Osteopathic Approach to Headaches

FSACOFP Conference
July 2015

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Outline

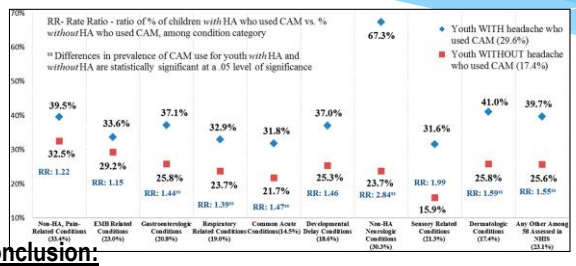
* Migraine and Tension-Type Headaches
  * Neuroanatomy – CN V
  * Definitions
  * Clinical Assessment
* Osteopathic approach based on 5 Models of treatment

Complementary and Conventional Medicine Use Among Youth With Recurrent Headaches

Christina Bethell, PhD, et al

PEDIATRICS Volume 132, Number 5, November 2013

(represents **33 million youth** ages 10-17 years)



CAM used:

Biological Modalities:
- Mind/body
- Manipulative based
- Alternative med sys
- Healing energies

Products/practices/Svs:
- Herbs
- Supplements
- Yoga
- Tai Chi
- Acupuncture

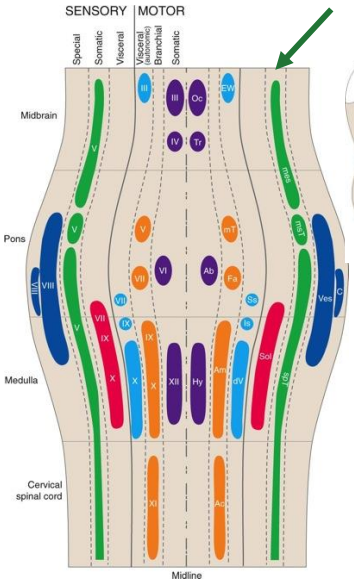
Conclusion:

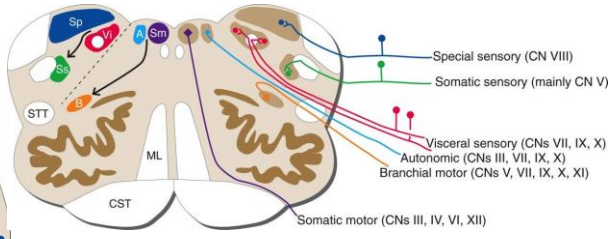
- CAM use is common among youth with HA with multiple chronic conditions and functional difficulties,
- support for proactive efforts among pediatricians and pediatric specialists to ask patient's about co-occurring health conditions, functioning, and CAM use and to integrate CAM into conventional care.
- Is a need to support clinicians with easy access to available information about effectiveness, availability, and indicators of quality CAM modalities/practitioners.

International Headache Society: Classification of Headaches

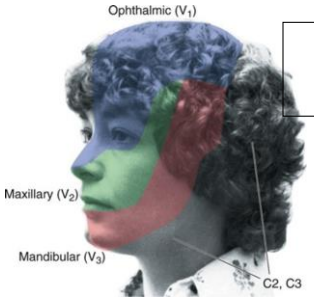
* 1 – Migraine
* 2 – Tension-type
* 3 – Cluster headache and chronic paroxysmal hemicrania
* 4 – Miscellaneous headache
* 5 – HA associated with - head trauma
* 6 – - vascular disorder
* 7 – - non-vascular cranial disorder
* 8 – - substances and withdrawal
* 9 – - non-cephalic infection
* 10 – - metabolic disorder
* 11 – HA or facial pain associated with disorders of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cranial structures

Nucleus CN V – in green EXTENDS AS FAR AS C3!!





V (trigeminal)	Ss	Spinal and main sensory nuclei	Skin, deep tissues, and dura mater of the head
		Mesencephalic nucleus	Muscle spindles and other mechanoreceptors
	B	Trigeminal motor nucleus	Muscles of mastication, tensor tympani, and a few others

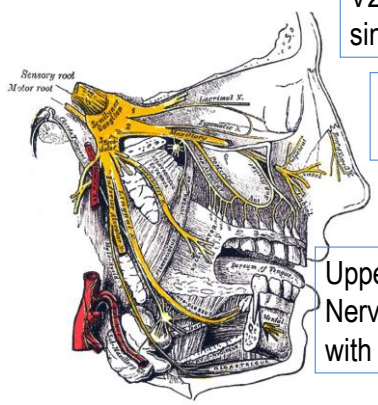


Sensory Input

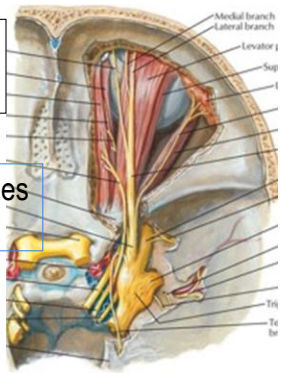
V1 – forehead, meninges meningeal blood vsls

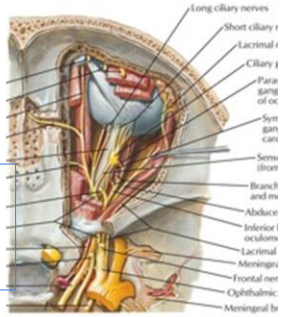
V2 – mid face and sinuses

V3 – teeth and lower jaw

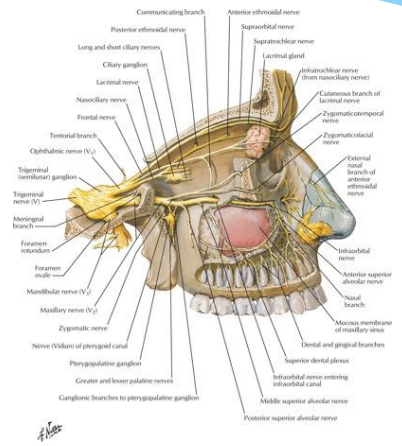


Upper Cerv. Sensory Nerves (C1-3) converge with CN V

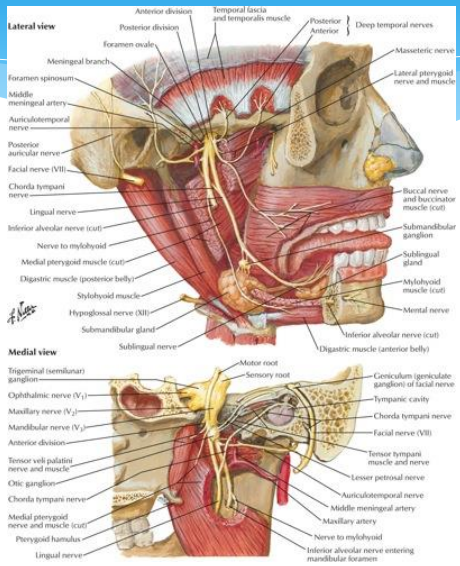




V1 & V2



V3



Migraines

Classic Migraine

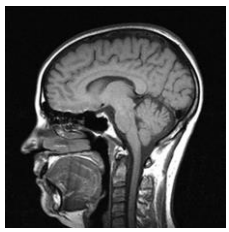
- Onset in childhood, adolescence, early adulthood
- Positive family history
- More common in women
- Classic triad
  - Visual scotomata/scintillations
  - Unilateral throbbing
  - Accompanied by nausea and vomiting
- Lasts 2-6 hours
- Relieved by sleep
- Combined w/tension HA

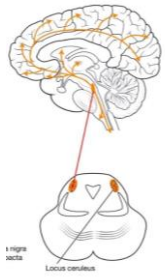
Cluster Migraine

- Recurrent, nocturnal, unilateral, retro-orbital searing pain
- Young males (90%)
- Awakens 2-4hr after sleep onset
- Accompanied unilateral lacrimation, nasal and conjunctival congestion (V1, V2)
- Lasts 20-60 min
- May recur several times per night (cluster)
- Months/years of pain-free periods

Mechanism in Migraine

- Migraine generator discovered in 1995
- Talairach space located in the **dorsal raphe nucleus** and **locus coeruleus area of the brainstem**
- Dysfunction in this area affects **anti-nociception** and **intracerebral vascular control**
- Wave of spreading electrical depression moves over cortex at a rate of 2-3 mm/ minute
- This is similar to the spread of oligemia (total volume of blood reduced) in migraine with aura





Upper lateral part of the pons

Tension Headache

- Onset in adolescence or young adult
- Non-familial

- Bilateral, generalized, bi-temporal, sub-occipital

- Felt as pressure or tight band
- Not throbbing
- Nausea/vomiting rare
- No nasal/conjunctival congestion

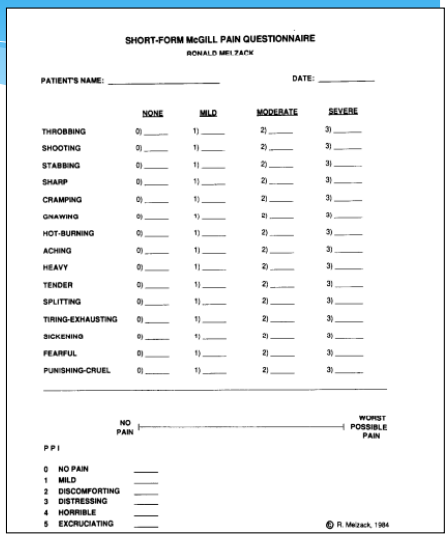
- Occurs late in day, related to stress
- Persist for hours or days

Take a good history. Pain diaries can help…

* Onset: date, circumstances, suddenness, buildup
* Intensity and character
* Frequency and duration of attacks
* Location of pain
* Level of impairment
* Pro-drome and triggers
* Seasonal variations
* Progression of symptoms
* Aggravating and remitting factors
* Current and past treatments and response to it
* Family history
* Sleep patterns
* Occupation and Leisure activities

McGill Pain Questionaire

* 3 major classes of pain descriptors
  * Sensory qualities (temporal, spatial, pressure, thermal)
  * Affective qualities (tension, fear, autonomic properties
  * Evaluative words (intensity and total pain experience)
* Provides quantitative information that has the sensitivity to detect differences among different methods to relieve pain
* Short-form is similar in sensitivity to the long form



SHORT-FORM McGILL PAIN QUESTIONNAIRE

RONALD MELZACK

PATIENT'S NAME: _____ DATE: _____

	NONE	MILD	MODERATE	SEVERE
THROBBING	0)	1)	2)	3)
SHOOTING	0)	1)	2)	3)
STABBING	0)	1)	2)	3)
SHARP	0)	1)	2)	3)
CRAMPING	0)	1)	2)	3)
GNAWING	0)	1)	2)	3)
HOT-BURNING	0)	1)	2)	3)
ACHING	0)	1)	2)	3)
HEAVY	0)	1)	2)	3)
TENDER	0)	1)	2)	3)
SPLITTING	0)	1)	2)	3)
TIRING-EXHAUSTING	0)	1)	2)	3)
SICKENING	0)	1)	2)	3)
FEARFUL	0)	1)	2)	3)
PUNISHING-CRUEL	0)	1)	2)	3)

NO PAIN — WORST POSSIBLE PAIN

PPI

0 NO PAIN
1 MILD
2 DISCOMFORTING
3 DISTRESSING
4 HORRIBLE
5 EXCRUCIATING

© R. Melzack, 1984

Table 5.5 ***McGill Pain Questionnaire***

Some of the words below describe your present pain. Circle only one word in each of the 20 groups *if* the group contains a word that describes your pain. Leave out any group that is not suitable.

1	2	3	4
Flickering	Jumping	Pricking	Sharp
Quivering	Flashing	Boring	Cutting
Pulsing	Shooting	Drilling	Lacerating
Throbbing		Stabbing	
Beating		Lancinating	
Pounding			
5	**6**	**7**	**8**
Pinching	Tugging	Hot	Tingling
Pressing	Pulling	Burning	Itchy
Gnawing	Wrenching	Scalding	Smarting
Cramping		Searing	Stinging
Crushing			
9	**10**	**11**	**12**
Dull	Tender	Tiring	Sickening
Sore	Taut	Exhausting	Suffocating
Hurting	Rasping		
Aching	Splitting		
Heavy			
13	**14**	**15**	**16**
Fearful	Punishing	Wretched	Annoying
Frightful	Gruelling	Blinding	Troublesome
Terrifying	Cruel		Miserable
	Vicious		Intense
	Killing		Unbearable
17	**18**	**19**	**20**
Spreading	Tight	Cool	Nagging
Radiating	Numb	Cold	Nauseating
Penetrating	Drawing	Freezing	Agonizing
Piercing	Squeezing		Dreadful
	Tearing		Torturing

From Melzack R. The McGill pain questionnaire: major properties and scoring methods. Pain 1975;1:275.

There is an app for that….

Name of App	Content
My Migraine Triggers	Chronical your migraines. Developed by Excedrin
Headache Diary Lite	Tracks your headache patterns; remitting factors
iHeadache	Log migraines symptoms and medication. Classify your headache
Headache Diary	Tracks headaches
Migraine Radar	Research app to monitor areas with high incidence of migraine sufferers and track weather, time of day and symptom occurrence

App Name	Content
Food Diary	Helps with symptoms after eating a food
Sleep Bot	Comprehensive sleep tracker. The hours you spend sleeping, your sleep habits and wakes you up at the least disruptive time in your sleep cycle
Period Calendar/Tracker	Menstrual cycle symptoms and mood
Relax Melodies	Customize audio track for soothing music when time to sleep
Acupressure: Heal Yourself	>90 acupressure points and self treatment
Med Helper: Pill reminder	Track all medications, reminders to take meds, doctors appointments, when need refills
Manage My Pain Pro	Tracks your pain symptoms
Brainwave Tuner or Binaural Beats	Generates tones that change brain frequency to treat headaches, promote relaxation and mood and enhance creativity

Physical Exam

- Palpation and percussion
  - Cranium
  - Jaw
  - Neck
  - Oral cavity
  - Ears
  - Sinuses
- Vital signs
- Mental status
- Funduscopic exam
- Visual acuity
- Signs of trauma
- Cardiac and pulmonary status

*A standing and supine osteopathic screening is plenty to know just how badly the upper cervical and upper thoracic spine is restricted!

Migraineurs

* Brains function differently even when not having migraine
* Visual information is processed more quickly
* There may be a relative deficiency of energy metabolism in some areas of their brains and muscles

* May have a history of:
  * Motion sickness as children
  * Ice cream headaches
  * Torticollis
  * Benign paroxysmal vomiting of childhood

Typical Provoking Factors for Migraine

* Hormonal changes: oral contraceptives, menstruations, hormonal replacement, pregnancy
* Medications
* Weather changes
* Alcohol
* Sleep changes (too little, too much)
* Foods and common food ingredients
  * Caffeine (soft drinks, coffee, tea, chocolate, OTC drugs, prescription drugs)
* Missed meals
* Stress, exhilaration or "letdown"
* Fluorescent lights
* Smoke

Mechanism of Migraine

* Rate of electrical depression, oligemia (dec blood volume as in dehydration) and scotomata are the same
* Oligemia is secondary to the primary neurological event
* Electrical depression is followed by the release of neuropeptides causing neurogenic inflammation and pain

Red Flags

* New onset headache, especially if persistent
* Variation from typical pattern
* Presence of medical or neurological signs and symptoms
* Atypical headache
* Progressive headache
* Acute-onset headache (rapid buildup)
* Refractory to standard treatment

FOM III, Table 37.5
Treatment algorithm for Tension-type HA

Treatment Plan	Objective	Technique
Treat upper thoracic and rib dysfunction	Eliminate upper thoracic dysfunction involved in perpetuating the pain; balance autonomic tone	Soft tissue, MFR, ME, FPR, Counterstrain, HVLA, rib raising
Treat cervical dysfunction, particularly involving the occiput, C1, and C2	Eliminate cervical mechanics and soft tissue tension involved in exacerbating the pain	Soft tissue, Occipitoatlantal MFR, FPR, ME, HVLA
Treat cranial dysfunction including TMJ dysfunction	Eliminate cranial strain patterns affecting the trigeminal neurovascular system	Direct and indirect cranial osteopathy; MFR and ME technique for TMJ dysfunction
Treat lumbar, sacrum, and pelvis	Eliminate compensatory or contributing strain patterns from below	Soft tissue, MFR, ME, HVLA, Counterstrain
Address postural mechanics	Reduce exacerbating factors	Core strengthening, scapular retractions, cervical isometric exercises, proprioceptive training
Stress reduction counseling	Reduce exacerbating factors while enhancing overall well-being	One-on-one counseling to identify specific stressors and individualize stress management strategies
Health promotion and disease prevention	Reduce risk of future illness; enhance overall well-being	Smoking cessation, exercise and nutrition counseling; health screening (e.g., fasting lipids,

	Location	Innervation	Dysfunction
V. Trigeminal			
V1 ophthalmic branch	Passes through the lateral wall of the cavernous sinus Enters the orbit through the superior orbital fissure	Upper eyelid, scalp, forehead, eyeball, ethmoid sinus, nasal cavity, lacrimal gland and conjunctiva.	Dysfunction of temporal bone may affect the function of this nerve.
V2 maxillary branch	Courses through: Inferior portion of cavernous sinus Middle cranial fossa Foramen rotundum Pterygopalatine fossa Infratemporal fossa Inferior orbital fissure	Supplies sensory fibers to the dura, maxillary sinus, maxillary premolar and molar teeth, nasal septum, lower eyelid, nose, and upper lip.	Tic douloureux may be associated with dysfunction of this nerve
V3 mandibular branch	Exits the middle cranial fossa via the foramen ovale	It contains both motor and sensory fibers. Supplies the teeth, gingiva, skin of the temporal region, the ear, lower face, muscles of mastication, floor of the oral cavity and tongue	Trigeminal neuralgia affecting this division. Sensory information from structures innervated by the trigeminal nerve (sinuses) may be

Five Models of Osteopathic

* Biomechanical Model
  * Altered mechanical stresses ⟹ Exceed the allostatic load
* Respiratory – Circulatory Model
  * Altered respiratory mechanics ⟹ Insufficient O_2, nutrition, lymph and immune function
* Neurological Model
  * Facilitated segment & ⇑ Sympathetics ⟹ VS, SV reflex changes
* Metabolic – Energetic Model
  * Nutritional toxins ⟹ Impair self-regulatory and self-healing
* Behavioral Model
  * Psychological, social, spiritual health ⟹ stress and ability to heal

Goals of OMT for HA

* Biomechanical
  * Restore free and balanced motion within the MS system
* Respiratory – Circulatory
  * Improve motion of rib cage and all the diaphragms
* Neurological
  * Restore autonomic balance, alleviate segmental facilitation, relieve pain, eliminate abnormal afferent signaling
* Metabolic – Energetic
  * Promote energy conservation, enhance immune function
* Behavioral
  * Stress reduction, improve social interaction & spiritual outlook

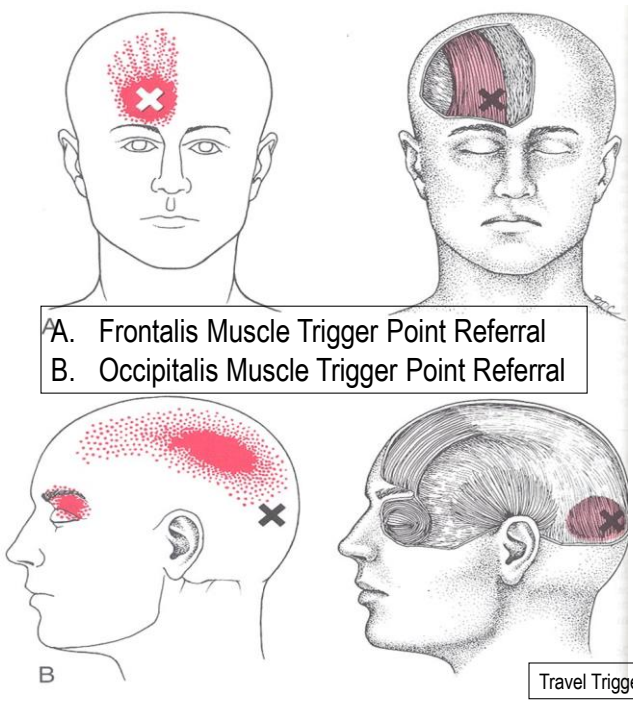
1) Biomechanical Model

* Myofascial Trigger Point Treatment of the head and neck
  * A muscle that has a contraction nodule that may radiate pain and exhibit a twitch response when compressed

Probability of having a MF TrPt

Travell (Table 5.1)

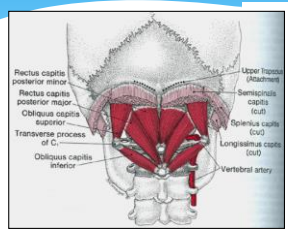
Disorder causing head pain	Probability of Myofascial Trigger Point Pain
Migraine ☆	High
Tension-type HA ★	Very high
Cluster HA	Low to moderate
Head Trauma pain ★	Moderate to high
Vascular disorders	Low
Non-vascular intracranial disorder	Low
Substance Withdrawal	Low to High
Metabolic Disorder	Low
Noncephalic Infections	Low
Cervicogenic Headache	High

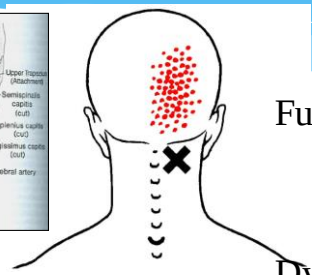


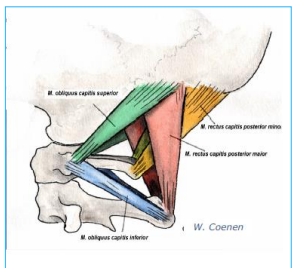
A. Frontalis Muscle Trigger Point Referral
B. Occipitalis Muscle Trigger Point Referral

Travel Trigger Point Manual

Suboccipital Muscles Trigger Points







Functional Anatomy

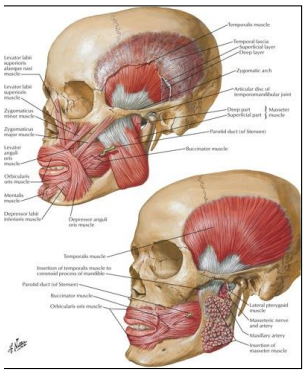
-contain high density of proprioceptors

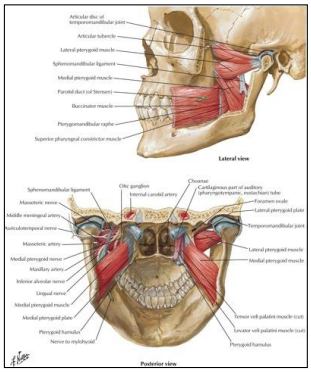
Dysfunction

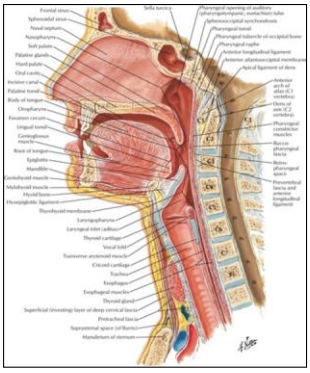
-atrophic changes lead to loss in proprioceptive control at the dorsal horn

-gives rise to chronic pain syndromes

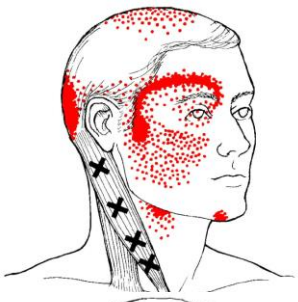
Layers of Myofascial Trigger Points

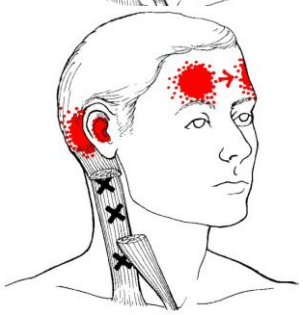






Neck Trigger Pts





Travel Trigger Point Manual

Overlapping pain referral patterns causing typical migraine and tension-type headache pictures

- Unilateral
- Bilateral

Muscles to assess:

- SCM
- Upper trap
- Sub-occipital triangle
- Temporalis

Trigger Point Treatment Demonstration

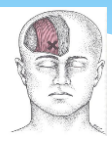
A. Trigger Point Pressure Release
B. Spray and stretch
C. Dry Needling
D. Injection

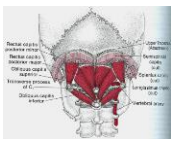
* Correct Perpetuating Factors
* Correct Postural Derangements
* Exercise
  * Stretching
  * Aerobic Conditioning

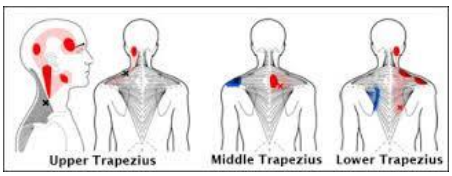
* DON'T FORGET TO TREAT THE OTHER SOMATIC DYSFUNCTIONS!

Trigger Point Assessment and Treatment Practice

* Frontalis
* Temporalis
* Occipitalis
* Suboccipital mm group:
  * Obliquus Capitis Superior
  * Obliquus Capitis Inferior
  * Rectus Capitis Posterior Major and Minor
* SCM
* Upper and middle traps





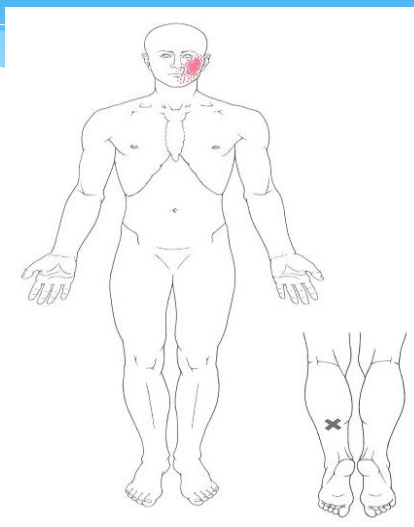
SCM Stretch (right side TrPt)

Anchor the distal attachment on the clavicle/sternum – right arm holds table edge

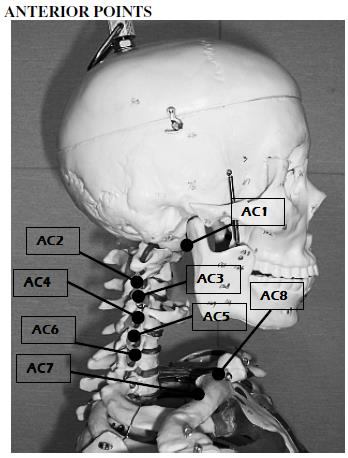
Side-bend the head away (lean left) and rotate it towards (look up toward the ceiling) the ipsilateral SCM

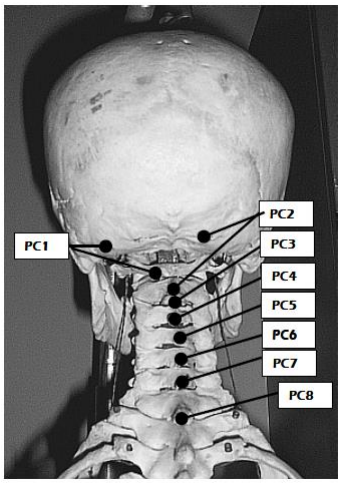
Rare Trigger Point

* Rare trigger point referral patterns
* Soleus muscle trigger point refers pain to the ipsilateral face and jaw
* Travell & Simons Trigger Point Manual, Vol 1- Figure 22.2



Anterior and Posterior Cervical Tenderpoints

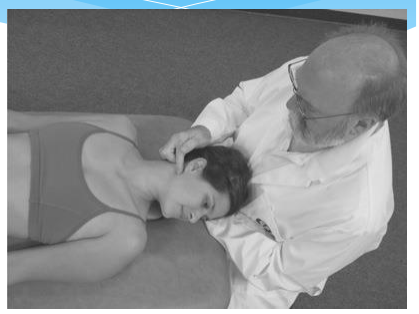




Practice: AC1 Tenderpoint Treatment

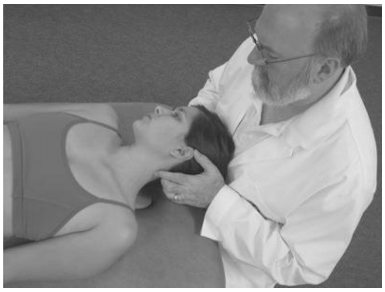
Anterior First Cervical AC1:

* May present with frontal HA or migraine HA, blurred vision, dysphagia, hyoid dysfunction, or vagus neuritis
* TP: Posterior aspect of ascending ramus of the mandible, half-way b/w the mastoid process and the inferior angle of the jaw
* TX: Patient supine. Physician supports occiput. Rotate away, markedly. SB slightly away. May apply slight caudal force on the contralateral parietal to further reduce sensitivity.

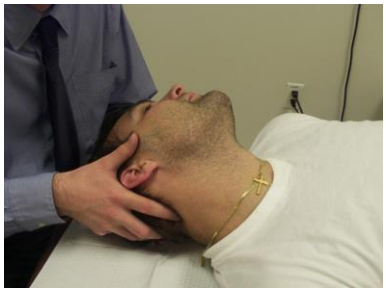


Anterior and Posterior Cervical TP Treatment

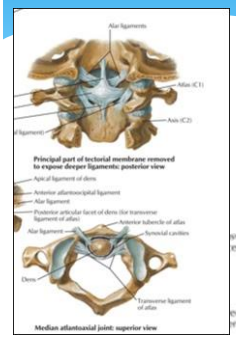
Anterior: Flex, SB and Rotate AWAY



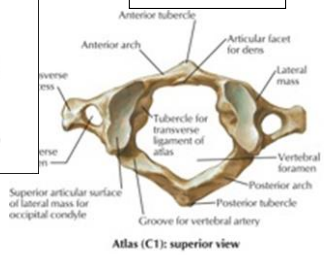
Posterior: Extend (off the table), SB and Rot AWAY



OA Anatomy

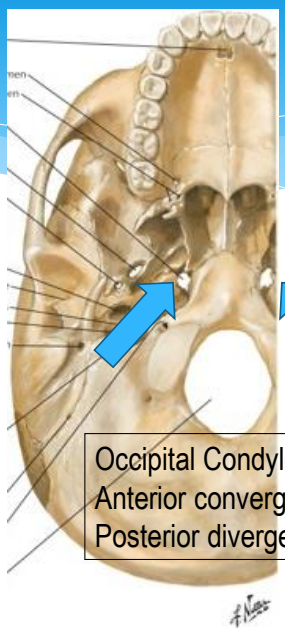


ANTERIOR

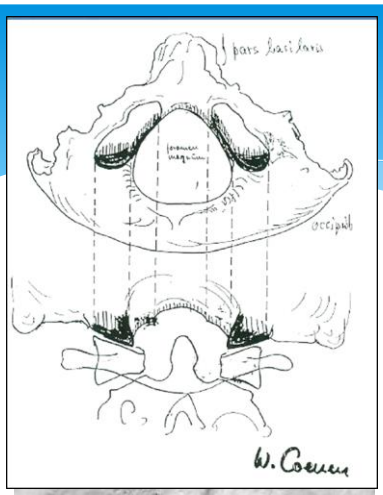


Atlas (C1): superior view

POSTERIOR



Occipital Condyles=
Anterior convergence
Posterior divergence



OA - 3 position Diagnosis

* The condyles of the occiput sit like a "cup in saucer" into the lateral masses of the atlas.
* OA ONLY TYPE I (SB and ROT opposite) Somatic Dysfunctions due to configuration of the condyles
  * Anterior convergence
  * Posterior divergence
  * Lateral cupping of the atlas

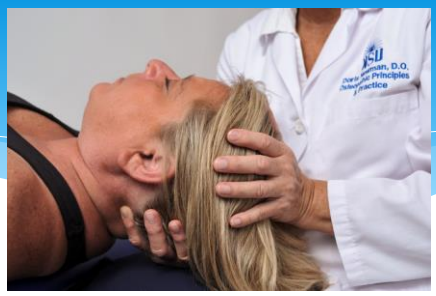
Occipito-atlantal (OA) Diagnosis

(SB and ROT always opposite direction)

* Patient supine
* Physician seated at head or side of table
* Grasp the occiput
* Glide or slide left and right = side-slip
* If glides left to right = SB left, ROT right
* If glides right to left = SB right, ROT left

* Repeat side gliding in OA flexion and extension
* If restriction is worse during flexion then the joint is better in extension so the diagnosis is Extension SB ? ROT ?
* OA – always SB and ROT opposite directions

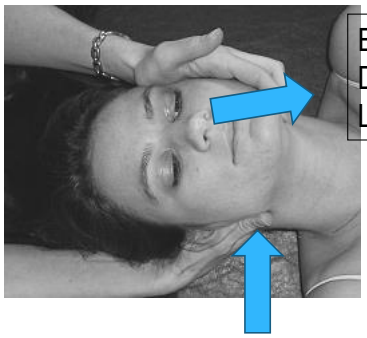
Supine – OA FPR
Seated – OA FPR



- Steps in FPR:
  - Physician seated at head of table or to the side
  - Reduce sagittal curve (flattened C-spine)
  - Induce flexion or extension (indirect position of segment)
  - Facilitating force (compression in neck) to segment only (for OA very mild compression)
  - Induce indirect SB and Rot of segment –INDIRECT POSITION
  - Hold 3-5 seconds
  - Relax
  - Repeat as much as necessary

Carreiro, J. Pediatric Manual Medicine, An Osteopathic Approach. Churchill, Livingstone, Elsevier 2009.

MET of OA F SB left R right with oculo-vestibule-cephalic (OVC) reflex



- Extend the OA segment to the restrictive barrier
- Monitor the OA closely
- Induces SS (left or right) to the restrictive barrier
- Have the patient look down and left OR right towards their toes with their eyes only
- Rest
- Take up slack
- Repeat 3 – 5 times
- Retest

MET of OA E SB left R right with oculo-vestibule-cephalic (OVC) reflex

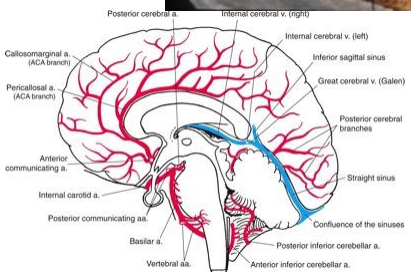
* Flex the OA segment to the restrictive barrier with a NOD motion
* Monitor the OA closely
* Induces SS (left or right) to the restrictive barrier
* Have the patient look up and left OR right towards you with their eyes only
* Rest
* Take up slack
* Repeat 3 – 5 times
* Retest

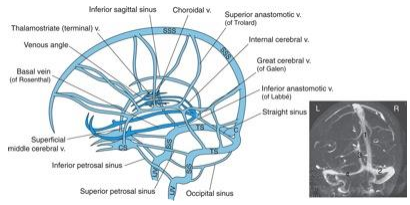
HVLA of OA Flexed SS left = SB right Rot left

* Hold the patient's head with the right hand, cupping the right ear.
* Place the left index finger on the patient's left posterolateral occiput and sideslip toward the right to the restrictive barrier.
* Flex the OA and rotate the patient's head to the right.
* Fine tune by localizing your forces to the OA joint by
* lifting (untucking) the chin.
* Apply a HVLA thrust to the right with the left index finger on the occiput while assisting with the right hand to slide the occipital condyles toward the right on the atlas.

2) Respiratory – Circulatory Model

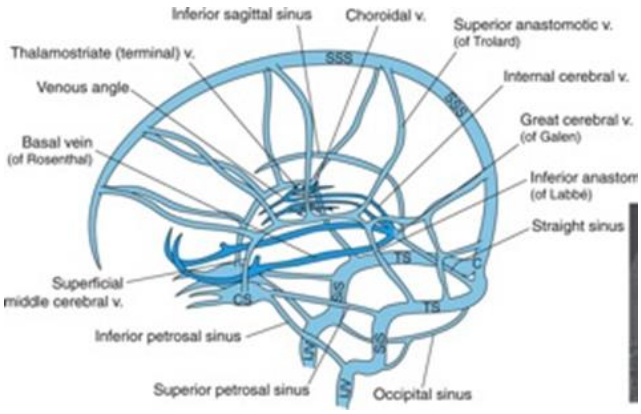
* Venous Sinus Release
  * Addresses venous fluid in the head
* Treatment of the OA
  * Utilizing multiple modalities





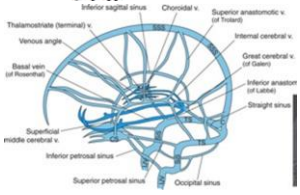
Venous Sinus Release

* Confluence of Sinuses
* Occipital Sinus
* Straight Sinus
* Transverse Sinus
* Sagittal Sinus

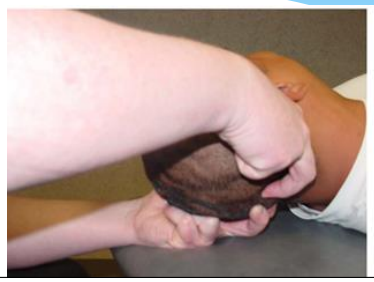


Step 1 – Confluence of Sinuses

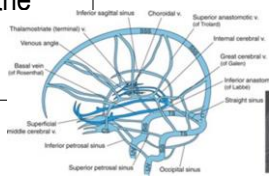
• Place the two middle fingers on the external Occipital protuberance and wait for a release.



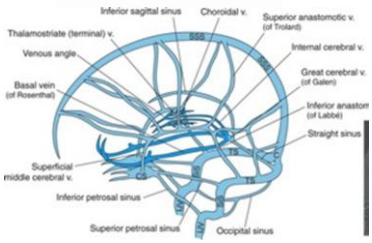
Step 2 – Occipital Sinus



- Finger pads #2-5 placed along the midline of the occiput below the external occipital protuberance and above the foramen magnum
- Wait for a release

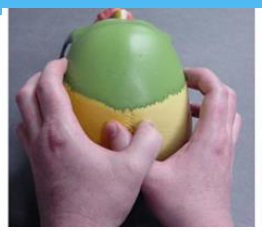


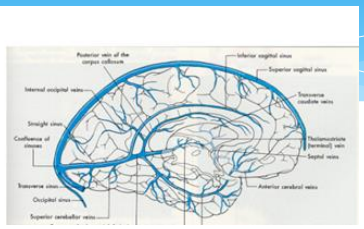
Step 3 – Transverse Sinus Release



* Pivot your index finger from a vertical position to a horizontal position around the external occipital protuberance
* Finger pads remain along the transverse sinus until you feel a release

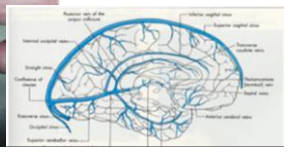
Step 4 – Sagittal Sinus





- With the patient's head lifted up slightly, place your thumb pads on opposite sides of the sagittal sinus
- Move the thumbs away from each other placing a traction or spreading along the sagittal suture
- Move a thumb's breadth upwards
- Await a release at each position
- Stop at the coronal suture

Finish Sagittal on Frontal Bone

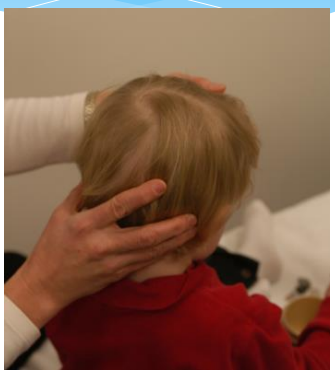


- Place the finger pads along the midline of the frontal bone
- Spread the tissues by pulling the fingers away from each other
- Hold until you feel a release of the deep tissues

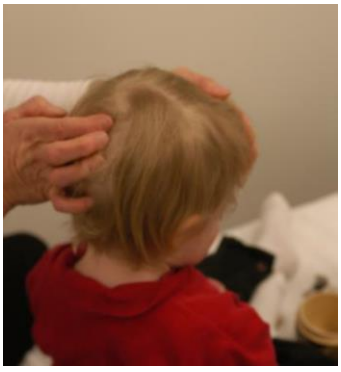
Seated Sinus Release - Toddler

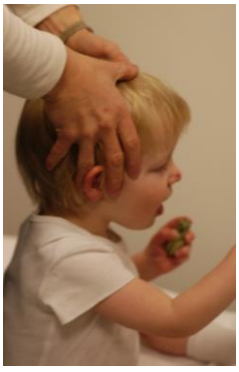
Straight

Transverse

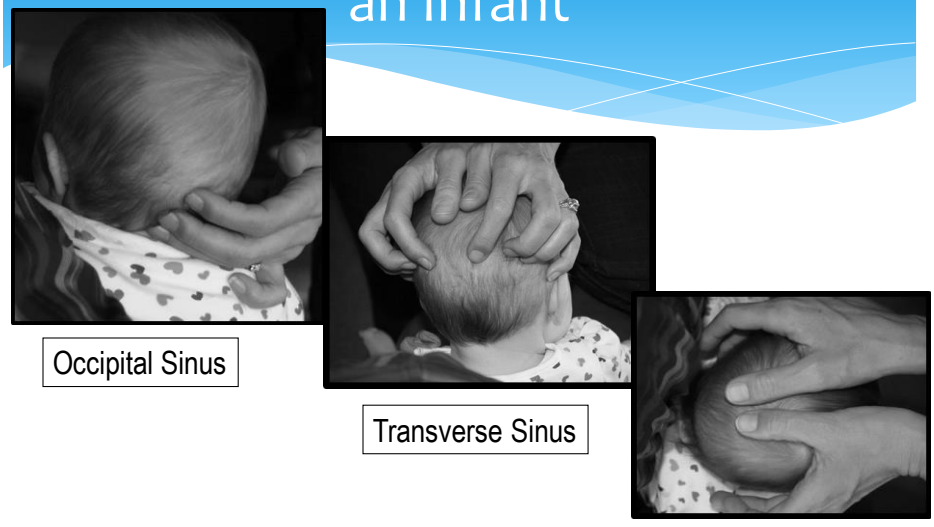


Seated Sinus Release - Toddler - Sagittal Sinus





Seated Venous Sinus Release in an Infant



Occipital Sinus

Transverse Sinus

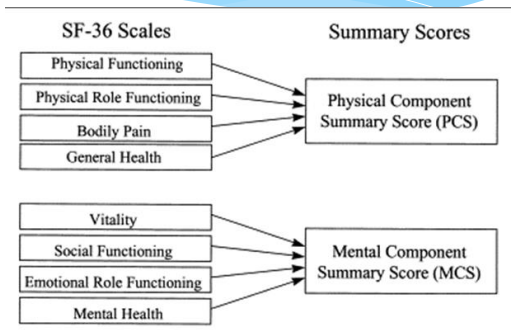
Sagittal Suture

Efficacy of OMT of Female Patients with Migraine

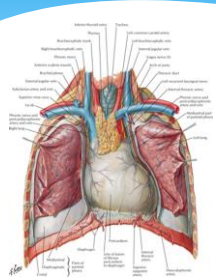
* OMT as an alternative to traditional therapies for
* 42 female migraneurs ages 18-65 years recruited in a local newspaper
* 3 migraines per month diagnosed by a physician
* 21 intervention group
  * Standard therapy plus OMT, **5 treatments of 50 minutes over 10 weeks**
* 21 control group
  * Standard therapy alone
* Exclusion:
  * CAM w/i 8 weeks prior
  * Pregnant or Lactating
  * Underlying neurologic dx
* Before and after questionnaires:
  * MIDAS-Migraine Disability Assessment
  * Short Form – 36
  * German "pain questionnaire

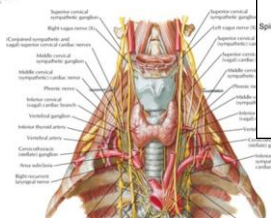
Results

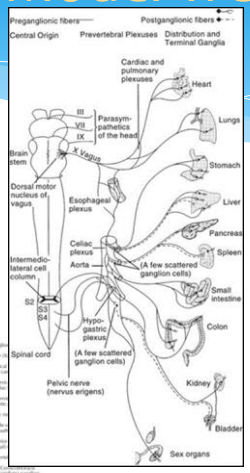
- **Intervention Group:**
- SF-36:
  - 3 of 8 HRQoL domains significant improvement AND general betterment in all other domains
- MIDAS score
  - Pain intensity, occupation disturbance and # days of disablements ALL significantly reduced
- **Control Group:**
  - Insignificant differences

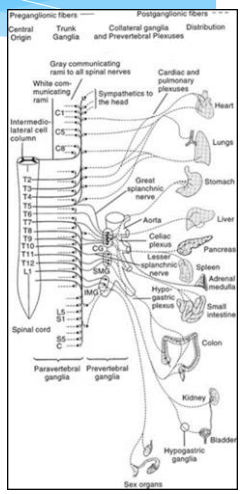


3) Neurological Model Treatment



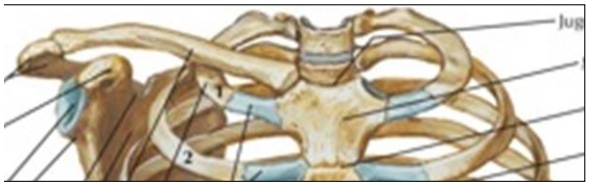






Thoracic Inlet – Anatomy Review

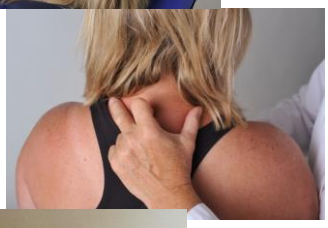
* **Review of the Thoracic Inlet Anatomy:**
  * First Rib attaches to T1 TPs only with a single facet on the head of the rib
  * First rib attaches anteriorly to the manubrium
  * Clavicle sits above the medial aspect of the 1st rib

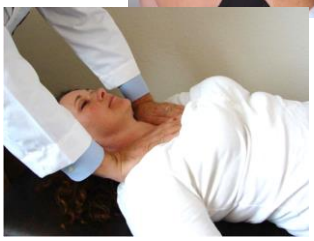


T1 & 1st Rib Complex Diagnosis

* From the head of the bed, move the T1 TPs inferiorly testing SB motion
* Move your thumbs more laterally to test for rib restrictions, first with the breath then with inferior motion testing
* From the anterior aspect and just under the SC junction, find the 1st Rib and push posteriorly test for T1/Rib rotation

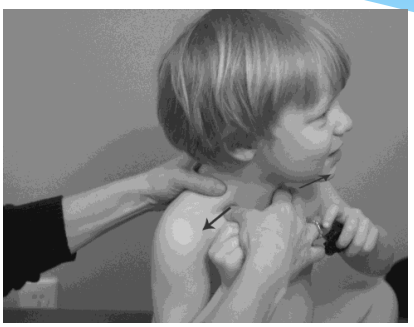
MFR of the Thoracic Inlet





* Hand positions:
  * Anterior Hand with first and third fingers just below the SC joint on the anterior rib 1
  * Index finger on the sternal notch
  * Posterior Hand with first and third digits on top of the first rib and index on spinous process of rib one.
* Treatment:
  * Like the steering wheel of a car, move the thoracic inlet CW then CCW
  * Which direction is more restricted
  * Treat in either direct or indirect fashion

Direct or Indirect Thoracic Inlet MFR in the toddler and infant



HVLA of Thoracic Inlet (T1) -SB and Rot in SAME direction

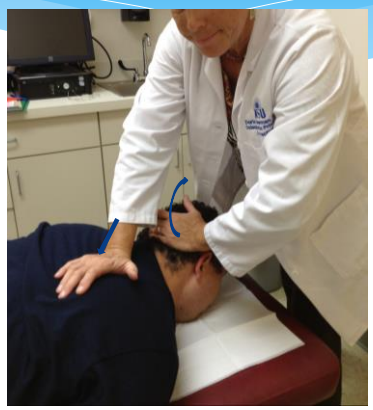
* Standing at the head of the supine patient
* Lift the head with your hands and place the PIP of each index finger along the posterior aspect of T1 TPs
* For SB and Rot in **SAME** directions use a **2-step** process:
  * Thrust the SB component with a force towards the opposite ASIS
  * Then switch to the opposite side and thrust the ROT component in a direction towards the opposite shoulder
  * Use the patient's breath
  * Take up the slack
  * **FIND THE RESTRICTIVE BARRIER IN ALL DIRECTIONS**

T1 N SB & Rot Opposite direction

* For T1 SB and Rot in **opposite** directions, use a **one-step process:**
  * For T1 E Rl Sr, place your PIP on the top of the right TP in such a manner as to meet the SB barrier, and at the same time slide the PIP slightly posterior in order to move the segment to the left rotation barrier
* Direction of Thrust is towards the left lower rib cage.
* Have the patient breath to relax.
* Thrust on the exhale.
* MEET THE TISSUE BARRIERS IN ALL DIRECTIONS!!

Prone Chin-Pivot Thrust T2 – T4

* T2 or T3 F Rr Sr
* Patient in prone with chin on table
* Physician places palm of left hand on pt's occiput and pisiform of right hand on pt's right posterior transverse process.
* With a swift rotary motion on the occiput and an anterior thrusting motion on the TP, separate your hands in a crossed-wise fashion



4) Metabolic Model Treatment

* Blood work to identify uncommon causes
  * Heavy metal toxicity
  * Vitamin Deficiencies
  * Altered thyroid hormone
* Nutrition
  * Nutrition changes that address inflammation
  * Remove dietary stressors (sugars, trans fats, etc)
  * Add fresh fruits and vegetable
* Exercise
  * Yoga
  * Tai Chi

5) Behavioral Model Treatment

* Mindfulness Based Stress Reduction
  * Jon Kabbit-Zinn – developed at Univ. Mass. Med. Ctro
  * As early as late 1970's
  * Research arm of the institute
* https://www.youtube.com/watch?v=nMgzhCamwNM&list=PLDf_edljRHgYHll7lTomC_P5w9STh2hgU

References

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* Carreiro, J. An Osteopathic Approach to Children, 2nd ed. Churchill Livingston Elsevier, 2009.
* *Bethell, C, et al. Complementary and Conventional Medicine Use Among Youth With Recurrent Headaches* PEDIATRICS Volume 132, Number 5, November 2013
* FOM II and FOM III
* Netter, Atlas of Anatomy
* British Gray's Anatomy
* NSUCOM and UNECOM OPP hand-outs
* You Tube Mindfulness Based Stress Reduction Video