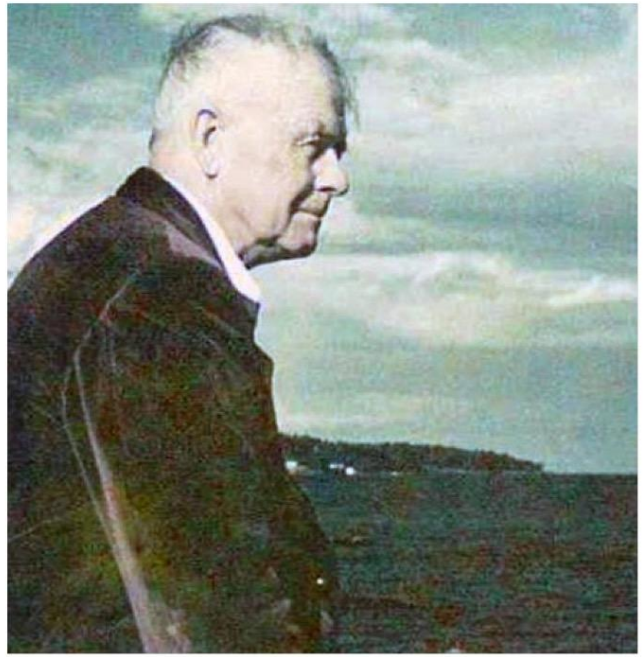

Easy Myofascial Osteopathic Cranial Manipulative Medicine

Monterey, CA

Jay B. Danto, DO

Interim Dean

Associate Dean of Osteopathic Integration

Interim OMM Department Chair, Professor

I have nothing to disclose or conflicts of interests regarding the contents of this presentation...even within the past 3 years!

DYU
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OSTEOPATHIC MEDICINE

Learning Objectives

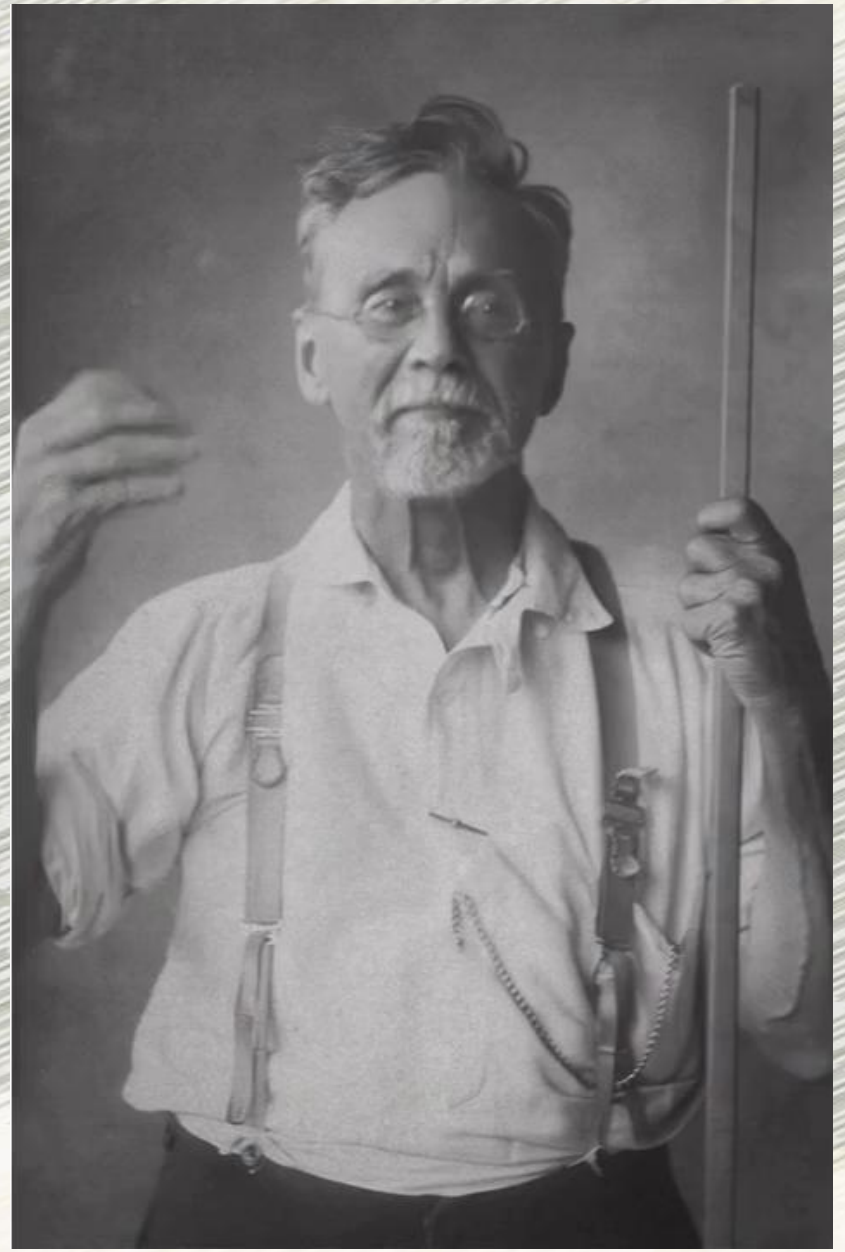
1. **Identify** the anatomical and clinical **indications** and **contraindications** for Myofascial OCMM within the cranial mechanism.
2. Differentiate **common myofascial patterns** and dysfunctions relevant to the cranium, including their palpatory characteristics.
3. **Demonstrate appropriate hand placement, palpatory skills, and treatment sequencing** required to perform Myofascial OCMM safely and effectively.
4. **Apply Myofascial OCMM techniques** to cranial dysfunctions with attention to patient comfort, tissue response, and operator biomechanics.
5. **Evaluate treatment outcomes** by reassessing tissue texture, motion, and patient-reported changes following Myofascial OCMM.

Identify the anatomical and clinical **indications** and **contraindications** for Myofascial OCMM within the cranial mechanism.

Myofascial Osteopathic Cranial Manipulative Medicine

By Jay Danto, DO

“…begin with the brain or head because…to give such diseases as belong to that division of the body. Then the neck, chest, abdomen and pelvis. Thus, we have five divisions in regular order, beginning with the head and finishing with the sacrum.”



-Andrew Taylor Still, DO. Philosophy of Osteopathy (p. 32).

Origins of Osteopathic Cranial Manipulative Medicine (OCMM)

- **OCMM** is a system of diagnosis and treatment developed by an osteopathic physician, utilizing the **Primary Respiratory Mechanism (PRM)** and **balanced membranous tension**
- First described by **William G. Sutherland, D.O., D.Sc. (Hon) (1873–1954)**, an early student of Dr. A.T. Still & graduate of the ASO in 1899

Indications for Myofascial OCMM

- Somatic dysfunction in the Head
- Clinical presentations with commonly relevant SDs:
  - Headache
  - Cranial neuropathy and/or nerve entrapment
  - Bell's palsy
  - Trigeminal neuralgia
  - Colic
  - Orofacial pain
  - Otitis media
  - Sinusitis
  - Temporomandibular joint dysfunction and malocclusion
  - Vertigo
  - Feeding difficulties, in infants, and in adult neurologic causes e.g post-stroke
  - Plagiocephaly
  - Torticollis
  - Tinnitus
  - Post-concussive syndromes/traumatic brain injury.

Hensel, Kendi; Cymet, Tyler. A Teaching Guide for Osteopathic Manipulative Medicine (p. 71). (Function). Kindle Edition

Contraindications for Myofascial OCMM

Absolute may include but not limited to:

- Acute intracranial bleeding
- Skull fracture
- Acute cerebrovascular accident

Relative:

- Coagulopathies
- Space occupying lesion in cranium
- Increased intracranial pressure

Hensel, Kendi; Cymet, Tyler. A Teaching Guide for Osteopathic Manipulative Medicine (p. 72). (Function). Kindle Edition

The Rest of the Learning Objectives

- Differentiate common myofascial patterns and dysfunctions
- Demonstrate appropriate hand placement, palpatory skills, and treatment sequencing
- Apply Myofascial OCMM techniques
- Evaluate outcomes

Photo: https://www.pinterest.com/pin/215398794653026947/

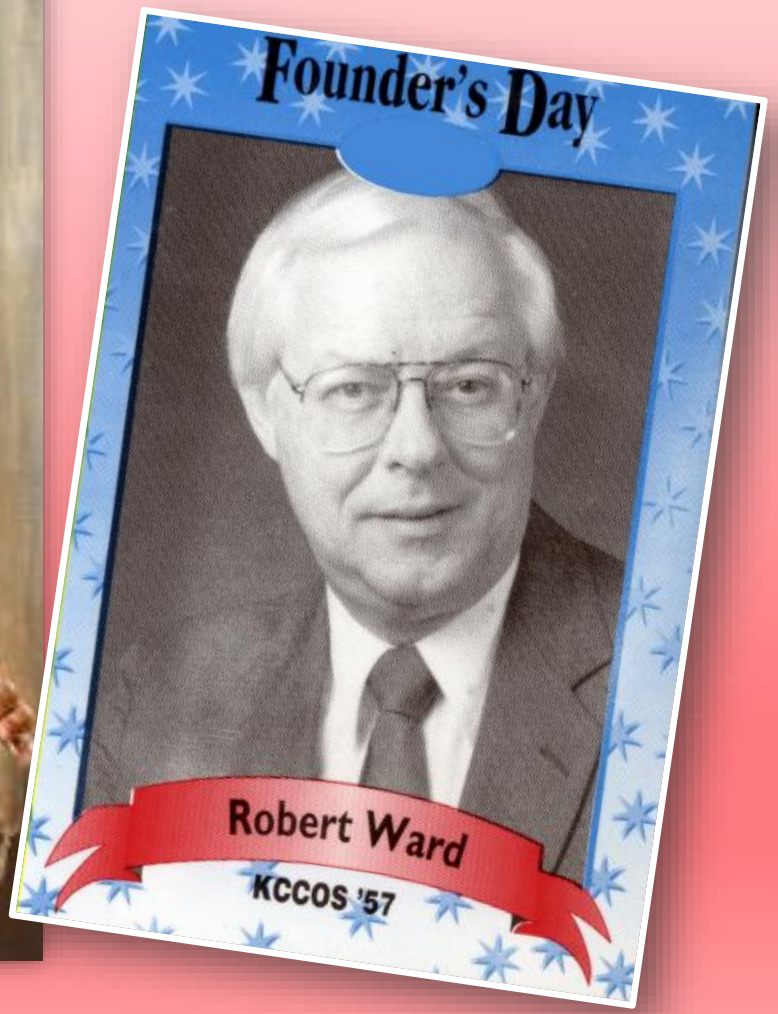
“Beveled, like the gills of a fish indicating a primary respiratory mechanism for mobility.”

-William Garner Sutherland, DO (1978)

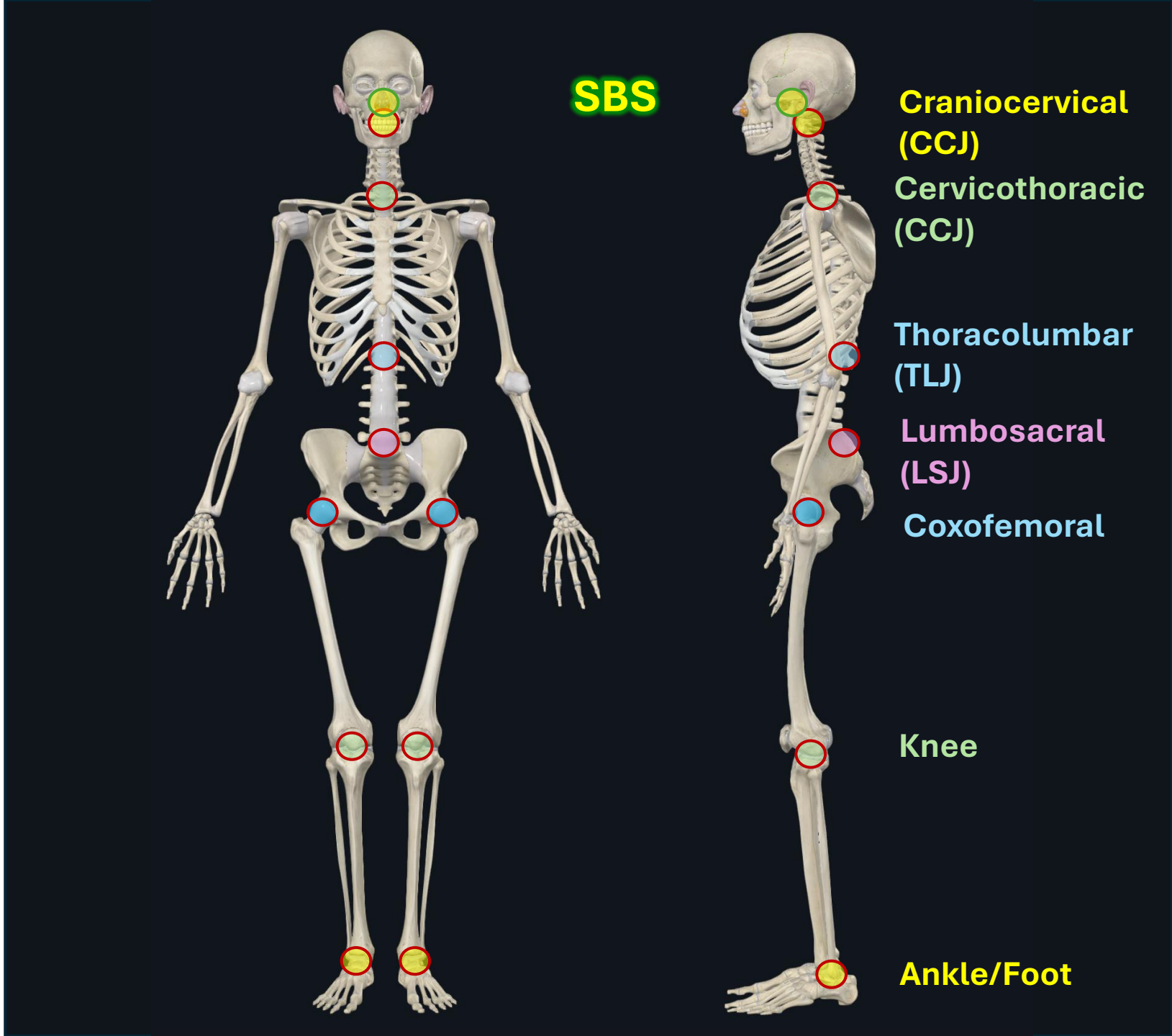
5 Components of the Primary Respiratory Mechanism

- Inherent motility of the central nervous system.
- Mobility of the intracranial and intraspinal membranes (Reciprocal Tension Membrane).
- Fluctuation of the cerebrospinal fluid (CSF).
- Mobility of the cranial bones.
- Involuntary mobility of the sacrum between the ilia.

Origins of my interpretation of Myofascial OCMM



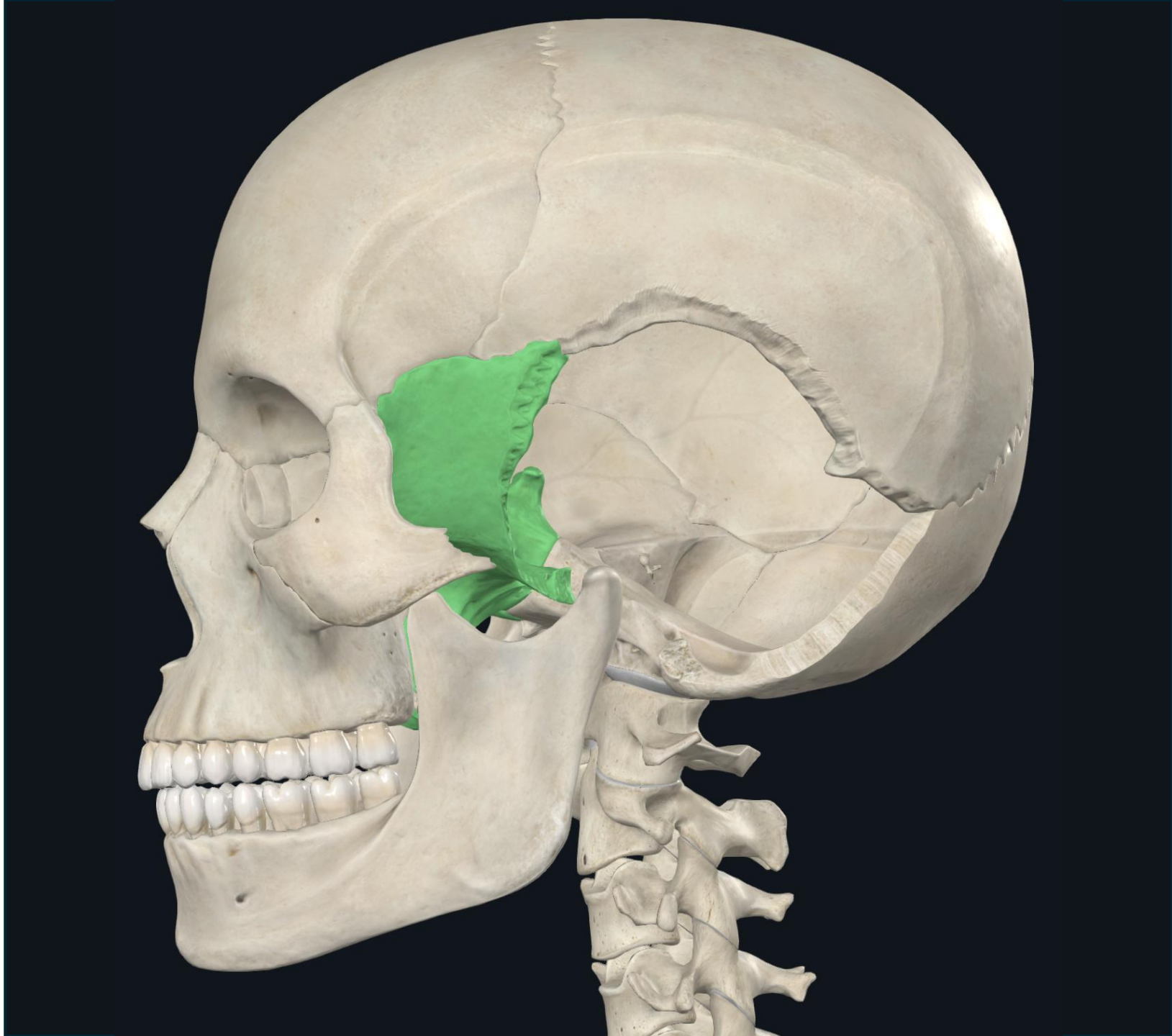
Fluids, Diaphragms, lymphatics& the PRM



The SBS

The SBS

The SBS



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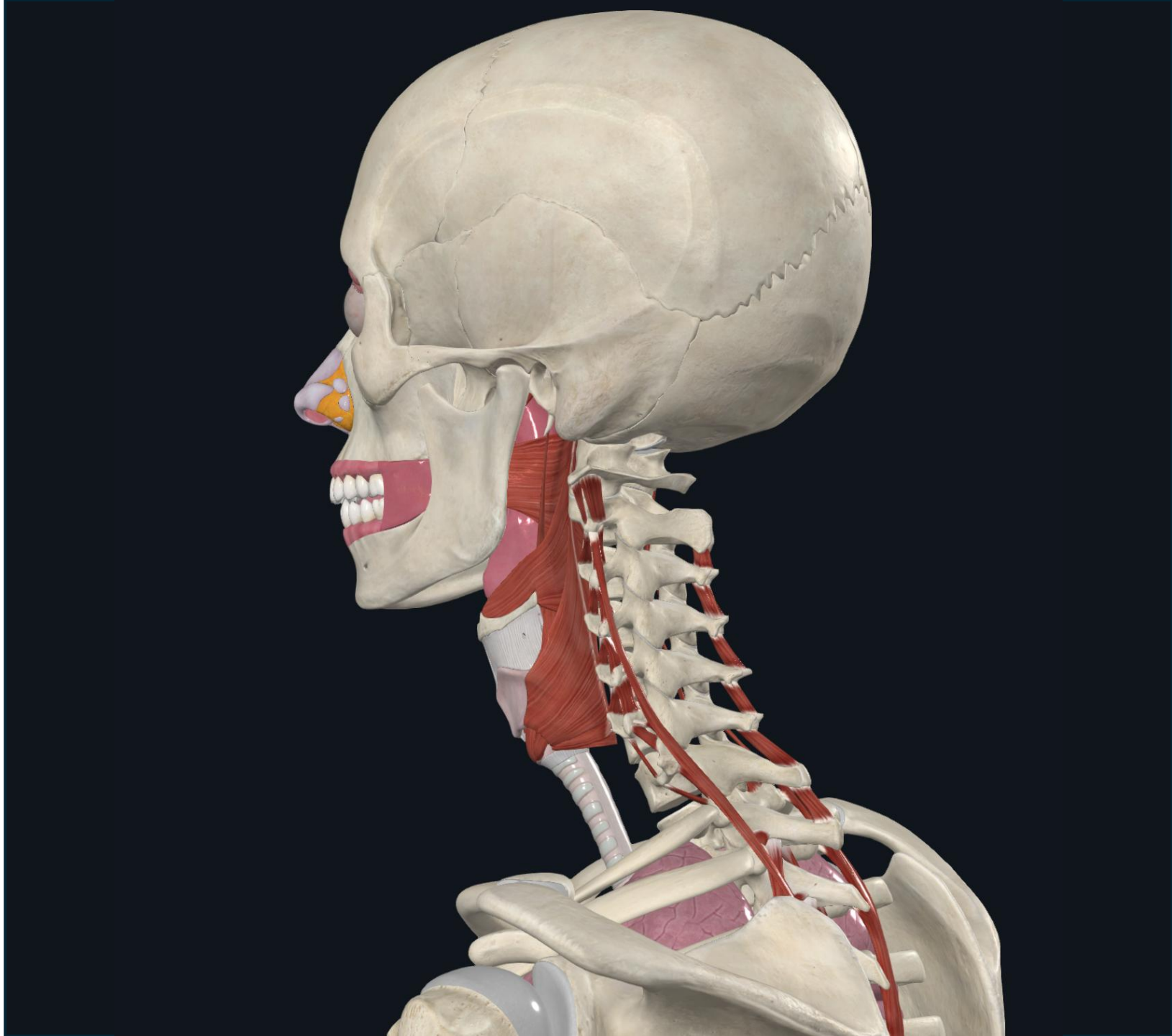

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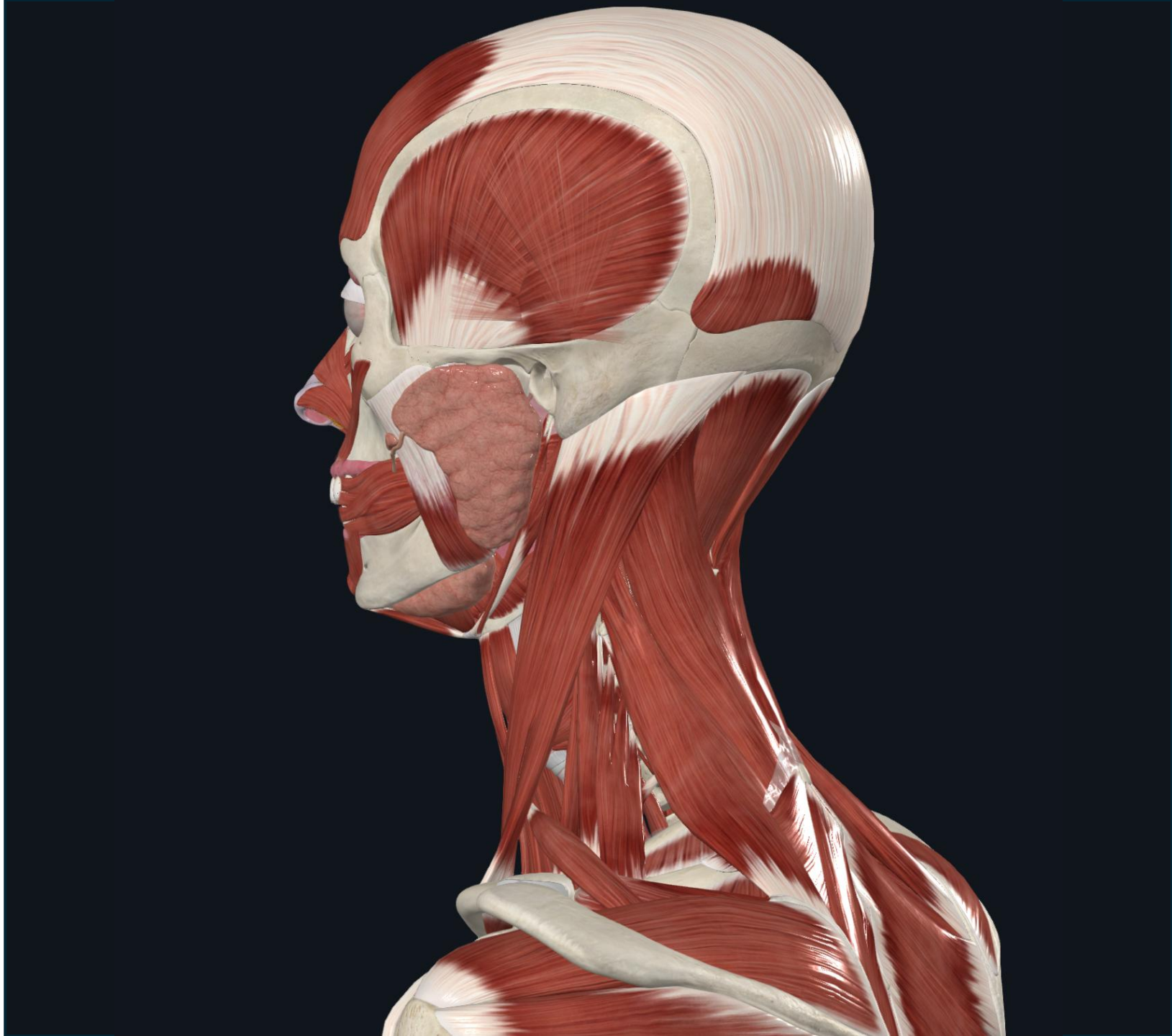

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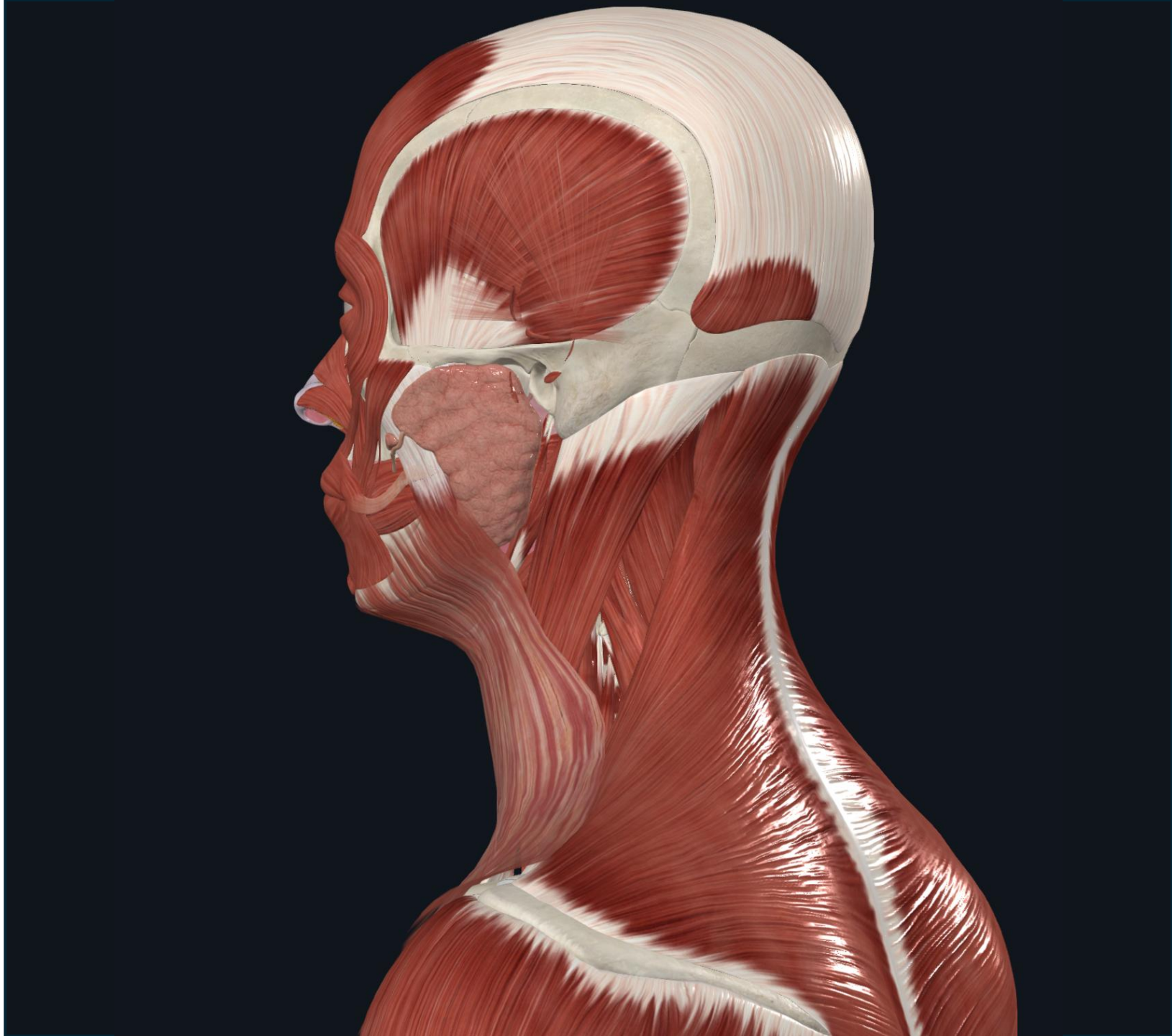
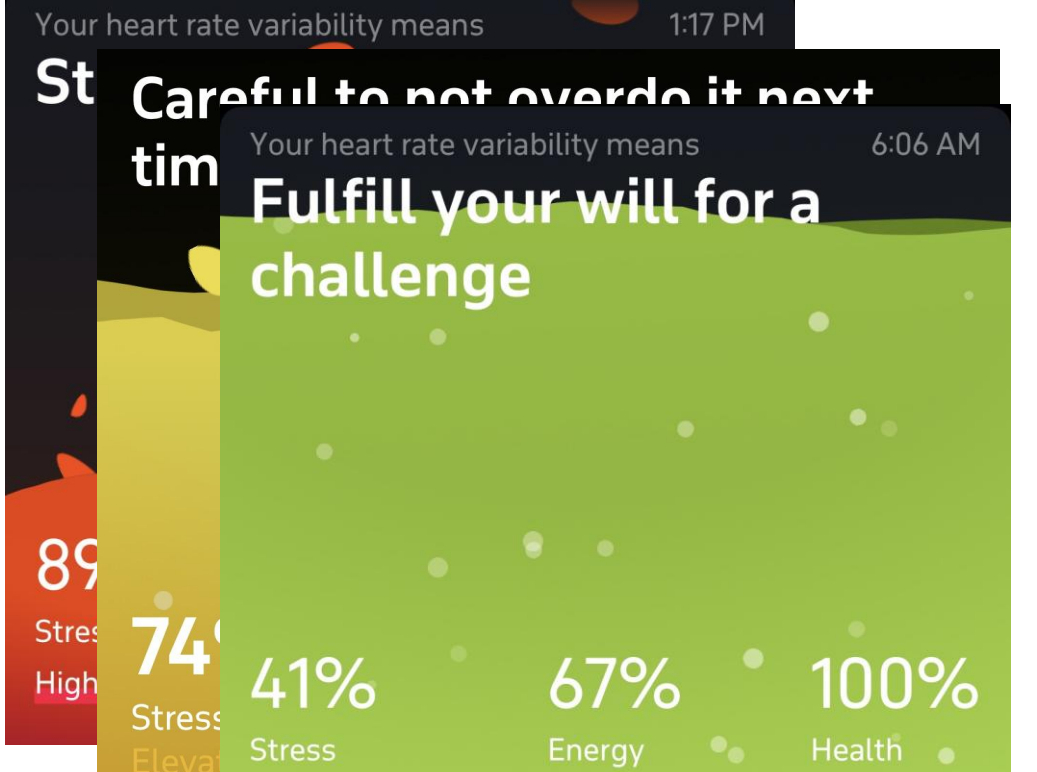


HRV, Stress, OMT, & Suboccipital Self-Tx

Methods: Web of Science®, National Library of Medicine (PubMed), and Google Scholar databases yielded 37 publications meeting our criteria.

Conclusion: the current neurobiological evidence suggests that HRV is impacted by stress and supports its use for the objective assessment of psychological health and stress

Kim HG, Cheon EJ, Bai DS, Lee YH, Koo BH. Stress and Heart Rate Variability: A Meta-Analysis and Review of the Literature. Psychiatry Investig. 2018 Mar;15(3):235-245. doi: 10.30773/pi.2017.08.17. Epub 2018 Feb 28. PMID: 29486547; PMCID: PMC5900369.

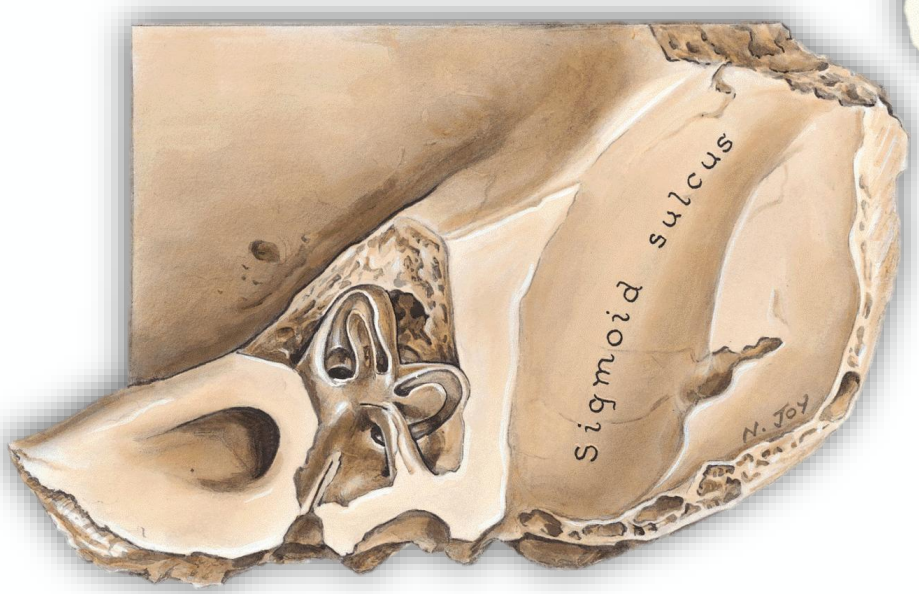


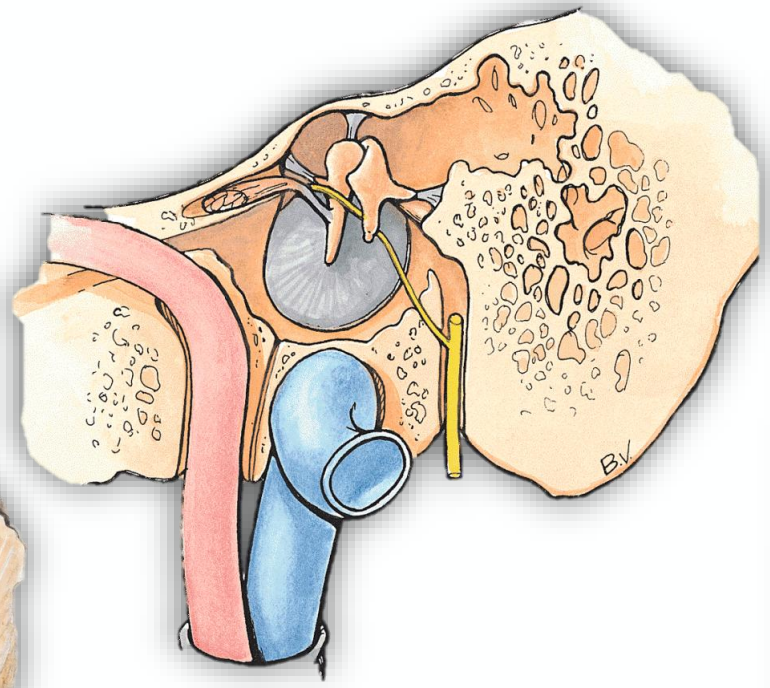
RTM & the Temporal Bone

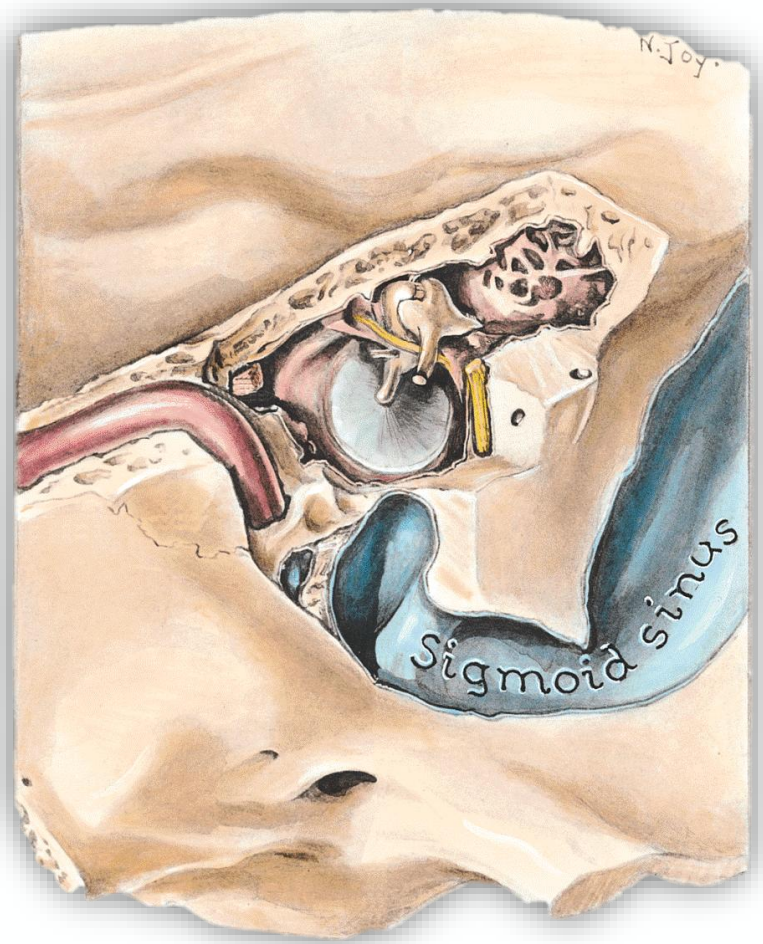
Myofascial Osteopathic Cranial Manipulative Medicine

By Jay Danto, DO

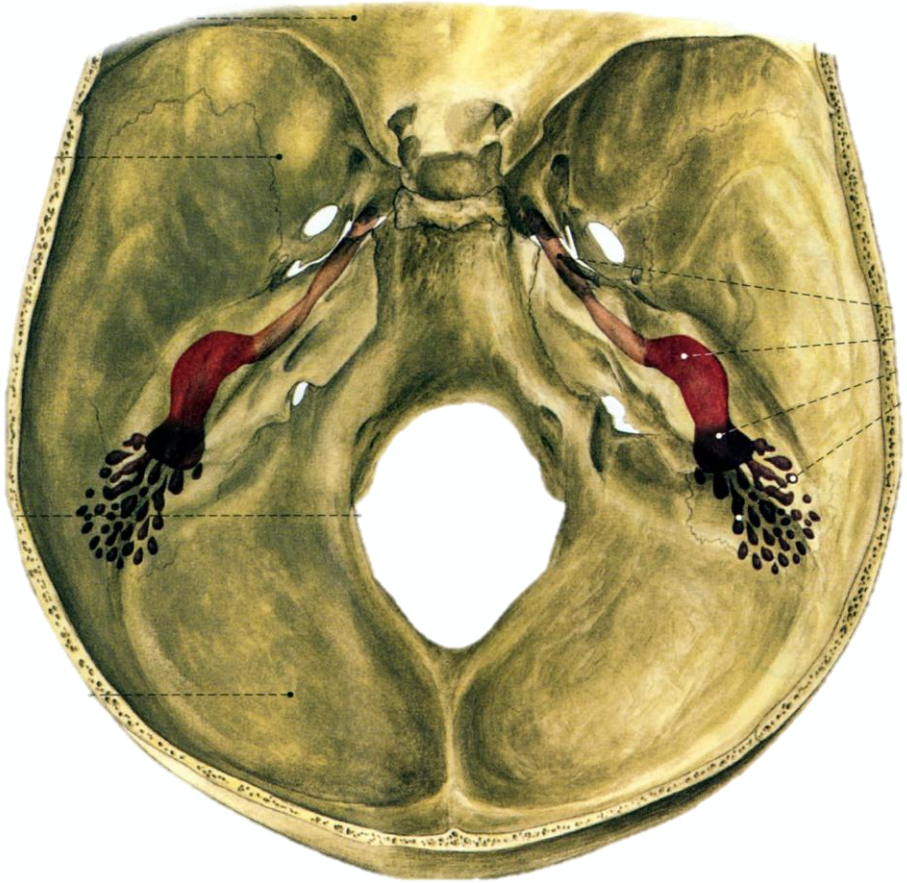
Ear Organs

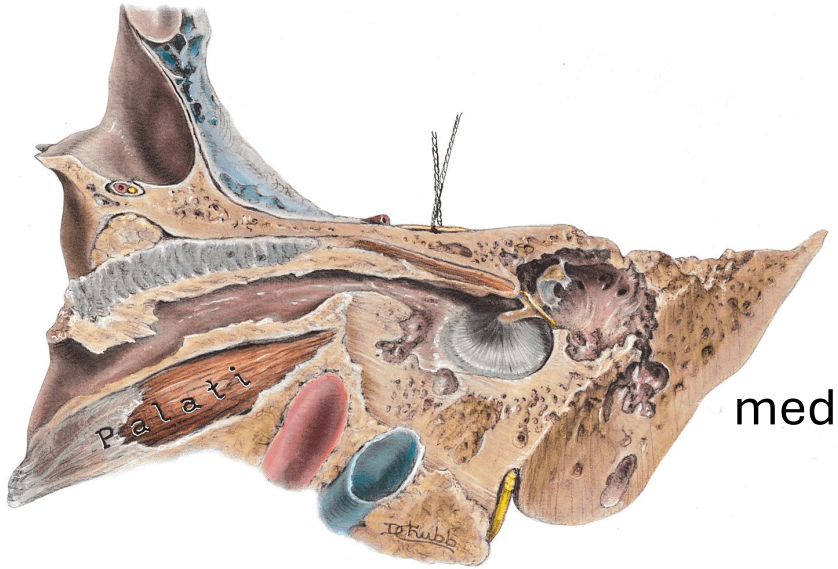






Eustachian Tube

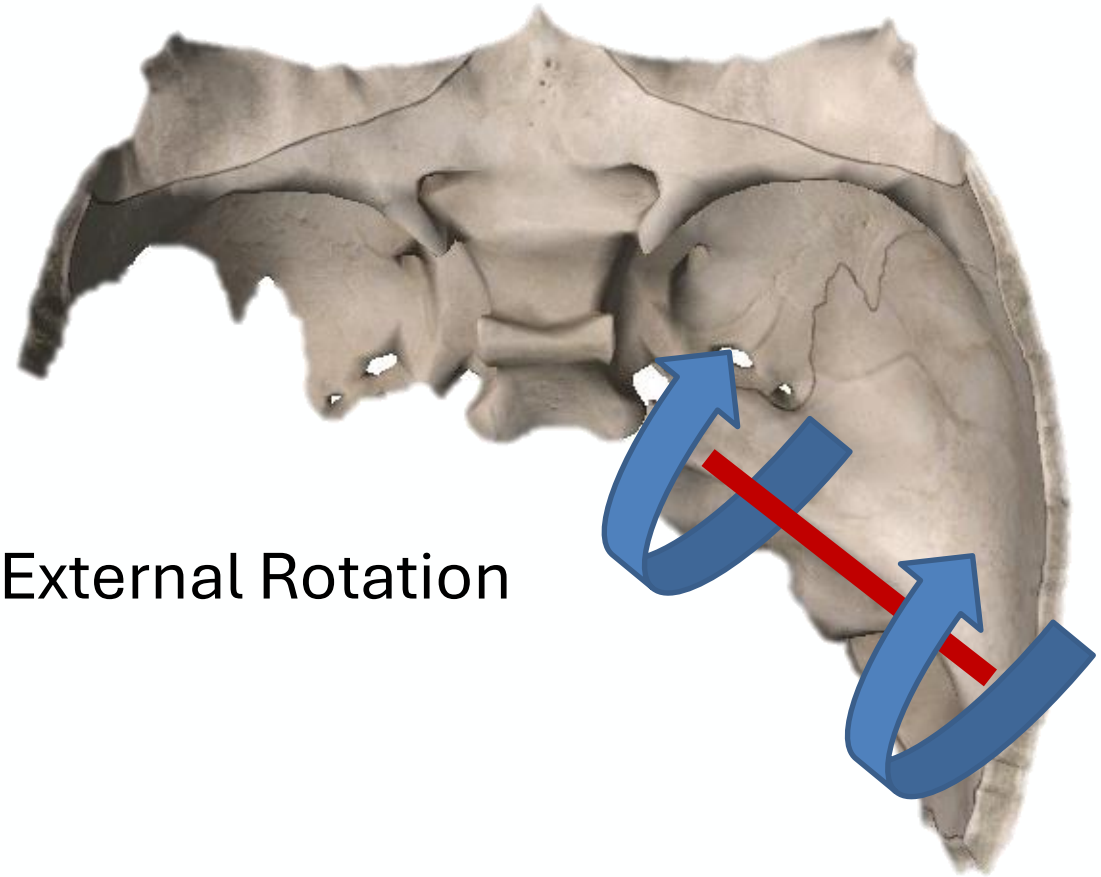




medial view

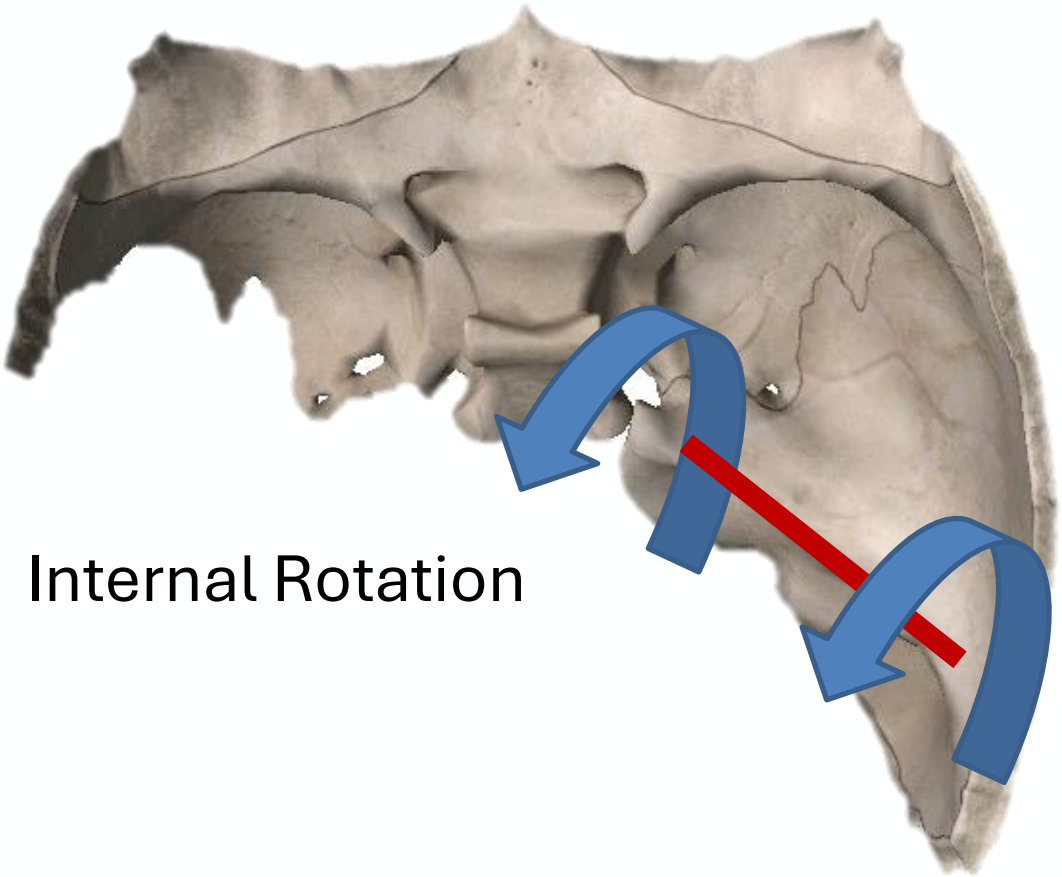
- Eustachian tube exits the petrous portion and becomes the medial wall of the middle ear (the sphenoid is the lateral wall)
- Internal rotation of the temporals will place pressure on the Eustachian tube
  - high-pitched tinnitus
- External rotation will often produce a low roaring sound or low pitched tinnitus

Temporal Bone Motion



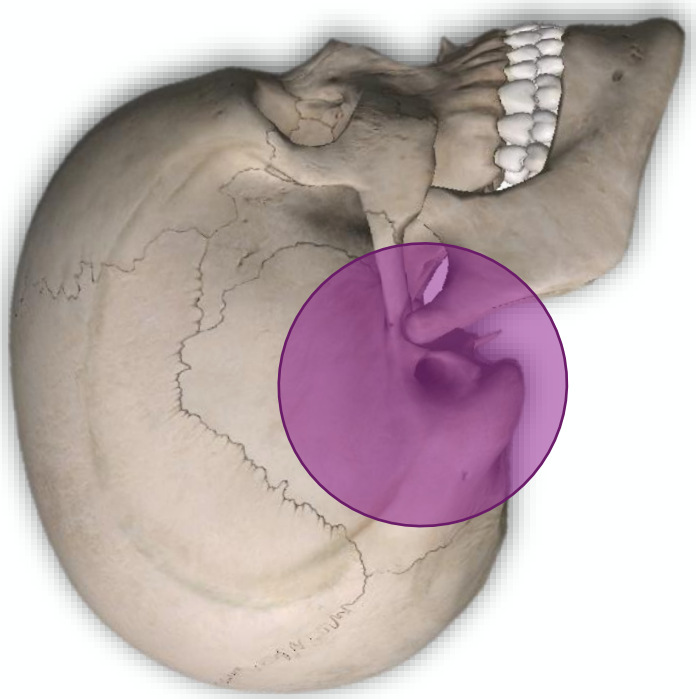
External Rotation

Axis just inferior to petrous ridge



Internal Rotation

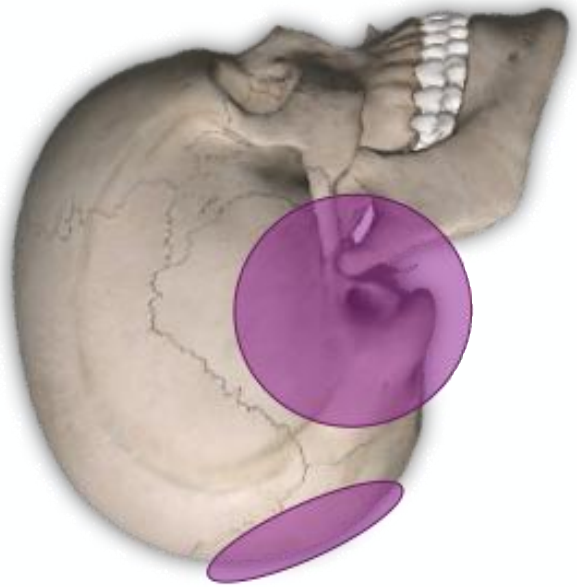
Ear Myofascial Testing



- Place your palms over the ipsilateral ears
- Test each plane of motion for each ear individually
  - **Temporal Rotation** *(I/E = F/E)*
  - **Superior/Inferior motion** *(SB)*
  - **Anterior/Posterior** *(head rotation)*
- *Note the most restricted EAR!*

Unilateral Ear iMFR Treatment

- Place the ipsilateral palm over the most restricted ear
- Cup the occiput with your other hand
- Place the tissues in the indirect positioning for each plane of motion for the ear (Temporal Rotation, S/I, A/P)
- Place the occipital tissues in the indirect positioning for each plane of motion (CW/CCW, S/I, R/L trans)
- Release Enhancing Maneuvers
  - Head positioning, arm positioning, pelvis rotation
  - Respiratory Assist
- *Return to neutral & Re-examine*

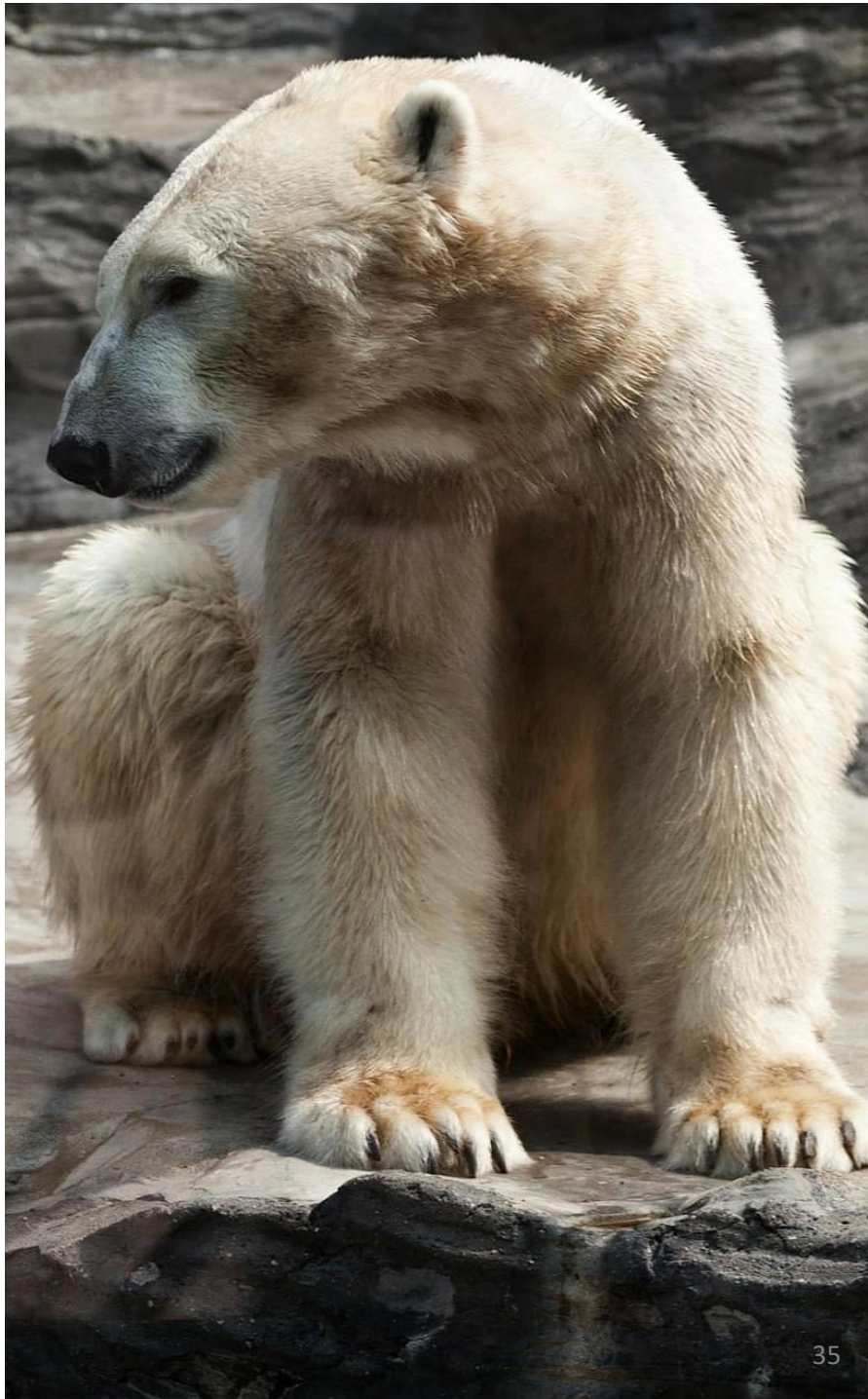


Bilateral Ear iMFR Treatment

- Place the ipsilateral palms over the ears
- Place the tissues in the indirect positioning for each plane of motion for the most restricted ear (Temporal Rotation, S/I, A/P)
- Then, do the same thing for the other side
- Release Enhancing Maneuvers
  - Head positioning, arm positioning, pelvis rotation
  - Respiratory Assist
- *Return to neutral & Re-examine*

Grounding Exercise

- Sit at the head of the table with your patient comfortably supine.
- Rest your hands in your lap or on the table.
- Place your feet flat on the floor and imagine them as big, bear paws rooting you to the ground.
- Close your eyes and take a 3 deep abdominal breaths, relaxing your shoulders and body more with each exhalation.



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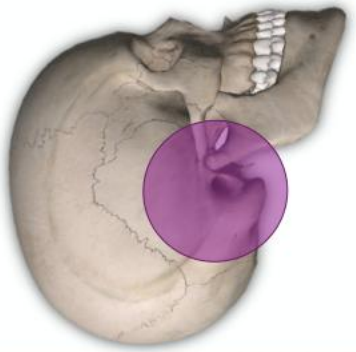

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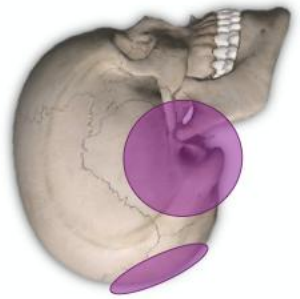

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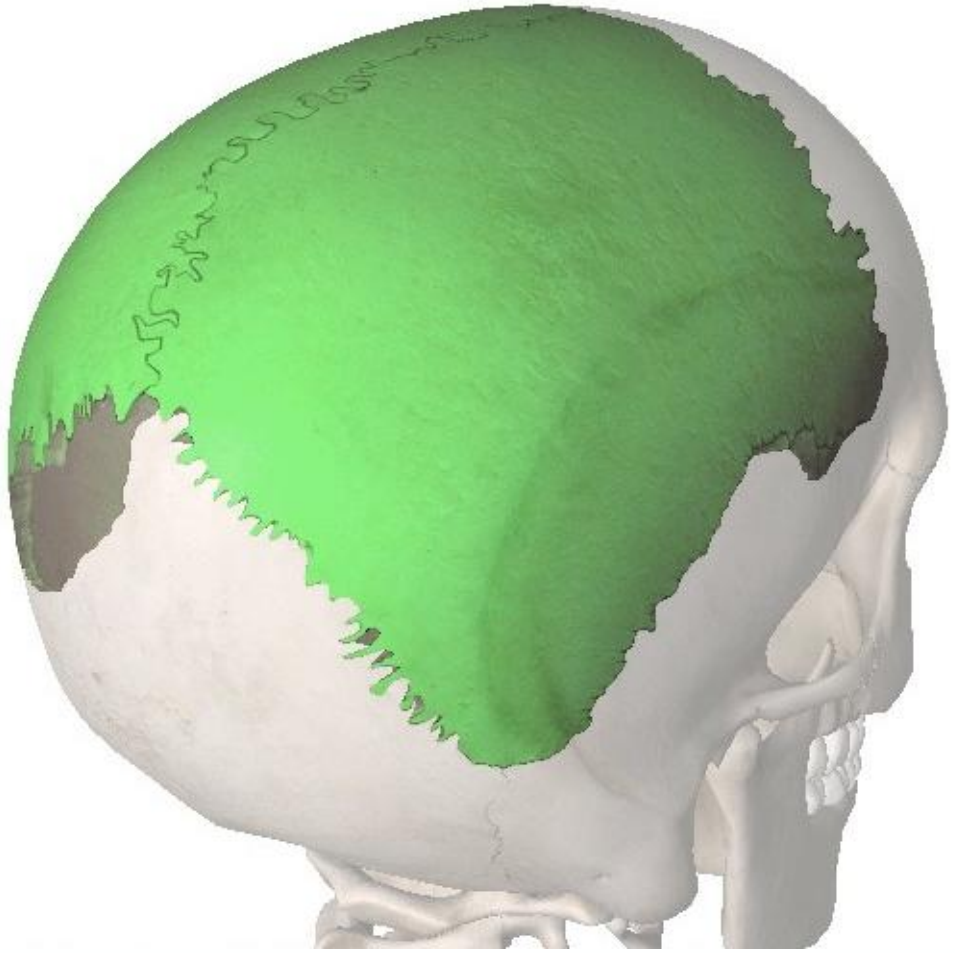
Parietal Bones

by Jay B. Danto, DO



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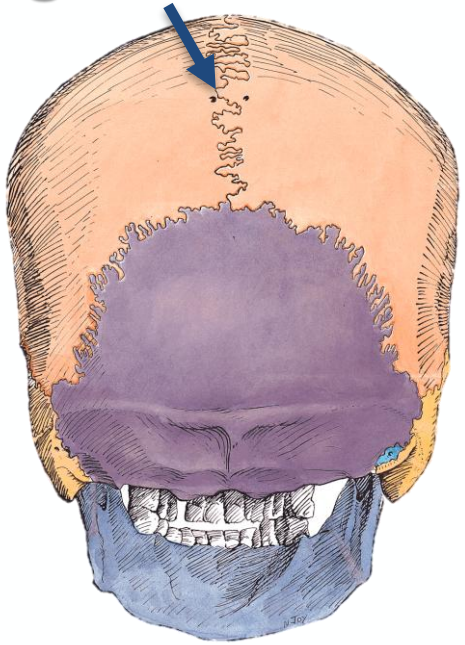
Parietal bone articulates with 5 other bones

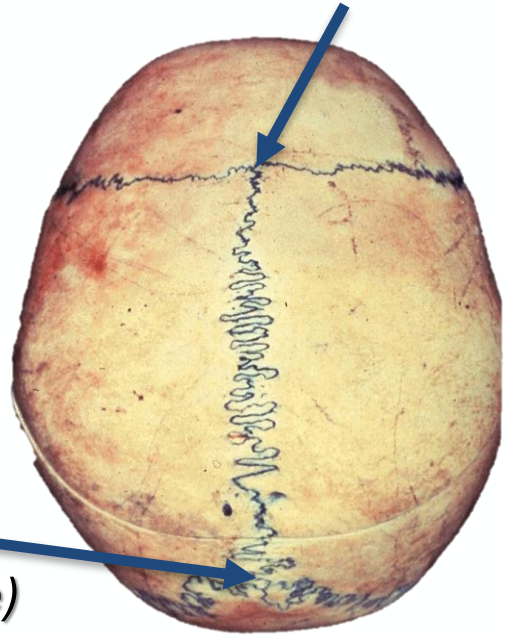
1. Occiput
2. Frontal
3. Sphenoid
4. Temporal
5. Opposite Parietal

It is a paired bone…

Sagittal



Bregma
(old ant. fontanelle)

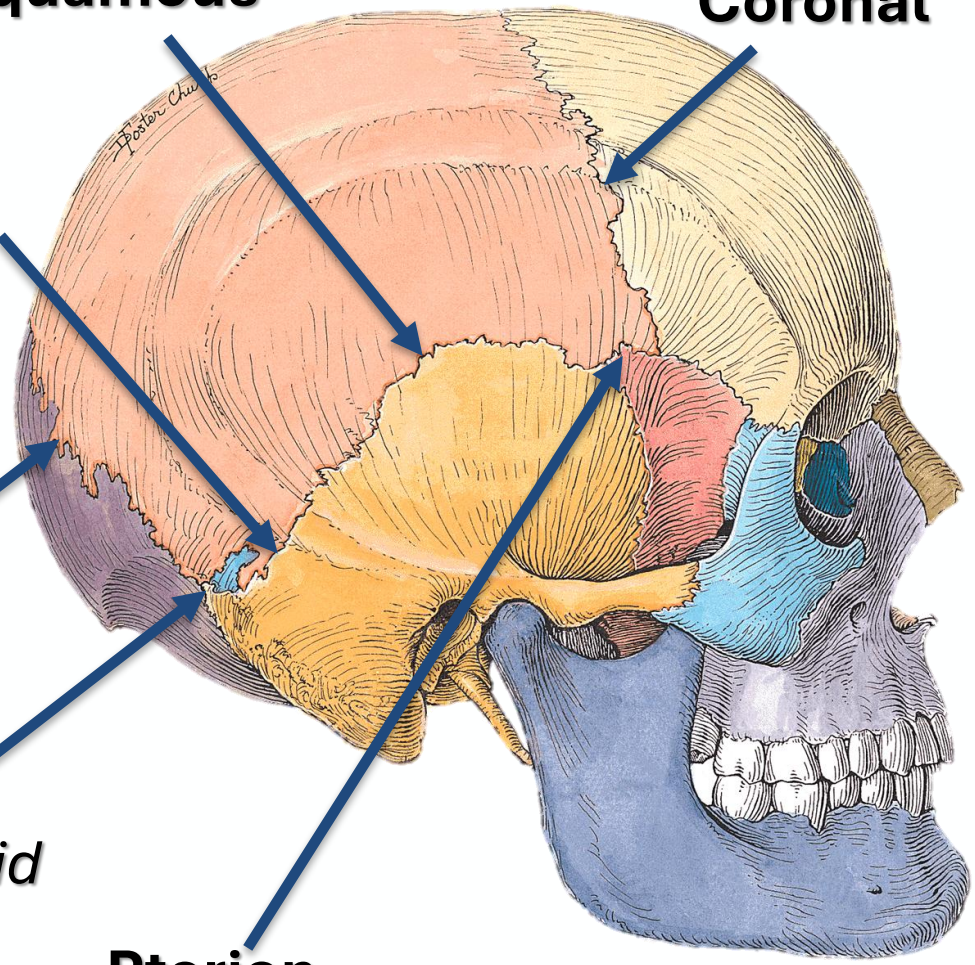


Lambda
(old post. fontanelle)

Parietosquamous

Coronal

Parietomastoid



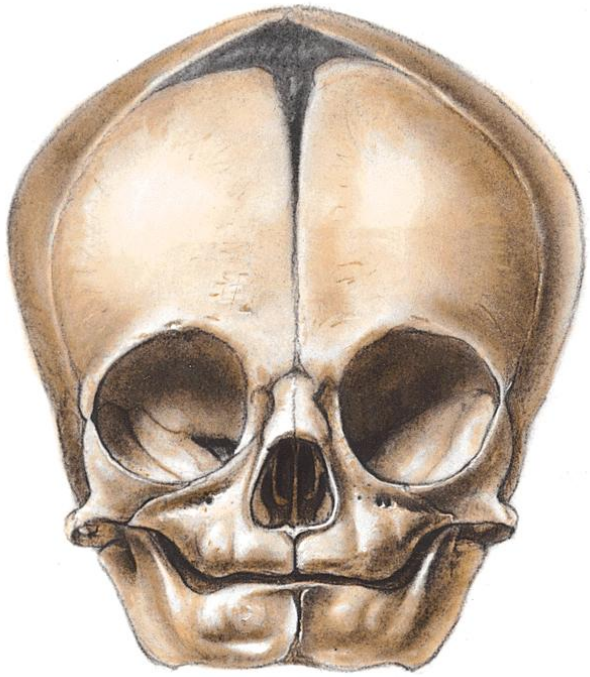
Lambdoidal

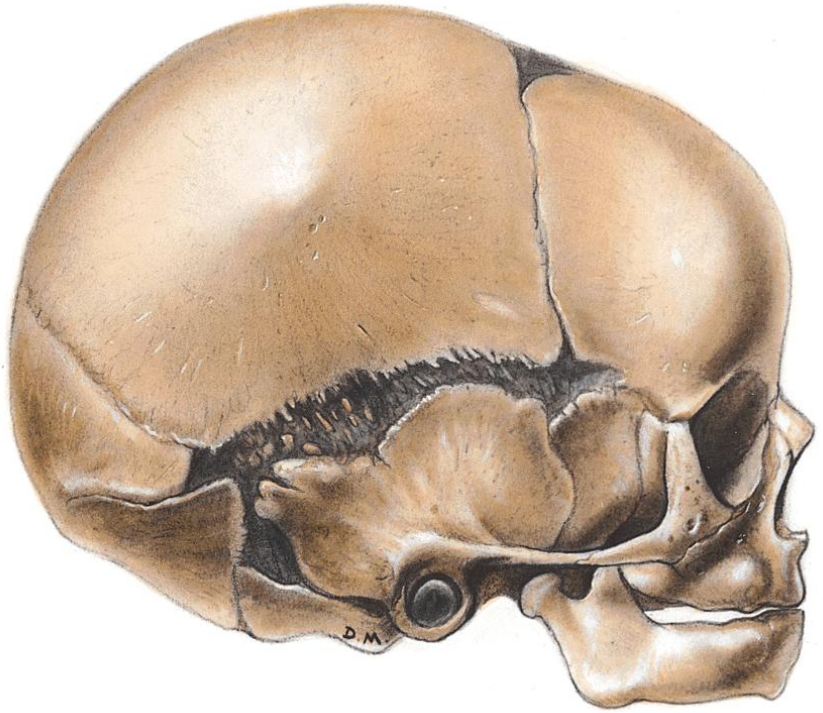
Asterion
(old mastoid fontanelle)

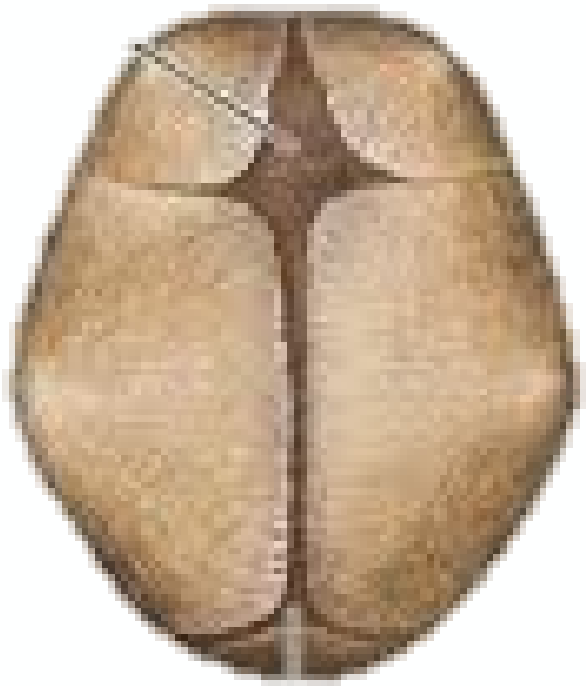
Pterion
("H" like union of 4 bones Old sphenoid fontanelle)

Sutures & Bony Landmarks

The parietal bone is the only bone that contacts all 4 fontanelles.







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Parietal: Outer Surface

Upper Temporal Ridge

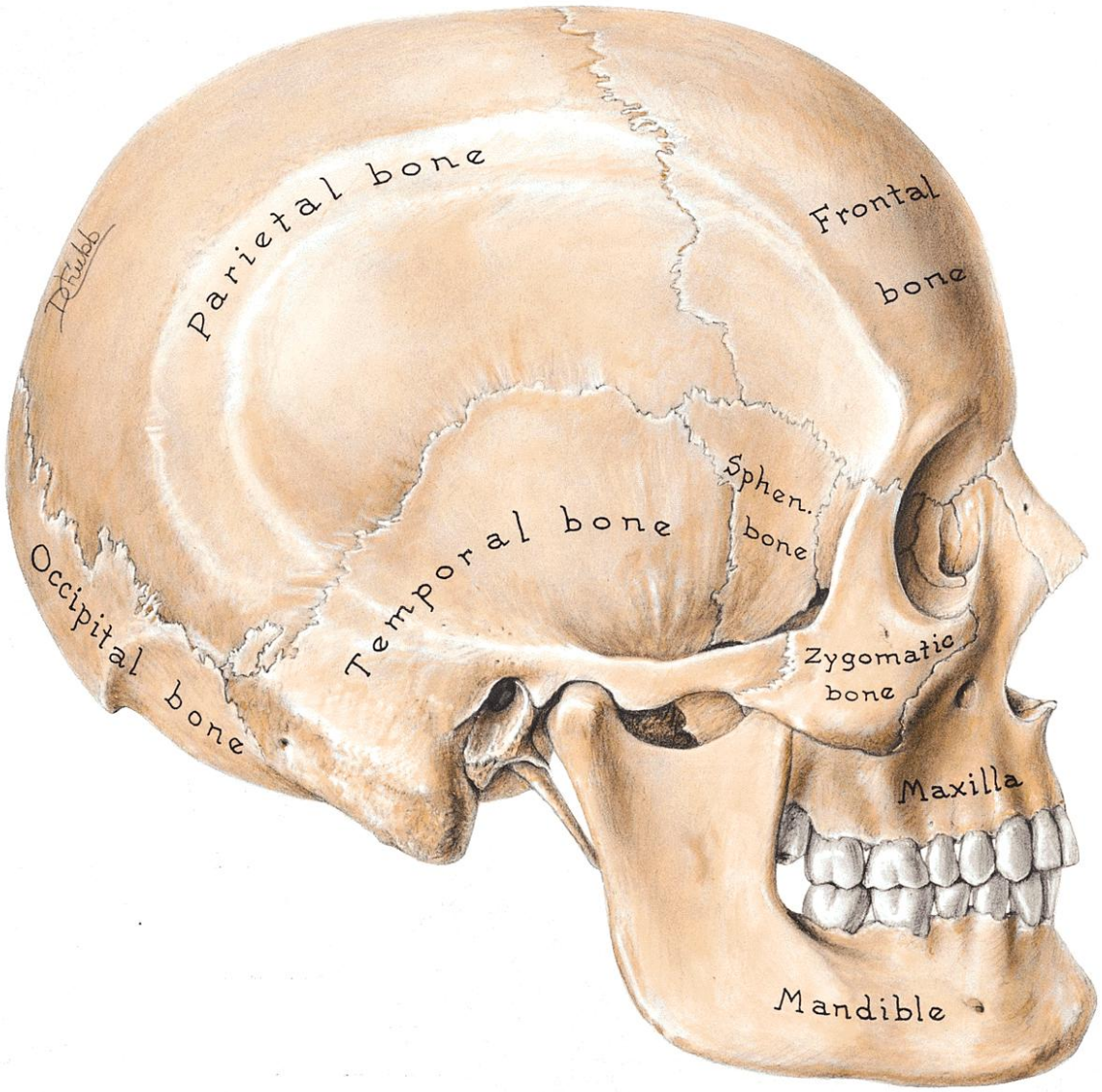
Attachment of the temporal fascia

Lower Temporal Ridge

Origin of the temporalis muscle

Temporalis Fossae

Filled by the temporal muscle

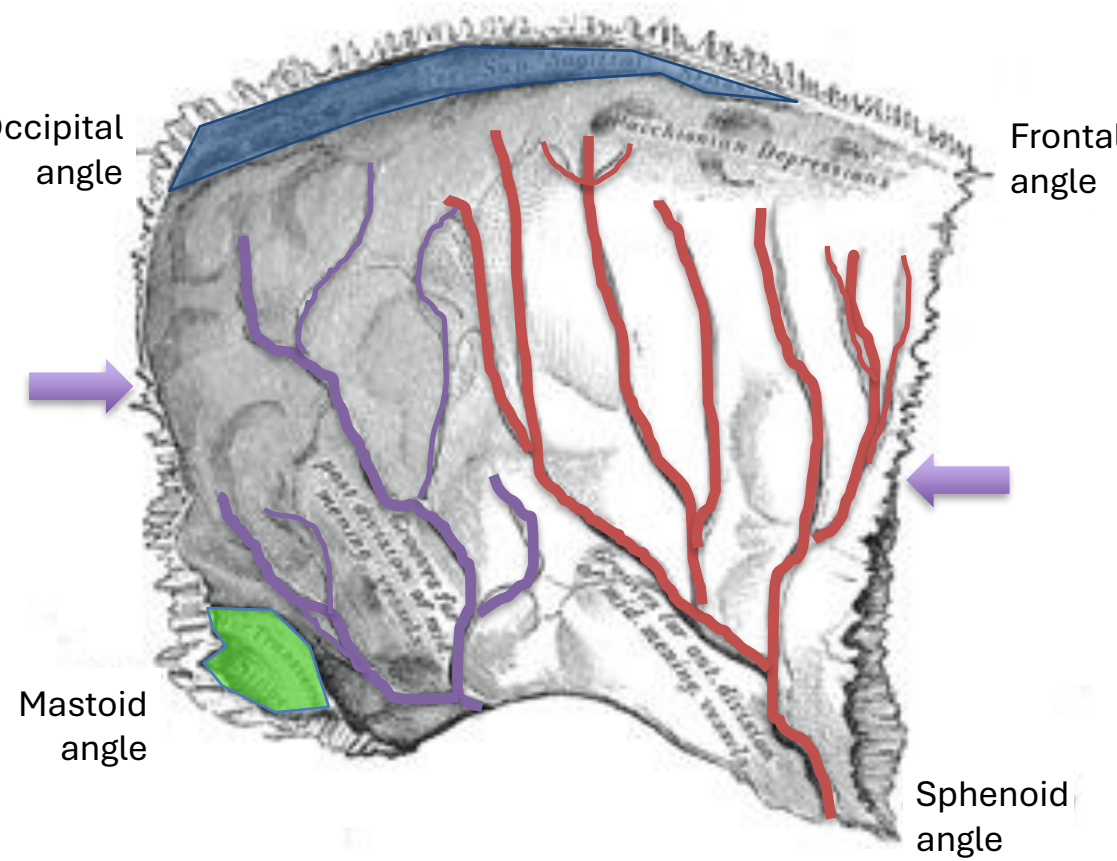


Parietal: Inner Surface

- Sagittal Sulcus: a groove along the sagittal suture in which the sagittal sinus runs
- Groove of the middle meningeal artery (*anterior* & *posterior*)

Note the bevel changes (purple arrows) along the coronal and lambdoidal articulations

- Lateral part of the groove for the **Transverse Sinus**
  - *Carries the marginal insertion of the tentorium cerebelli*



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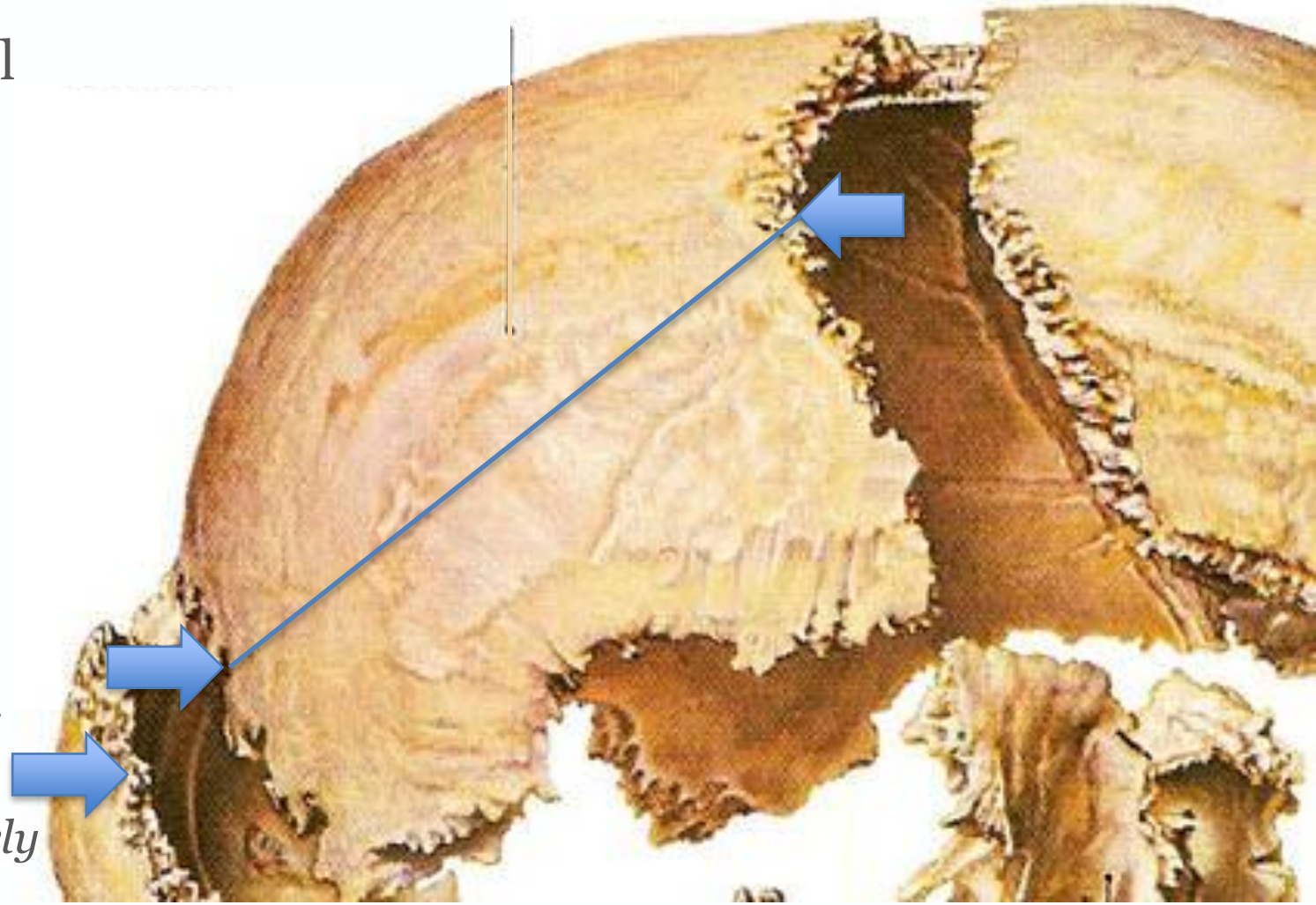
Parietals Axis of Motion

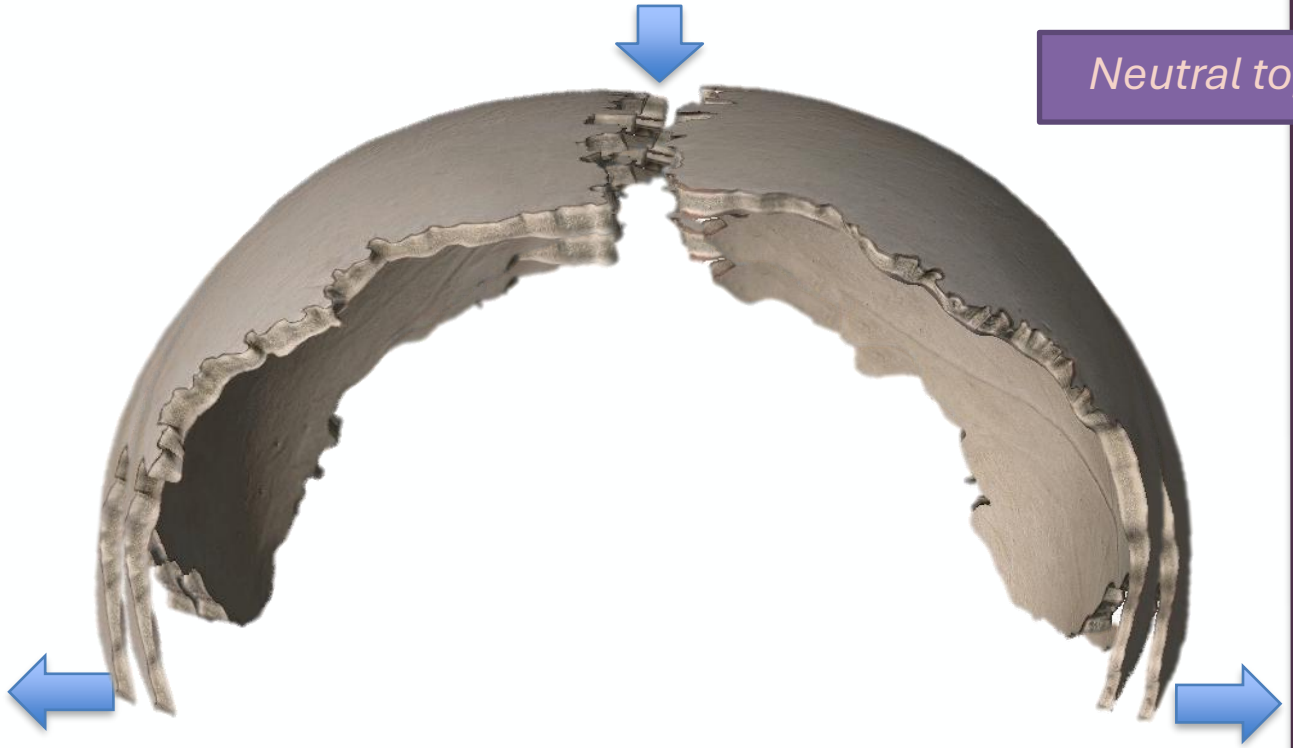
- Bevel change midway along sagittal and lambdoidal sutures creates a hinge for the AP axis of motion (coronal plane).
- External rotation of the parietals occurs with SBS Flexion *(Stewie head)*
  - *Inferior borders move laterally*
  - *Superior borders move medially and inferiorly*
  - *Pterion, Asterion & Squamous sutures move laterally*
  - *Sagittal suture moves slightly inferiorly*



Parietals Axis of Motion

Parietals Axis of Motion

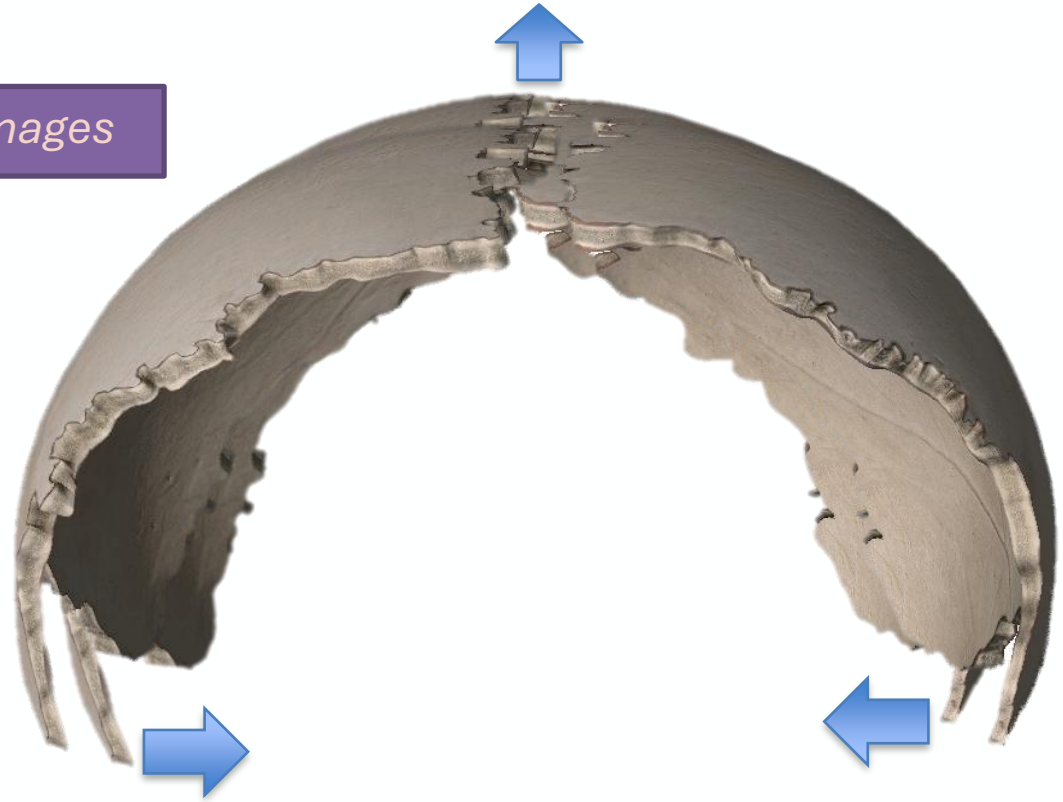
External Rotation



- Sagittal articulation moves inferiorly
- Temporal articulation moves laterally
  - *Cranium widens laterally*

Neutral top images

Internal Rotation



- Sagittal articulation moves superiorly
- Temporal articulation moves medially
  - *Cranium narrows laterally*

Parietal Bone Physiologic Motion

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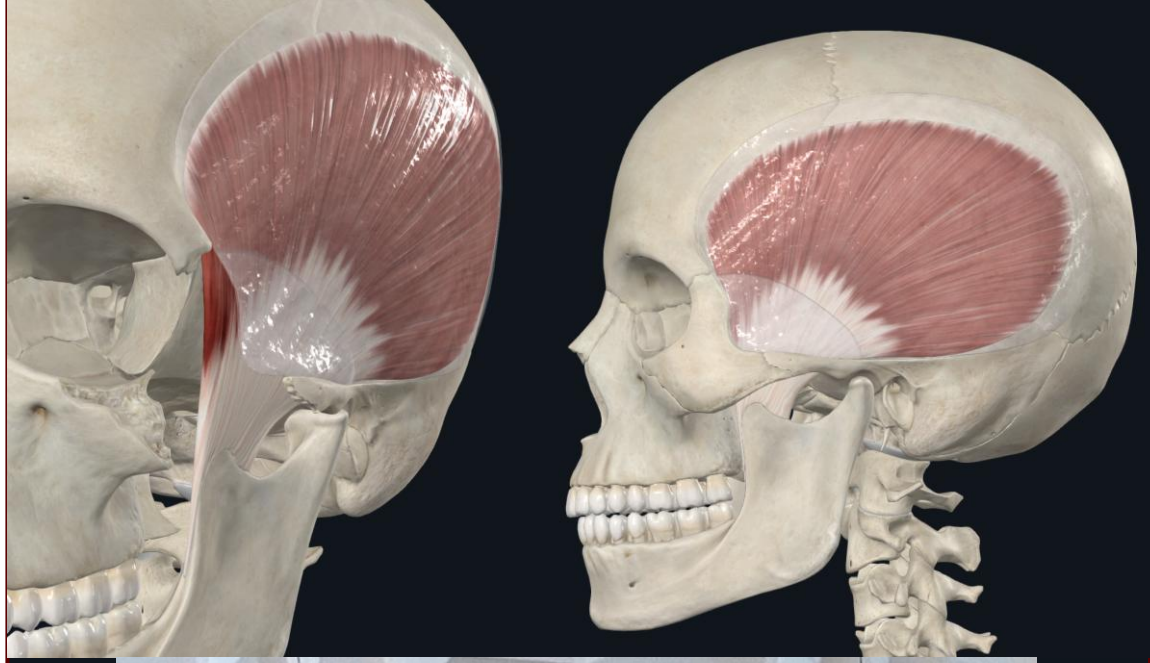
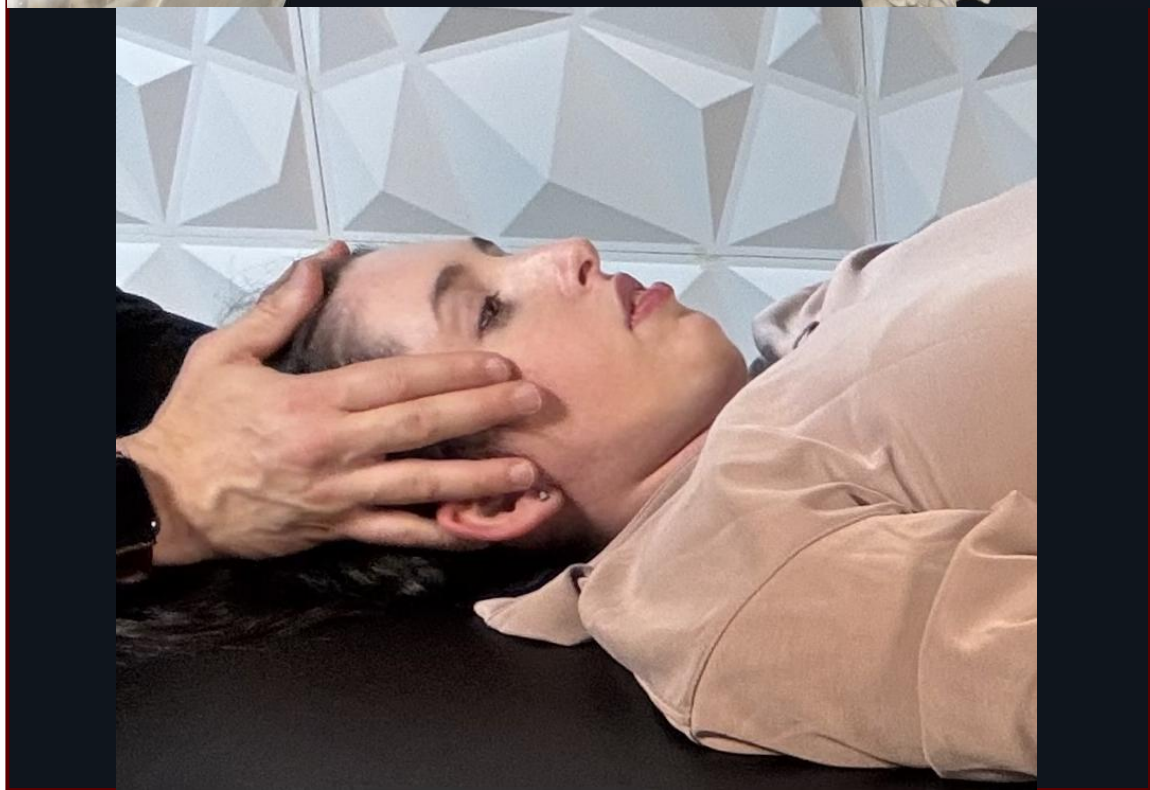
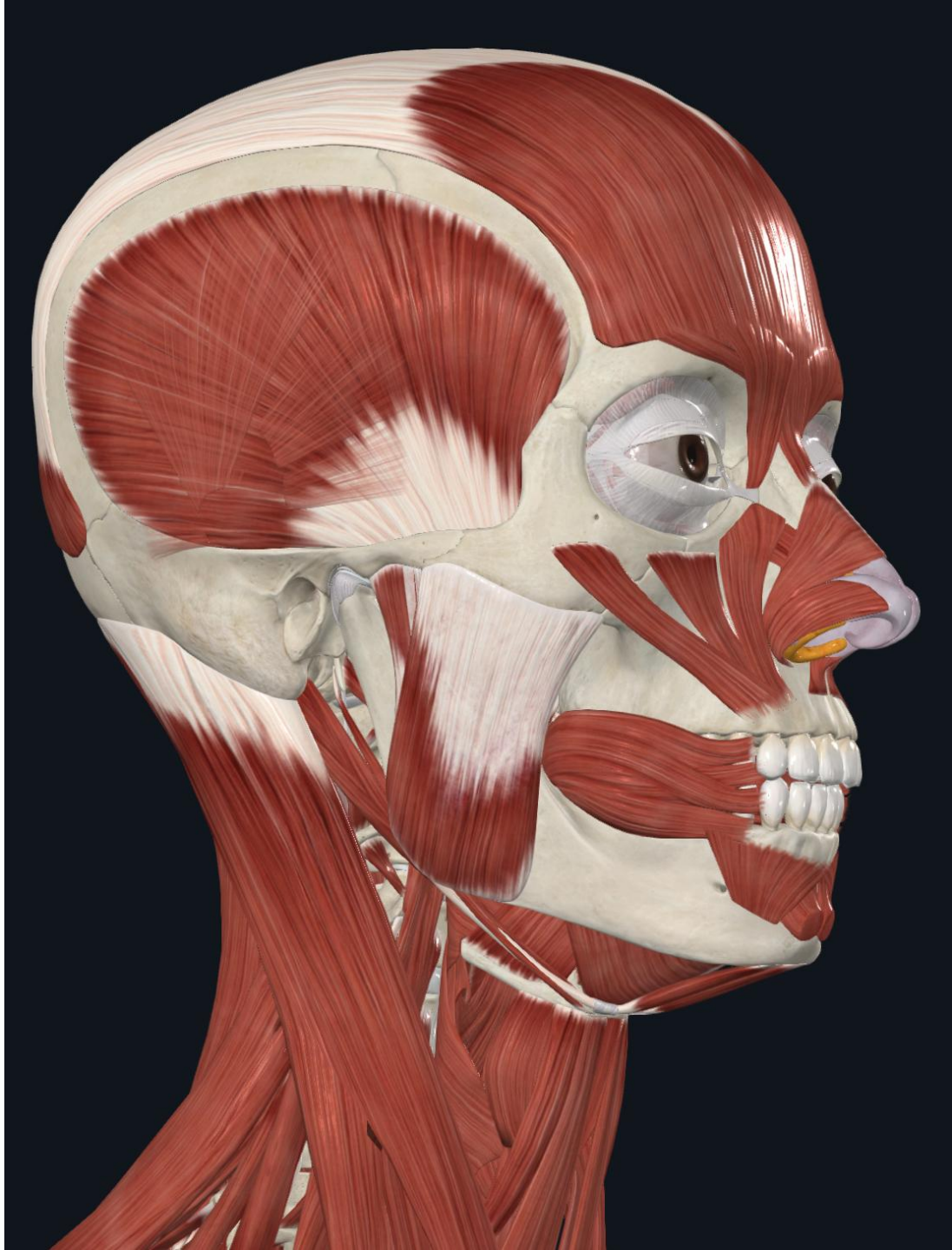
Temporalis MFR

- **Hand Contacts:** Fingers over the frontalis muscle
- **Indirect positioning** of tissues for each plane of motion for the most restricted muscle first
  - CW/CCW, S/I, L/R Lateral translation
- Then, do the same thing for the other muscle
- **Release Enhancing Maneuvers**
  - Opening/closing mouth
  - Head positioning, arm positioning, pelvis rotation
  - Respiratory Assist
- *Return to neutral & Re-examine*

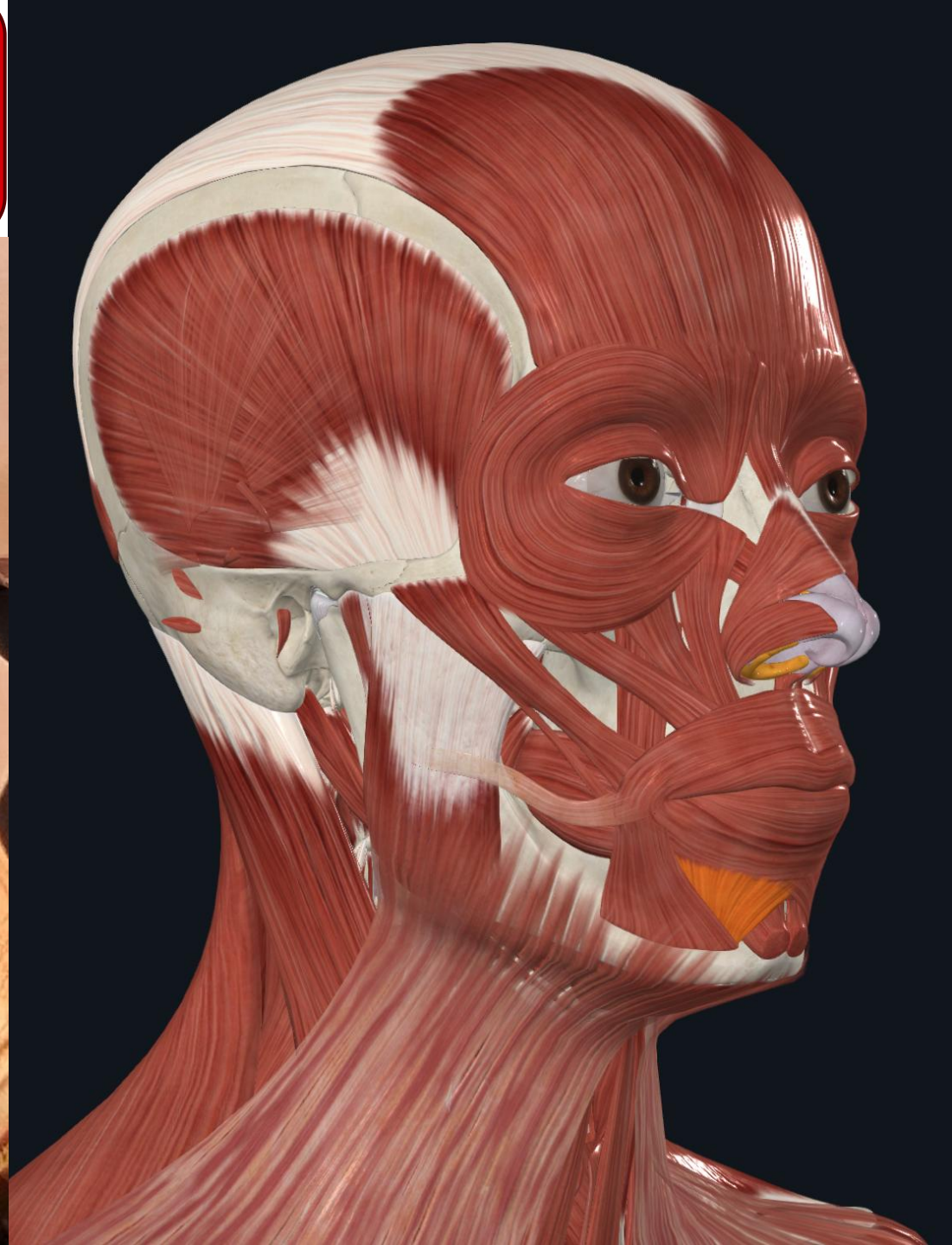


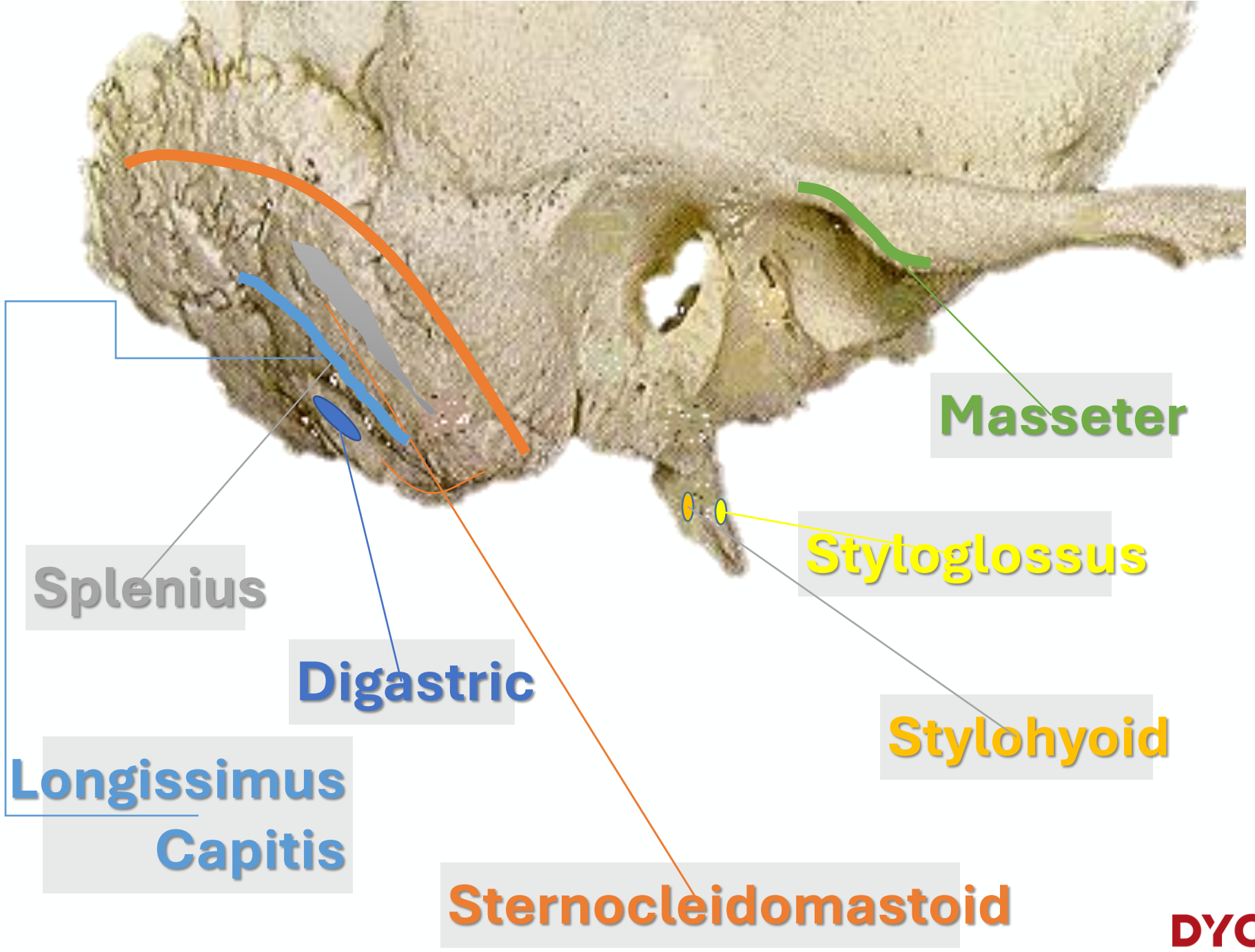


Masseter



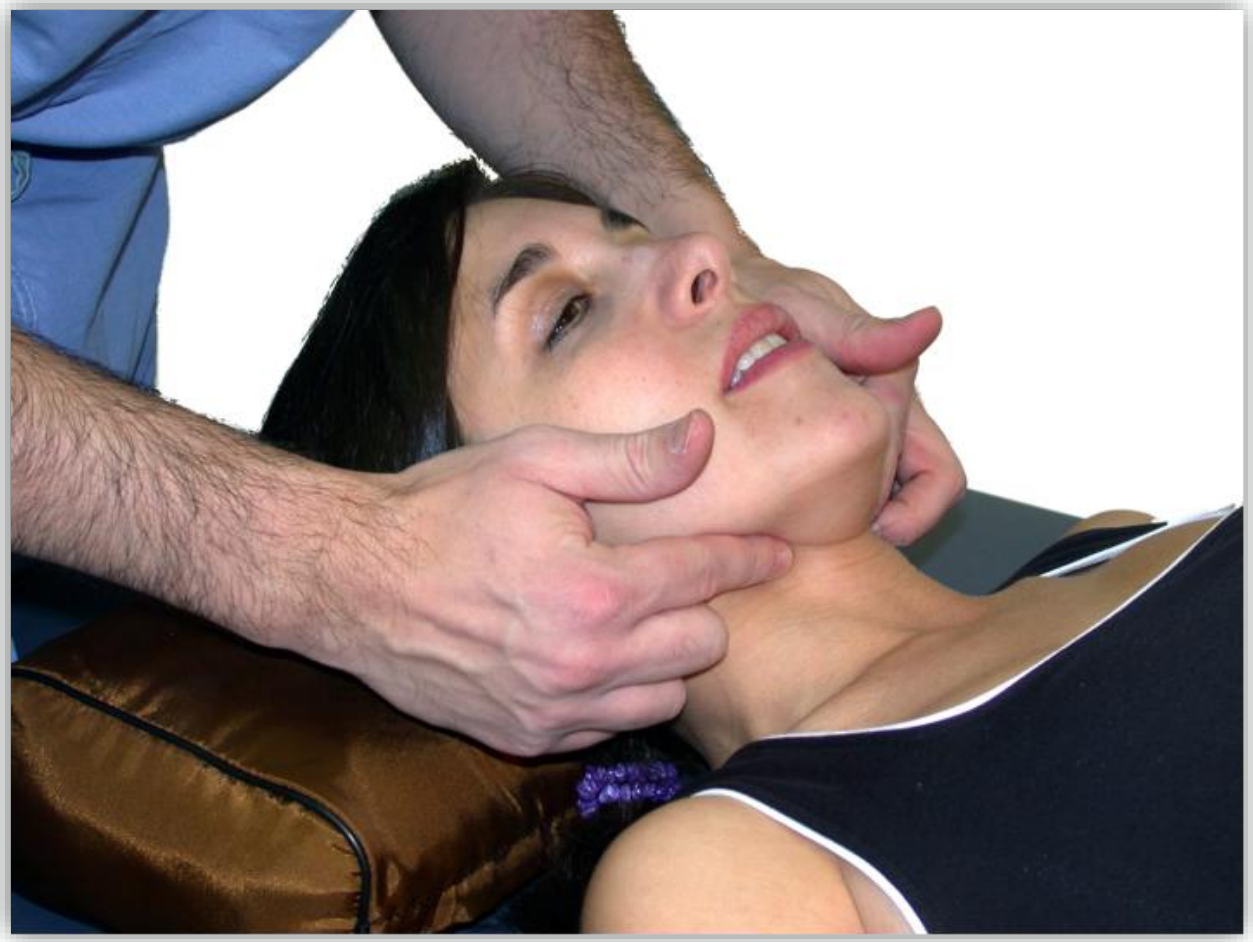
Temporalis ST





Global Hyoid Muscle Diagnosis and dMFR

- **Head Position:** on a pillow or flat
- ***Test Translation:*** translate hyoid laterally right and left
- ***dMFR:*** position hyoid to engage the restrictive barrier
- **REM:** swallowing; respiratory assist
- *Return to neutral & Re-examine*



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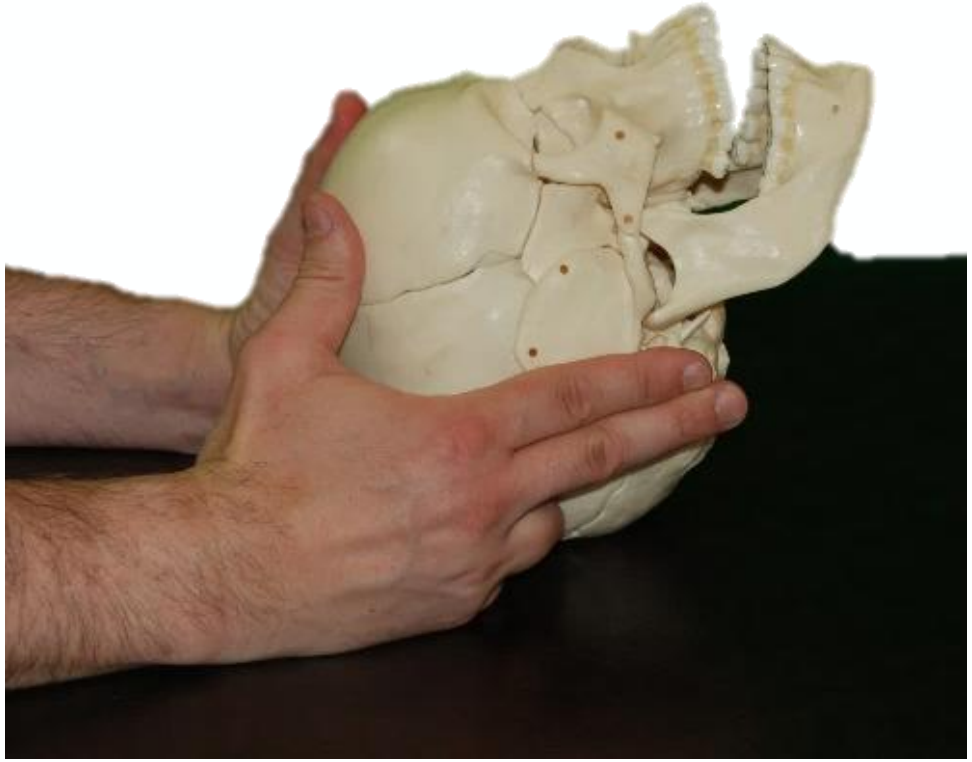
Diagnosis of Temporal dysfunctions

1. **Screening test**
   - **Draw test** – determines side of dysfunction
     - Similar to "Shelf" test for OA
2. **Assess sutures** for reduced mobility
   - **Temporoparietal suture**, esp. parietal notch
     - *Treat with **Parietal Lift***
   - **Occipitomastoid suture**
     - *Treat with "**V-spread**"*
   - **Sphenosquamous Suture**
     - *Treat with **V-spread***

Temporal Drawer Test



- Operator sits at the head.
- Contacts the inferior portion of the mastoid with his index finger,
- Gently drawing the temporal bones cephalad (superiorly), either simultaneously or one at a time.
- **POSITIVE**: Restriction of motion indicates a positive draw test.

Fluid Techniques: V-Spread

- Direct action to separate suture
- Assisted by CSF fluid fluctuation
- Set up a cyclic fluid wave synchronous with inhalation and exhalation phases.

Fluid Techniques: V-Spread

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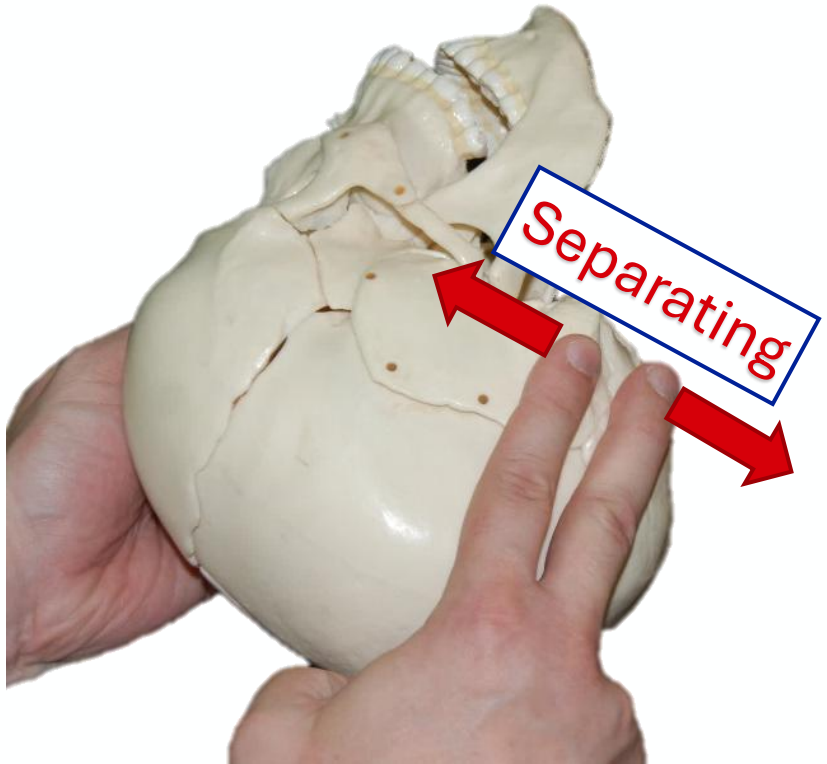

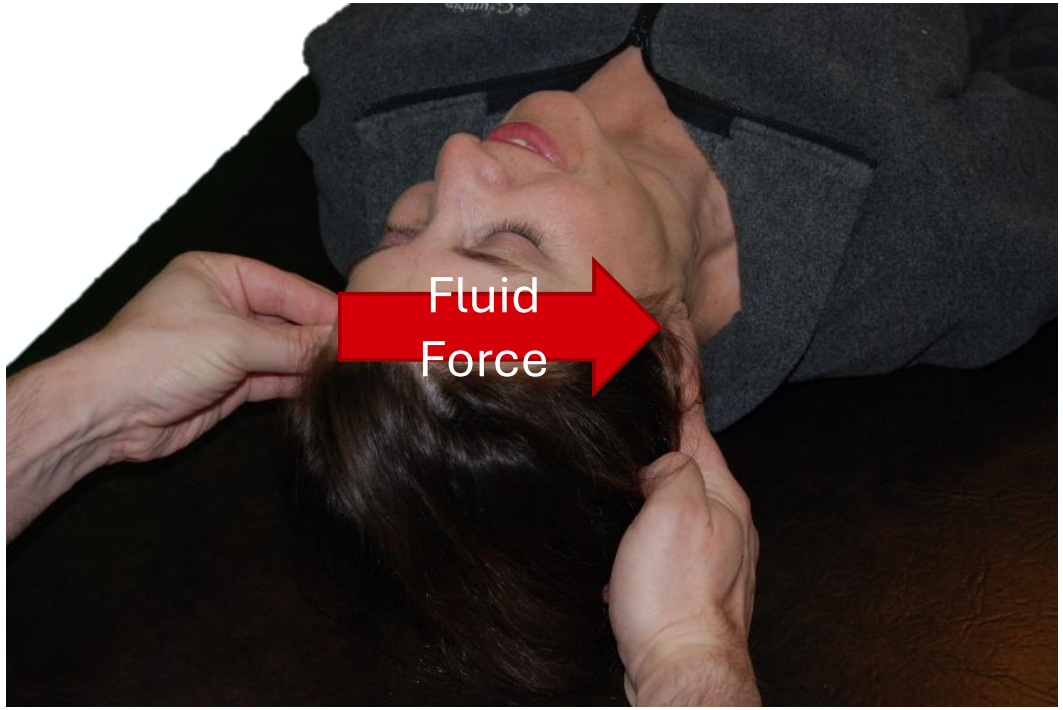

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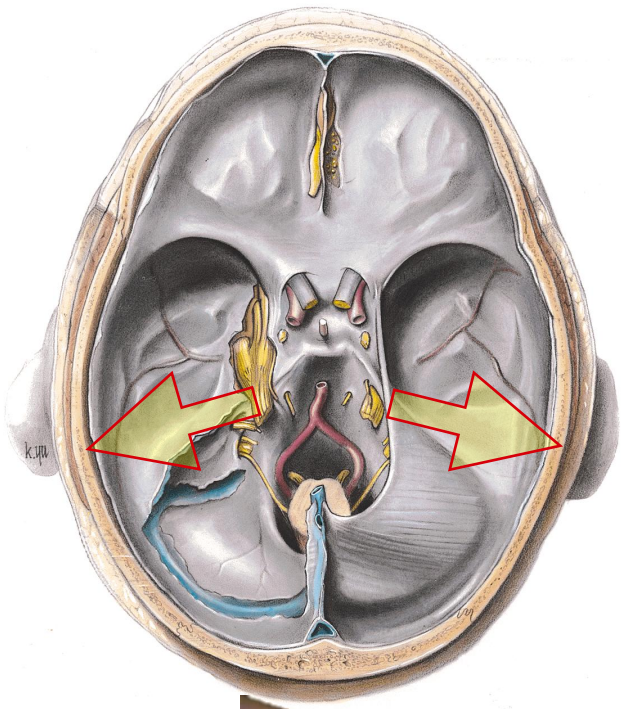
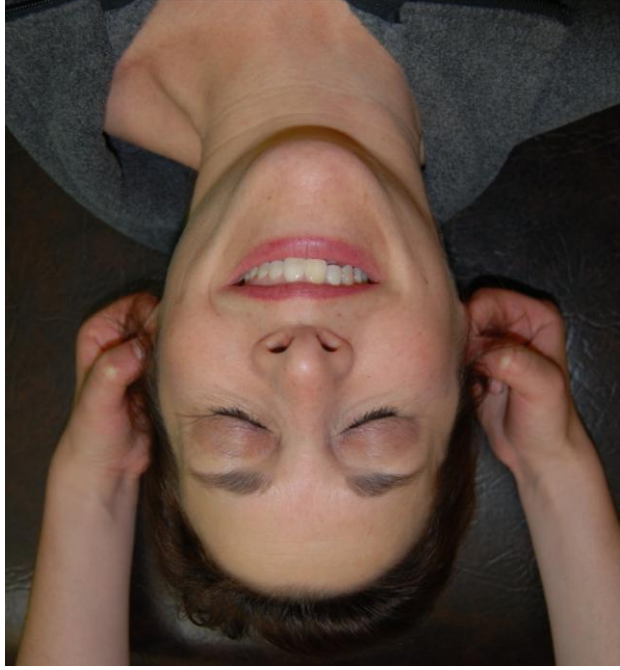
Temporal Pull MFR

- Use a pincer grip on the pinnae as close to the temporal bones as possible
- Apply traction laterally and posteriorly along a vector that parallels the the petrous ridge of the temporals
- Encourage the inhalation phase and take up the slack maintaining tension at the *feather's edge* of the restrictive barrier until a release is felt

*Tentorium rebalancing through temporal traction





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     - *Treat with **"V-spread"***
   - **Sphenosquamous Suture**
     - *Treat with **V-spread***

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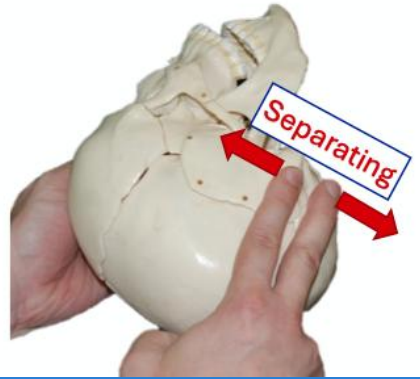

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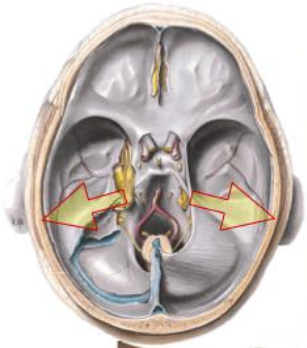

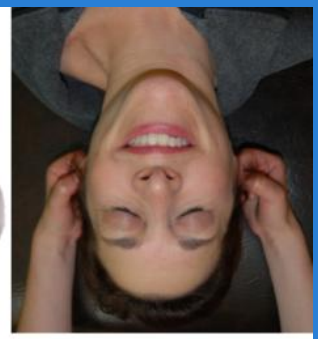

Frontal Bones

by Jay B. Danto, DO

Image is from 3D4Medical's EssentialSkeleton4 application

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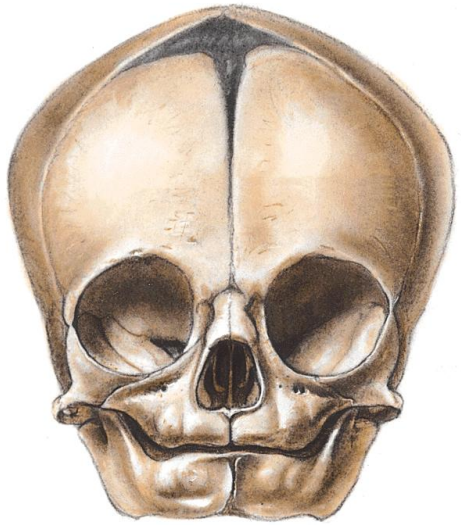
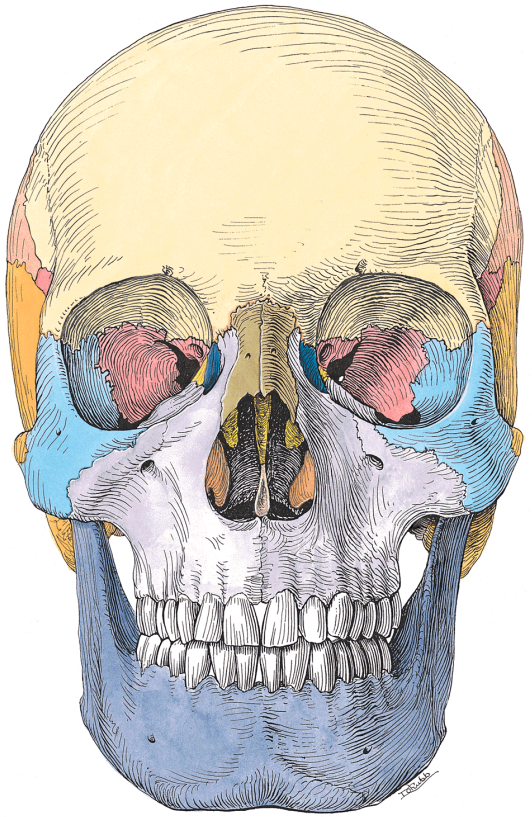
Frontal Anatomic Considerations

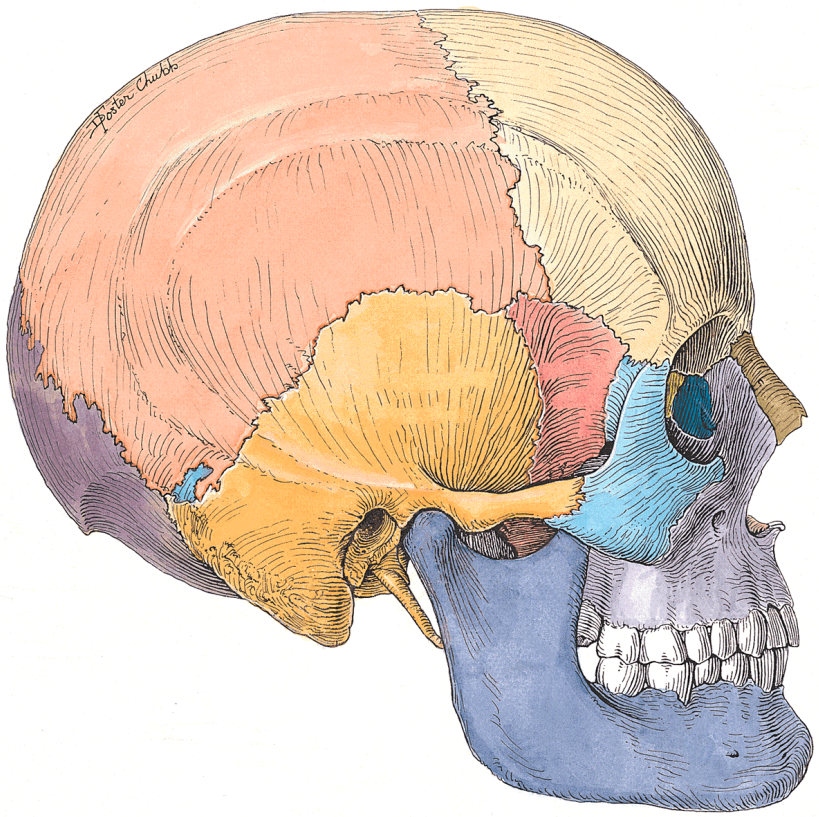
- Considered paired only because, in infancy, it is two structures
- Metopic suture (remains in 10% of adults)
- Forms roof of orbits
- Superior border of anterior nasal fossa

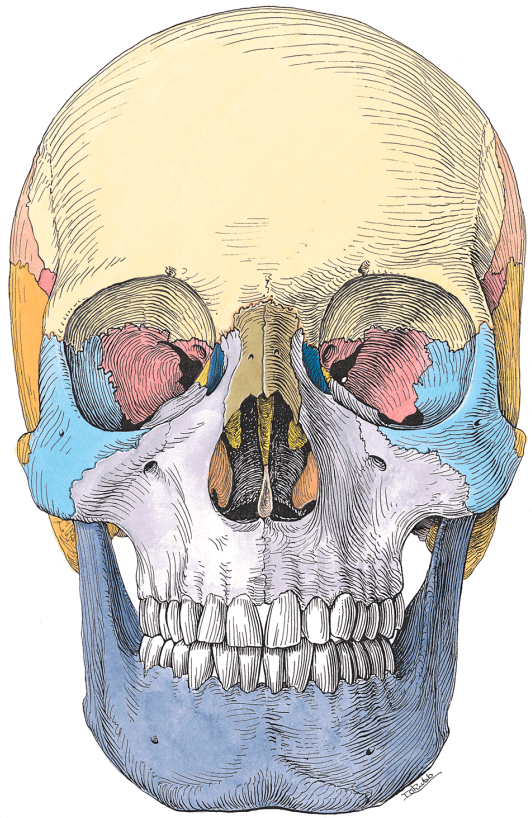




Frontal Bone Articulations

- Parietals
- Sphenoid
- Ethmoid
- Lacrimals
- Maxillae
- Nasals
- Zygoma





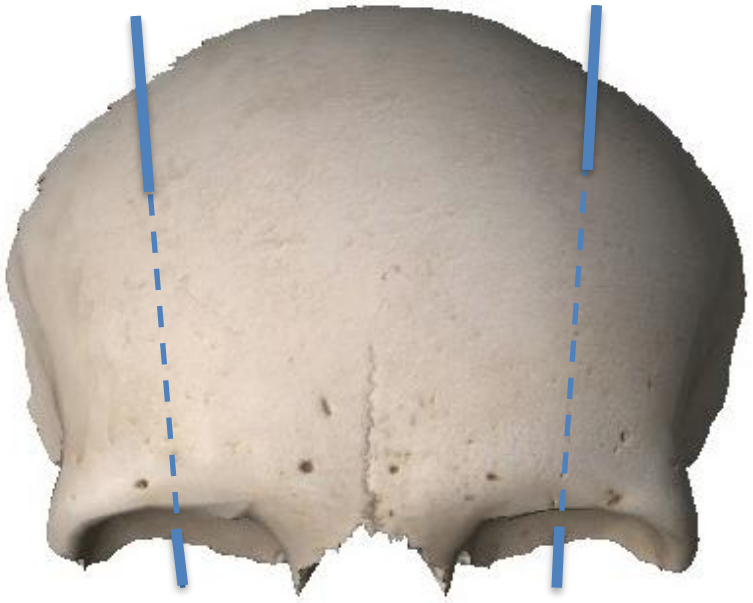
Frontal Bone Physiologic Motion

Axis *(moves as if still 2 bones)*

- *Metopic has hinge-like action*
- *Coronal plane motion*
- *Moves from center of orbital roof through frontal eminence*

Motion

- ***External rotation** (during SBS flexion): Lateral side moves anterior/lateral and slightly inferior, glabella moves posteriorly*
- ***Internal rotation** (during SBS extension): Lateral side moves Posterior/medial and slightly superior, glabella moves anteriorly*



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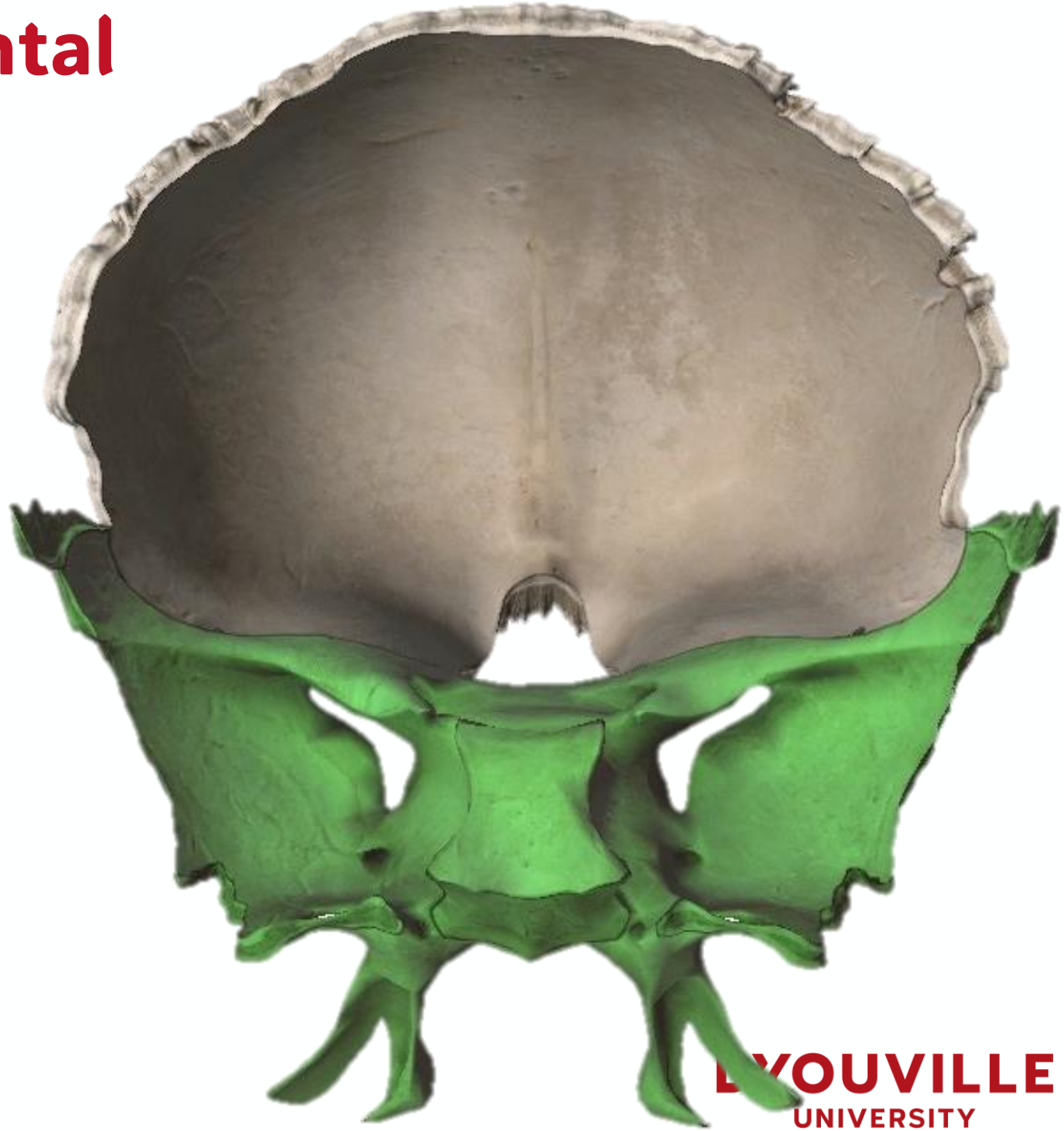
Sphenoid Moves the Frontal During External Rotation

Sphenoid Moves the Frontal During External Rotation



Bilateral Frontalis MFR

- **Contacts:** Place the finger pads over the frontalis muscle on either side
- **Indirect positioning** of tissues for each plane of motion for the most restricted side first
  - CW/CCW, S/I, L/R Lateral translation
- Then, do the same thing for the other side
- **Release Enhancing Maneuvers**
  - Head positioning, arm positioning, pelvis rotation
  - Respiratory Assist
- *Return to neutral & Re-examine*

Bilateral Ocipitalis MFR

- **Contacts:** Place the finger pads over the occipitalis muscle on either side
- **Indirect positioning** of tissues for each plane of motion for the most restricted side first
  - CW/CCW, S/I, L/R Lateral translation
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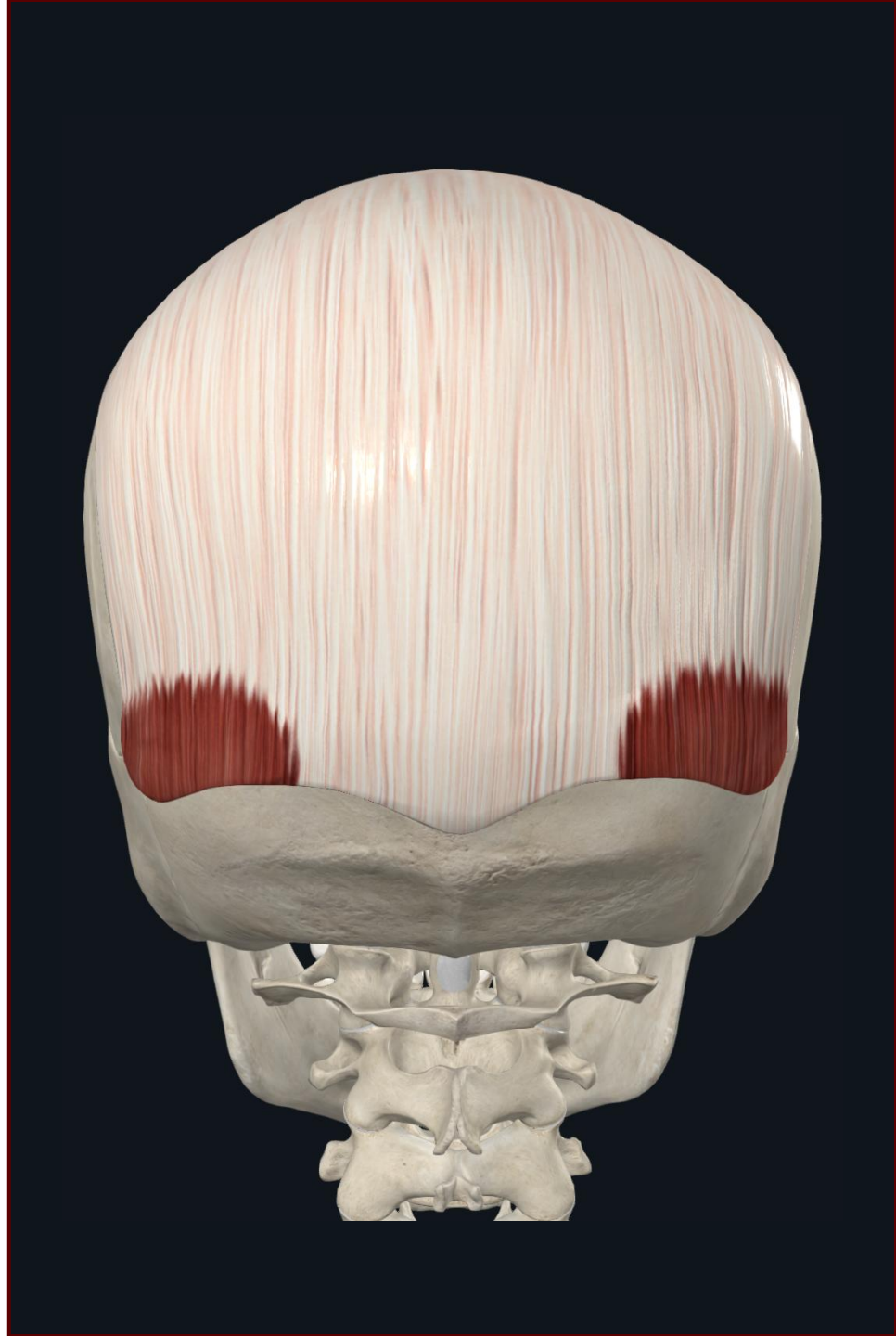

Contralateral Occipitalis-Frontalis MFR

- **Anterior Hand:** Finger pads over one frontalis muscle
- **Posterior Hand:** Other finger pads over the contraslateral occiput
- **Indirect positioning** of tissues for each plane of motion for the most restricted muscle first (Frontalis or Occipitalis)
  - CW/CCW, S/I, L/R Lateral translation
- Then, do the same thing for the contralateral other muscle
- **Release Enhancing Maneuvers**
  - Head positioning, arm positioning, pelvis rotation
  - Respiratory Assist
- *Return to neutral & Re-examine*

Occipitalis-Frontalis MFR

- **Anterior Hand:** Fingers over the frontalis muscle
- **Posterior Hand:** Cups the occiput
- **Indirect positioning** of tissues for each plane of motion for the most restricted muscle first (Frontalis or Occipitalis)
  - CW/CCW, S/I, L/R Lateral translation
- Then, do the same thing for the other muscle
- **Release Enhancing Maneuvers**
  - Head positioning, arm positioning, pelvis rotation
  - Respiratory Assist
- *Return to neutral & Re-examine*

Bilateral Frontalis MFR

- **Contacts:** Place the finger pads over the frontalis muscle on either side
- **Indirect positioning** of tissues for each plane of motion for the most restricted side first
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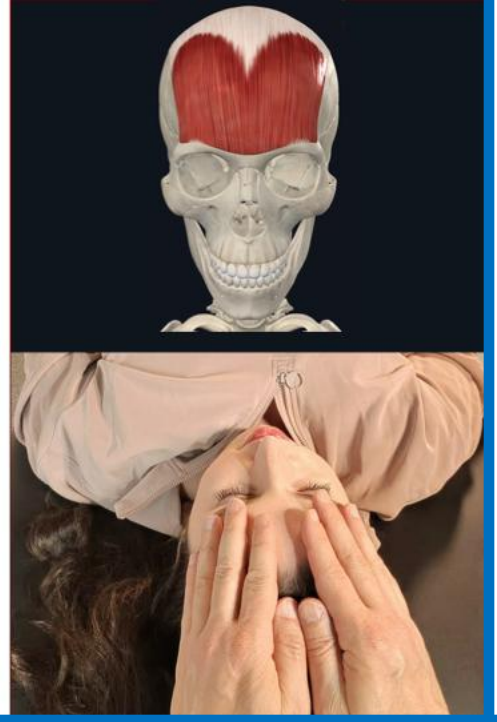
  - Respiratory Assist
- *Return to neutral & Re-examine*



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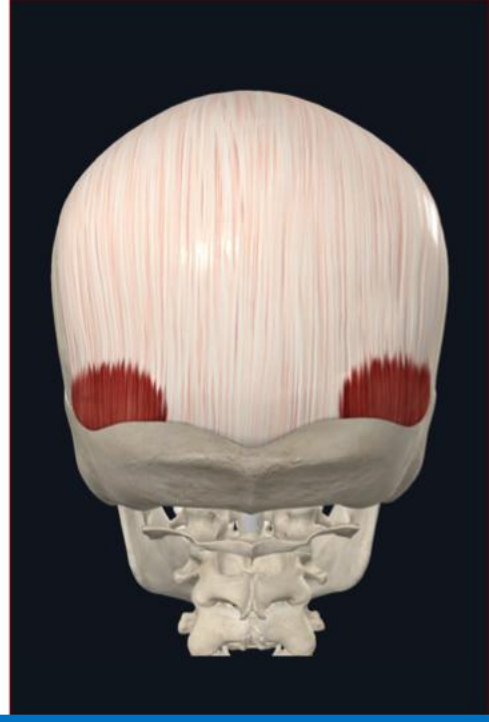
- *Return to neutral & Re-examine*



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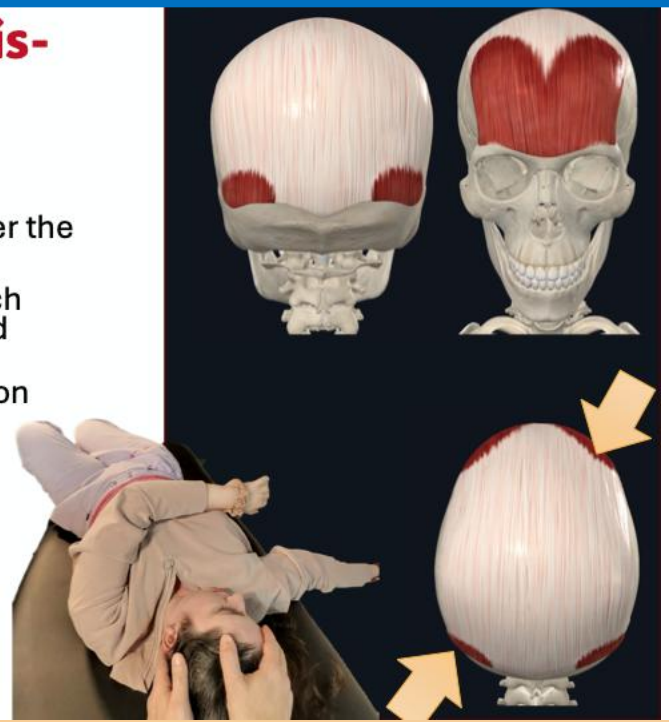

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- **Release Enhancing Maneuvers**
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  - Respiratory Assist
- *Return to neutral & Re-examine*

Sphenoid INR Techniques

Lab 4: Dura Palpation & MFR

by Jay B. Danto, DO

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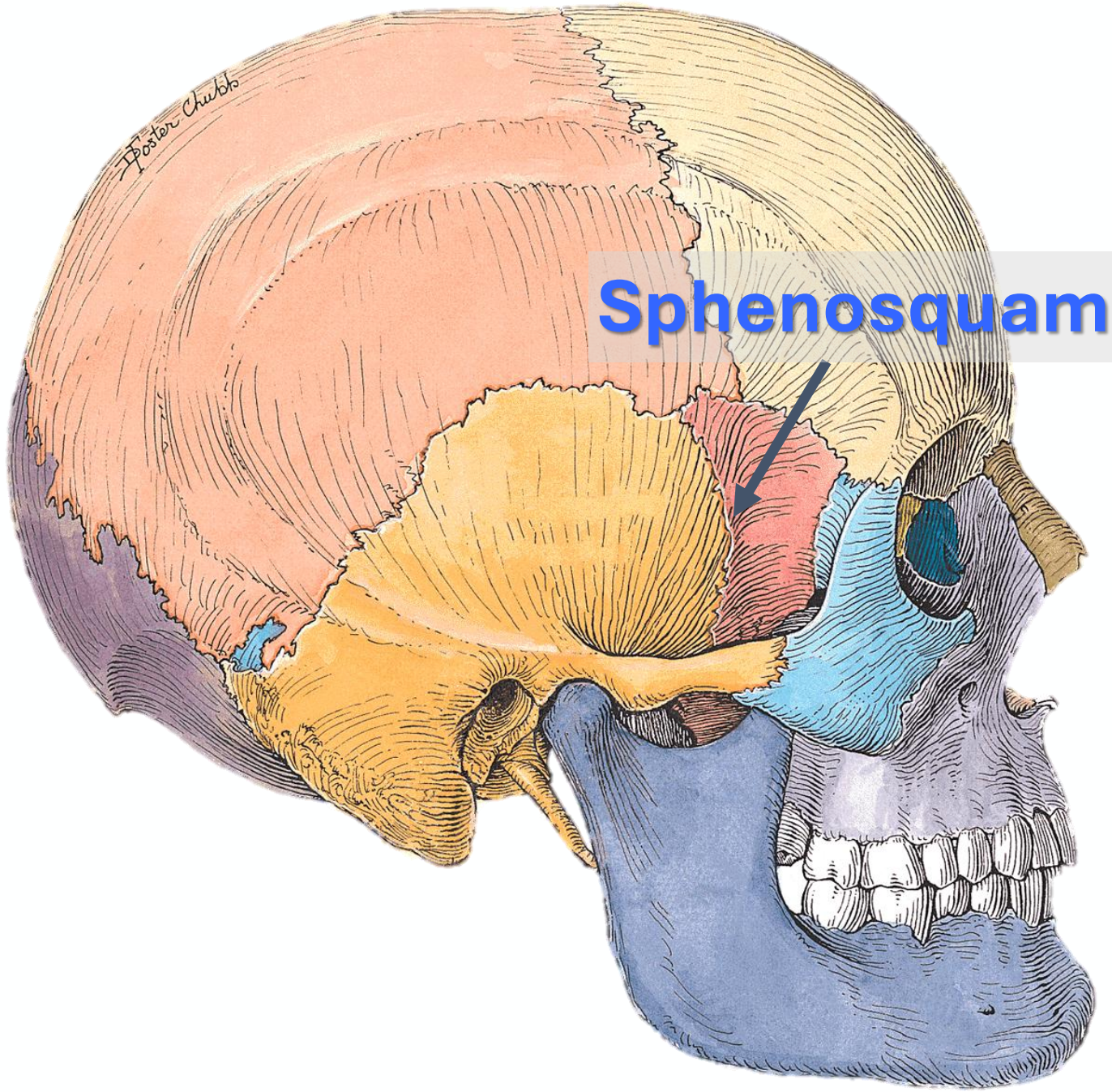

DX - Sphenosquamous Suture

Feel for fullness as temporal bone goes into ER and Sphenoid goes into flexion

- ***Positive finding:*** *absence of fullness at the SS suture with flexion*

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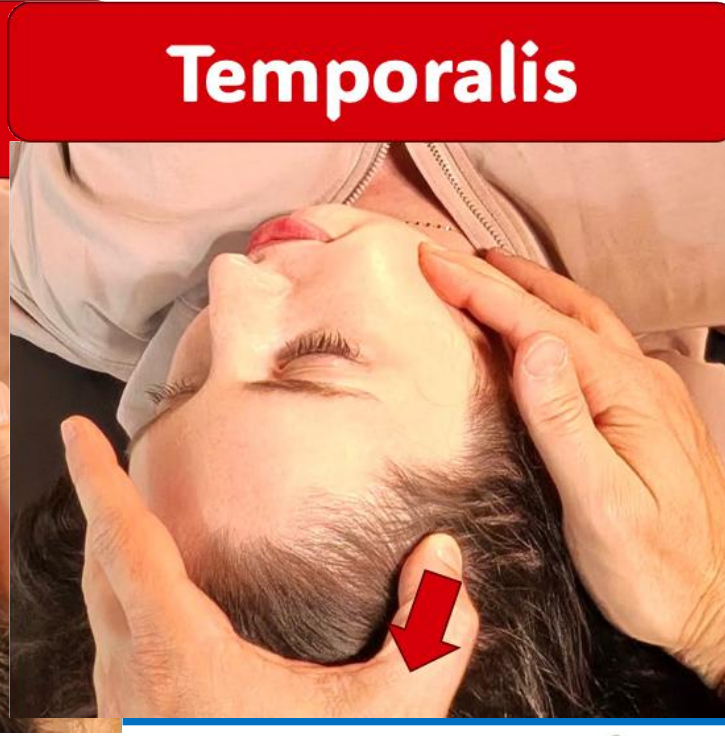
V-Spread of the Spheno-Squamous Pivot

- Index and middle finger pads apply separating force perpendicular to the long axis of the suture
- The other hand contacts the opposite side of head, diagonally across from suture (*around the area of the parietal eminence)* and applies rhythmic pressure in the amount of only 1-2 ounces
- Maintain separating force u

Temporalis MFR

- **Hand Contacts:** Fingers over the frontalis muscle
- **Indirect positioning** of tissues for each plane of motion for the most restricted muscle first
  - CW/CCW, S/I, L/R Lateral translation
- Then, do the same thing for the other muscle
- **Release Enhancing Maneuvers**
  - Opening/closing mouth
  - Head positioning, arm positioning, pelvis rotation
  - Respiratory Assist
- *Return to neutral & Re-examine*



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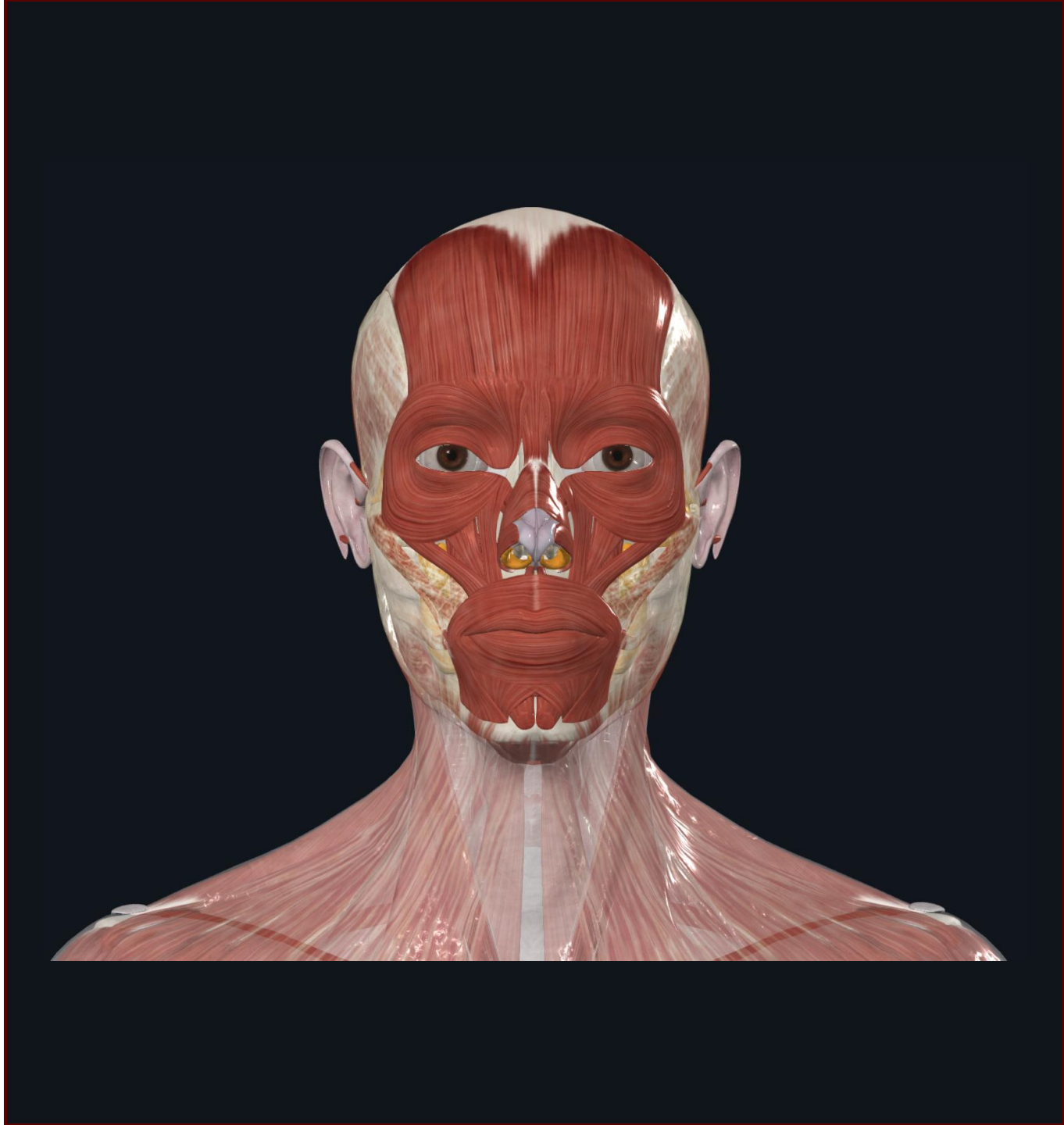
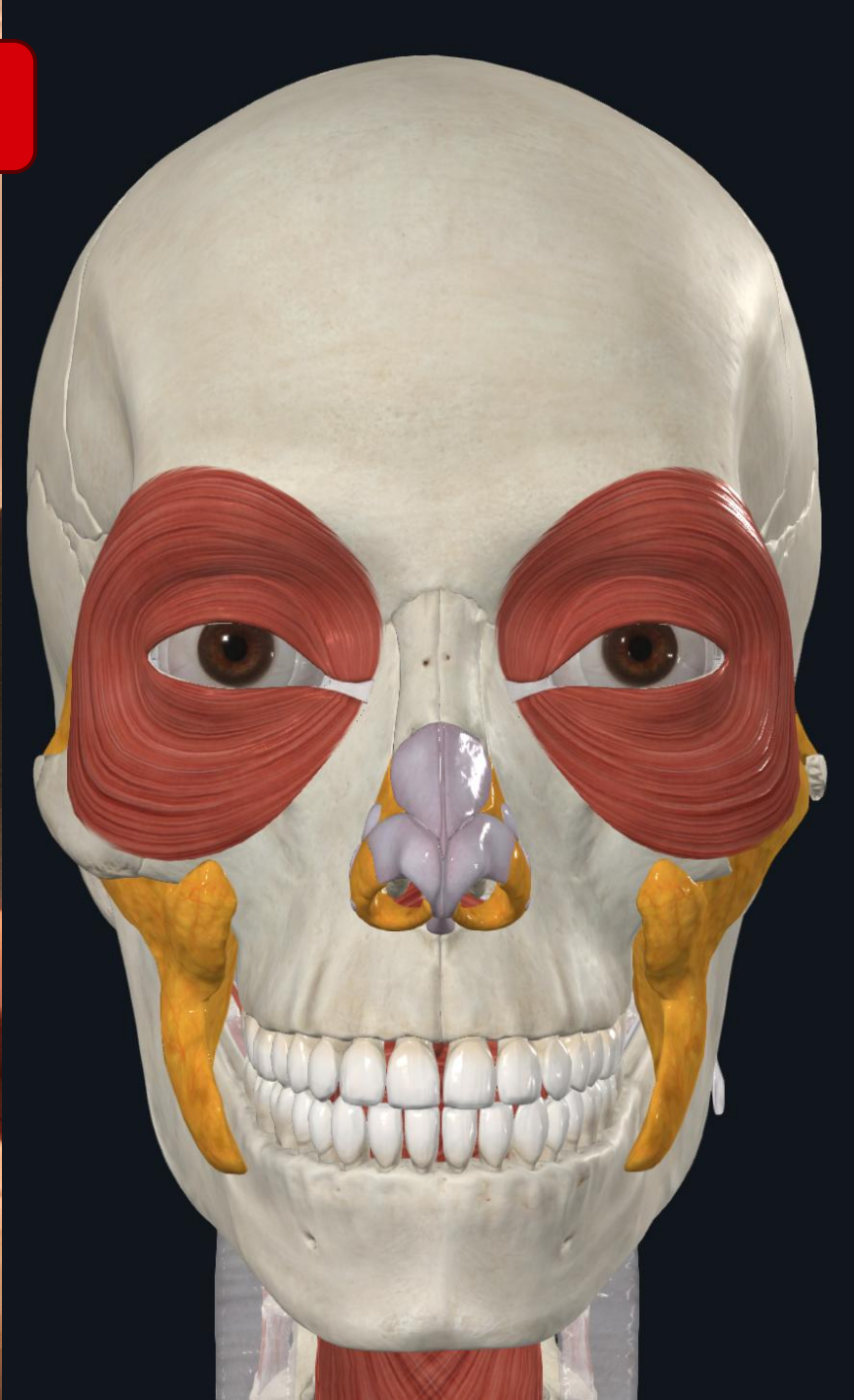
Facial Diagnosis & MFR

Jay B. Danto, DO

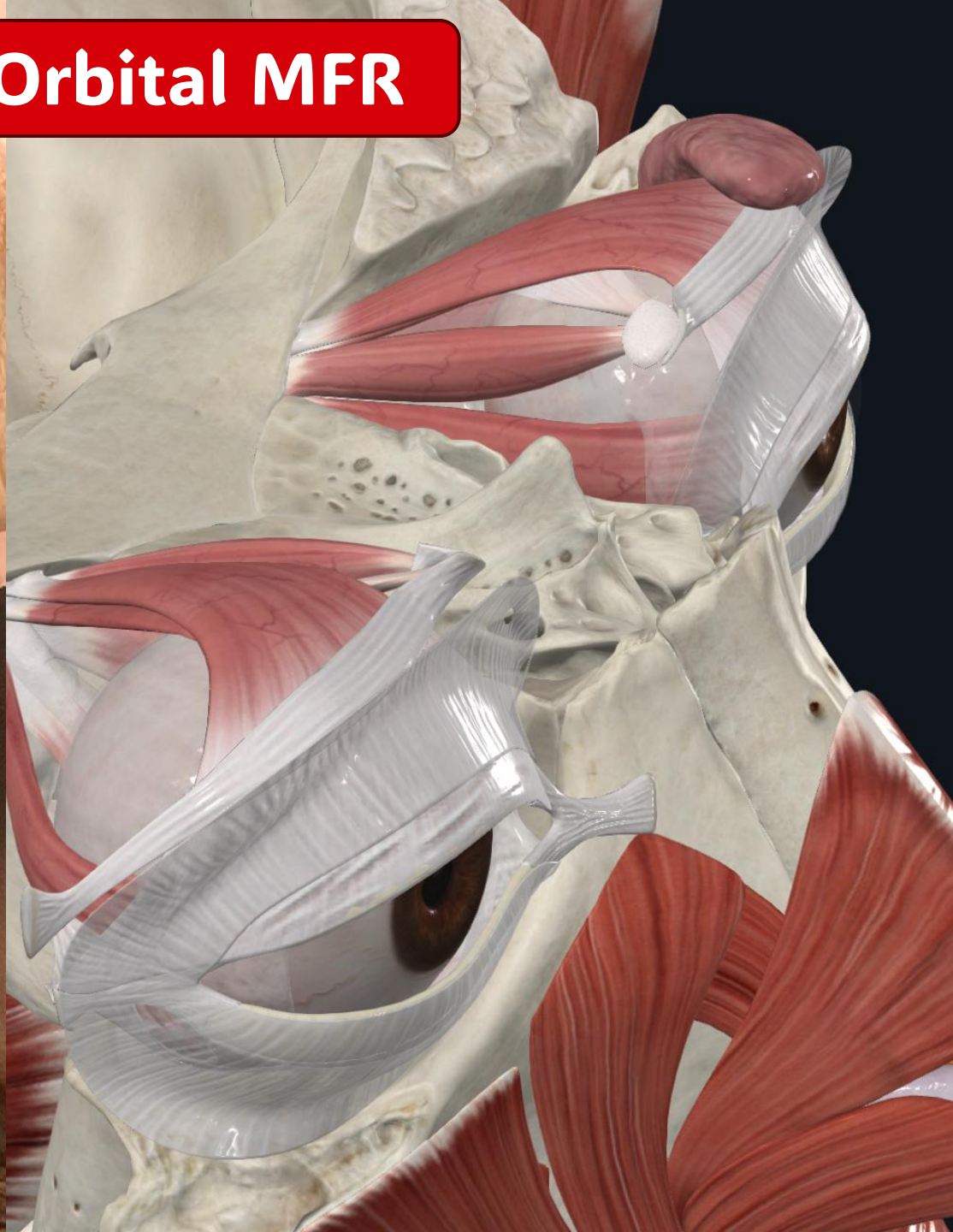
DYOUVILLE UNIVERSITY
OMM DEPARTMENT



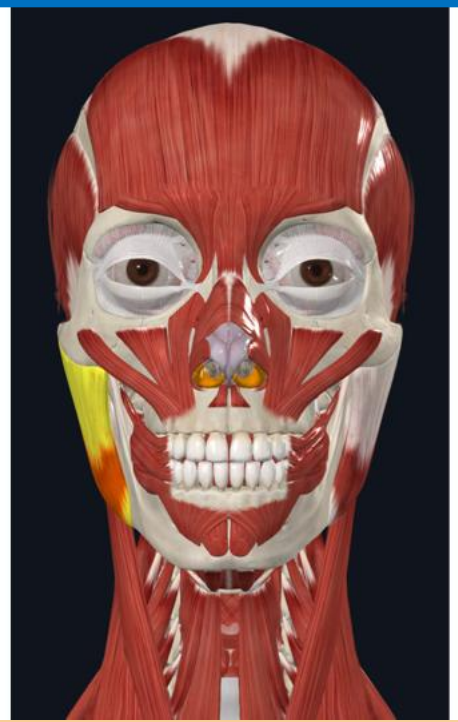
Orbicularis Oculi

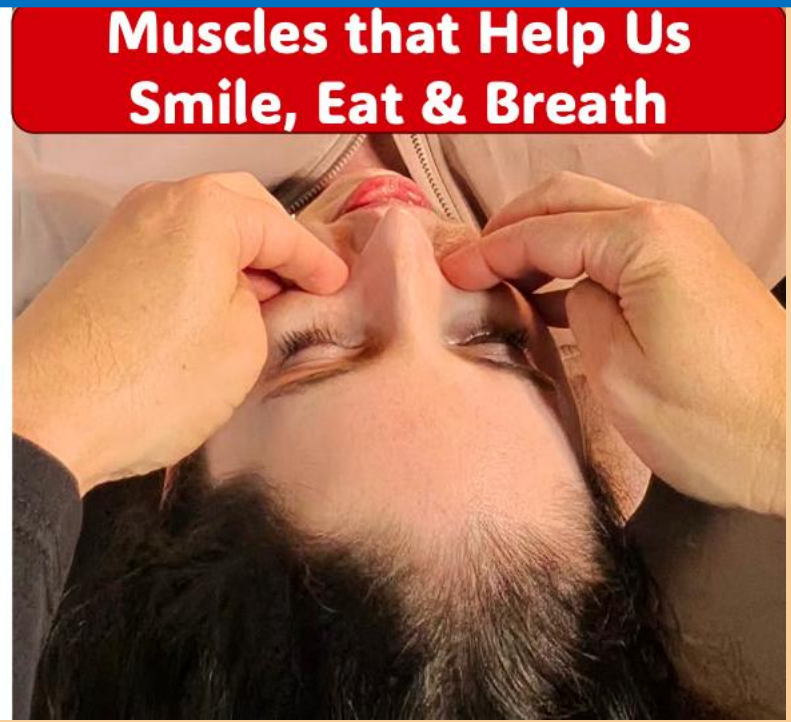


Orbicularis Oculi & Orbital MFR



Muscles that Help Us Smile, Eat & Breath





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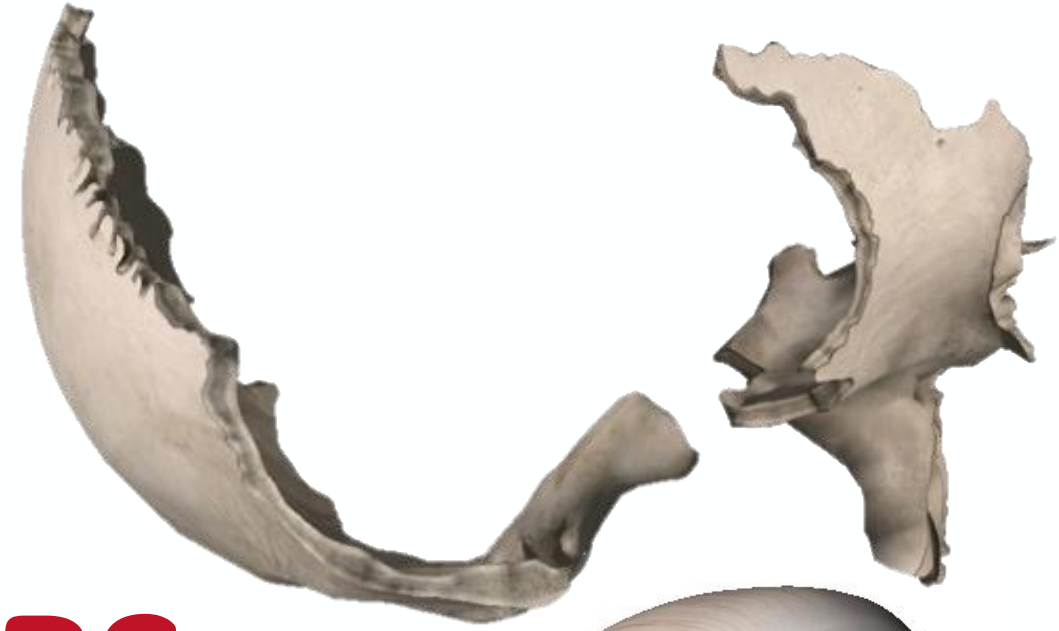


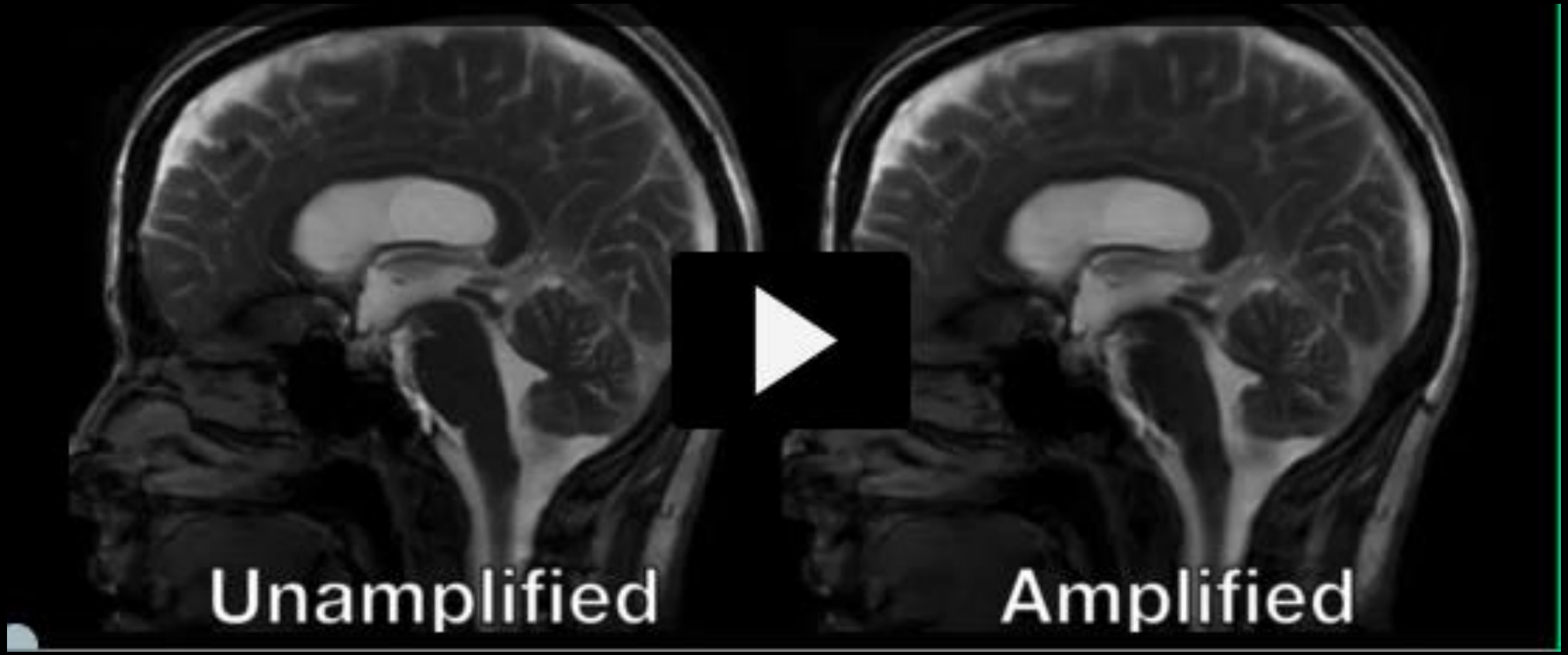
Myofascial Reflections of SBS Motion Dx & MFR

Myofascial Osteopathic Cranial Manipulative Medicine

by Jay B. Danto, DO

DYOUVILLE UNIVERSITY

Mobility of the Brain

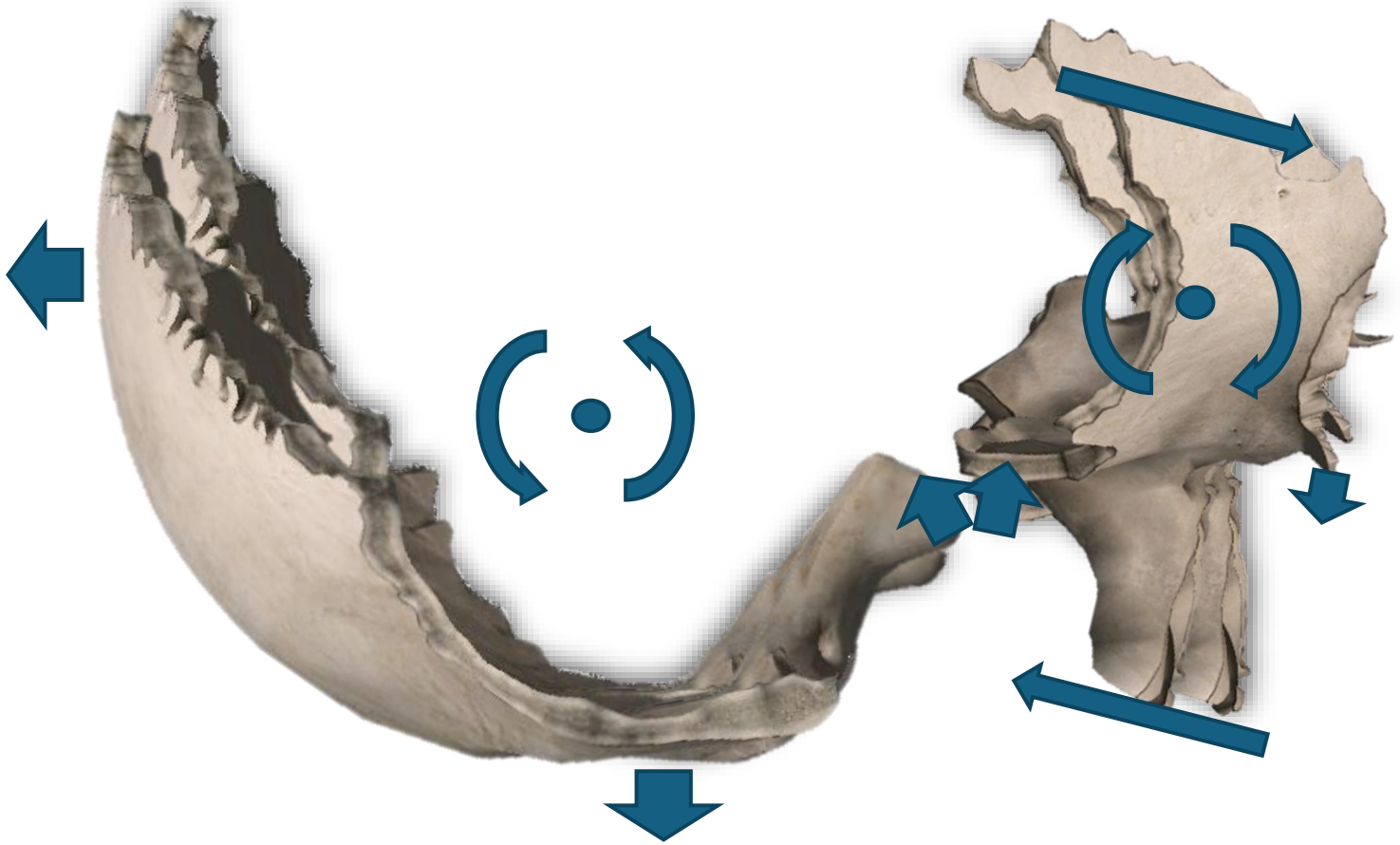


Itamar Terem, Wendy W. Ni, Maged Goubran, Mahdi Salmani Rahimi, Greg Zaharchuk, Kristen W. Yeom, Michael E. Moseley, Mehmet Kurt, Samantha J. Holdsworth, “Revealing sub-voxel motions of brain tissue using phase-based amplified MRI (aMRI).” Magnetic Resonance in Medicine. May 30, 2018

Physiologic Motion: Flexion

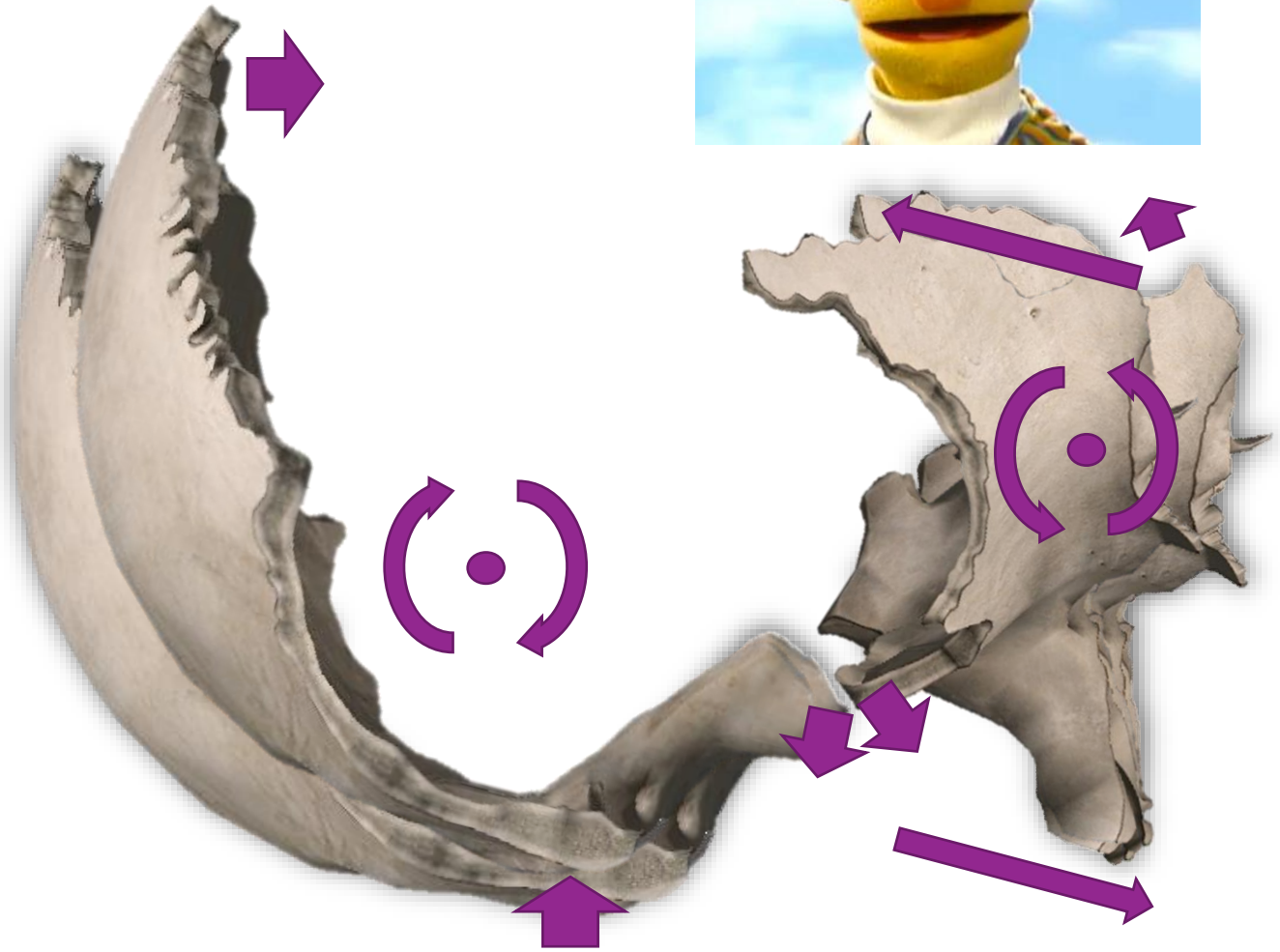
Flexion: SBS rises superiorly as the distance decreases between the inferior angle of the sphenoid and occiput decreases toward the mid-position.

- Basi-occiput & Basi-sphenoid moves superiorly
- Occipital squama moves inferiorly and posteriorly
- Greater wing moves inferiorly and anteriorly

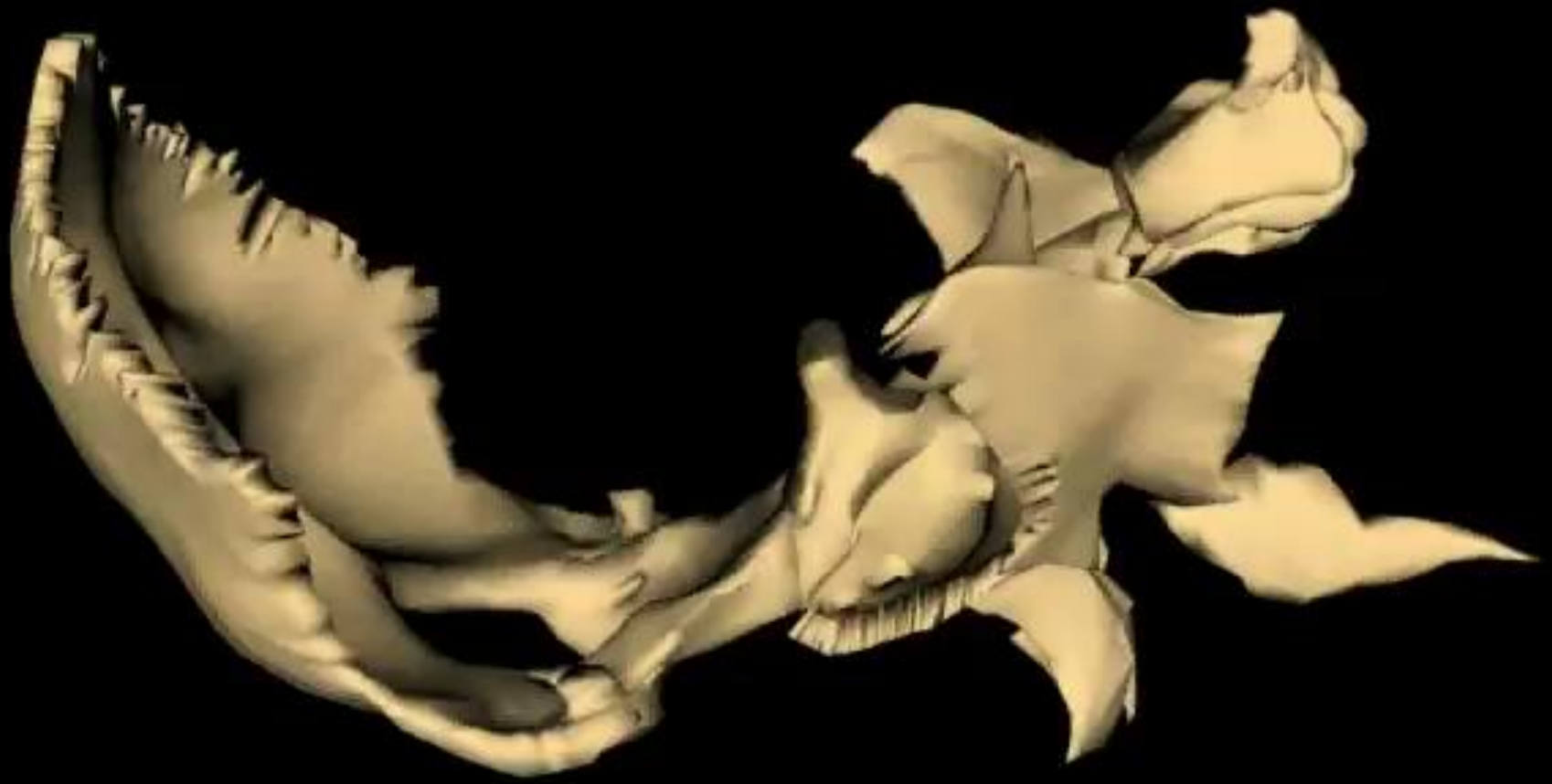


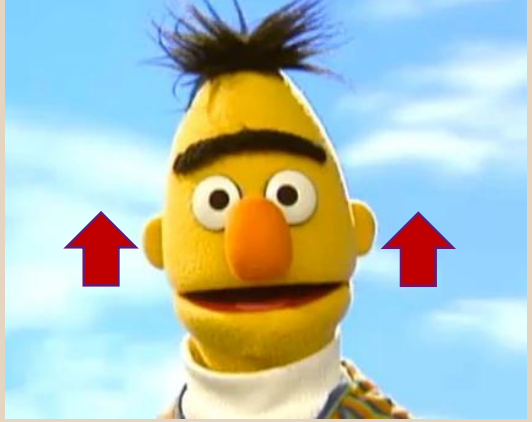
Physiologic Motion: Extension

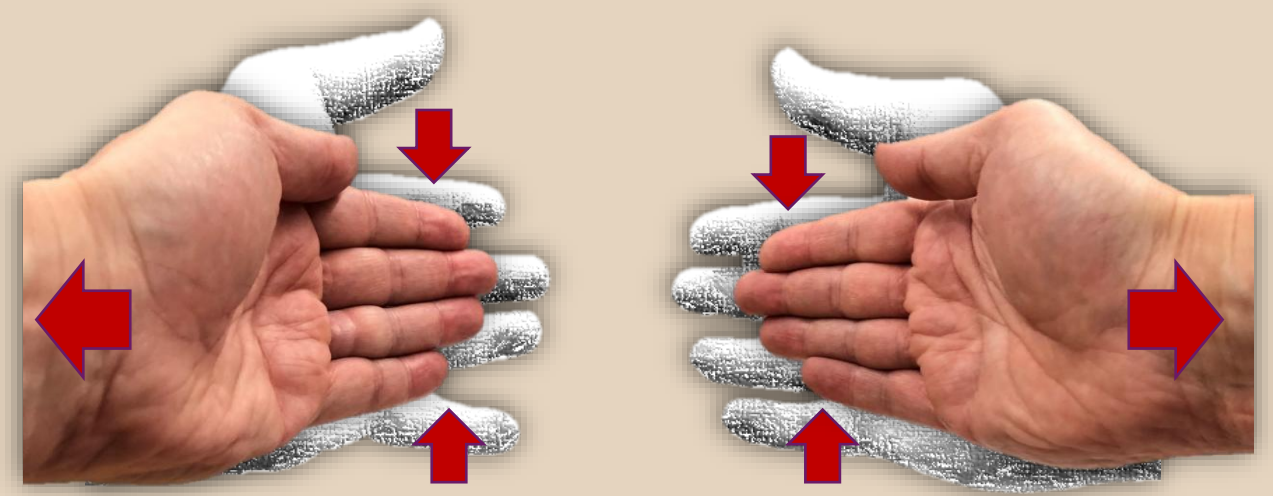
- **Extension:** SBS moves inferiorly as the distance increases between the inferior angle of the sphenoid and occiput increases toward the mid-position.
  - Basi-occiput & Basi-sphenoid moves inferiorly
  - Occipital squama moves superiorly and anteriorly
  - Greater wing moves superiorly and posteriorly



Flexion & Extension







Flexion

fingers spread apart and move away from you

Extension

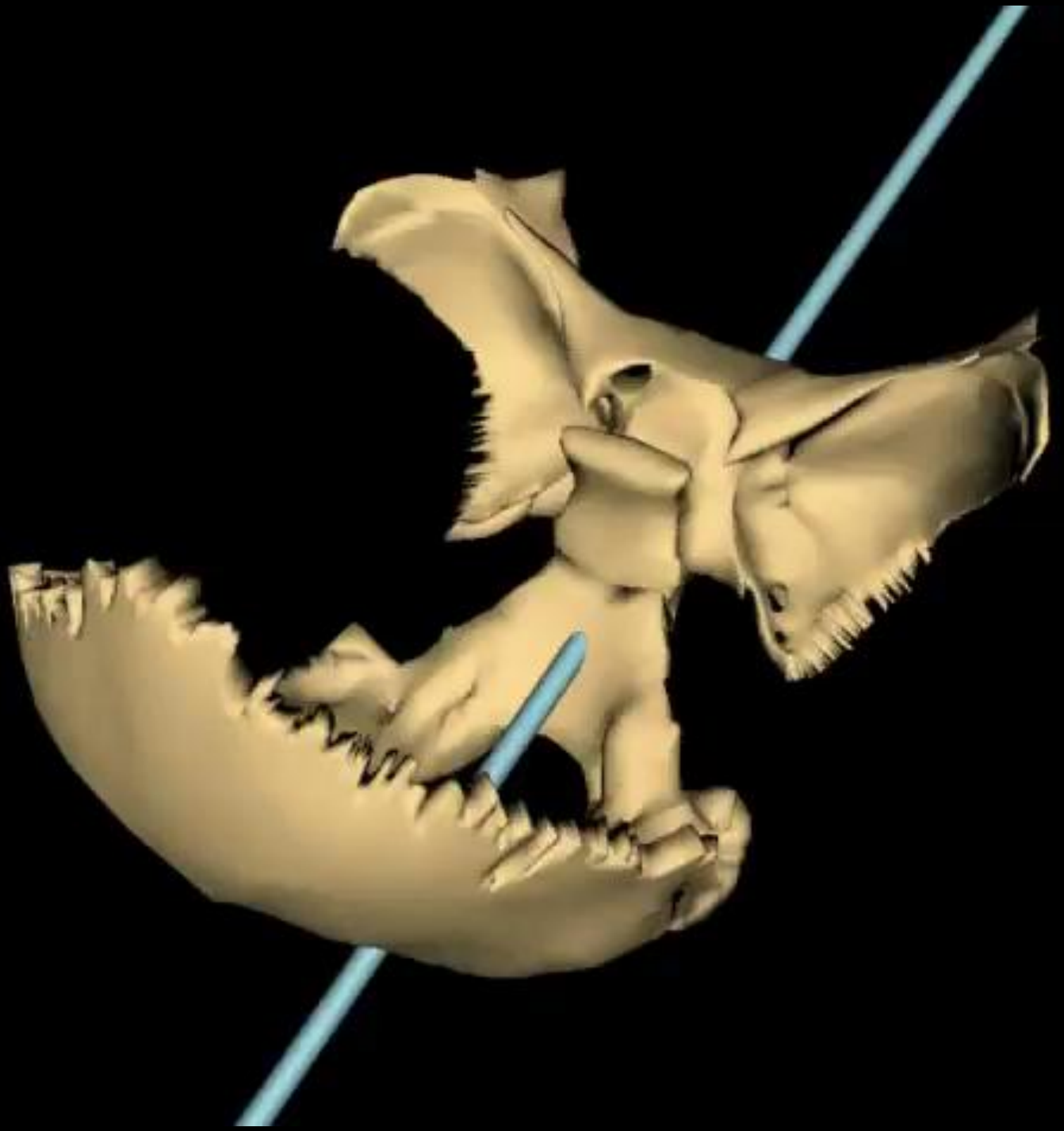
fingers approximate and move towards you

SBS: Torsion

- **History**: trauma may be significant
- **General contours**: sphenoid and occiput rotate in opposite directions around an AP axis
- **Naming:** ***right/left torsion*** designated by the superior sphenoid greater wing side

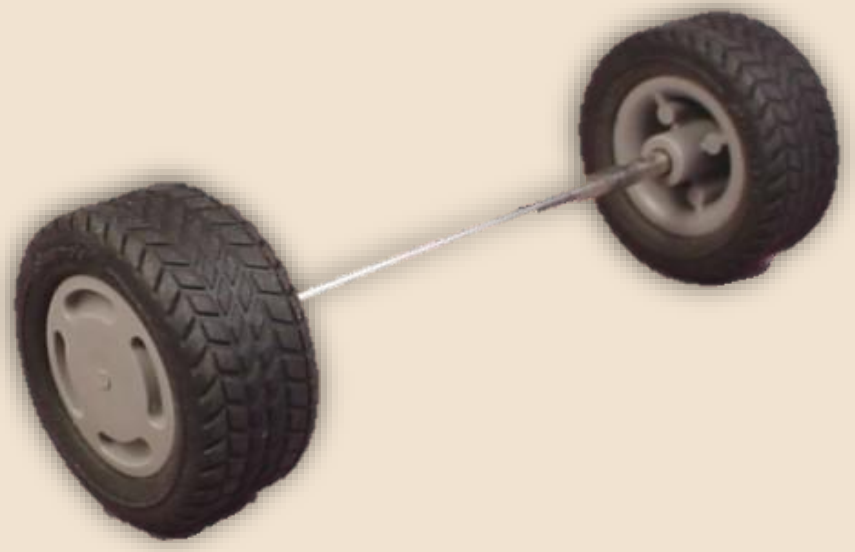
Right SBS Torsion

Torsion



Torsion

Palpatory Experience



One hand's finger pads move superiorly while the finger pads of the other hand move inferiorly.

Right SBS Torsion:

Finger pads of right hand move superiorly & the left finger pads move inferiorly.

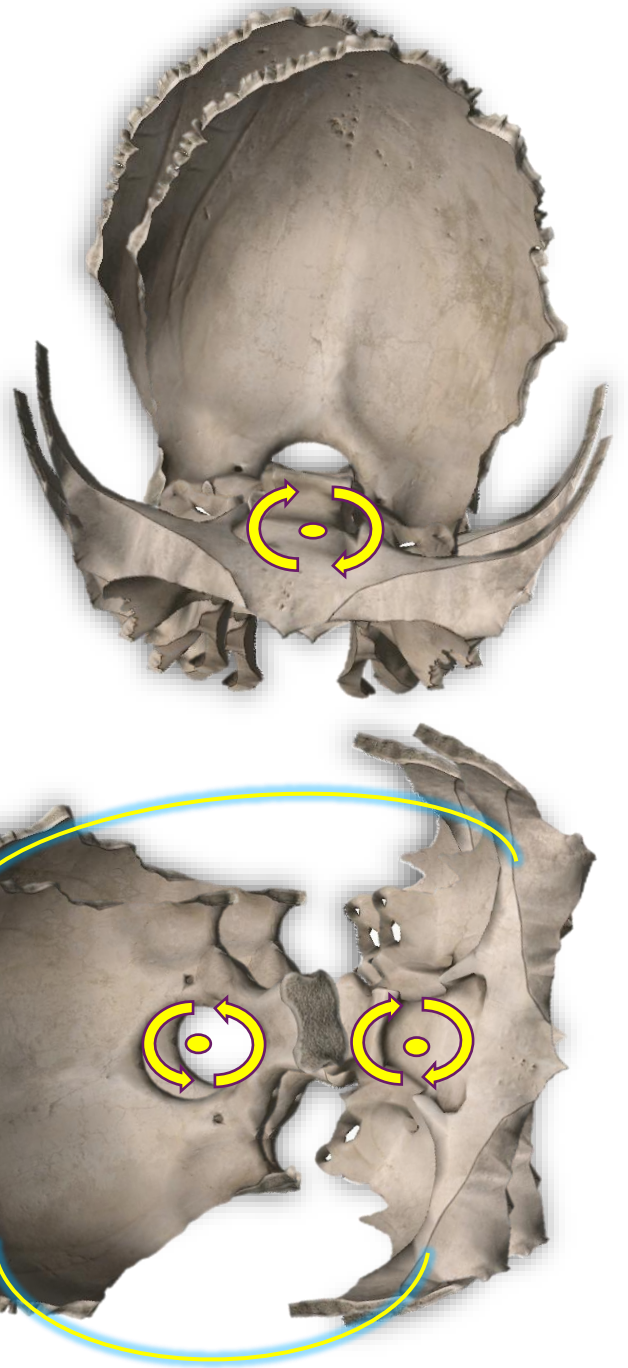
Left SBS Torsion:

Finger pads of left hand move superiorly & the right finger pads move inferiorly.

**Descriptions of motion directions are in terms of the patient as the reference point.*

SBS: Sidebending Rotation

- **History:** not conclusive
- **Axes of Rotation**
  - **Sidebending:** 2-vertical axes…direction of spin is in opposing directions
    - *Foramen magnum*
    - *Body of the sphenoid*
  - **Rotation:** 1-AP axis
    - From *opisthion* to *nasion* for rotation.
- **Contours:** The side of the lower greater wing and occiput is in relative flexion, and; The high side is in relative extension.
- **Naming:** designated by the convex side *(flexed side)*



Left SBS Sidebending Rotation

Right Sidebending-Rotation

Sidebending Rotation Palpatory Findings

- Named side feels “fuller”
  - 1st Finger and pinky move away from each other
  - *“Crack the egg and pour it out”*
  - *“Down & Out in Beverly Hills”*
- Opposite side “shrinks”
  - 1st finger and pinky move toward each other

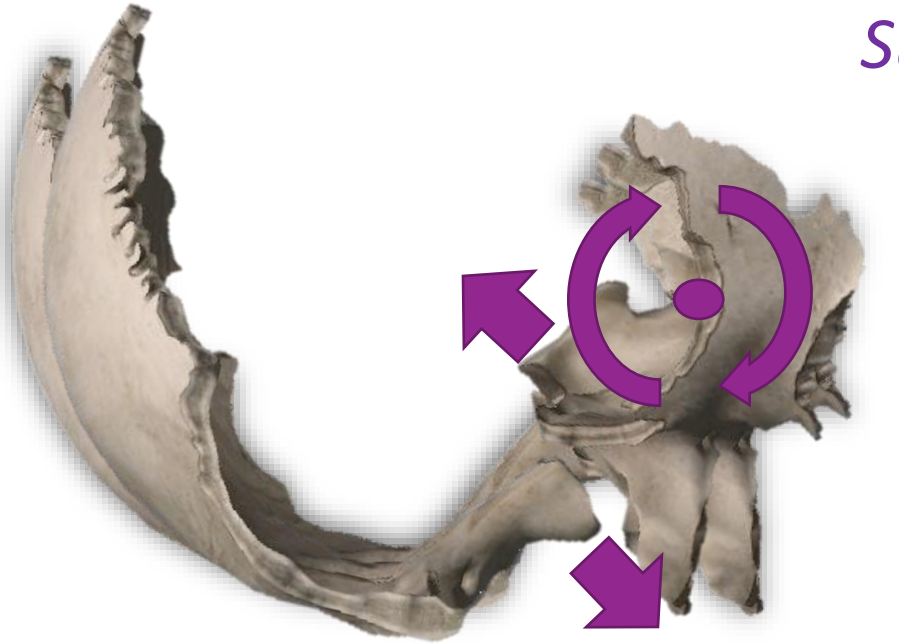
Right SBS Sidebending Rotation:

Fullness on the right. Right index and pinky move away, whilst left fingers approximate.

Left SBS Sidebending Rotation:

Fullness on the left. Left index and pinky move away, whilst right fingers approximate.

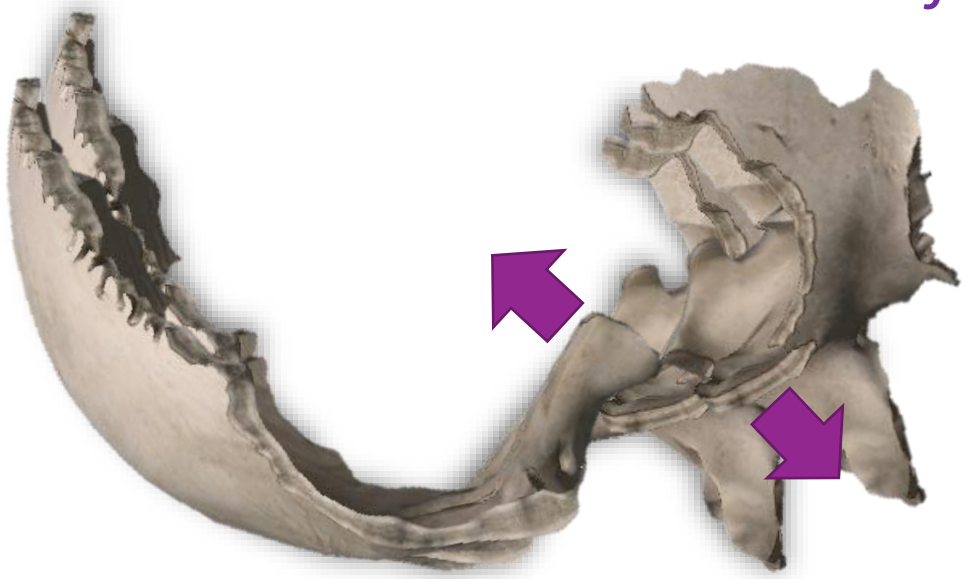
Superior Vertical Strain



Sphenoid: **Flexed** with rotation around its transverse axis and *basisphenoid superior*; bilateral *anterior quadrants are in external rotation*.

Occiput: **Extended** with rotation around its transverse axis; bilateral *posterior quadrants are in internal rotation*.

Inferior Vertical Strain



Sphenoid: **Extended** with rotation around its transverse axis and *basisphenoid inferior*; bilateral *anterior quadrants are in internal rotation*.

Occiput: **Flexed** with rotation around its transverse axis; bilateral *posterior quadrants are in external rotation*.

Inferior Vertical Strain

Vertical Strain Palpatory Experience

Superior Vertical Strain:

1st fingers move inferiorly, pinky fingers move superiorly

Inferior Strain:

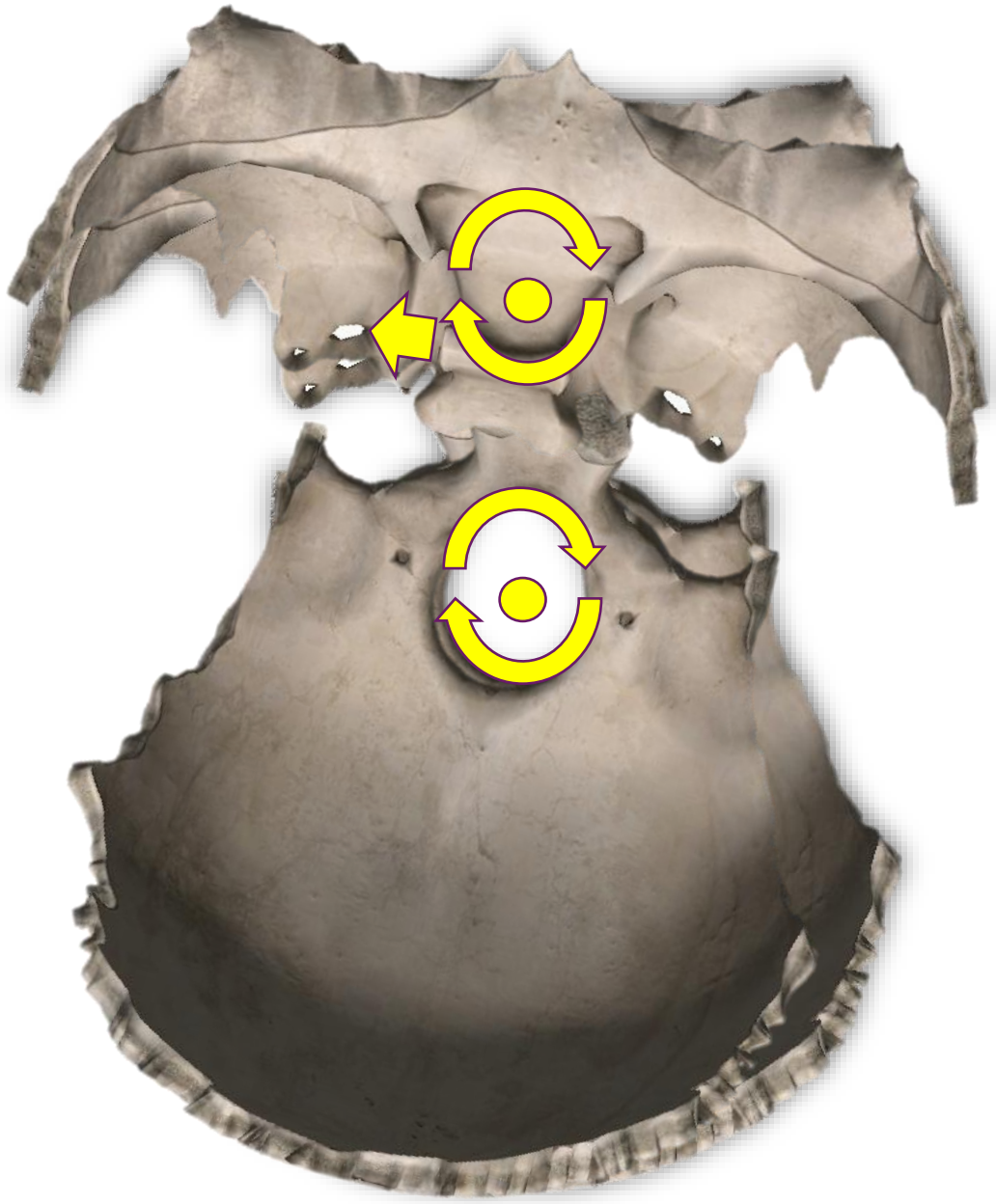
1st fingers move superiorly, pinky fingers move inferiorly

**Descriptions of motion directions are in terms of the patient as the reference point.*

SBS Lateral Strain

- **History:** the location, direction and the force of the trauma is important.
- **Axes of Rotation**
  - **Sidebending:** 2-vertical axes…direction of spin is in opposing directions
    - *Foramen magnum*
    - *Body of the sphenoid*
- **General contours:** *parallelogram* head
- **Naming:** By the direction of the base of the sphenoid; in a left lateral strain the lateral shear occurs with the sphenoid base to the left and the occipital base to the right.

Left Lateral Strain



Right Lateral Strain

Lateral Strain Palpatory Findings

Index fingers of both hands translate in opposite directs from translator direction of pinky fingers

SBS Right Lateral Strain:

Index finger pads move to the left and pinky finger pads to the right.

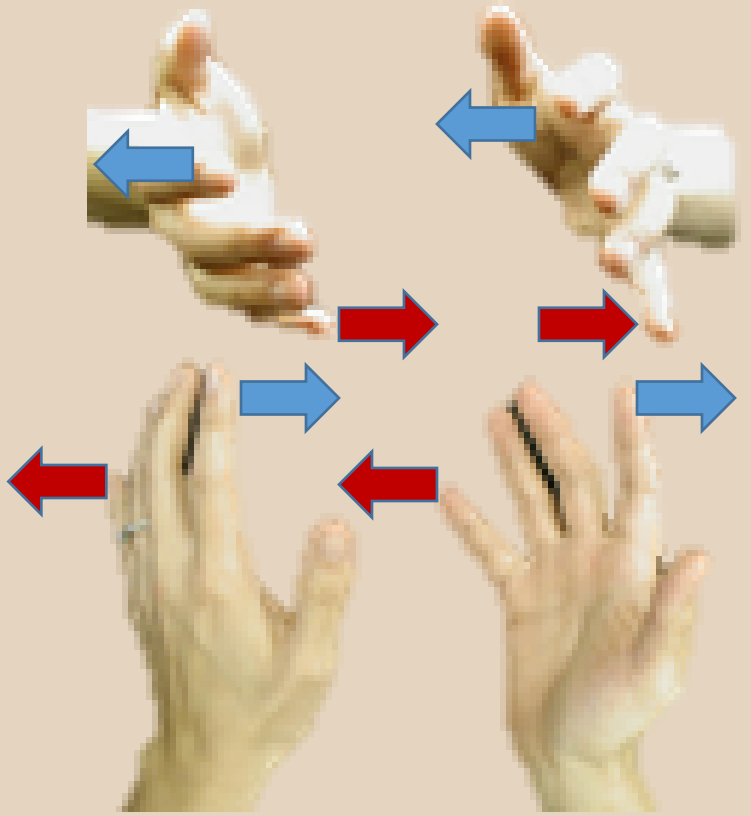
- *Right hand moves anterior*

SBS Left Lateral Strain:

Index finger pads move to the right and pinky finger pads to the left.

- *Left hand moves anterior*

**Descriptions of motion directions are in terms of the patient as the reference point.*



Shown: Left Lateral Strain

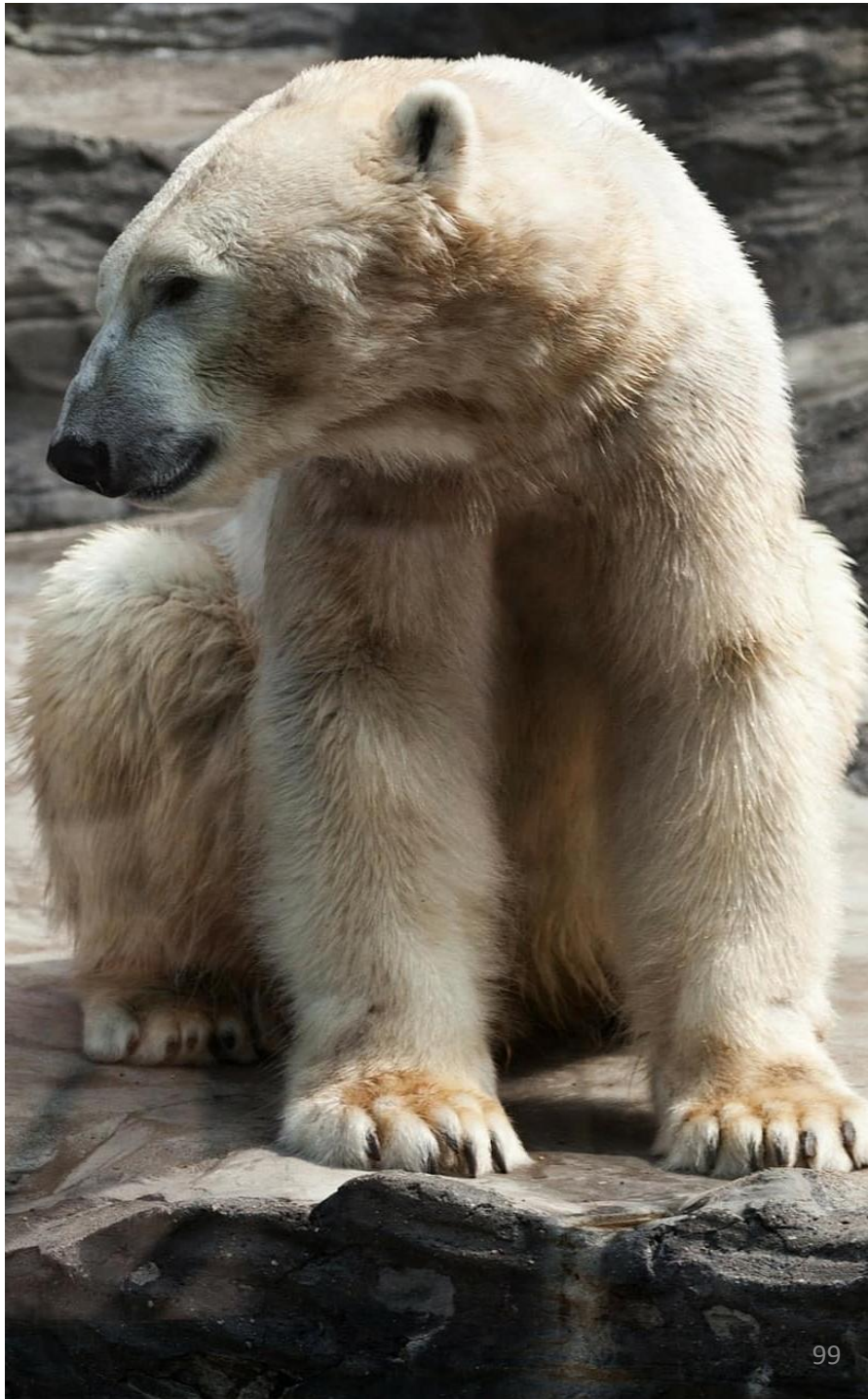
Sphenobasilar Compression

- A somatic dysfunction of the cranium in which the basisphenoid and the basilar portion of the occiput have been approximated to the degree that motion is moderately impaired, seriously lacking or almost completely lost
- Usually induced by trauma or compressive forces, including birth trauma
- Usually induced by trauma or compressive forces, including birth trauma

REMIS

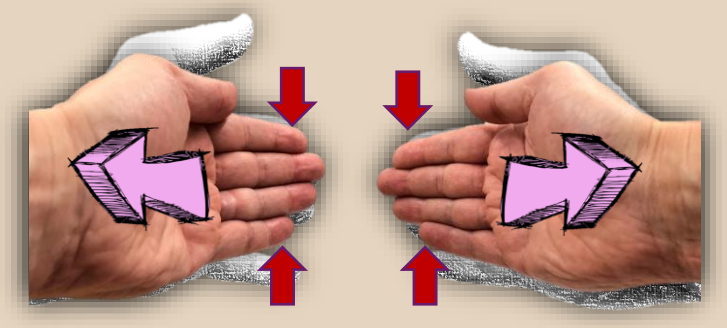
Grounding Exercise

- Sit at the head of the table with your patient comfortably supine.
- Rest your hands in your lap or on the table.
- Place your feet flat on the floor and imagine them as big, bear paws rooting you to the ground.
- Close your eyes and take a 3 deep abdominal breaths, relaxing your shoulders and body more with each exhalation.



Flexion

fingers spread apart and move away from you



Extension

fingers approximate and move towards you

Superior Vertical Strain (hands move together opposite of name):

1st fingers move inferiorly, pinky fingers move inferiorly

Inferior Strain:

1st fingers move superiorly, pinky fingers move inferiorly

SBS Right Lateral Strain (parallelogram pinkies):

Index finger pads move to the left and pinky finger pads to the right.

SBS Left Lateral Strain *(pictured)*:

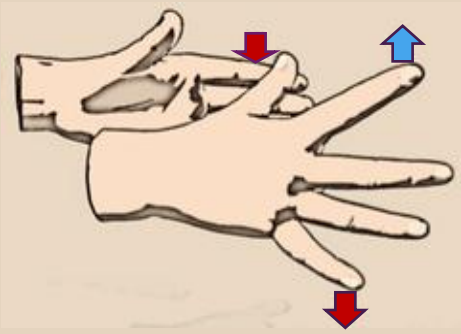
Index finger pads move to the right and pinky finger pads to the left.

Right SBS Torsion (high greater wing):

Finger pads of right hand move superiorly & the left finger pads move inferiorly.

Left SBS Torsion:

Finger pads of left hand move superiorly & the right finger pads move inferiorly.



Right SBS Sidebending Rotation (convexity):

Fullness on the right. Right index and pinky move away, whilst left fingers approximate.

Left SBS Sidebending Rotation:

Fullness on the left. Left index and pinky move away, whilst right fingers approximate.

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