diaphragm (“rest & digest”)

**Sympathetic Responses**
- “Fight or Flight”

**Unmyelinated Vagus (‘Reptilian” Response)**
- “Freeze” to survive at all costs; least effective/healthy strategy

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**Intervention: Focus/Exercise Breath**

**High Priority:** Because breathing is vital to survival, information from the respiratory system must be noticed and attended to immediately
- **Intervention models** suggest that signals from “fast afferent” vagal afferents carrying information about changes in the rate, depth or pattern of breathing receive the highest priority and have rapid, widespread effects on brain functions.
- **Access:** Alveoli stretch receptors have “fast vagal” afferents

**Unique in ANS Function:** Breathing is the only autonomic function that can easily be voluntarily controlled so it provides a portal through which specific selected breathing patterns
- Can be used to send messages through PNS, SNS and interoceptive systems to affect how the brain perceives, interprets, and responds to stress or threat
**Intervention: Breath**

- **Resonance Breathing** “exercises” the baroreceptors:
  - Increased baroreflex gain is analogous to a more sensitive thermostat, allowing the body to regulate BP and gas exchange more effectively
- **Structured breathing** has neurophysiological effects (e.g., yoga breathing)
  - Stretch receptors in the alveoli, baroreceptors, chemoreceptors & sensors throughout the respiratory structures send information about the state & activity of the respiratory system through vagal afferents & brainstem relay stations to other CNS structures
  - Input influences perception, cognition, emotion regulation, somatic expression & behavior
- Consider as adjunctive to OMT or prescribe as exercise

Even CPAP has alveolar afferents noted as proposed mechanism in ↑HRV)

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**Breathing with OMT: Integrating a Neurovisceral Approach to Homeostasis**

3:18 Video @ https://www.youtube.com/watch?v=gg31LGyog

**Andrew Weil’s Yogic 4-7-8 Breathing Exercise**

Goal: Access ANS (Vagus) Through Secondary Respiration

Entrain and Modulate Heart Rate Variability (↑HRV)

3:18 Video @ https://www.youtube.com/watch?v=gg31LGyog
Voluntary Breathing Practices

- **General Advice**
  - Slow breathing with eyes closed best
  - Enhanced outcome if 1st relieve physical tension (qi gong, yoga, tai chi)

- **Different Rates for Different Goals**
  - Rate 4.5 – 6 optimal for ANS, cognitive & stress reduction
  - Rate <3bpm more sedating/meditative

- **Options**
  - **This Lab** – Will use 4:7:8 (4–In; 7–Hold; 8–Out)
  - **Future** – Your Research; Pick by Evidence-Base, Population, Ease, etc

Implementing Polyvagal Strategy
**Osteopathic Treatment Paradigm Shift**

**Vagal Target:** Now a paradigm shift in the medical treatment of diverse disorders like depression, epilepsy & pain using vagal nerve stimulation/balance-regulation … adds rich layer to osteopathic understanding in the neurological-ANS model

- Instead of exclusively targeting sympathetic activities, physicians should also **attempt to modulate/increase myelinated vagal tone.**
- Metaphorically: can no longer base treatment decisions based solely on the concept of a ‘sticky accelerator’ (sympathetics) while overlooking the possibility of ‘bad brakes’ (parasympathetics).
- Behavioral interventions like **HRV Biofeedback** and **emotional self-regulation strategies** represent non-invasive methods of restoring homeostasis.

**LAB GOAL: APPLY OSTEOPATHIC STRATEGIES FOR NEUROVISCERAL INTEGRATION**

**OMT Applications for Health**

- Modulate CNX & HRV with Sub-Occipital Inhibition & OA Decompression
- CN V & X – Dural Diaphragm Inion & Nuchal Line inhibition or Venous Sinus Drainage
- Vagal Mechanoreceptors – Linea Alba / Fulford Shock Release
- Vagal Mechanoreceptors – Upper GI Sphincter Release
- Social / Coherence & Respiratory Links – Paced Breathing; PRM with 2nd-ary Respiration & Heart-Breath Body-Mind Unity
ANS, Breathing & Social Engagement System Can Assist in Managing Allostatic Load

Polyvagalal Lab
Above Diaphragm

Integrate OMT & Paced Respiratory

Respiratory Coherence Strategies & Implementing Polyvagal Strategies (Above Diaphragm)
LAB 1A-B: Sub-Occipital Inhibition → Condylar Decompression

- OMT to Implement Polyvagal (Myelinated Vagal) Strategy
- Paced Respiration (4:7:8)
- Documented to Increase Heart Rate Variability

Add: 4 In – 7 Hold – 8 Out

LAB 1C: Inion – Subnuchal OMT

- OMT to Implement Polyvagal (Myelinated Vagal) Strategy
- Structures with CNX Innervation
OMT 1 A-B-C (Fast Vagus): Implementing a Neurovisceral Approach to Homeostasis

SubOccipital Inhibition & Decompression
Goal: Modulate Autonomic Balance
\( \uparrow \text{HRV} \) & Enhance Health

Neurovisceral Integration Lab: Interfacing Fulford Approach

Fulford Techniques with Paced Respiration
(Polyvagal / Neurovisceral Paradigms Context)
Lab 2A: Fulford Shock Release

- Pt knees bent to relax abdomen
- Contact costal margin on left
- Take enough soft tissue to travel up to diaphragm at Rib 6
- Compress to resistance
- Have patient breathe slowly (½ breath in; hold; blow out)
- As blow out, slightly increase resistance
- Continue until release
- May use Coherence or Yogic (etc) Breathing (Aid & Educate)
- Intention can be important

Lab 2B: Linea Alba Inhibition

- Pt with knees up to relax abd
- Make all fingers same length
- Contact midline & compress to resistance
- Have patient breathe slowly (½ breath in; hold; blow out)
- As blow out, slightly increase resistance
- Continue until release
- Intention can be important
- May use Coherence/Yogic (etc) Breathing (Aid/Educate)
Diaphragm Release & Linea Alba OMT
Goal: Release “Shock” (Gasp/Linea Alba/Solar Plexus) & Augment Secondary Respiration

Neurovisceral Integration Lab: Interfacing Visceral OMT

Implementing Polyvagal Strategies (Below Diaphragm)
Gut-Mind Connection – Visceral OMT

Added GI Sphincter Enteric/CNX Mechanotransduction Strategies(?)
**Treatment Paradigm Hypothesis**

**Gut-Mind:** Paradigm recognizes an important gut-emotion / gut-physiological link. Whether linked neurologically through the vagus or linked to GABA (vagal or microflora connection or both), enhancing the function of one is empirically linked to the function of the other

- Metaphorically: “Gut-wrenching” … “can’t stomach that”… need to “vent my spleen” “got butterflies in my stomach”

Visceral OMT may help homeostasis of the bowel directly. Vagal innervation of much of bowel (especially mechanoreceptor rich sphincter areas) may play a role a role through the vagus. Visceral OMT may provide a non-invasive method of modulating emotion and psychological health by linking biopsychosocial & neurological-ANS models.

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**Sphincter of Oddi OMT**

White ring IDs root of mesentery; yellow/red arrows IDs

Sphincter of Oddi (Youtube Link)  
https://www.youtube.com/watch?v=BMphhbyd1wo

Sphincters rich in mechanoreceptors
LAB 3 Find & OMT Sphincters/Flexures

- Pylorus
- Sphincter of Oddi
- Ileocecal sphincter

Duodeno-jejunal flexure

Sphincter of Oddi
Oath of Hippocrates ...

"The regimen I adopt shall be for the benefit of my patients according to my ability and judgement …"

“Anything I can clean up later?”

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Email me!