
# Craniosacral Osteopathy's Gift to Children: Cognitive and Neurological Development

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# As the Twig is Bent

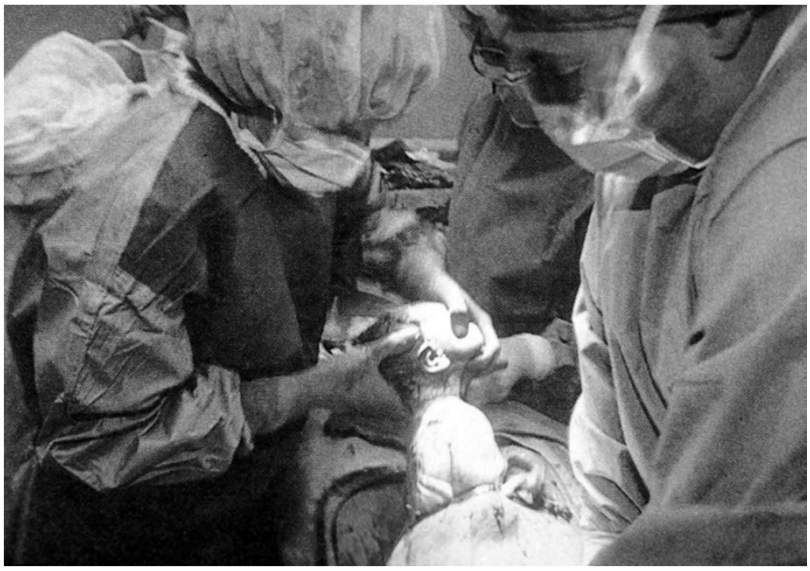
- "Normalizing the structure of the newborn head ranks among one of the most valuable and significant procedures in preventive medicine today. Its potential for good in the first few hours of life far exceeds what may be accomplished later"

## Where Learning First Occurs

- » Taste 14 weeks
- » Non nutritive suck 18 weeks
- » Hear 20 weeks
- » Learn & Respond
- » Remember
- » Sense Mom's emotions

## The fetus learns….

- Taste -14 weeks
- Non nutritive suck-18 weeks
- Hear-20 weeks
- Learn and Respond
- Remember
- Sense mom's emotions via stress hormones



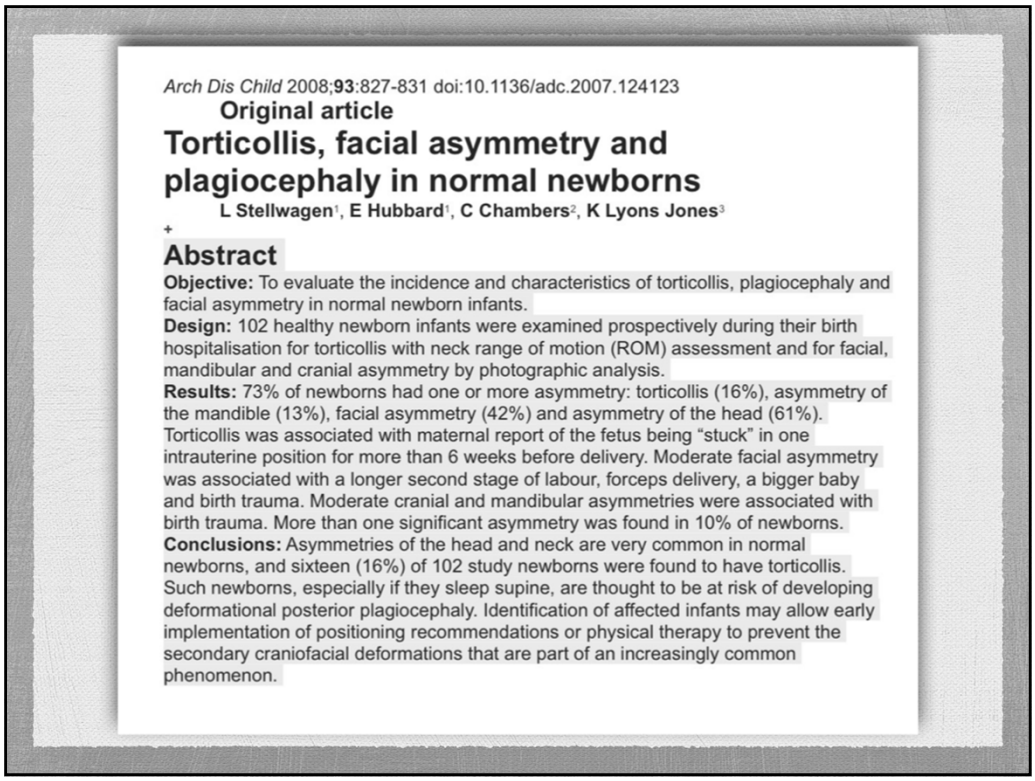
## Birth Trauma is the most common underlying cause of many childhood issues

- Did mom experience false labor before true labor began?
- Did membranes rupture before real labor began?
- Was labor induced? Was an epidural needed?
- Was baby in a face up instead of down or other unusual position?
- Were vacuum extraction or forceps necessary? C-section?
- Was there a nuchal cord? Heart decels?

## Signs Baby had Trauma

- Did baby have difficulty establishing effective nursing greater than 24 hours
- Did baby spit up or vomit after feeding?
- Was baby's head held to one side (torticollis)
- Did baby arch backwards forcibly when held or lying
- Was there asymmetrical motion of arms or legs
- Did baby have spells of inconsolable crying?

## Babies like Osteopathic Treatment



*Arch Dis Child* 2008;**93**:827-831 doi:10.1136/adc.2007.124123

Original article

## Torticollis, facial asymmetry and plagiocephaly in normal newborns

L Stellwagen[1], E Hubbard[1], C Chambers[2], K Lyons Jones[3]

**Abstract**

**Objective:** To evaluate the incidence and characteristics of torticollis, plagiocephaly and facial asymmetry in normal newborn infants.

**Design:** 102 healthy newborn infants were examined prospectively during their birth hospitalisation for torticollis with neck range of motion (ROM) assessment and for facial, mandibular and cranial asymmetry by photographic analysis.

**Results:** 73% of newborns had one or more asymmetry: torticollis (16%), asymmetry of the mandible (13%), facial asymmetry (42%) and asymmetry of the head (61%). Torticollis was associated with maternal report of the fetus being "stuck" in one intrauterine position for more than 6 weeks before delivery. Moderate facial asymmetry was associated with a longer second stage of labour, forceps delivery, a bigger baby and birth trauma. Moderate cranial and mandibular asymmetries were associated with birth trauma. More than one significant asymmetry was found in 10% of newborns.

**Conclusions:** Asymmetries of the head and neck are very common in normal newborns, and sixteen (16%) of 102 study newborns were found to have torticollis. Such newborns, especially if they sleep supine, are thought to be at risk of developing deformational posterior plagiocephaly. Identification of affected infants may allow early implementation of positioning recommendations or physical therapy to prevent the secondary craniofacial deformations that are part of an increasingly common phenomenon.

# Plagiocephaly

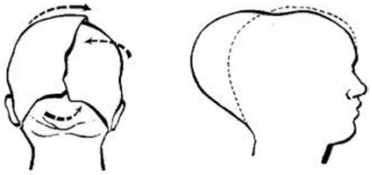
- Viewed as cosmetic problem by MD's
- Distortion of "circular" shape can affect function: reflux, recurrent otitis media, strabismus, learning problems
- Usual approach: positioning, PT for associated torticollis, helmet
- Widespread use of gentle manipulation unrecognized by allopathic community

## How to Avoid Positional Plagiocephaly

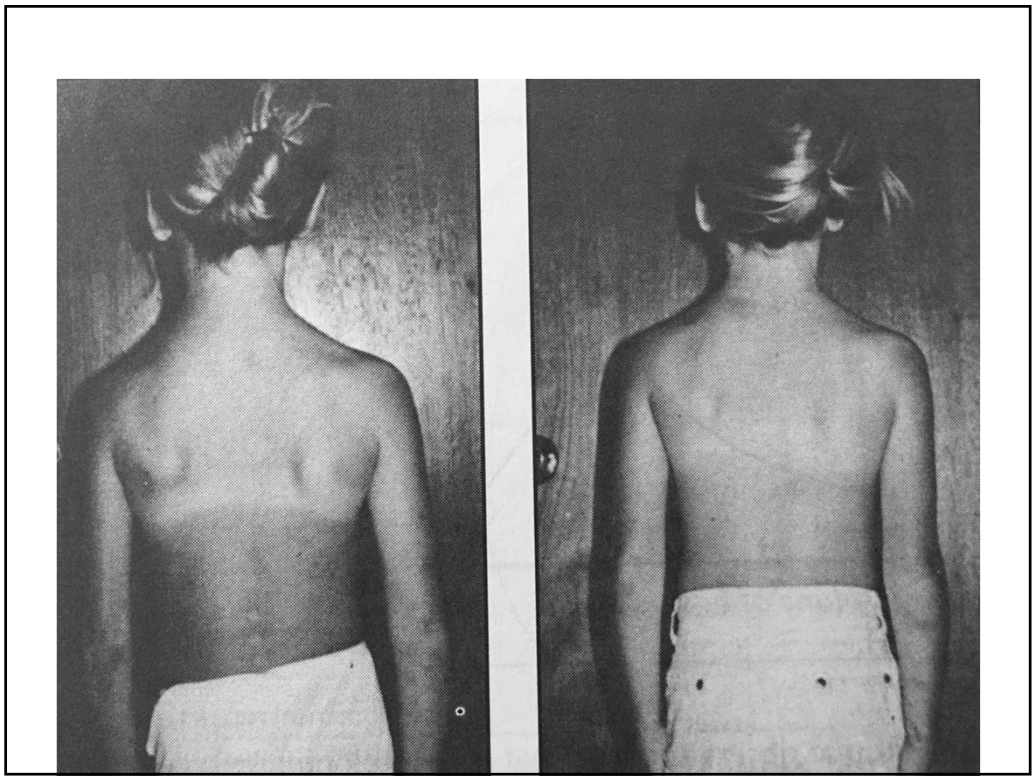
- Encourage "tummy time" when infant is awake and being observed
- Avoid much time in car-seat carriers, and bouncers, Upright "cuddle time"
- Alter supine head position
- Osteopathic Manipulative Medicine

## Birth Trauma

- How does distortion of the craniosacral mechanism affect learning and neurodevelopment?
- Structure influences function
- Functional patterns mold developing structure
- The brain develops in the house of the cranium



# 7 year old with ADHD

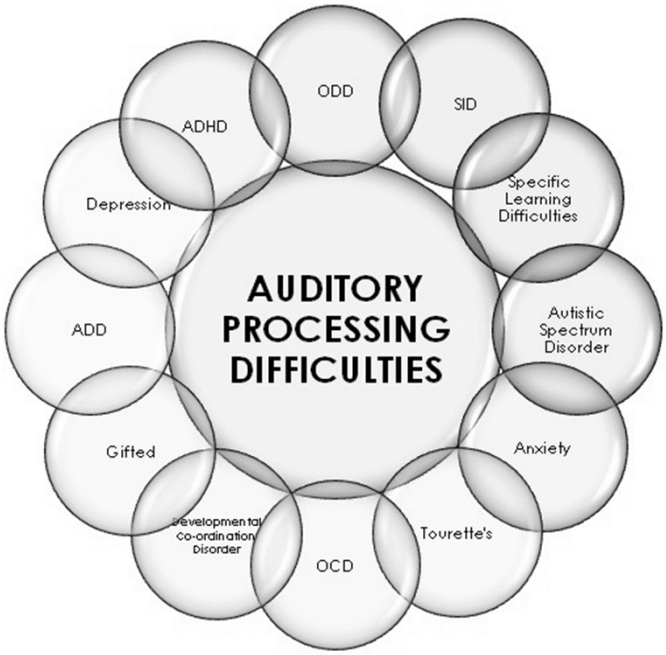


# Auditory Processing Disorder

- developmental or acquired
- neurodevelopmental delays
- ear infections
- head injuries

# Auditory Processing Disorder

- Difficulty paying attention in noisy environment
- Instructions, directions, phone numbers hard to remember
- Difficulty distinguishing similar sounds/words
- Poor attention is listening tasks
- Difficulty understanding riddles/verbal problems



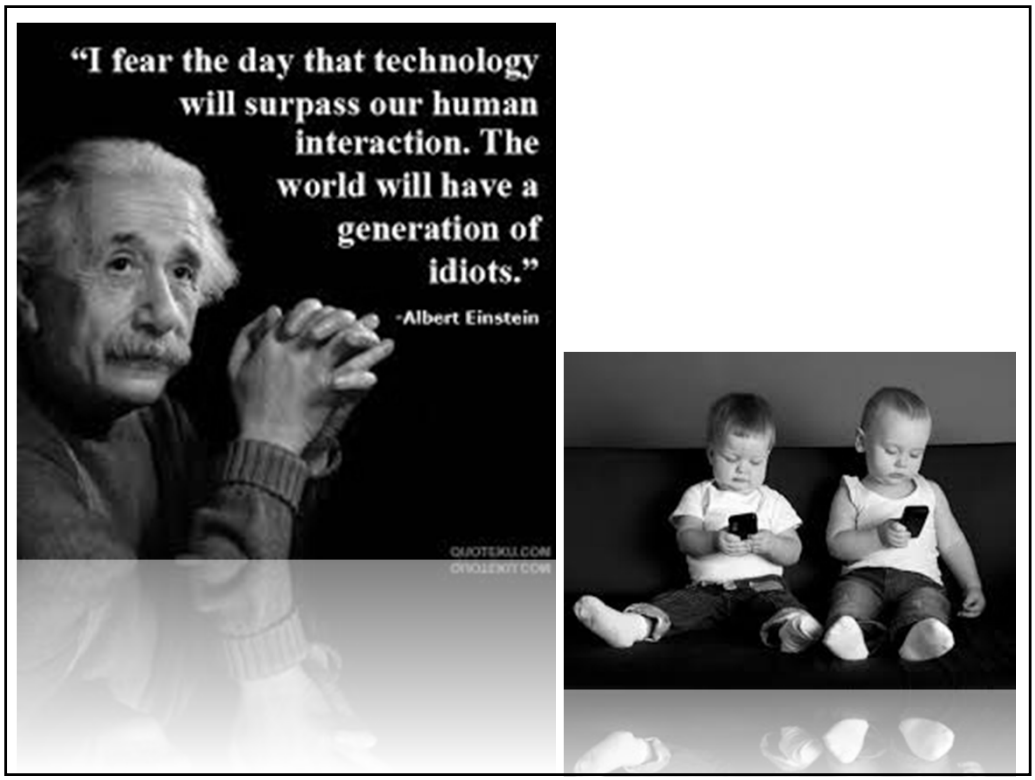

# Evaluation of the Child

- Comprehensive History
- Osteopathic physical and structural exam
- Developmental exam:
  - Motor: crawling, creeping, walking, heel-toe walking, balance, manual dexterity
  - Sensory: visual perception, auditory perception, tactile perception, age 4 up-self portraits are helpful
  - Dominance-eyes, hand, foot

# Clues to Dysfunction

- Birth trauma, trauma history
- Diet
- Immunization history
- Toxic exposure
- Be a detective: what was happening at the time the problem was noted?

# Early Development is KEY


"I fear the day that technology will surpass our human interaction. The world will have a generation of idiots."
-Albert Einstein
QUOTESKU.COM

# Vision

A. Right esotropia

B. Right exotropia

Exotropia

# Visual Stress!

## The Straw that Broke the Camel's Back…

**Intrauterine Malnutrition**

**Birth Trauma**

**Lack of Oxygen**

**Vaccines**

**Drugs**

**Genes**

**Toxins, GMOs**

**Biochemical Insufficiency**

**Illness Immunological Compromise**

**Accidents**

**Poor diet**

**Learning Disability**

**Perceptual Disorders**

**Dyslexia**

**Speech Disorders**

**Behavioral and Emotional Issues**

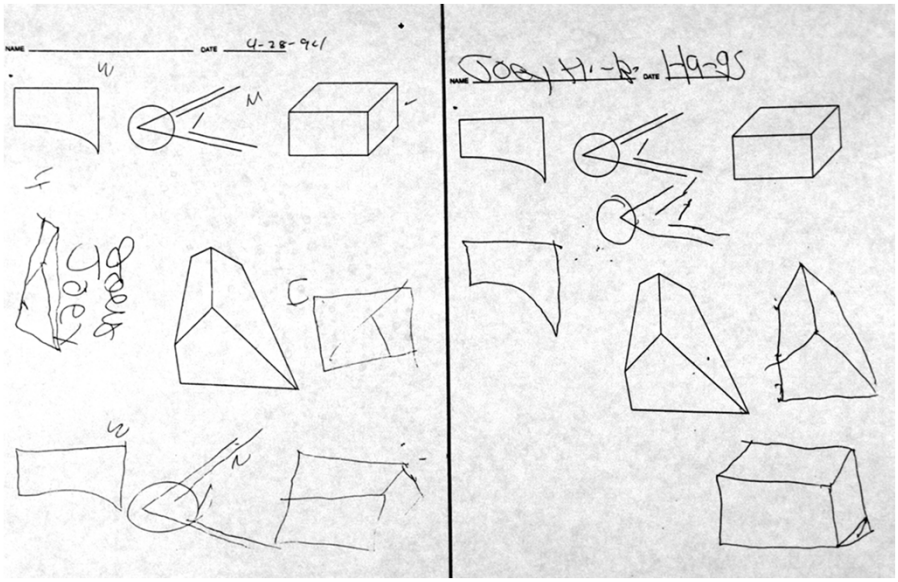
**Hyperkinesis**

**Cerebral Palsy**

**Vision & Hearing Deficits**

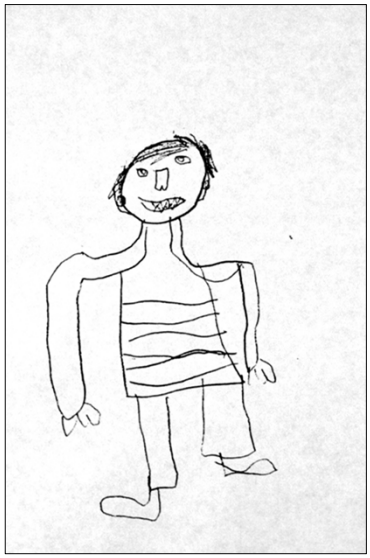
**Autism**

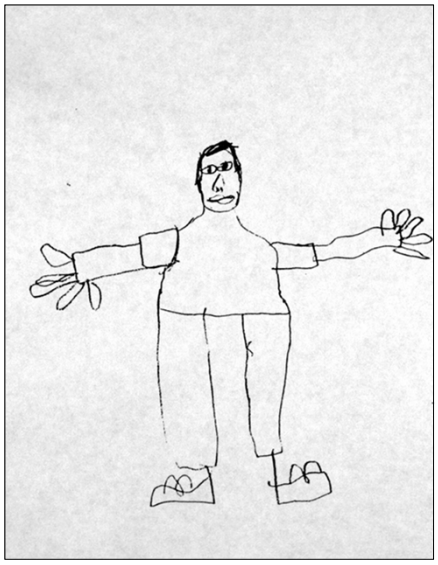
## 10 yr old with Cerebral Palsy



**Before Osteopathic Manipulative Treatment** **9 months later - 8 sessions OMT**

# Body Perception Before & After Osteopathic Treatment





***Encounters with Children: Pediatric Behavior and Development*** **Dixon & Stein**

# Speech Difficulties Can Relate to Structural Issues…

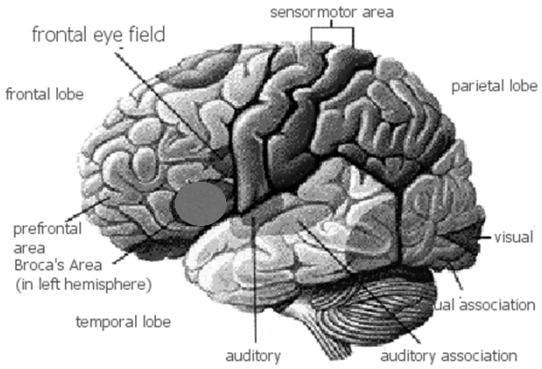
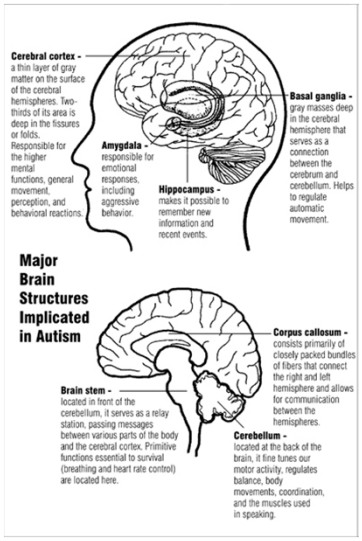



**Image on left from http://www.continuumosteopathy.com**
**Image on right from www.incrediblehorizons.com/images/brain**

# 3 year old with ASD?

- Initial MRI: Normal study except cerebellar tonsils project 7-10mm below the foramen magnum with a pointed configuration inferiorly. The brainstem and tonsils appear constricted within the foramen magnum. Chiari I malformation
- Osteopathic treatment weekly, then monthly
- MRI 5 months later: Mild cerebellar tonsil ectopic with slightly elongated tonsil surrounded by CSF-does not meet criteria for Chiari I malformation



# What about Autism?

- the brain can be abnormally large
- white matter not functioning properly


# The Structural Component of Autism Spectrum Disorder[4,5,6]

**"About 80% of children with development delays, such**

| The Structural Component of Autism | Result |
|---|---|
| **Compression** of the **left middle cranial fossa** (on the speech centers)[10]  | Won't have the tremendous growth of the middle cranial fossa around age 15 to 18 months, which is when speech starts to develop = **Speech Delay** |

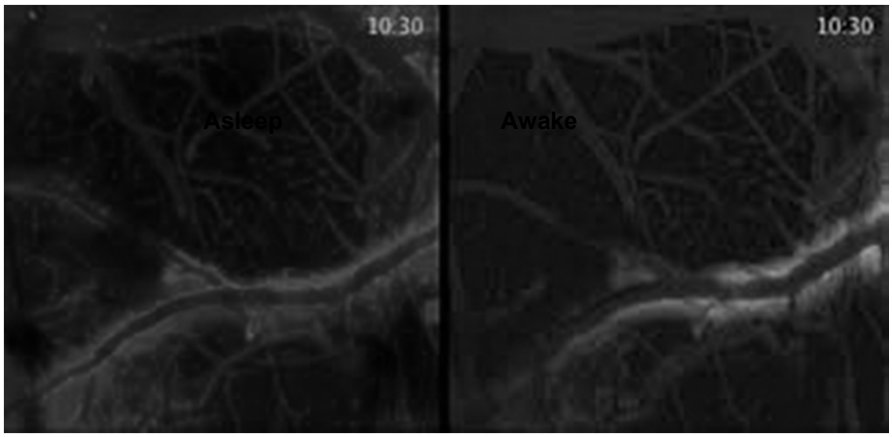
*Osteology*. From http://www.usmleweb.com/reference/gray/asub47.

4. Fryman, Viola M., DO. (1998). "Birth Trauma: The Most Common Cause of Development Delays". In H. King, DO, PhD (Ed.), *The Collected Papers of Viola M. Fryman, DO: The Legacy of Osteopathy to Children* (page 200). American Academy of Osteopathy.
5. Marohn, Stephanie. (2002). *The Natural Medicine Guide to Autism*. Charlottesville, VA: Hampton Roads.
6. "Clinical Applications of Osteopathy in the Cranial Field". (2003). *The Expanding Osteopathic Concept*, pp. 29-41.
10. Dr. Lavine had a case study of 22 out of 25 children diagnosed with autism who had the compression of the left middle cranial fossa This was confirmed via MRI

# Glymphatic System

- The brain's lymphatics
- glia + lymphatics
- How the brain disposes of wastes
- "It's the potency of the Tide that does the work" (WGS)

# The Brain Cleans Up While You Sleep



Glymphatic transport activity best in right lateral position

The Effect of Body Posture on Brain Lymphatic Transport
The J. of Neuroscience, August 5, 2015

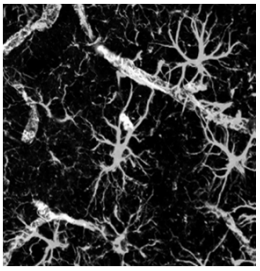
# Brain Drain

- Brain 2% adult body mass
- Weighs about 3 lb
- Consumes 20-25% body's total energy
- Eliminates 1/4 ounce of protein debris a day, 3lb over a year

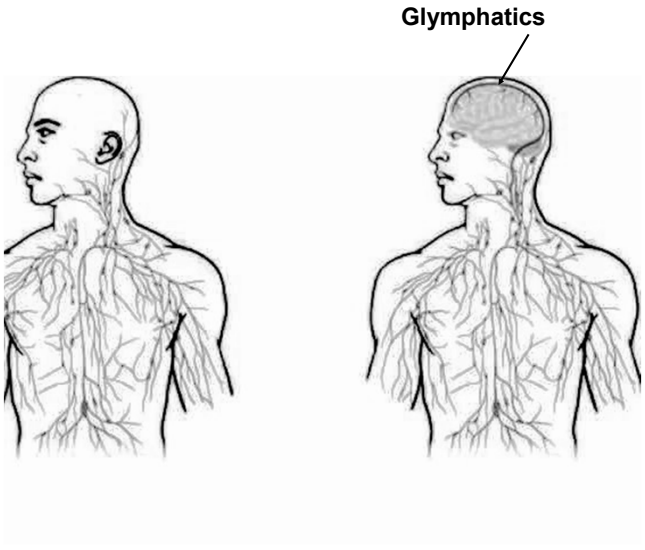
**Nedergaard, GoldmandScientific American, March 2016 pp.44-49**

"Because the brain is like every other tissue connected to the peripheral immune system through meningeal lymphatic vessels..It changes entirely the way we perceive the neuro-immune interaction."

Jonathan Kipnis, PhD
Director UVA's Center for Brain Immunology and Glia



# The Revised Lymphatics



"Cleanliness is next to Godliness. Turn the waters of life loose at the brain, remove all hinderances and the work will be done and give us the eternal legacy, Longevity."

Philosophy of Osteopathy, A. T. Still, p. 79

# Cerebral Spinal Fluid Mechanics Affects:

- Neuroendocrinology
- Psychopharmacology
- Cerebrospinal-lymphatic drainage
- Brain nutrition
- Immune function

# OMT for the Glymphatics

- **Same 4 goals as OMT for lymphatics**
  - Open myofascial transition areas
  - Encourage thoracic diaphragmatic motion
  - Support lymphatic flow
  - Mobilize fluid in the lymphatic-venous system

"*the cerebrospinal fluid is the highest known element contained in the human body unless the brain furnishes this fluid in abundance, a disabled condition of the body will remain*"

Philosophy & Mechanical Principles of Osteopathy

"he who is able to reason will see that this great river of life (the CSF) must be tapped and the withering field irrigated at once or the harvest of health will be lost."

Philosophy of Osteopathy, p. 39

## Osteopathic Philosophy

- The Body has an Inherent Healing potential. Our job is to release that so that every child and adult can reach their optimal potential.

## Ahh, That Feels Better!