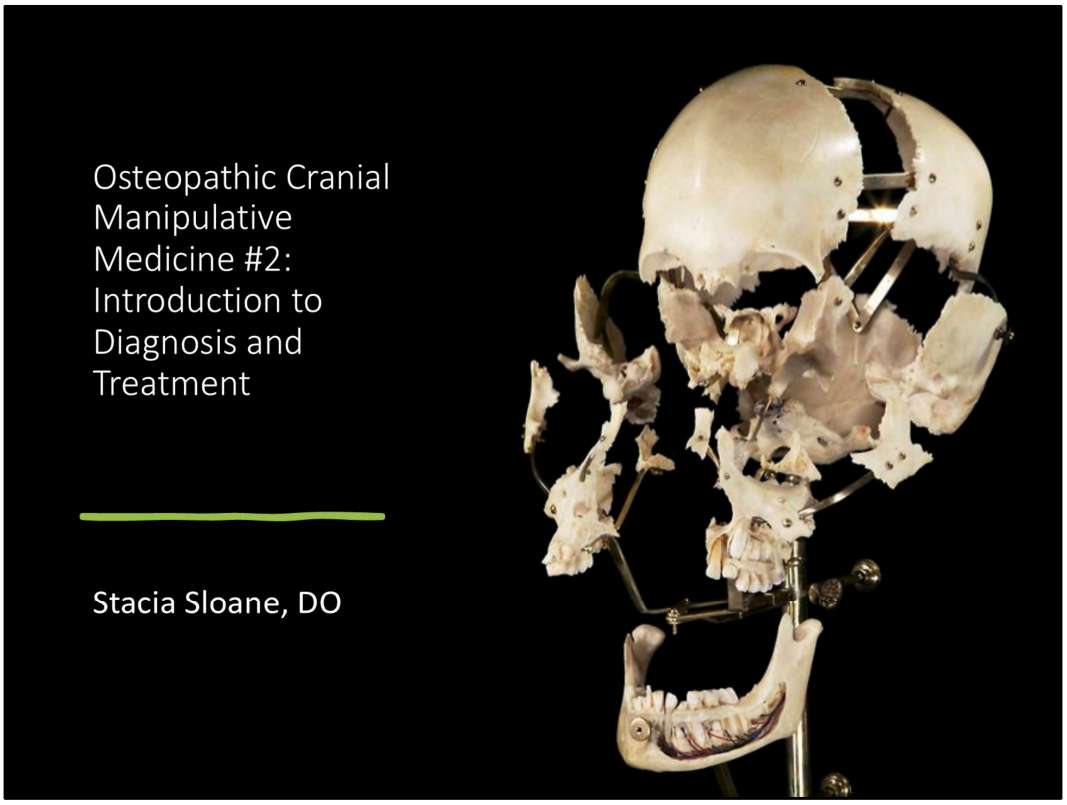
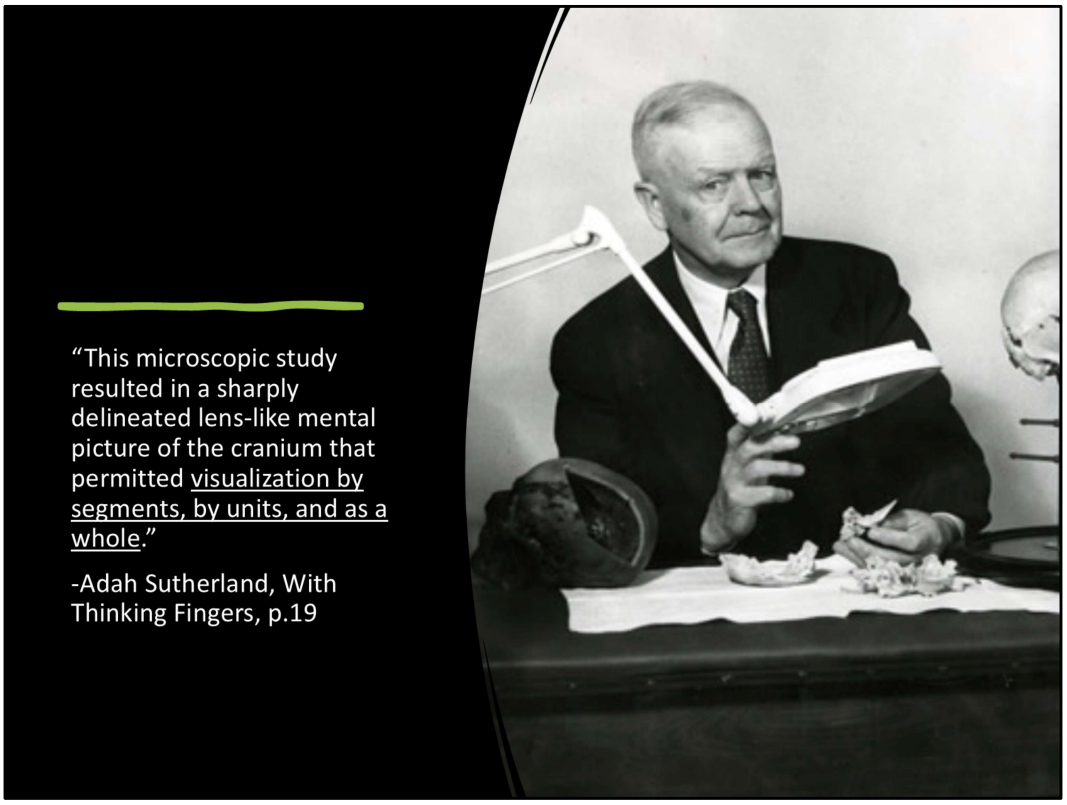
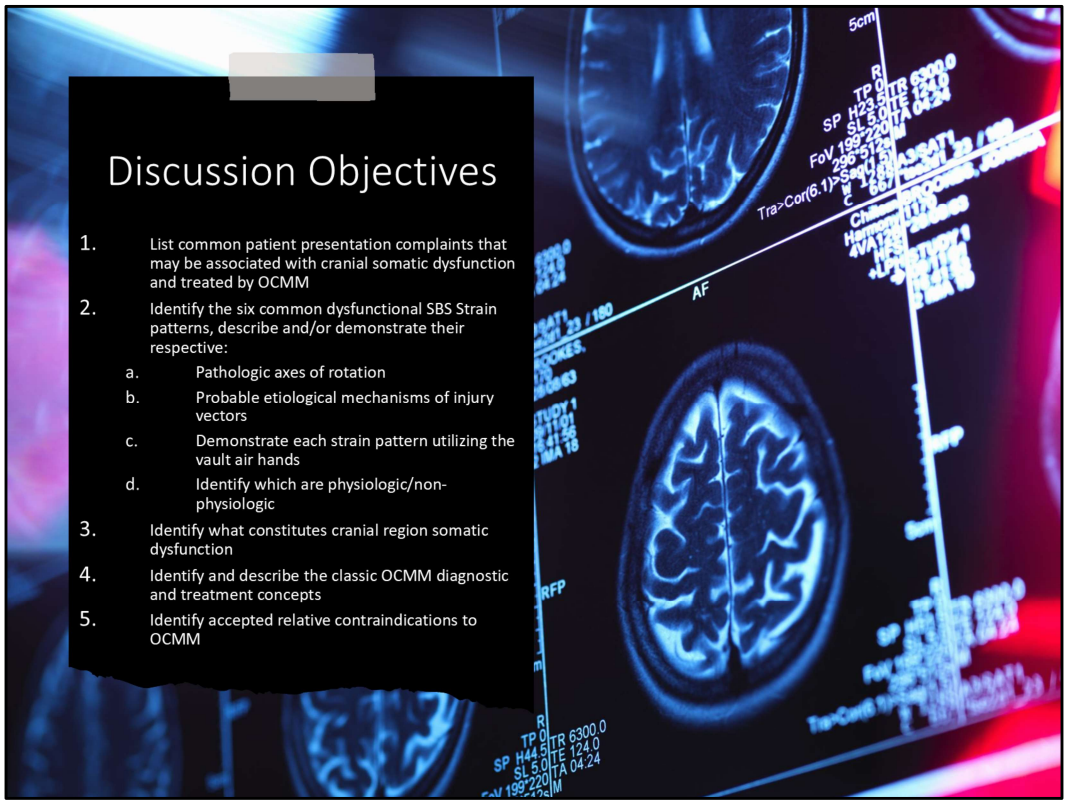

Osteopathic Cranial Manipulative Medicine #2: Introduction to Diagnosis and Treatment
Stacia Sloane, DO

OCMM



William Sutherland, DO discoverer of OCMM studying a Beauchene model

through feeling and anatomy


Discussion Objectives
1. List common patient presentation complaints that may be associated with cranial somatic dysfunction and treated by OCMM
2. Identify the six common dysfunctional SBS Strain patterns, describe and/or demonstrate their respective:
a. Pathologic axes of rotation
b. Probable etiological mechanisms of injury vectors
c. Demonstrate each strain pattern utilizing the vault air hands
d. Identify which are physiologic/non-physiologic
3. Identify what constitutes cranial region somatic dysfunction
4. Identify and describe the classic OCMM diagnostic and treatment concepts
5. Identify accepted relative contraindications to OCMM

OCMM 2 Intro to Dx and Tx- Outline

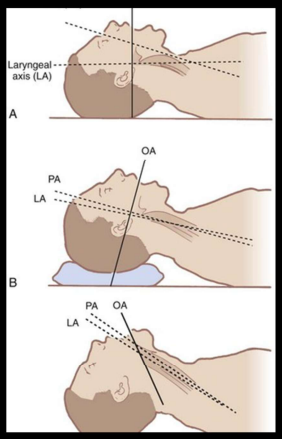
- Part 1:
  - Common clinical presentations
  - Initial diagnosis including vault contact
  - Normal physiologic motion of the cranium:
    - Flexion and Extension
- Part 2:
  - Sphenobasilarsynchondrosis (SBS) strain patterns:
    - Physiologic strains
      - Flexion/Extension, Torsions, Sidebending rotations
    - Non-physiologic strains
      - Compression, Lateral strains, Vertical strains
- Part 3:
  - OCMM- treatment principles
  - Contraindications

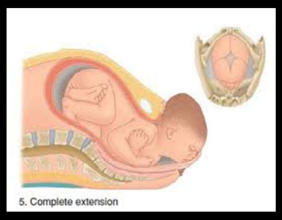
OCMM is used to treat somatic dysfunction (SD). Examples of some clinical presentations that commonly have relevant SD include:

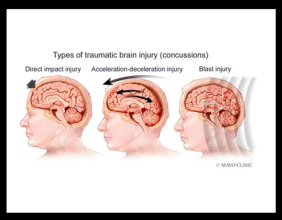
- HEENT dysfunction and infective complaints include but not limited to:
  - Headaches
  - Bell palsy
  - Trigeminal neuralgia
  - Cranial neuropathy-nerve entrapment
  - Otitis media
  - Sinusitis
  - Temporomandibular joint dysfunction and malocclusion
  - Tinnitus (ringing in ears – high or low pitch)
  - Vertigo/Balance/Dizziness – Vestibular effects
  - Auditory dysfunction – Cochlear effects
  - Anosmia/Dysnosmia (smell changes)
  - Optical (acuity changes, strabismus, nystagmus)
  - Plagiocephaly, feeding difficulties, torticollis, colic
- Memory, mood, and cognitive disorders (TBI/Concussion)
- Vagal dysfunction
  - Respiratory (acute/chronic infections, asthma)
  - GI (dysmotility, diarrhea/constipation, GERD)
  - Cardiac (chrono/inotropic issues)
- Somatic dysfunction in other regions of the body
  - Things that won't resolve (something else is "hanging" it up)

Recall that the indication to use OMT is not a symptom but the presence of somatic dysfunction

CRANIAL SOMATIC DYSFUNCTION







- Birth trauma
- Intrauterine position
- Falls on the buttock
- Impact/Trauma
  - Blows to the side of head
  - Blows to the top of the head
  - Blows to the front of the head
- Surgical trauma
- Extensive dental work
- Somatic dysfunction from other areas in the body
- Viscerosomatic reflexes

braces

Intubation considerations: Visual axis diagram. **A,** Head in neutral position. None of the three visual axes align. **B,** Elevation of the head approximates the laryngeal and pharyngeal axes. **C,** Extension at the atlanto-occipital joint brings the visual axis of the mouth into better alignment with those of the larynx and pharynx.

(From Stone DJ, Gal TJ: Airway management. In Miller RJ, editor: Anesthesia, ed 5, Philadelphia, 2000, Churchill Livingstone, p 1419.)

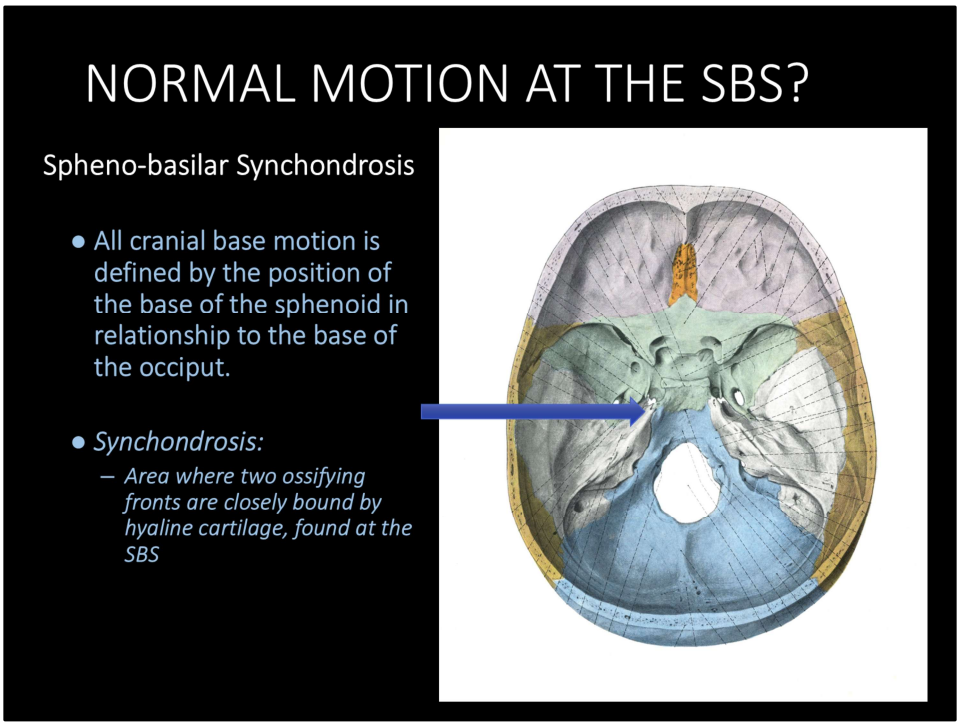
INITIAL DIAGNOSIS

- **Patient History**
  - Particularly of birth and other trauma
- **Visual observation**
  - Cranial as well postural gross or static symmetry
  - Functional – speech, vision, facial expression, TMJ motion, dental occlusion, expressive appropriateness etc…

- **Palpation**
  - Vault or Bilateral Temporal or Becker contact
- **Static impressions: palpate for position**
  - Firm/Hard
  - Warm/Cold
  - Gross symmetry
- **Dynamic impressions: palpate for motion**
  - Vitality
  - Symmetry
  - Rhythmicity
  - Characteristic description
  - SBS strain pattern(s) present
  - Articular and/or dural restriction
  - Fluid dysfunctions

finger on nose to get a sense of midline

SBS is sphenoid and occiput



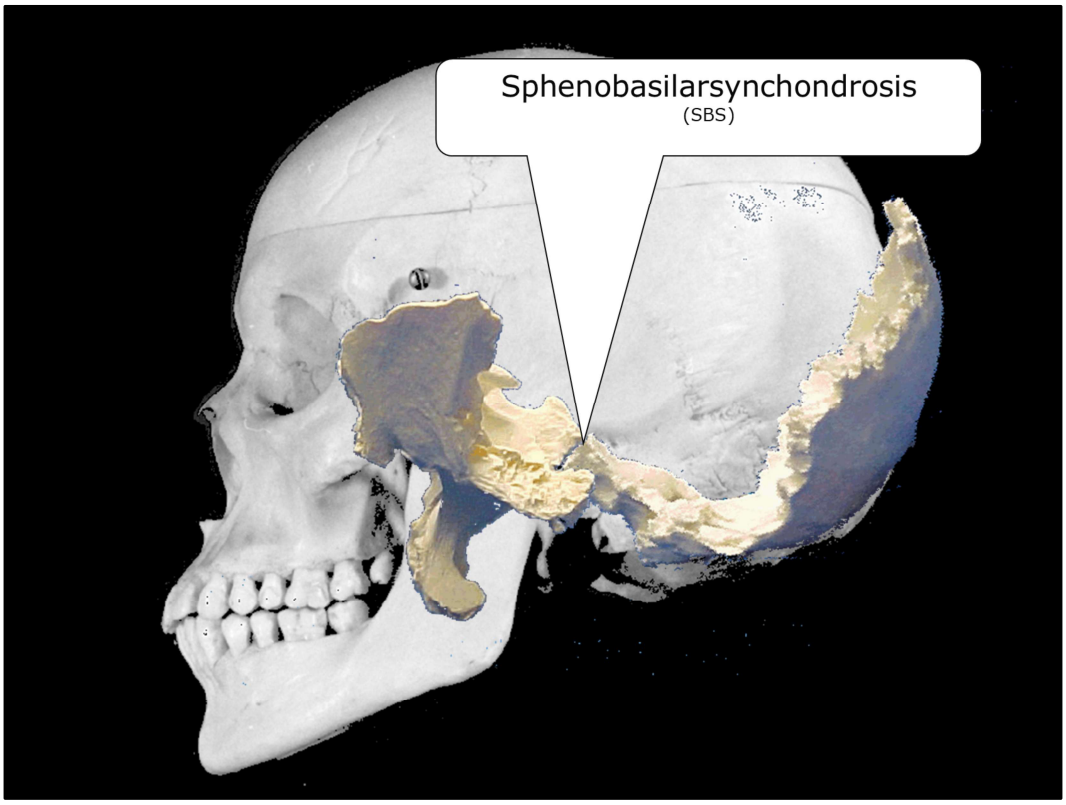
The SBS is considered the fulcrum of bony movement in the head.

We describe the movement of skull bones in terms of what is happening at the SBS.

The SBS has a cartilaginous junction until around age 25 when it starts to ossify, but it maintains flexibility and resiliency throughout life.

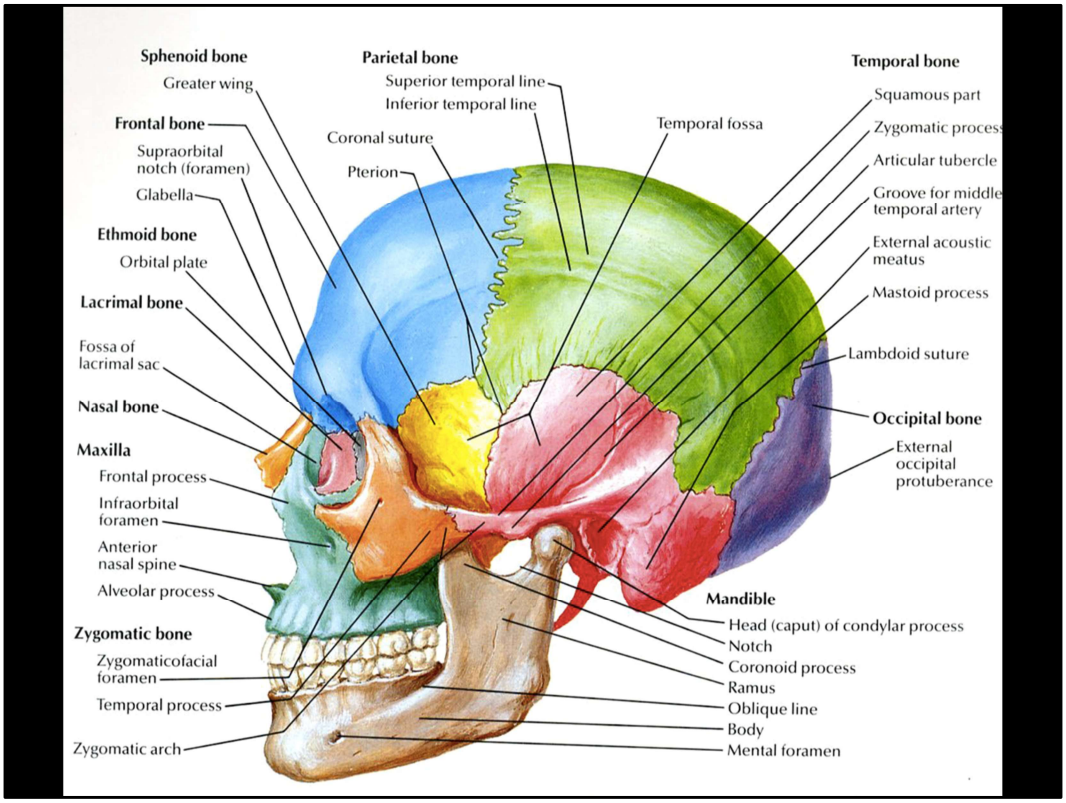
Flexion - both parts rise and extension both parts drop

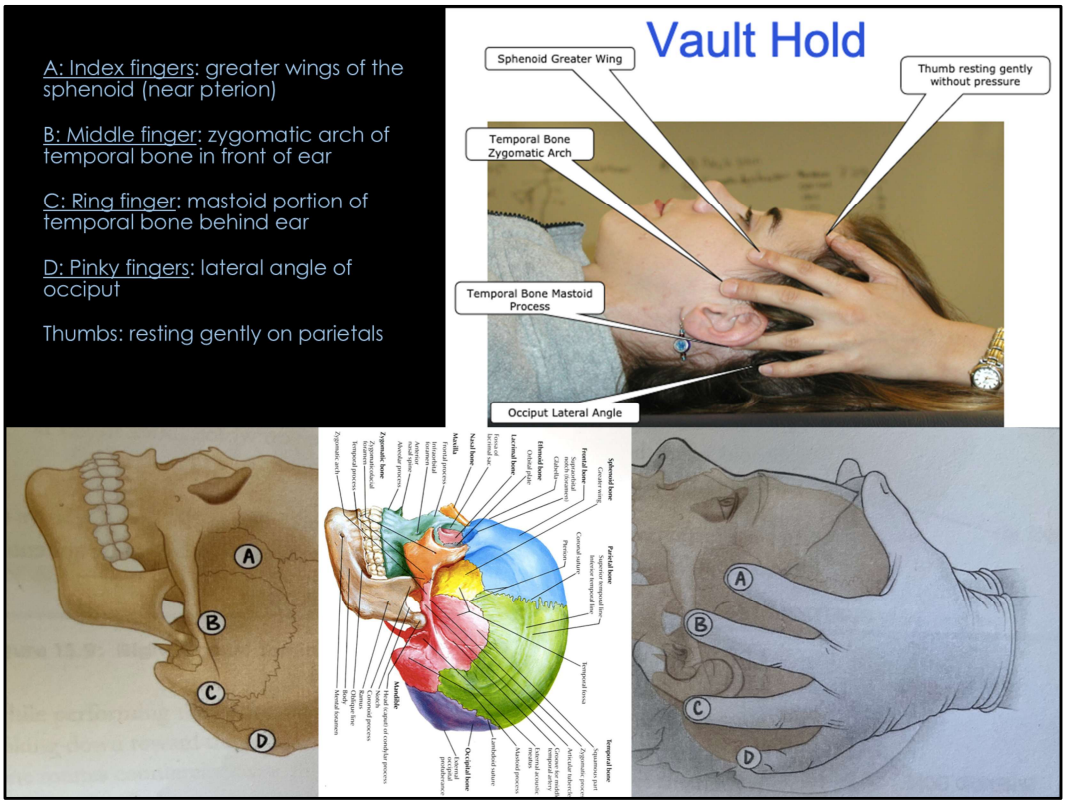
no direct palpation of SBS



Flexion

GW of sphenoid, squamous wings of occiput


Sphenoid bone
Greater wing
Frontal bone
Supraorbital notch (foramen)
Glabella
Ethmoid bone
Orbital plate
Lacrimal bone
Fossa of lacrimal sac
Nasal bone
Maxilla
Frontal process
Infraorbital foramen
Anterior nasal spine
Alveolar process
Zygomatic bone
Zygomaticofacial foramen
Temporal process
Zygomatic arch
Parietal bone
Superior temporal line
Inferior temporal line
Coronal suture
Pterion
Temporal fossa
Temporal bone
Squamous part
Zygomatic process
Articular tubercle
Groove for middle temporal artery
External acoustic meatus
Mastoid process
Lambdoid suture
Occipital bone
External occipital protuberance
Mandible
Head (caput) of condylar process
Notch
Coronoid process
Ramus
Oblique line
Body
Mental foramen

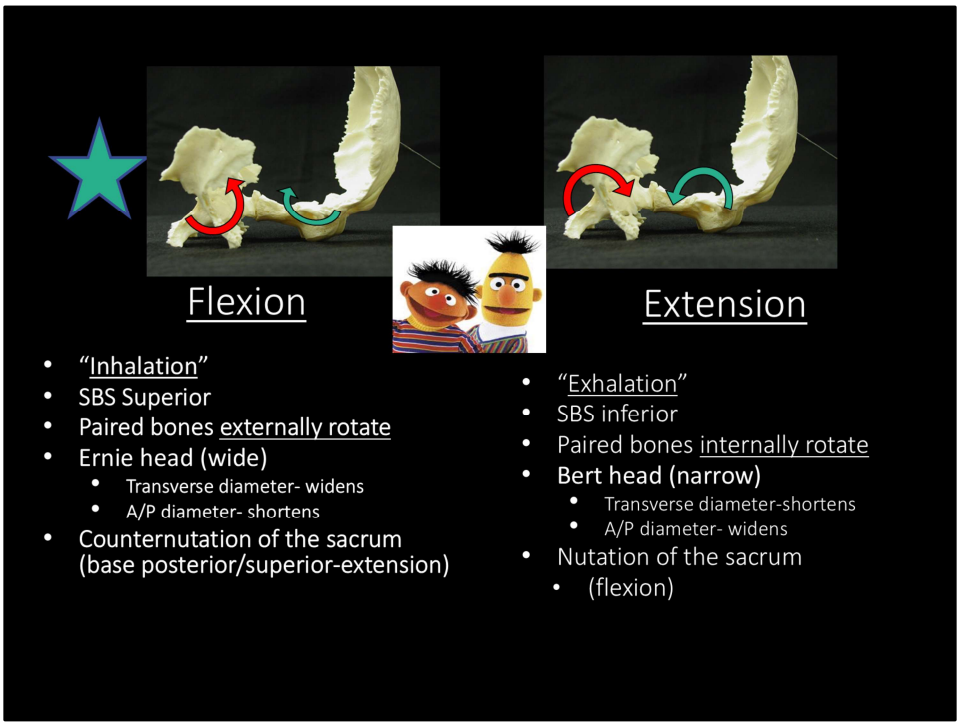


Vault contact/Hold
Not a fingertip contact- will feel motion through the most proprioceptors in tendons and joints

Sit comfortably- feet on the floor- the more comfortable and stable you are the more you will be able to feel
Don't STARE so intently- let the sensations come to your hands
Contact lightly- but it's not a fingertip contact- you want your joints to sense the motion
Let your mind be quiet
Visualize the structures under your hands (the better you know anatomy the better you can do this) hands take proprioceptive motion
Keep trying and keep practicing- you didn't learn to feel transverse processes in a day either!

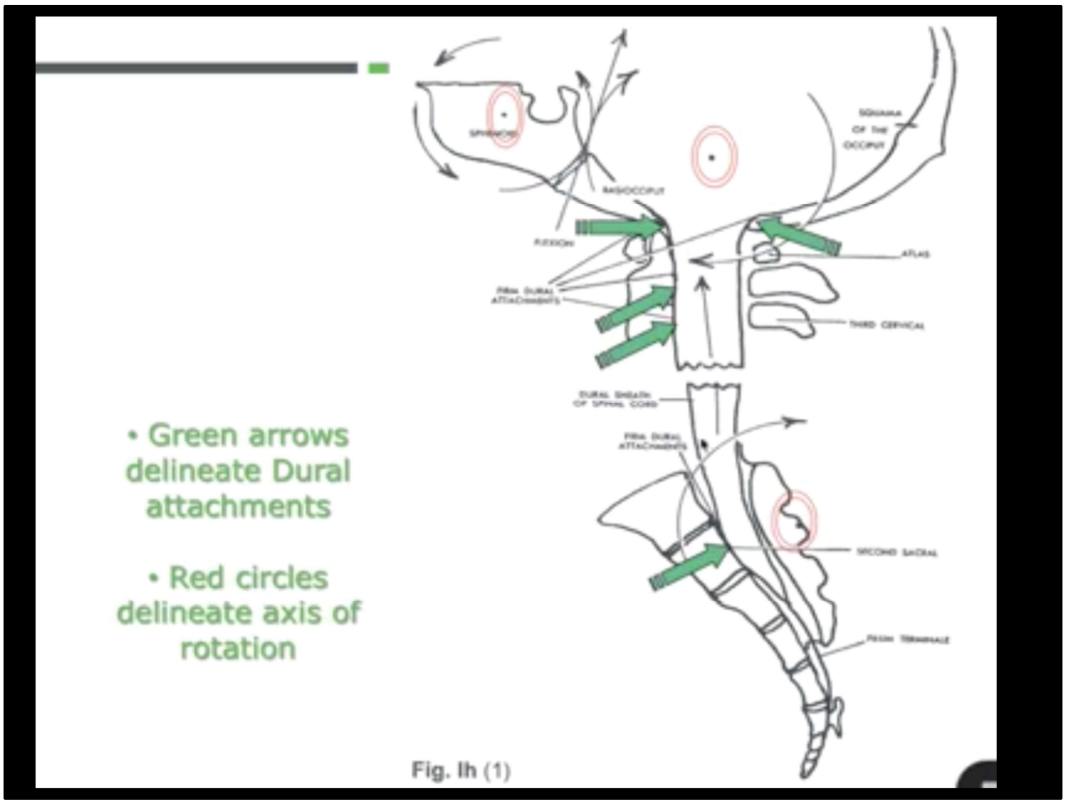
Motion can be increased with physical exercise, fevers, after OMT
Decreased with stress, fatigue, infections, mental depression, poisoning, debilitating conditions, somatic dysfunction

moves anterior and down



Remember that flexion of the SBS is going to draw the sacral base posterior and superior into counternutation/extension/base posterior. This is due to the core link!

biomechanical extension which is diff than PRM extension happening on diff axes

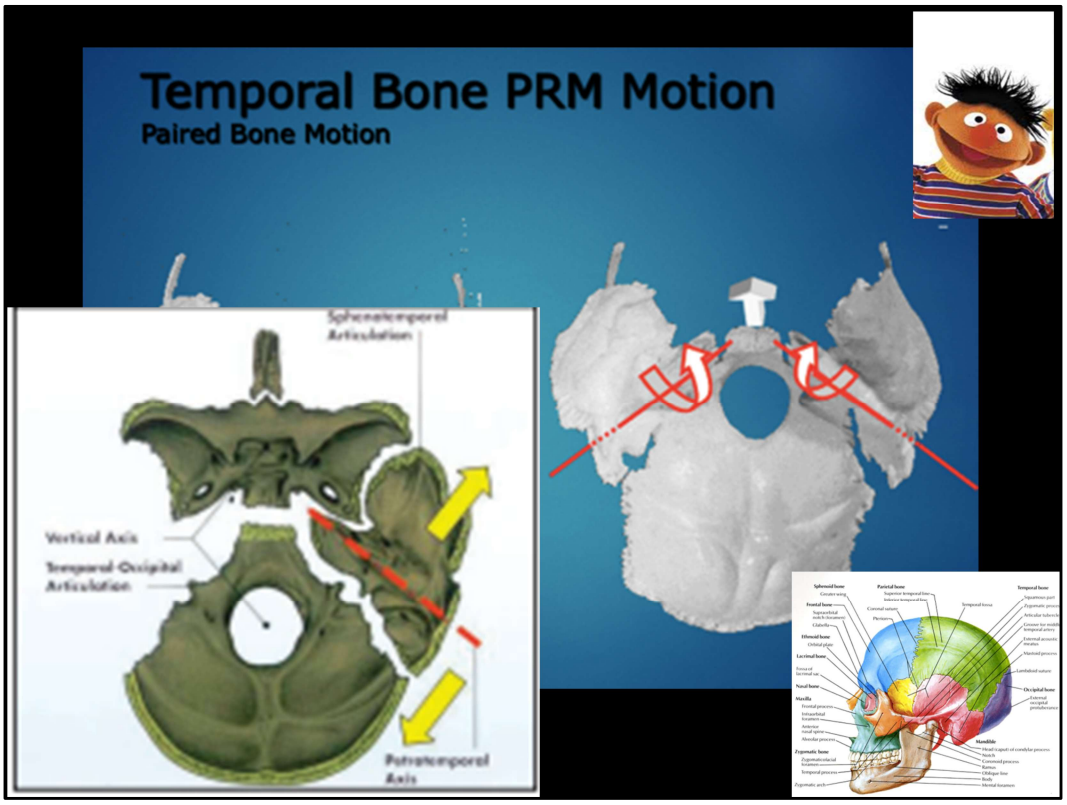


Flexion/Inhalation, SBS rises (sphenoid flexes forward, occiput relatively extends), Sacrum counternutates– base posterior and superior– extension of sacrum.

Sacrum follows the occiput

dura attached at foramen magnum and C2 and C3 but doesn't attach again until S2

every paired bone behaves like this

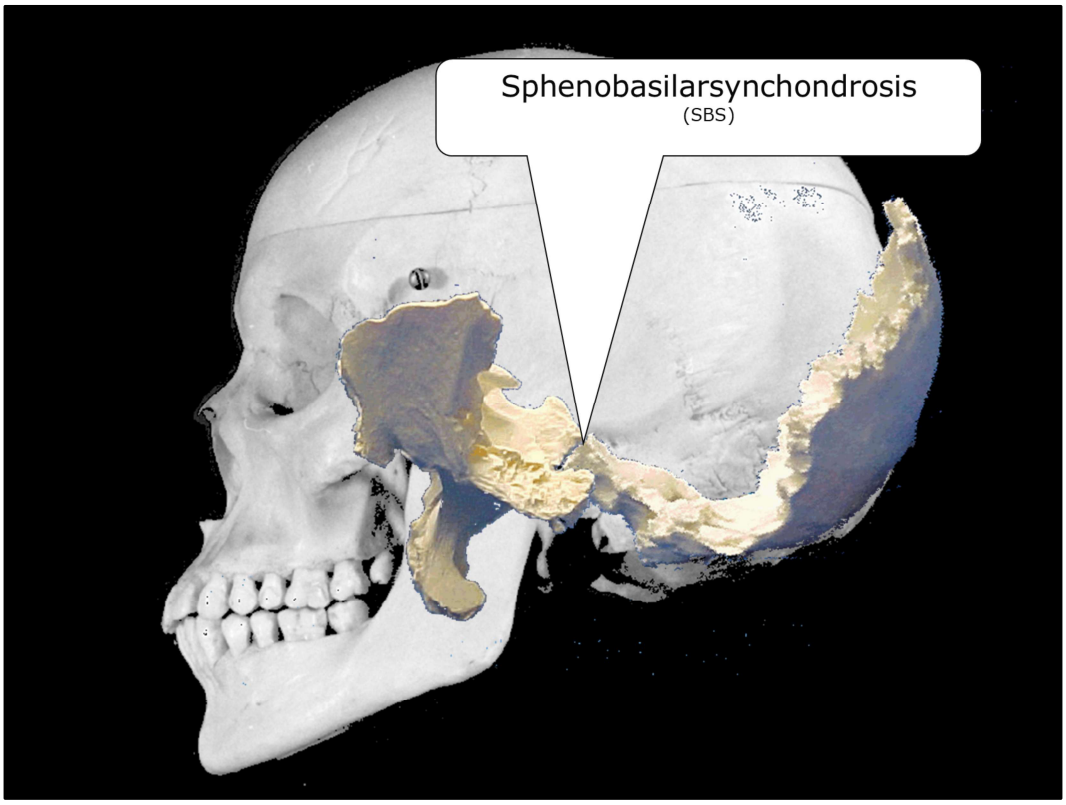


Superior view, looking down at the temporal bones (parietals and frontals removed). Appreciate the axis of rotation traversing through the petrous ridge of the bone– anteriorly converging.

On the right you can see that the basiocciput is rising– as we would see with FLEXION. The temporal bones are being driven by the occiput into EXTERNAL ROTATION– Appreciate how this would cause a relative widening of the anterior temporal area- creating an increased transverse diameter.

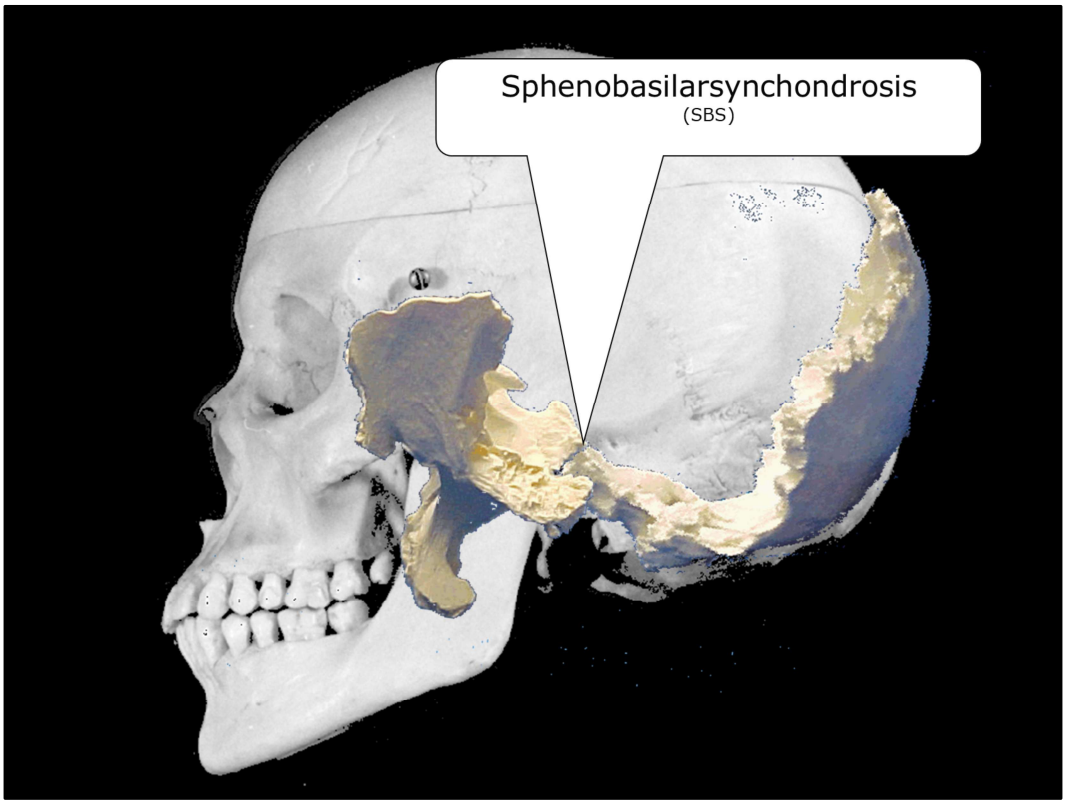
Red line shows us the axis of rotation of the temporal bone. The arrows show us the widening of the anterior-superior portion of the bone in external rotation, and the narrowing of the mastoid portion below the axis. Keep this in mind as you begin to wrap your heads around the shape of the head one would expect in flexion/extension of the midline bones. figure from “Cranial Strains and Malocclusion: A Rationale for a New Diagnostic and Treatment Approach” By Gavin A. James, MDS, FDS and Dennis Strokon, DDSfrom Orthopedic Gnathology, Hockel, J., Ed. 1983.

Ernie- WIDE- flexion
Burt- TALL/NARROW- extension



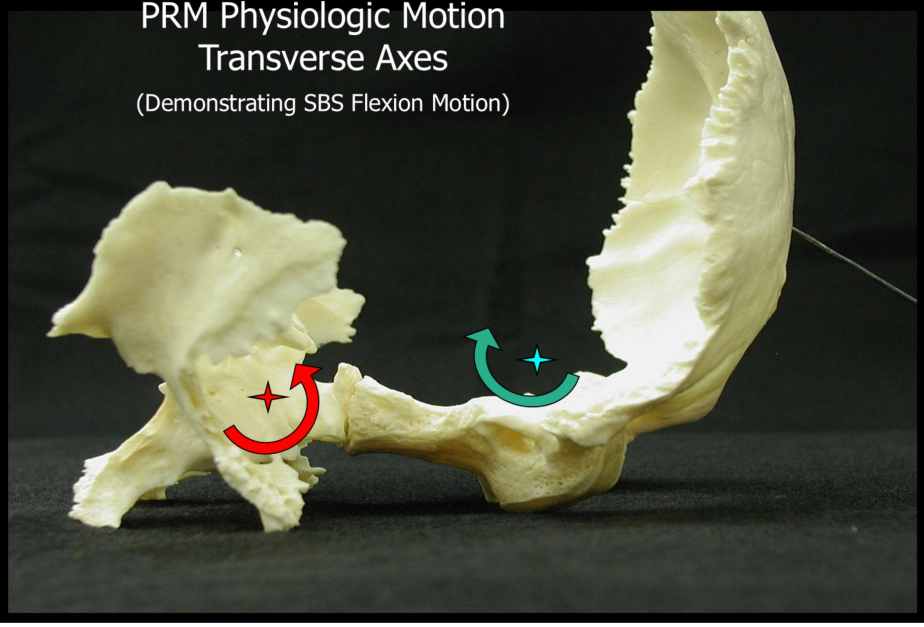
Flexion

occiput folds a little so it doesn't drop

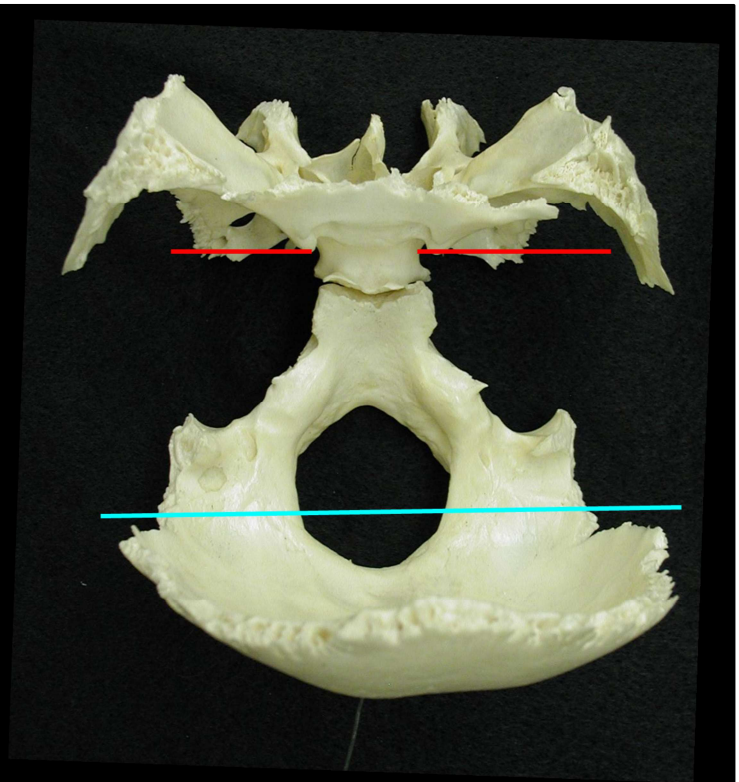


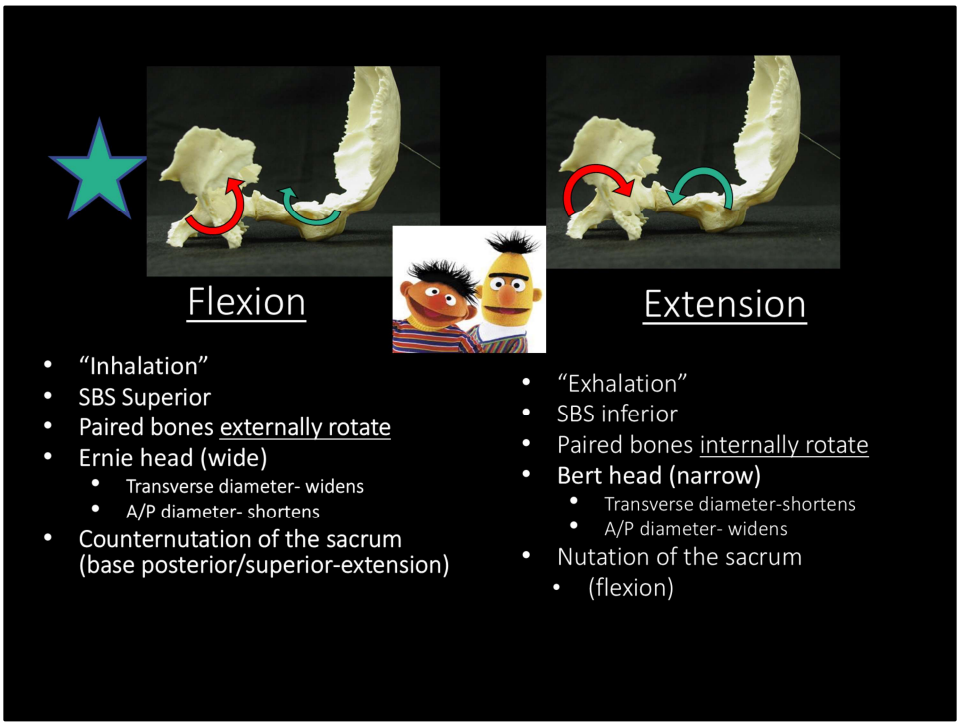
Extension

FLEXION AND EXTENSION



Sphenoid & Occiput
PRM Physiologic
Transverse Axes

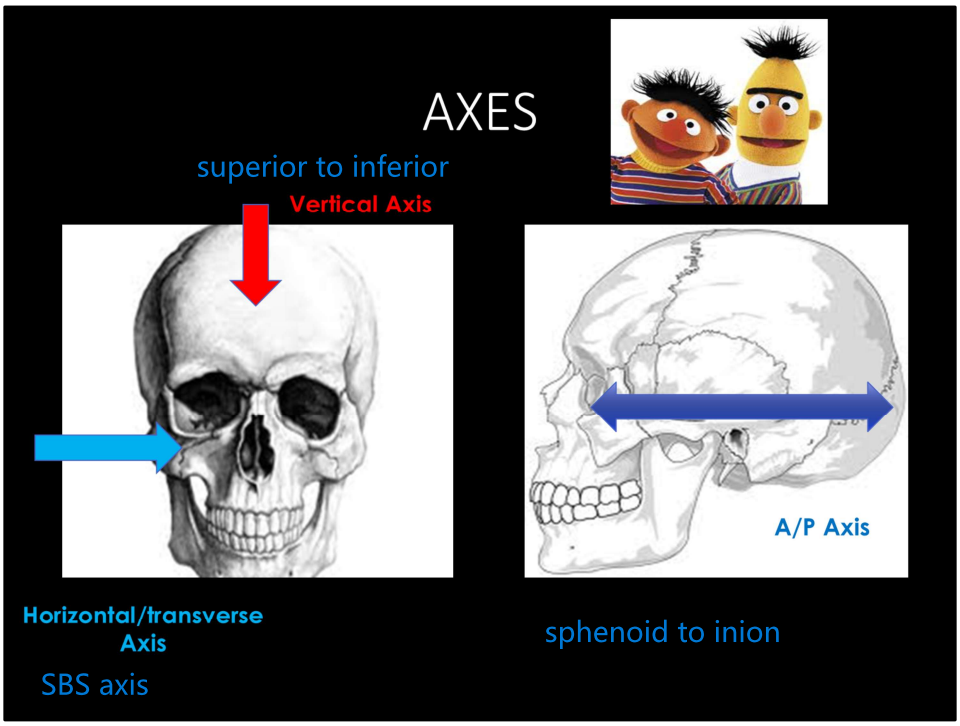




Flexion- head gets wider in transverse diameter and shortens in AP diameter- more convex, bregma descends-sacrum moves posteriorly

Extension- head narrows and lengthens- bregma ascends- paired bones internally rotation- sacrum moves anteriorly (S2 respiratory axis)

Don't confuse flexion of the SBS with flexion of the sacrum



Transverse axis/horizontal axis
AP axis

Ernie head (wide)

- Transverse diameter- widens
- A/P diameter- shortens

Bert head (narrow)

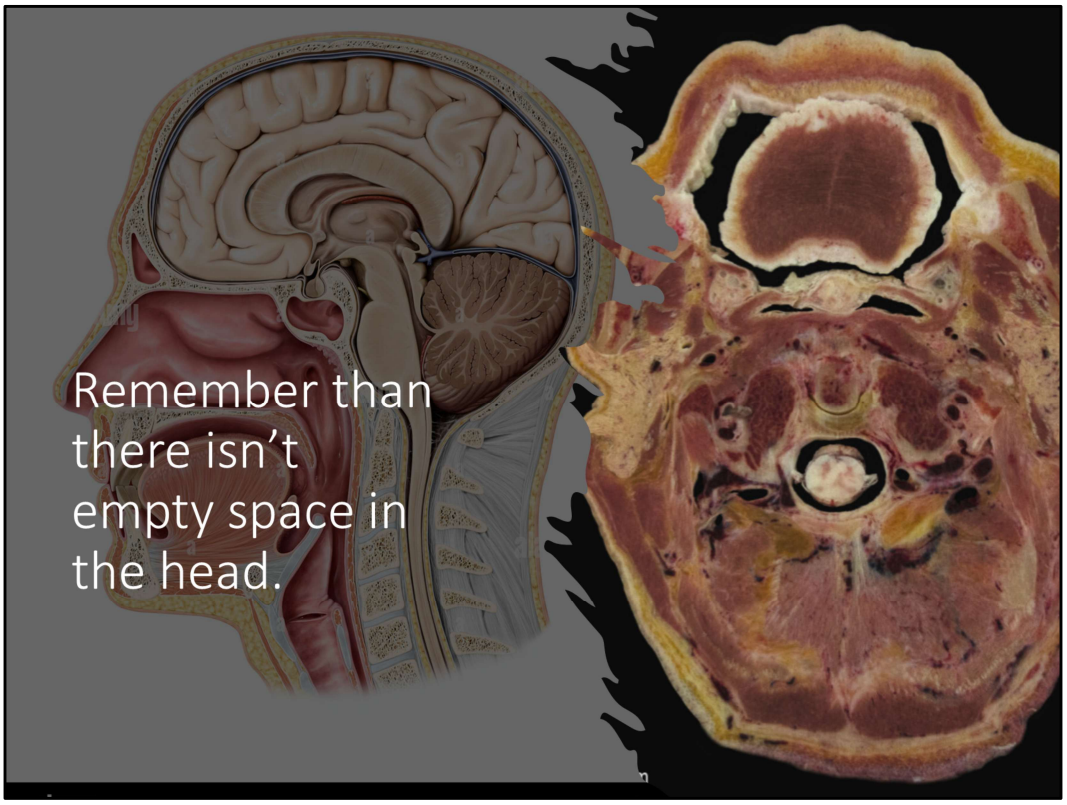
Transverse diameter-shortens
A/P diameter- widens

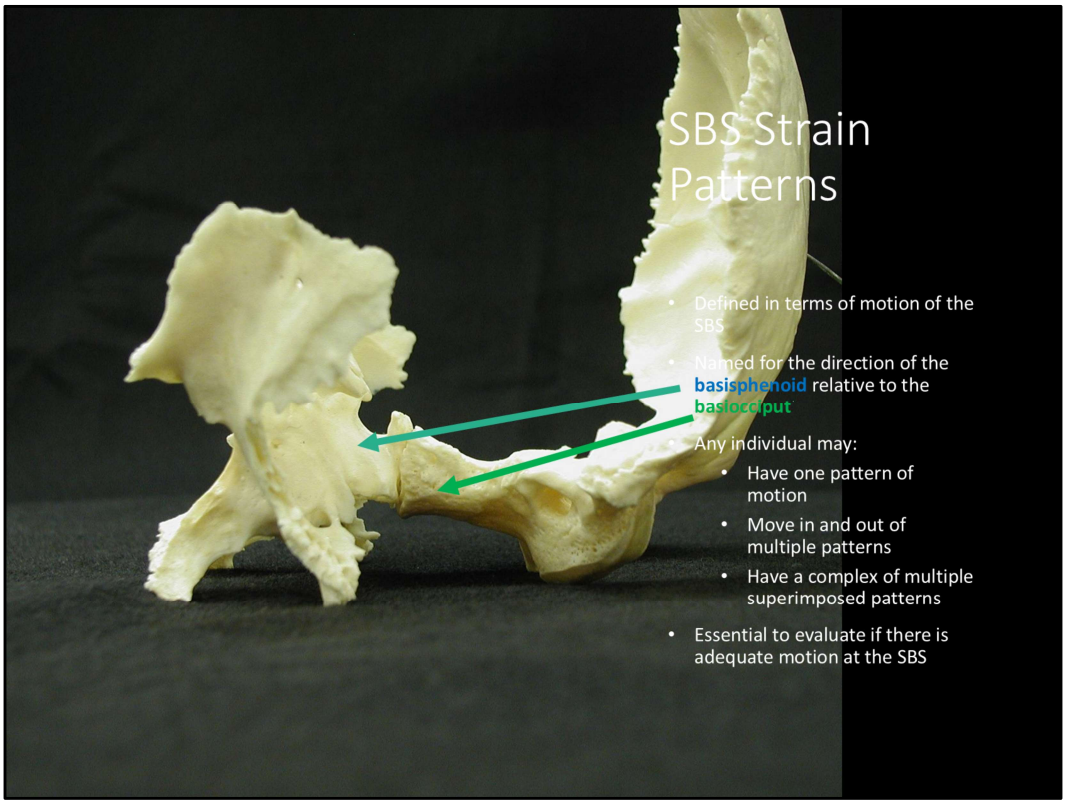
OCMM 2 Intro to Dx and Tx- Outline

- Part 1:
  - Common clinical presentations
  - Initial diagnosis including vault contact
  - Normal physiologic motion of the cranium:
    - Flexion and Extension
- Part 2:
  - Sphenobasilarsynchondrosis (SBS) strain patterns:
    - Physiologic strains
      - Flexion/Extension, Torsions, Sidebending rotations
    - Non-physiologic strains
      - Compression, Lateral strains, Vertical strains
- Part 3:
  - OCMM- treatment principles
  - Contraindications

What is a strain?

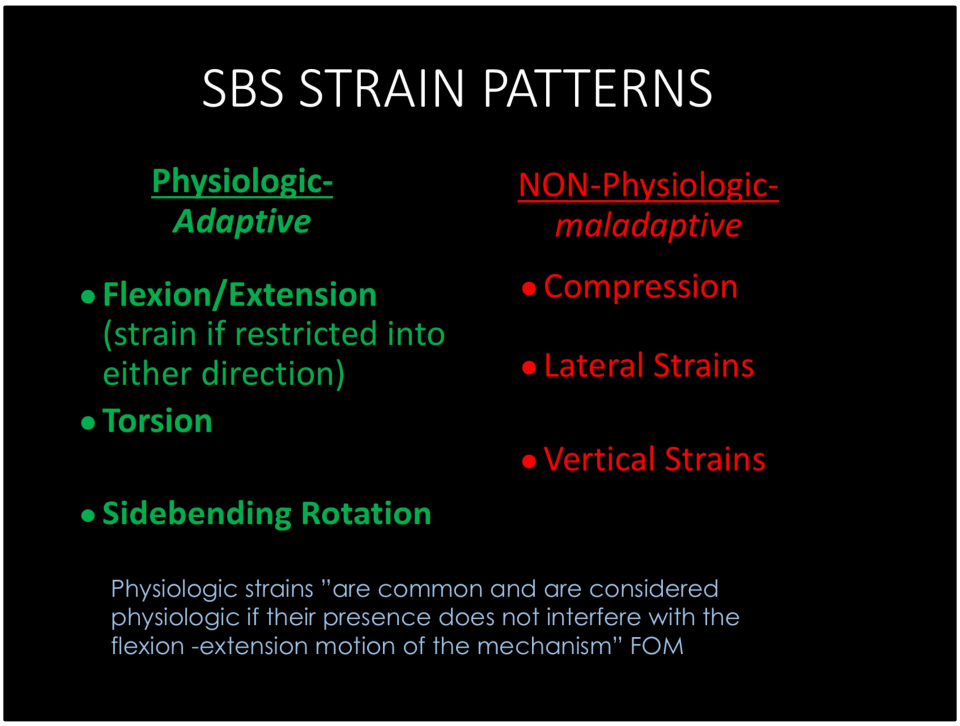
- Before we get lost in the weeds, lets first think about what is happening overall.
- Continuously step back and remember what is happening to the **whole** as we examine the **parts**.


Remember than
there isn't
empty space in
the head.



These strain patterns are a schematic representation of patterns of motion in the cranium– It is a complex system!

Strain patterns are used for systematic evaluation and recording– in medicine use standardized language to gain understanding into the incredibly complex body/mind/spirit of our patients. We need a common language to be able to evaluate our patients and communicate about our findings.

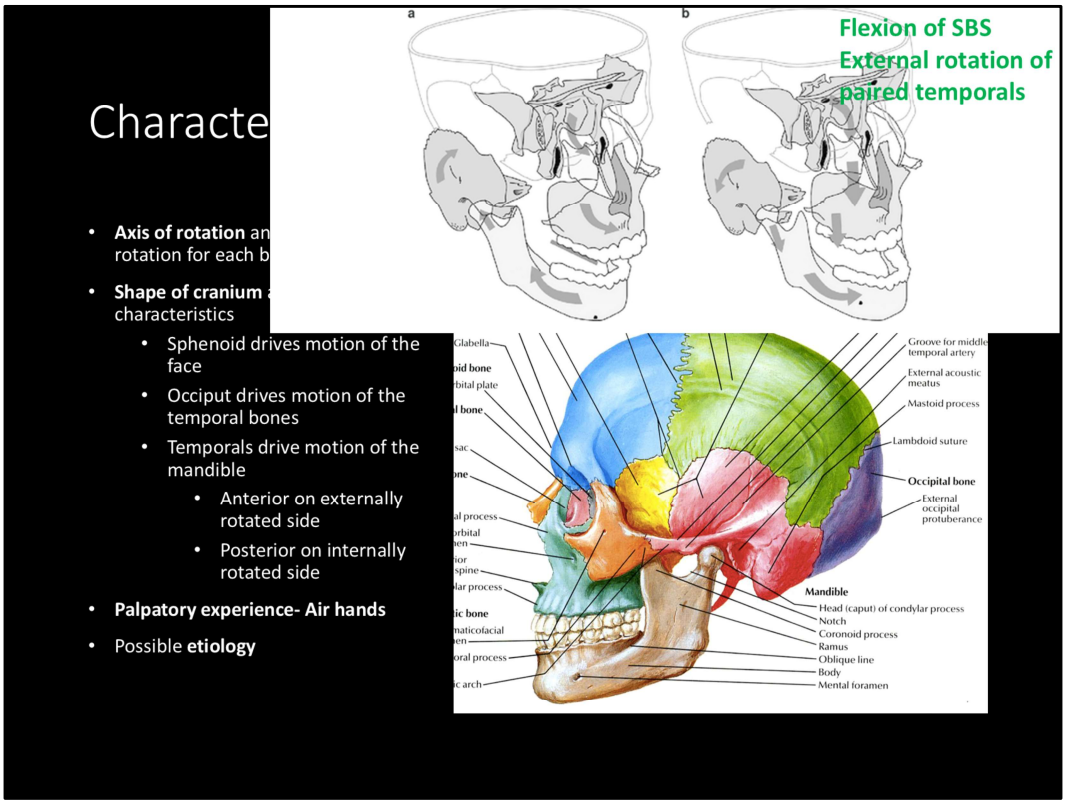


Strains impair the PRM (primary respiratory mechanism) to work- this may affect overall health of the nervous system

Physiologic strains- like forward sacral torsions- they can be the problem- or just a finding and not really causing any issue with the motion of the sacrum.

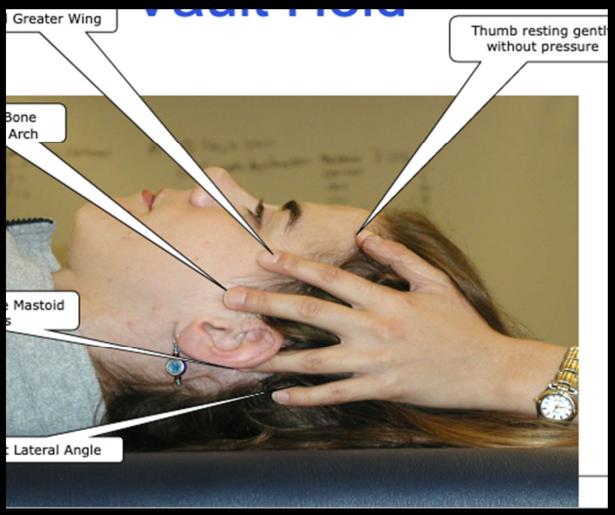
Notice that all the physiologic strains will rotate in opposite directions

The non physiologic ones will rotate in the same direction



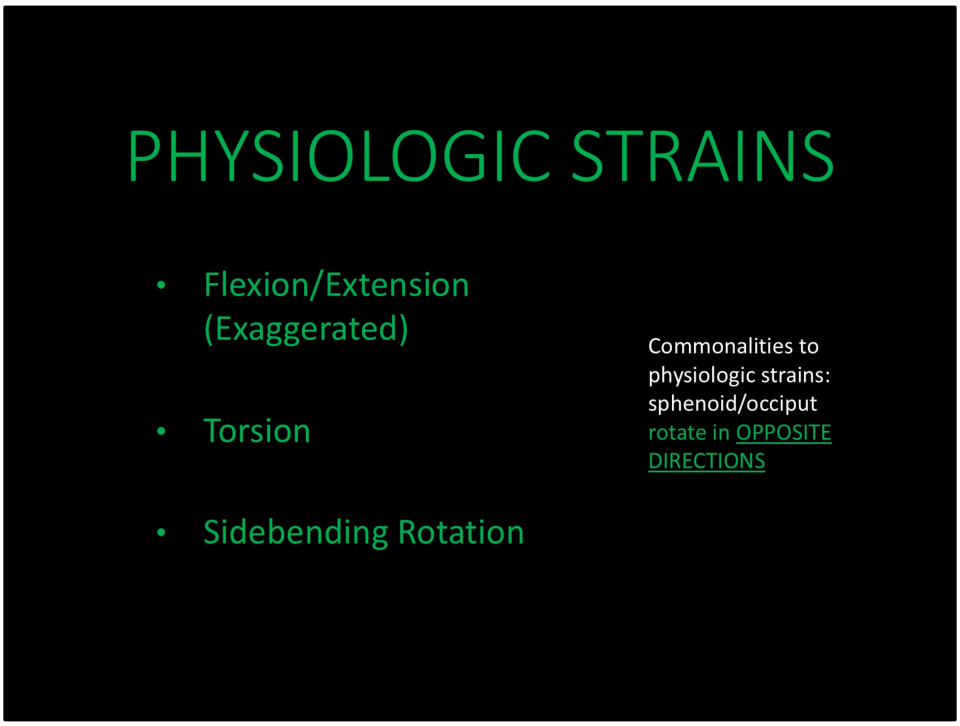
Internal (a) or external (b) rotation of the temporal bones associated with Extension/flexion respectively.

SBS is center of the motion
sphenoid drives face bones
occiput drive temporals
temporal bones drive mandible



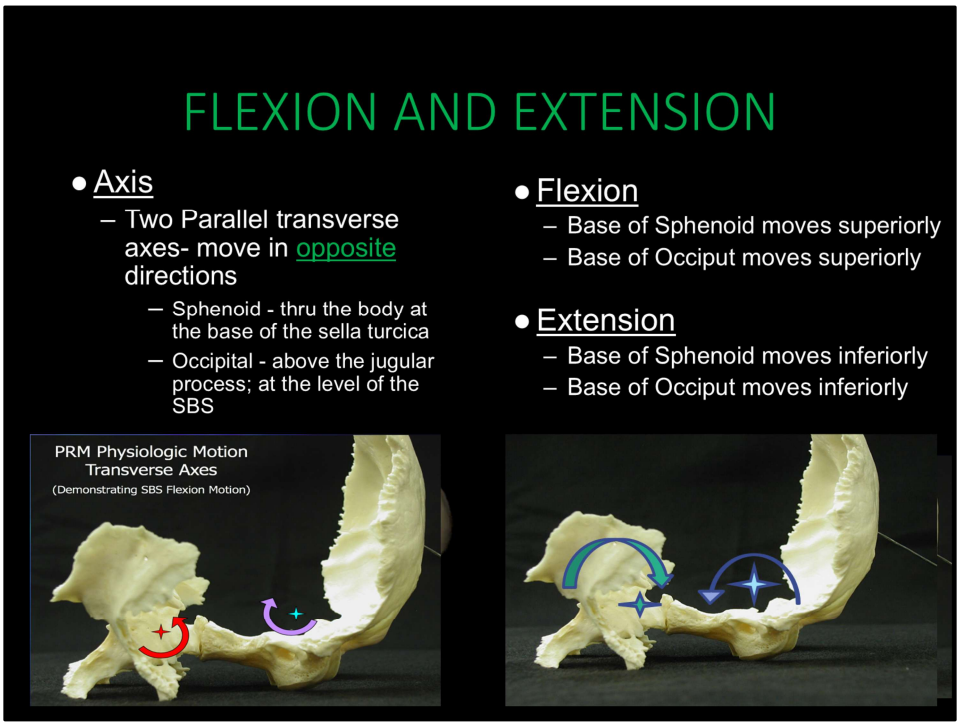
AIR HANDS

- Hands out in front of you index and pinky fingers out (others folded in)
- Your index fingers represent the motion/position of the greater wings of the sphenoid
- Your pinky's represent the motion/position of the occiput
- You can infer that the motion of the SBS based on your finger positions



Commonalities to physiologic strains: sphenoid/occiput rotate in OPPOSITE DIRECTIONS

shouldn't be rotating in the same direction

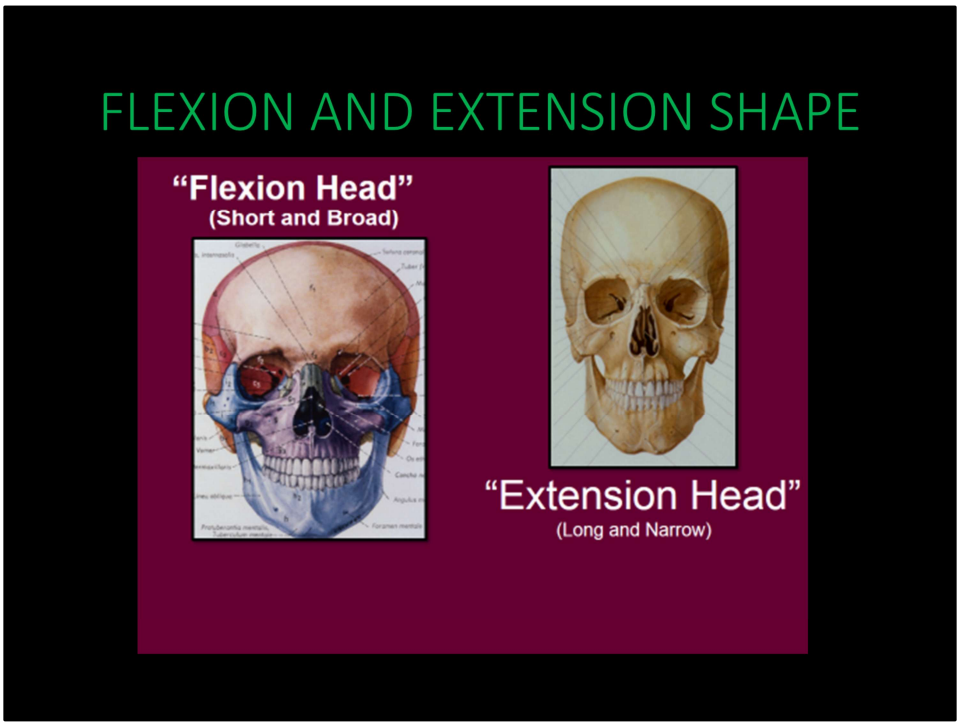


Normally the PRM moves through flexion and extension equally and fully
When you evaluate the head – assess if motion prefers flexion or prefers extension

Exaggerated motion one way and/or loss of motion in the other direction is a strain pattern (asymmetry)

FLEXION AND EXTENSION VIDEO

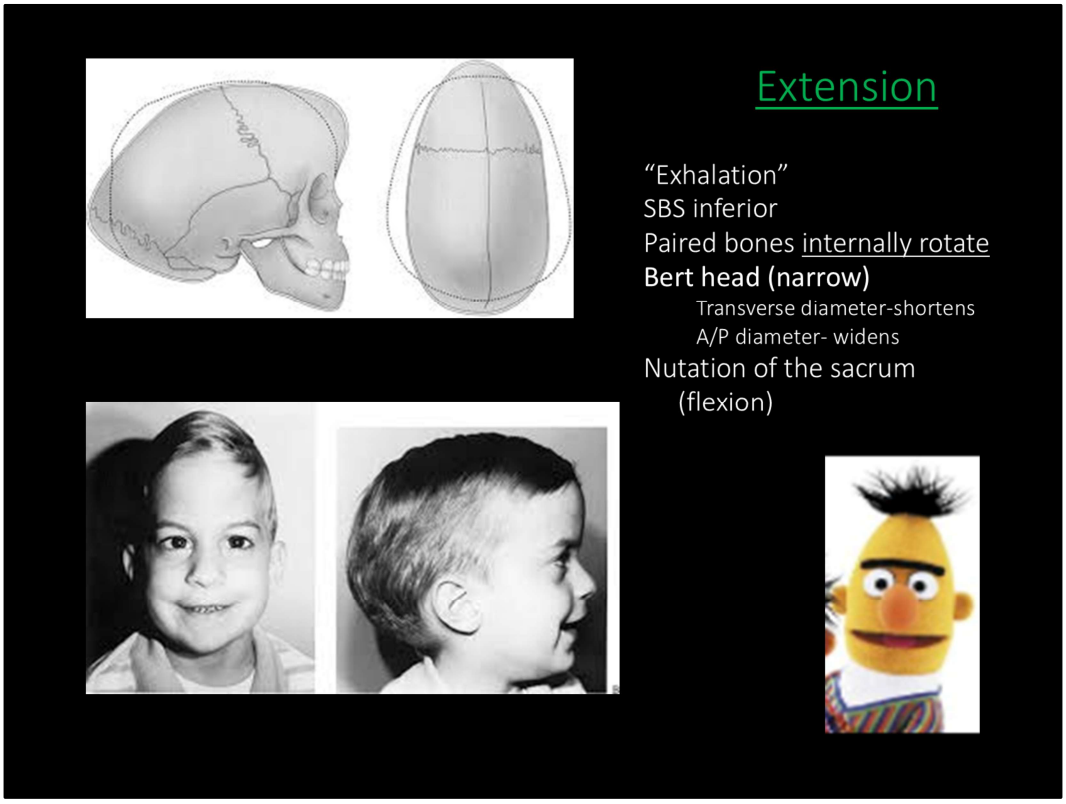
- https://www.youtube.com/watch?v=J2oVjn2ALLE



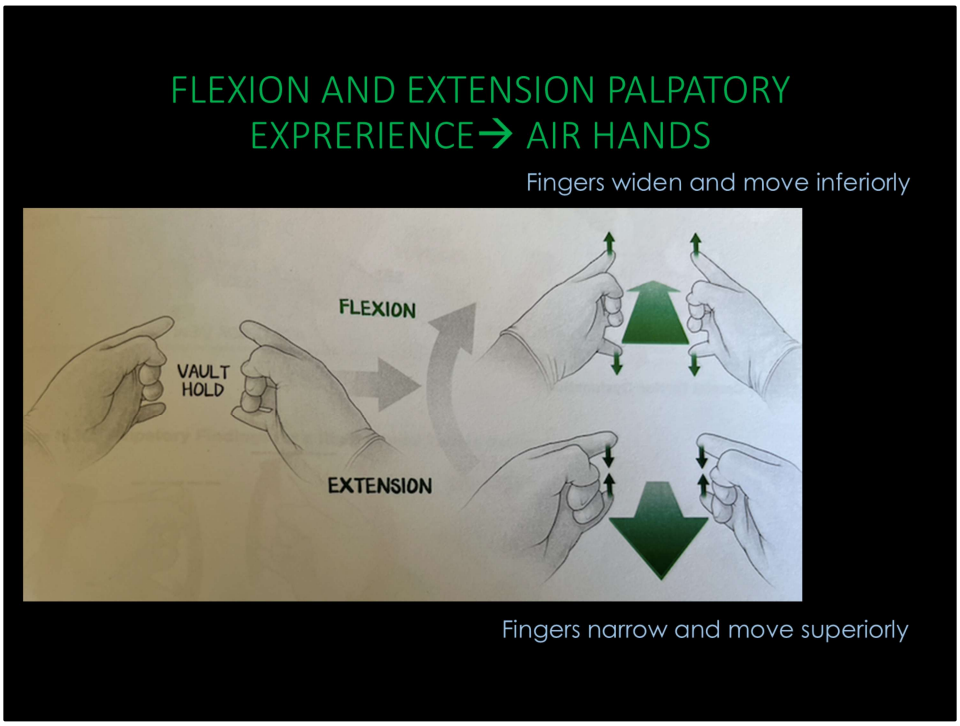
Ernie –short-wide- FLEXION
Burt- Tall/narrow- EXTENSION

http://www.youtube.com/watch?v=T4gjMoDIHT8
https://www.youtube.com/watch?v=J2oVjn2ALLE

extension head/scaphoid head



EXTENSION head– BURT
Internal rotation of the paired bones creates a narrow head! Imagine the superior aspect of the temporals rotating inward
Narrow, tall face
Deep eye sockets
Prominent ears (pinna flared)
Straight forehead with prominent eminences



Flexion: fingers widen and move inferiorly (towards the feet)
Extension fingers narrow and move superiorly (towards the top of the head)

Figure from onlinemeded

PHYSIOLOGIC STRAINS

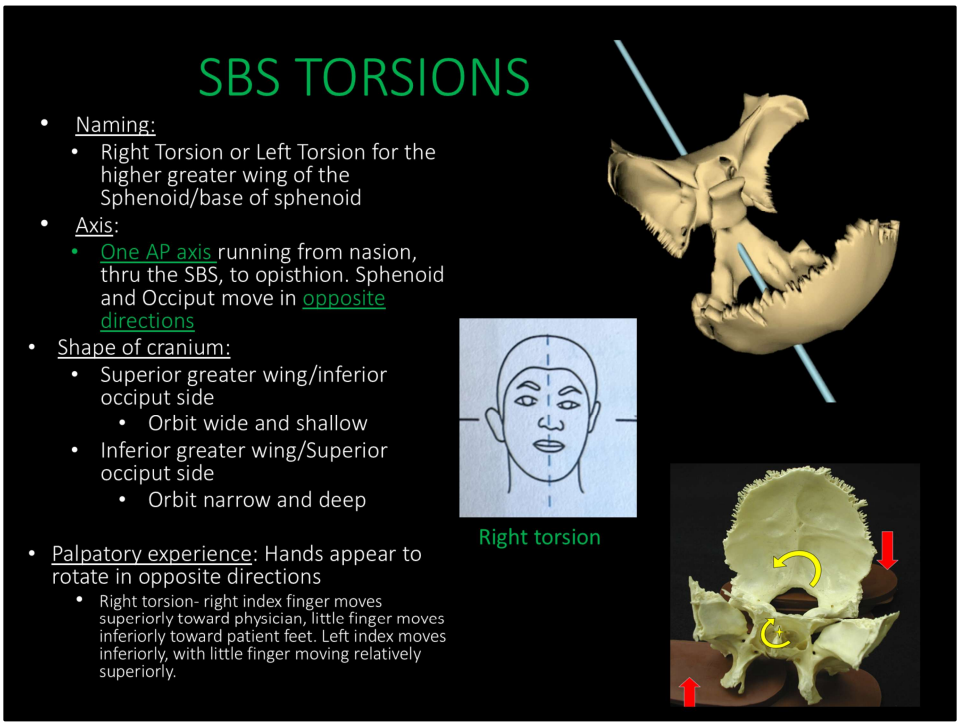
Flexion/Extension
(Exaggerated)

Torsions

Sidebending Rotation

eye protruding

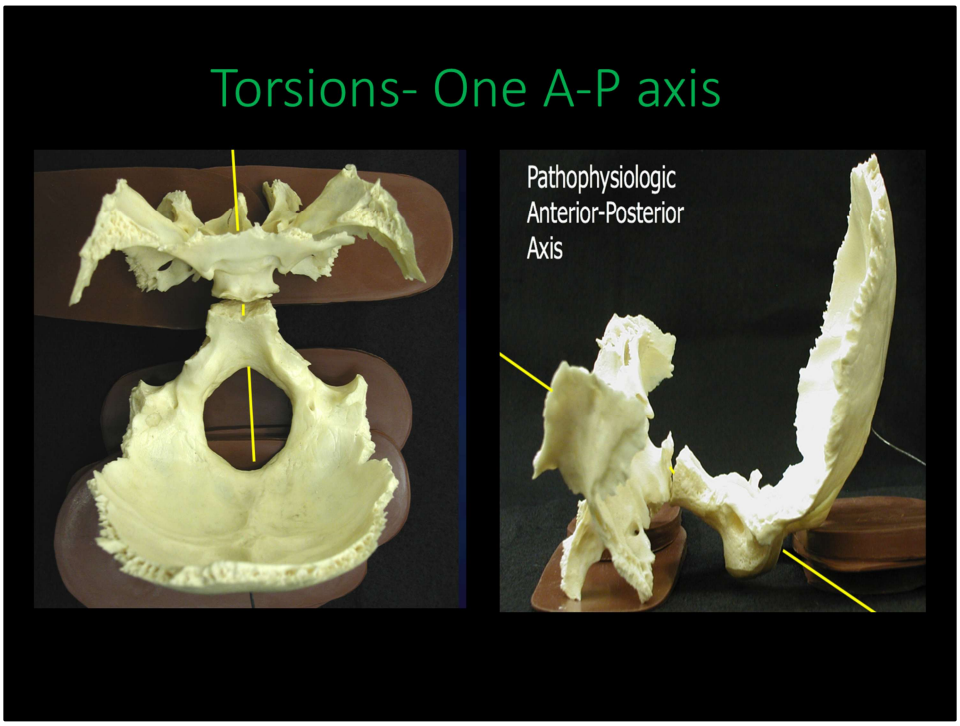
eye deep



Sphenoid rotates in one direction and the occiput rotates in another

Mechanism of injury (MOI) typically is an inferior or superior force vector directed on the outer anterior or posterior quadrant of the cranium

Diagram from OCA, Paul Dart MD presentation 2014



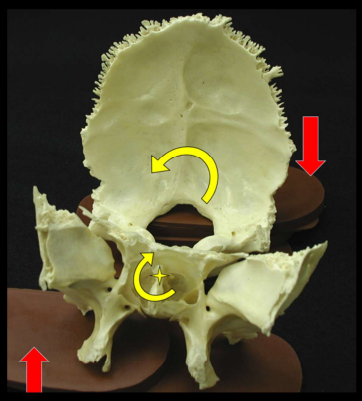
http://www.youtube.com/watch?v=GCmc5Ftn8QA
Torsion video

Figure from onlinemeded

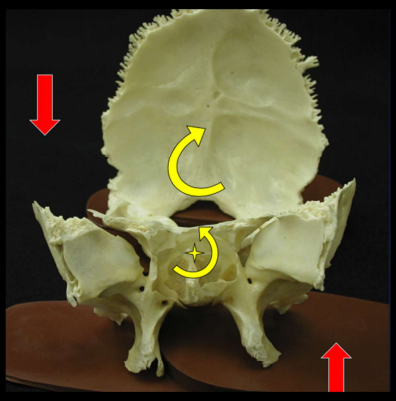
Hands appear to rotate in opposite directionsRight torsion- right index finger moves superiorly toward physician, little finger moves inferiorly toward patient feet. Left index moves inferiorly, with little finger moving relatively superiorly.

ANTERIOR VIEW OF TORSIONS

Right Torsion

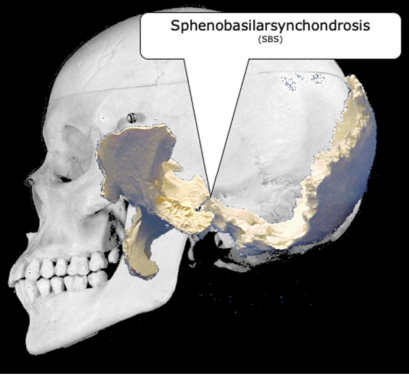


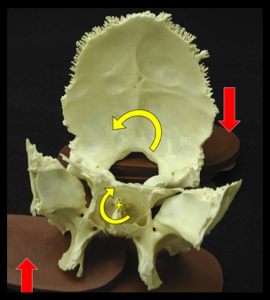
Left Torsion



Torsion Etiology:

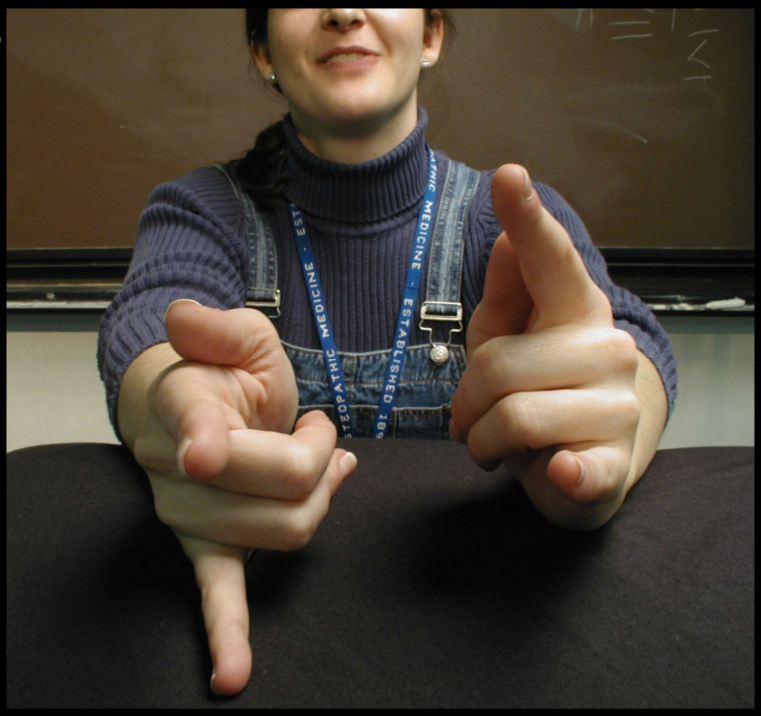
- A physiologic adaptation to a force from above down, or from below, up, on one of the four quadrants of the cranium
- A blow to one of the four quadrants





Extremely variable, often complex series of events over time.

What is this strain ?



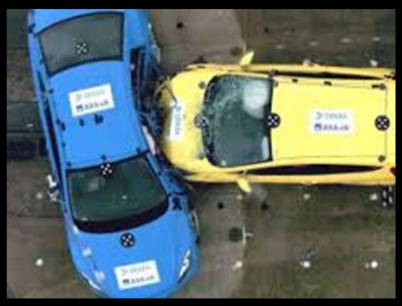
Left
Torsion

PHYSIOLOGIC STRAINS

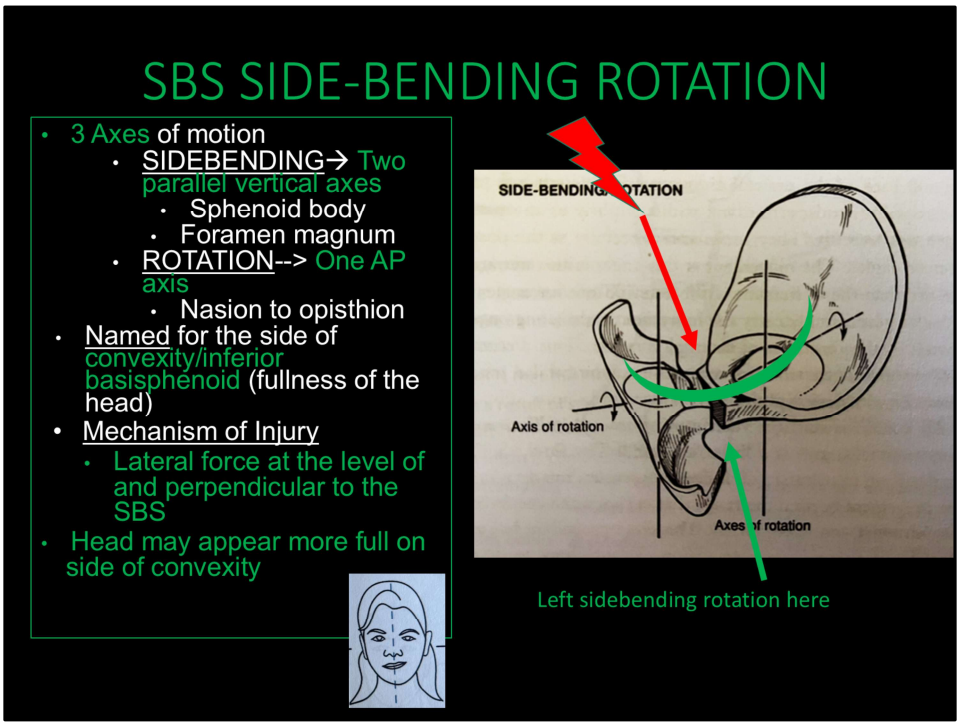
Flexion/Extension
(Exaggerated)

Torsions

Sidebending Rotation



3. SIDEBENDING ROTATION

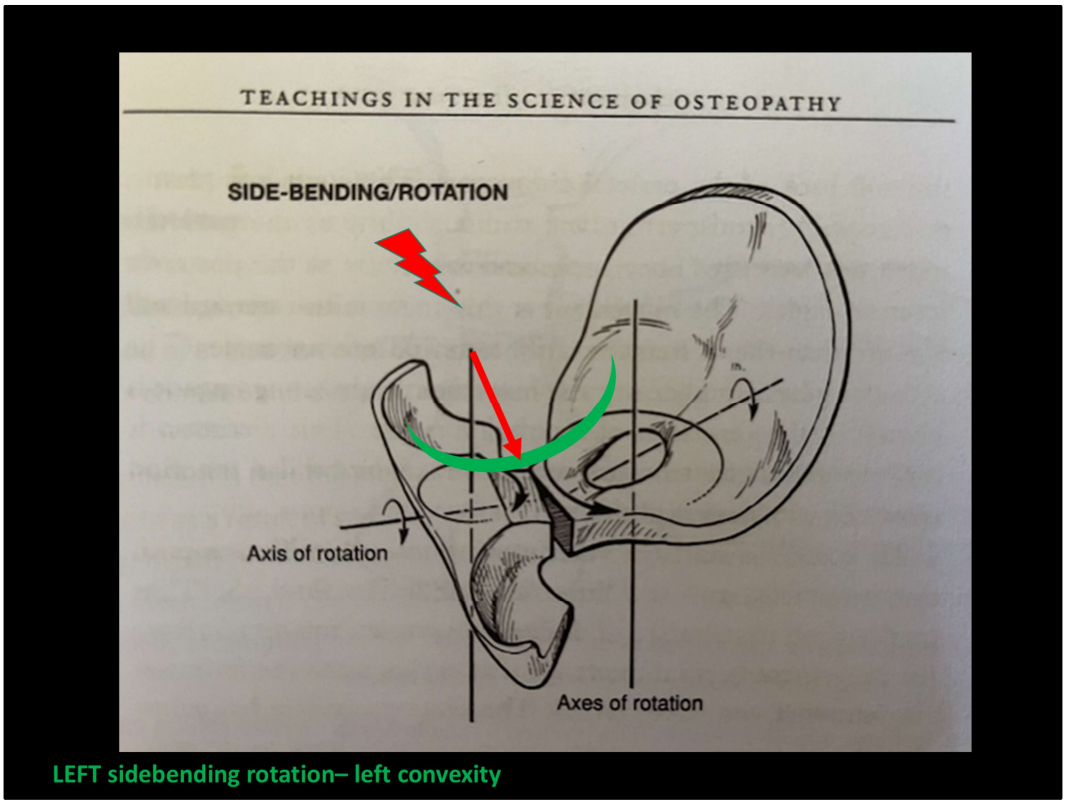


- Sidebending created by sphenoid and occiput moving in Opposite directions about the two **vertical axes**
- Rotation created by sphenoid and occiput moving in the Same direction about the **AP axis** (as opposed to torsion which has same AP axis but movement in opposite directions)

Think of this one as complex motion (like type II mechanics in the spine where motion is coupled)

TSO pg 154

Face diagram from OCA, Paul Dart MD presentation 2014



LEFT sidebending rotation

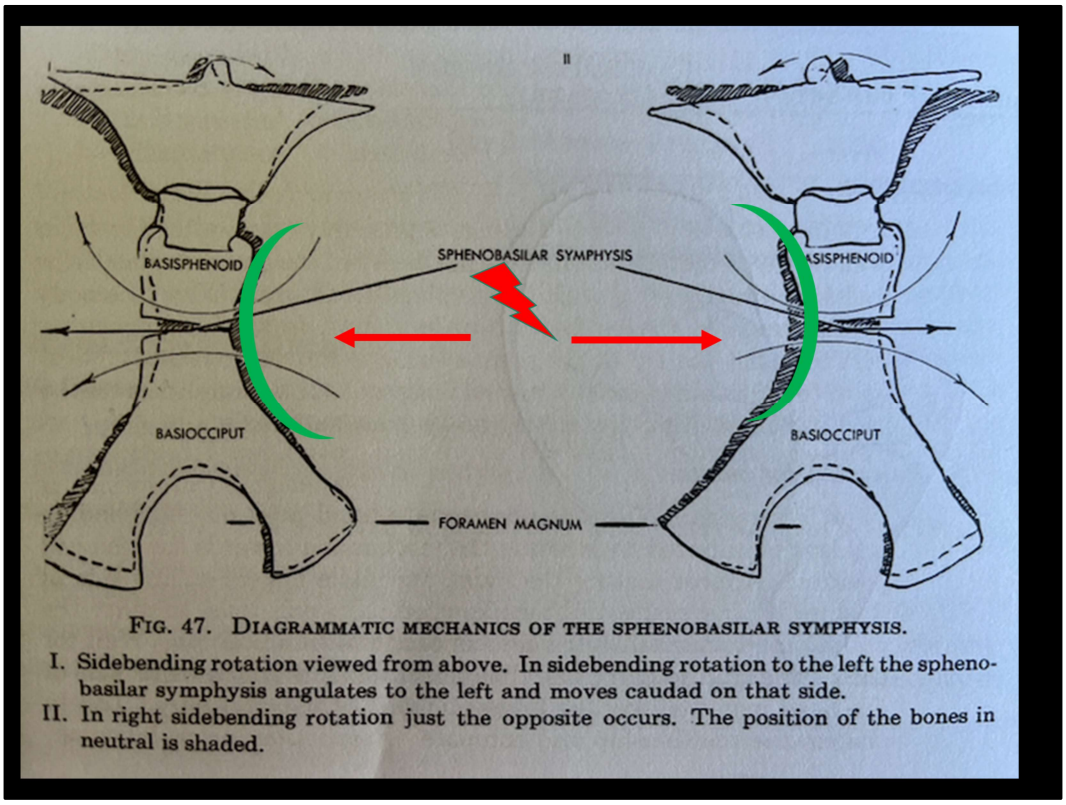
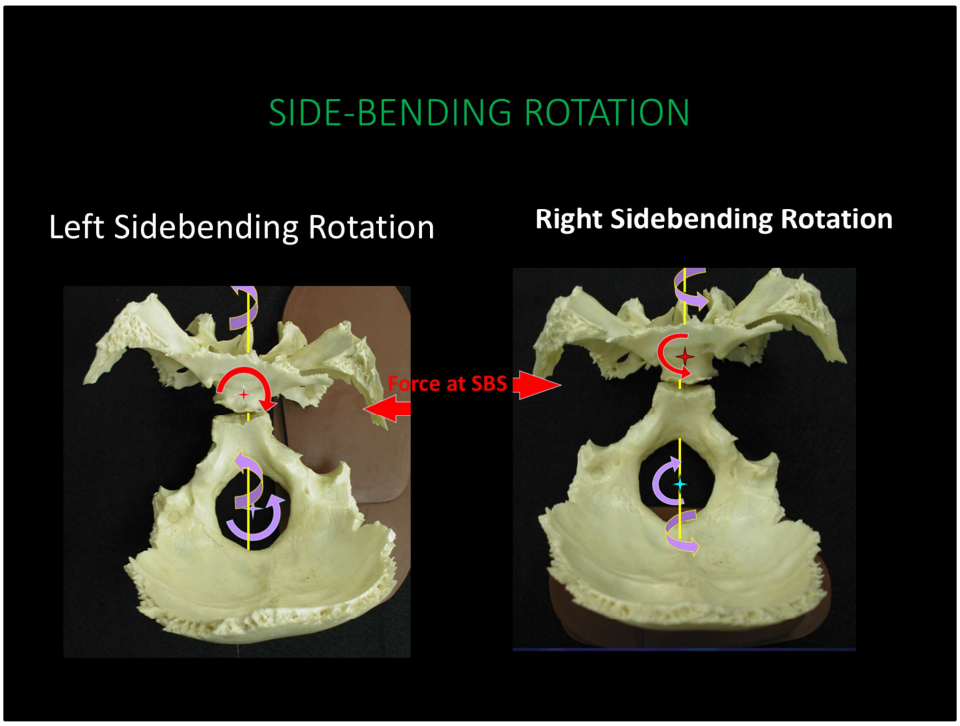


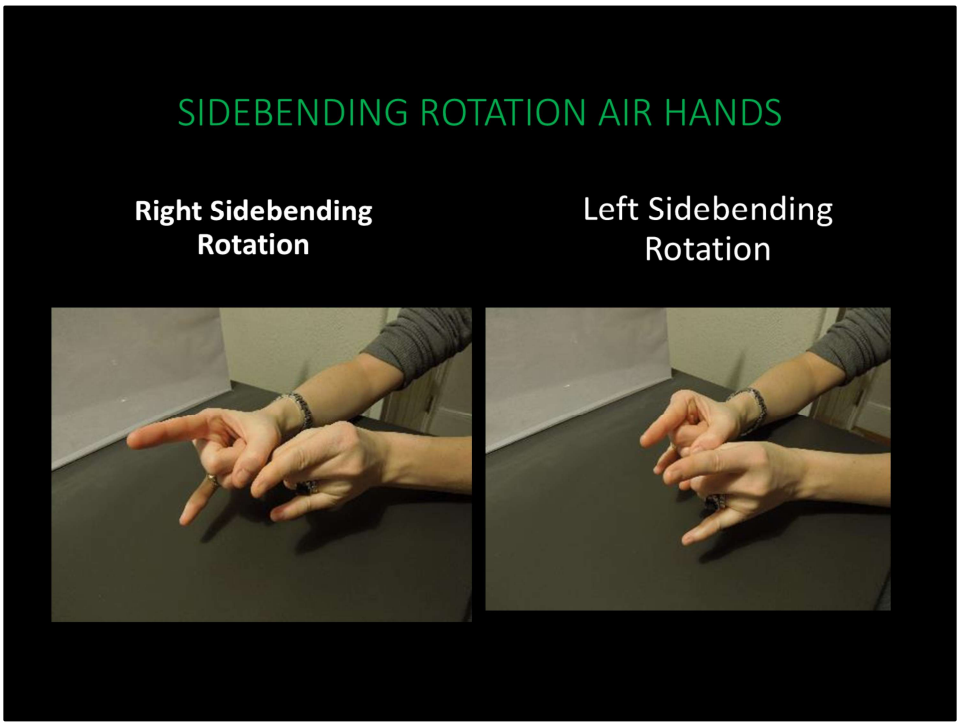
FIG. 47. DIAGRAMMATIC MECHANICS OF THE SPHENOBASILAR SYMPHYSIS.

I. Sidebending rotation viewed from above. In sidebending rotation to the left the sphenobasilar symphysis angulates to the left and moves caudad on that side.
II. In right sidebending rotation just the opposite occurs. The position of the bones in neutral is shaded.

OCF p 129

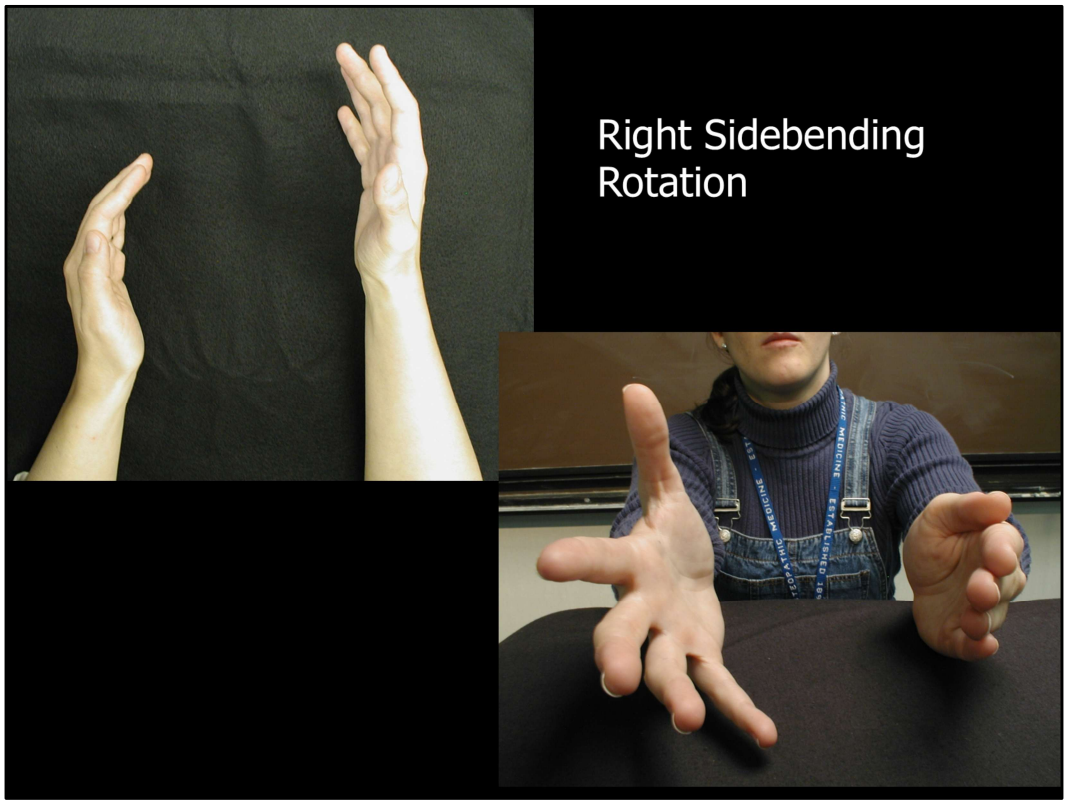


Red arrow shows force applied to create such a strain

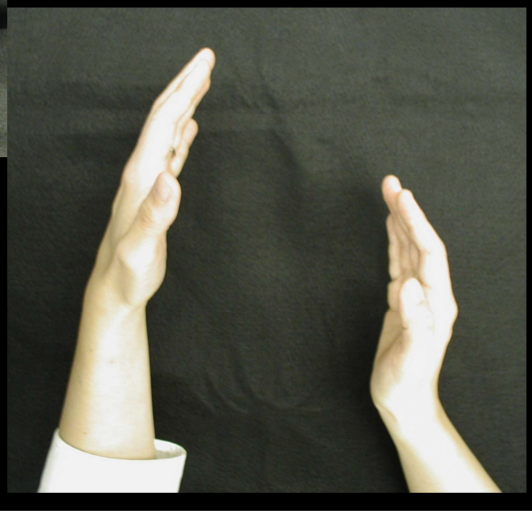


Vault palpatory experience

- defined by unilateral digits #2 & #5 moving apart (convexity) and inferiorly while contralateral digits #2 & #5 move together (concavity) and superiorly


Right Sidebending
Rotation

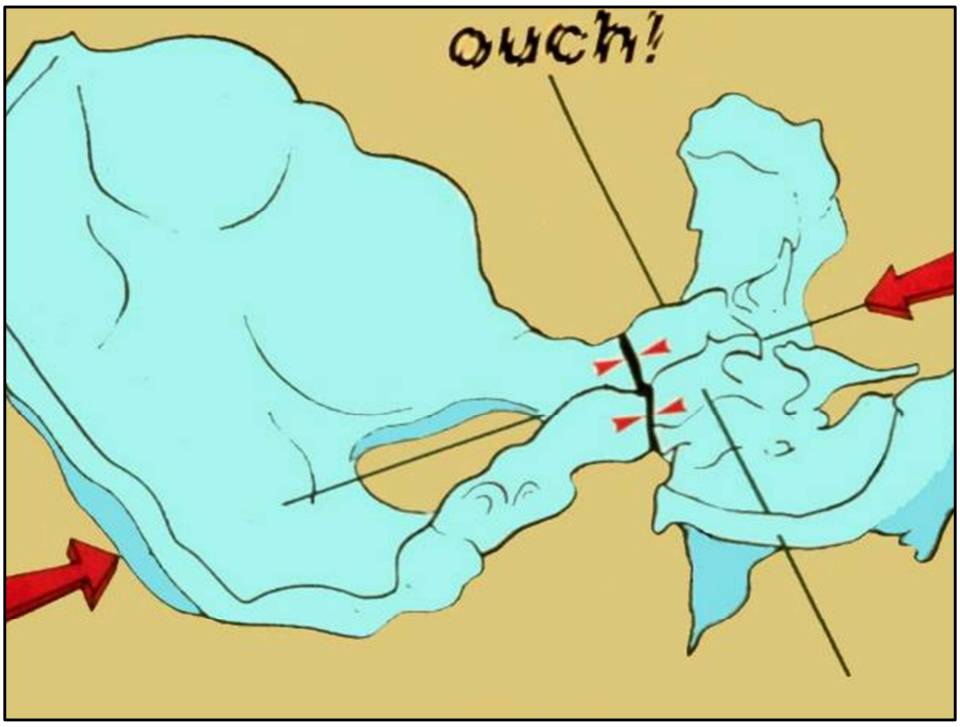
Left Sidebending Rotation



NON-PHYSIOLOGIC STRAINS

1. Compression
2. Lateral Strains
3. Vertical Strains

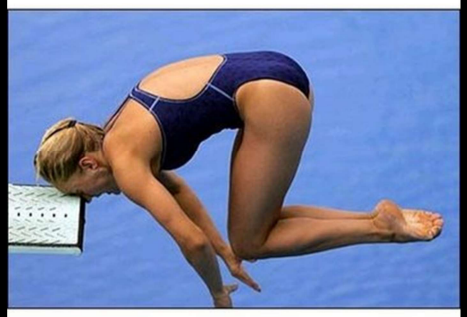
1. SBS COMPRESSION



Trauma (physical or psychological), severe infection (treating COVID pts at beginning of pandemic many heads were severely compressed)

normal relative anatomy, reduced or absent inherent motion (flex/ext)
may be hard, heavy, motionless - bowling ball head
may be more subtle and harder to detect as the vault bones continue to respond to CSF and compensate for lack of SBS motion
no axis of rotation
results from compression of SBS from front or back

BASE COMPRESSION

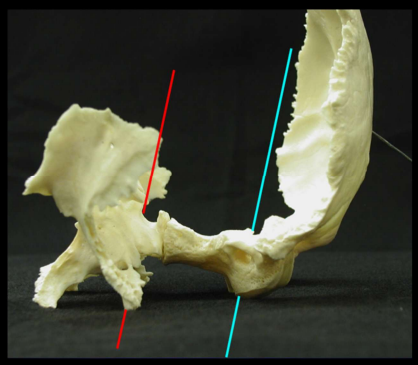


2. LATERAL STRAINS

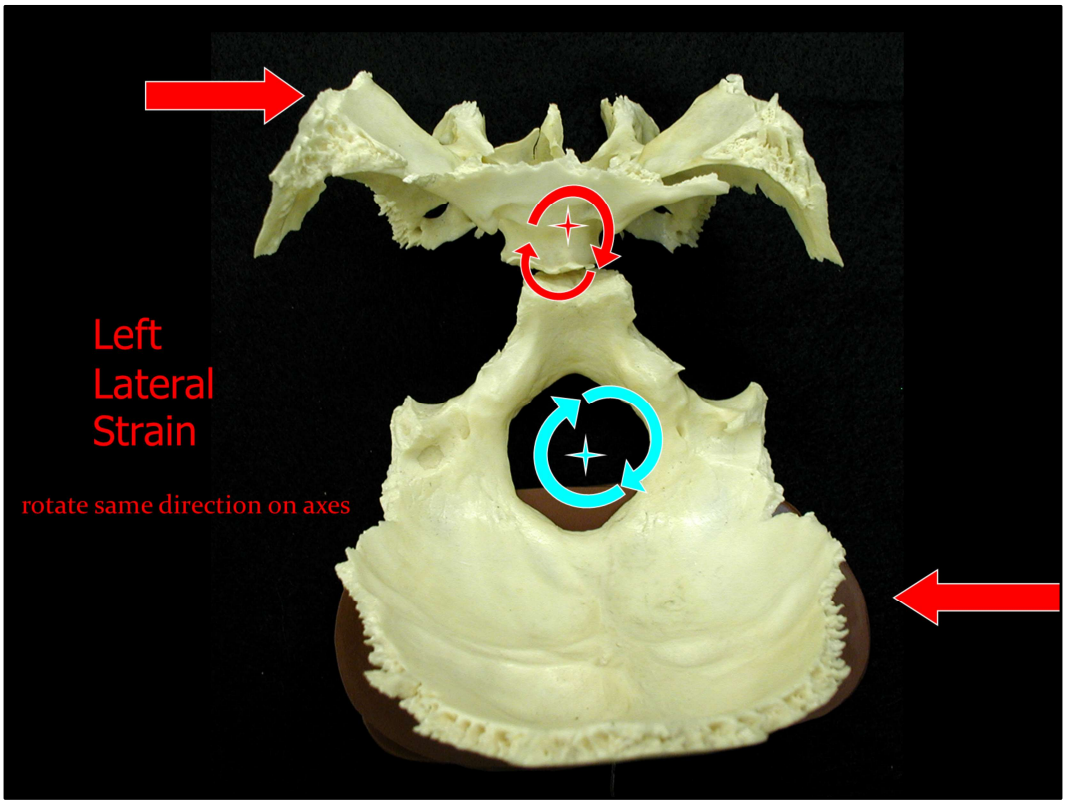
non-physiologic

LATERAL STRAINS

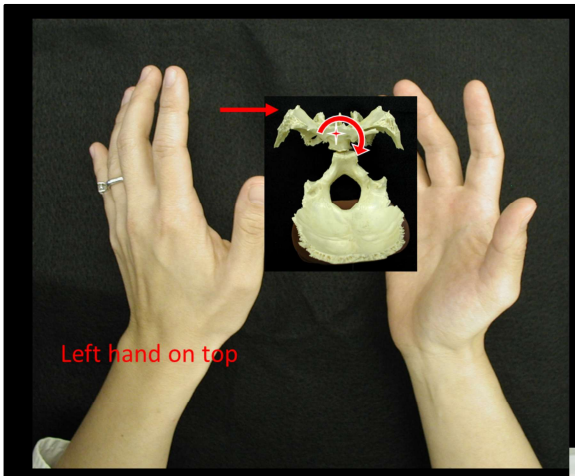
- Named
  - Left or Right Lateral Strain for position of base of sphenoid
- Axes
  - Two vertical axes
    - Body of the sphenoid
    - Through foramen magnum
- Rotation
  - Shearing force at SBS causing Sphenoid and Occiput to rotate same direction on axes
- Vault Palpatory Experience
  - B/L digits 2 moving in opposite L/R direction relative to B/L digits 5
- Mechanism of Injury
  - Plagiocephaly
    - Head appears "parallelogram"
  - Lateral force vector anterior or posterior to SBS



In real life there are many possible lateral strains depending on where the trauma strikes relative to the SBS– this is a simplified model to begin building a foundation of understanding.

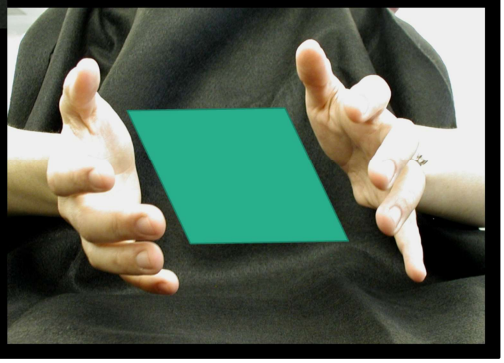


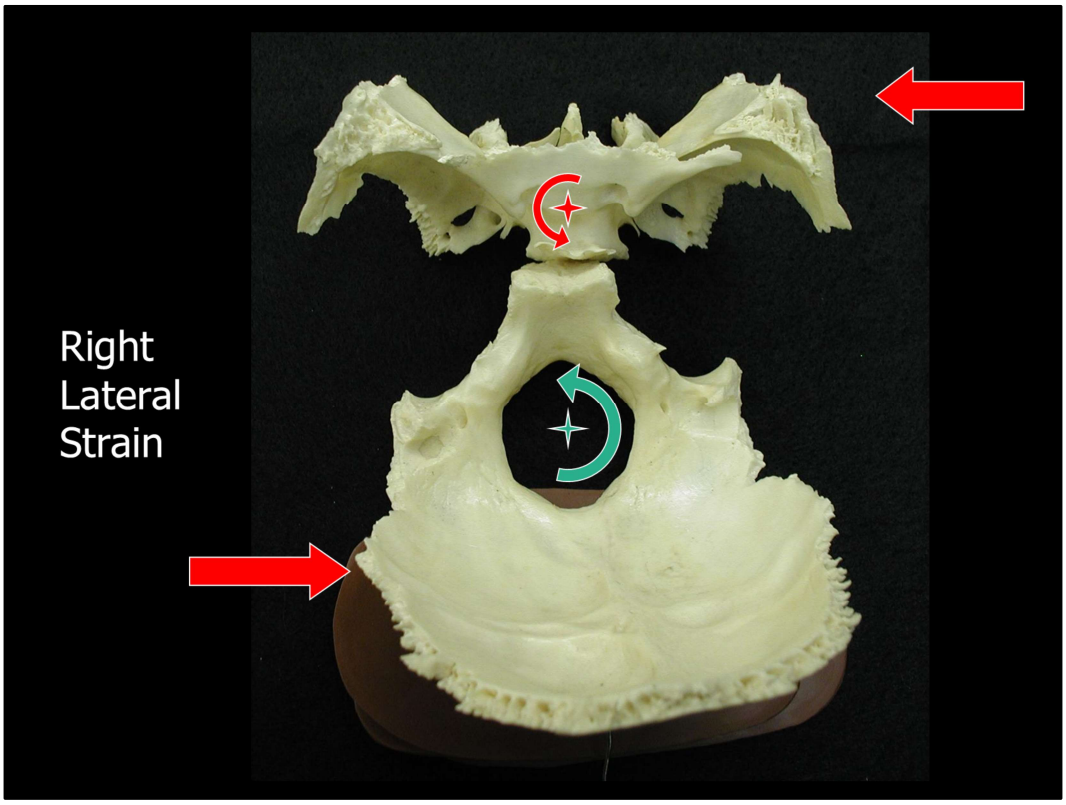
  - Two vertical axes
    - Body of the sphenoid
    - Through foramen magnum
- Rotation
  - Shearing force at SBS causing Sphenoid and Occiput to rotate same direction on axes



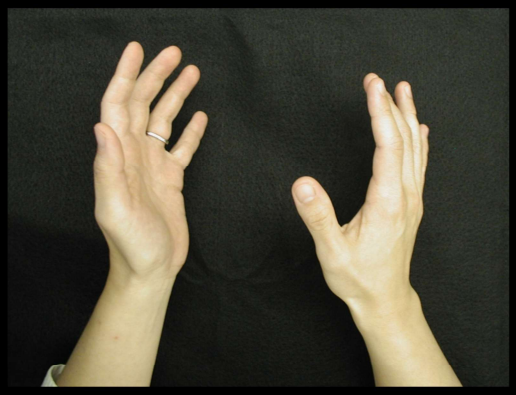
Left Lateral Strain

- Head appears “parallelogram”

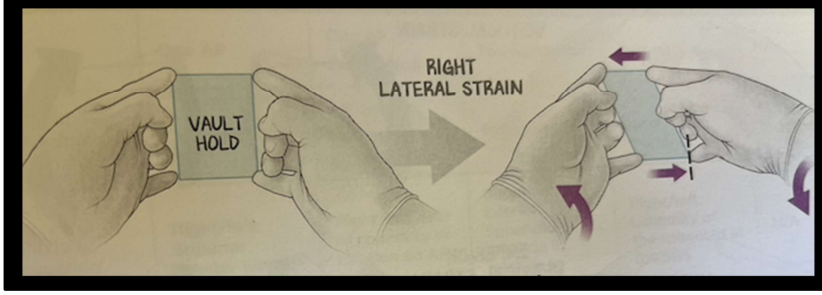


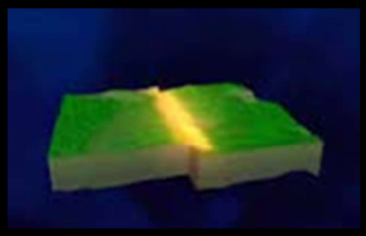

Right
Lateral
Strain

Right Lateral Strain



Right hand “on top”

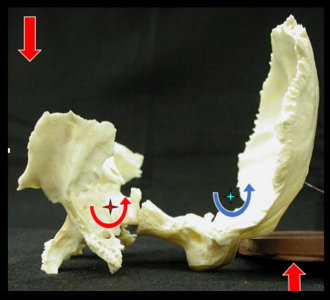




3. VERTICAL STRAINS

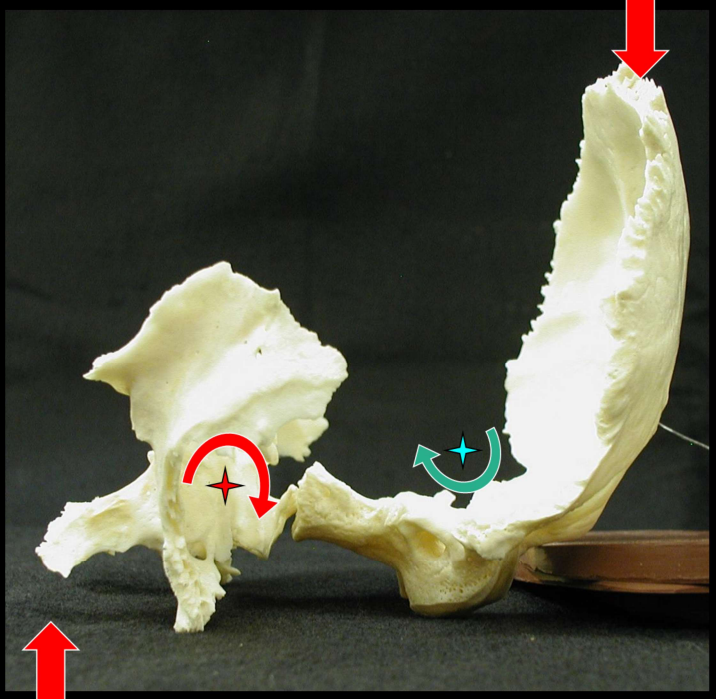
VERTICAL STRAINS

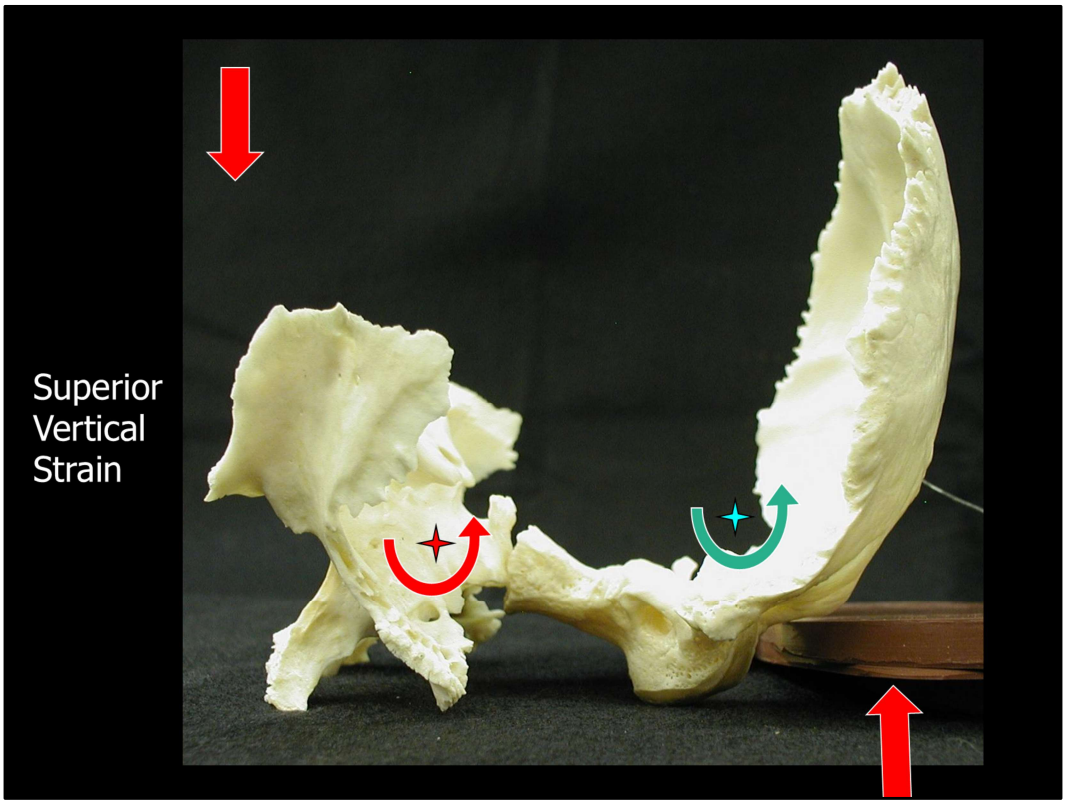
- **Named**
  - Superior or Inferior for the position of the base of the sphenoid
    - If the base rises up (superior strain) then the wings move inferiorly
    - If the base moves inferiorly (inferior strain) the wings will rise superiorly
- **Axes**
  - Two transverse (horizontal) axes
    - Body of sphenoid
    - Superior and posterior to the jugular processes of the occiput
    - Notice
      - Axes the same as flexion/extension except they **rotate in the same direction** instead of in opposite directions
- **Vault Palpatory experience**
  - B/L digits 2 moving in superior or inferior direction relative to the B/L digits 5
- **Mechanism of injury**
  - May be an inferior or superior force vector at the midline of the anterior or posterior aspects of the cranium



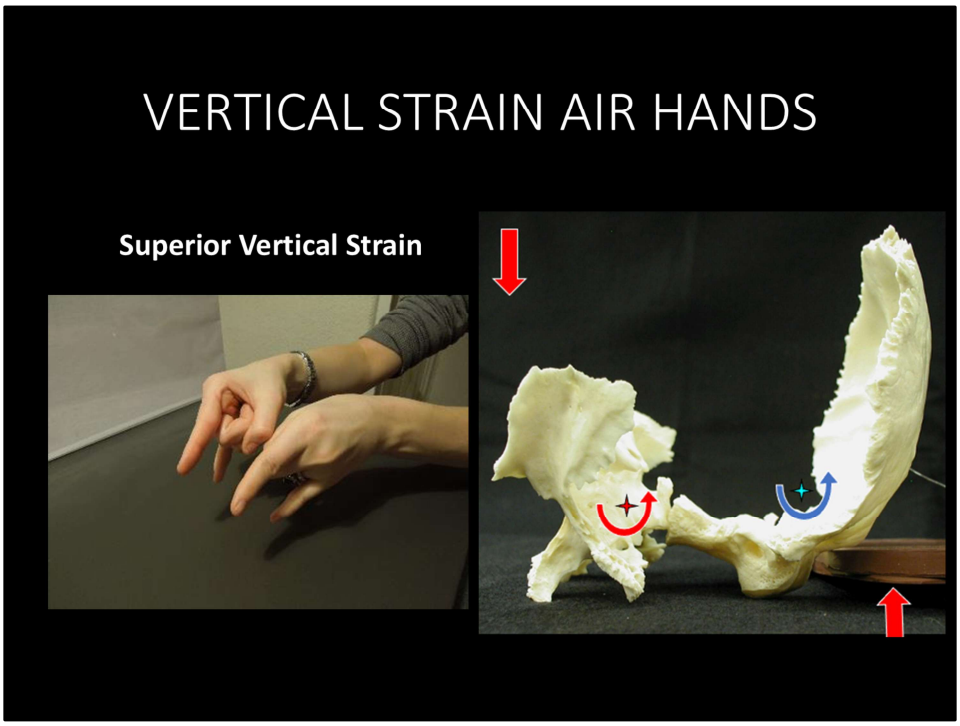
There is a shearing motion named for which way the basisphenoid shifts

Inferior
Vertical
Strain





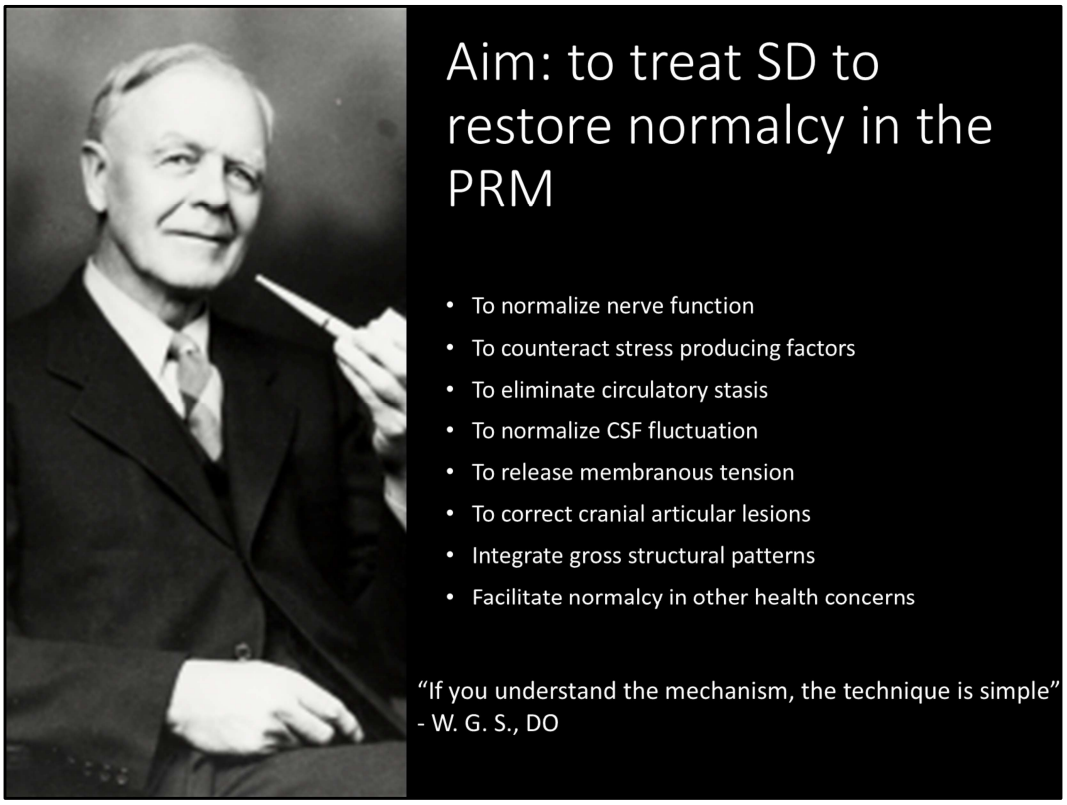
http://www.youtube.com/watch?v=cgH9P715ugE



REMEMBER it is named for the relative position of the body of the sphenoid. Because of the axis when the base of the sphenoid is superior the greater wings will feel like they are diving inferiorly.

OCMM 2 Intro to Dx and Tx- Outline

- Part 1:
  - Common clinical presentations
  - Initial diagnosis including vault contact
  - Normal physiologic motion of the cranium:
    - Flexion and Extension
- Part 2:
  - Sphenobasilarsynchondrosis (SBS) strain patterns:
    - Physiologic strains
      - Flexion/Extension, Torsions, Sidebending rotations
    - Non-physiologic strains
      - Compression, Lateral strains, Vertical strains
- Part 3:
  - OCMM- treatment principles
  - Contraindications



According to Magoun

HOW DO WE TREAT CRANIAL SOMATIC DYSFUNCTION?

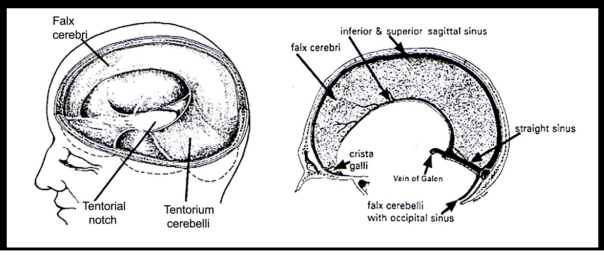
Osteopathic Cranial Manipulative Medicine

What are the principles of treatment?

- Exaggeration (indirect)
- Disengagement (direct)
- Direct articular release

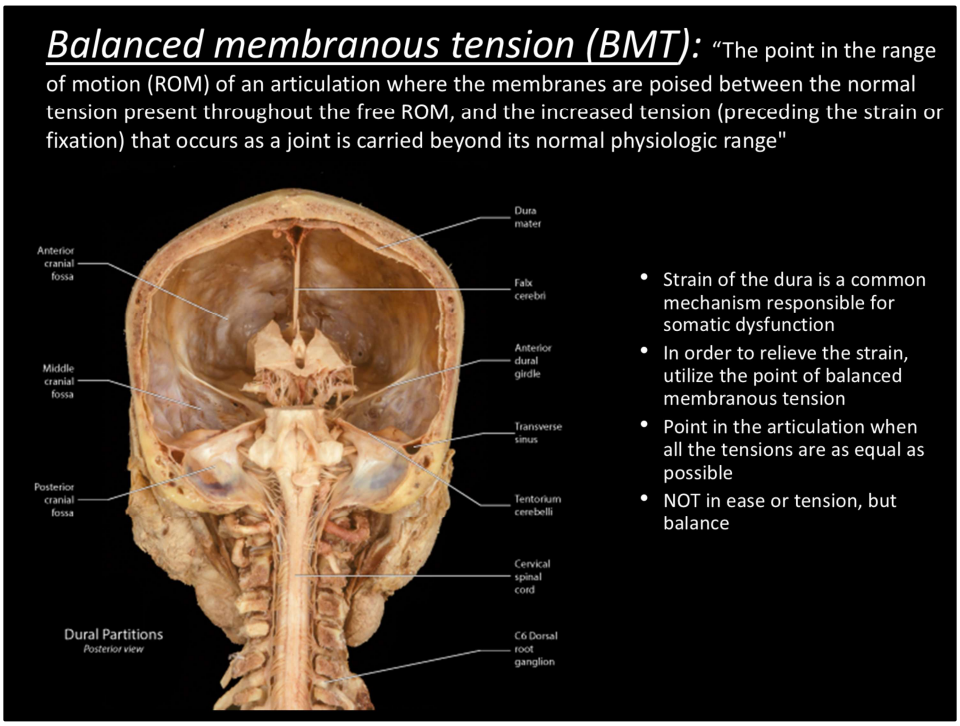
Other additional forces may be used:

- Respiratory Cooperation
- Cerebrospinal fluid fluctuation (directing the tide)



It is the most neutral position possible under the influence of all the factors responsible for the existing pattern. All attendant tensions having been resudced to the absolute minimum. This is found by palpating with “seeing, feeling, thinking and knowing fingers” –per Dr. Sutherland.

like BLT



get to the right place and it all lets go

The principles of treatment discussed are all ways to get to balanced membranous tension, the primary technique of OCMM.

Definition of BMT taken from Magoun, *Osteopathy in the Cranial Field.* 2nd edition. 1966 and FOM

BMT is Tensegrity

omitted for the sake of clarity.

A fundamental characteristic of prestressed tensegrity structures is, as Fuller described it, "…*continuous tension and discontinuous compression*".[35] These concepts are illustrated in Fig. 8a which shows a schematic diagram of the bones spread out in two dimensions. The bones are the compression elements which are being pulled by dural tension (only a small number of tension forces pulling in one general direction are shown in this diagram). Here they remain distinct from each other and do not make contact with each other at any point — 'discontinuous compression'. This contrasts with Fig. 8c, which shows the compressive load of a stone

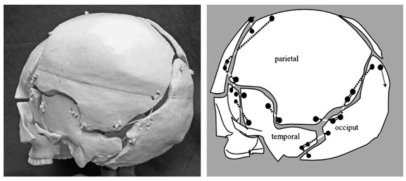


Fig. 5. Tensegrity skull model, postero-lateral view.

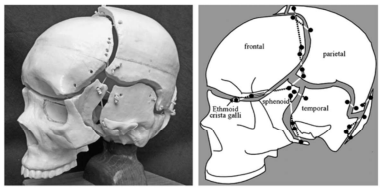
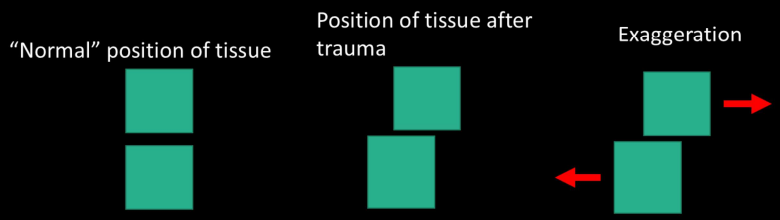


Fig. 4. Tensegrity skull model, antero-lateral view.

bones = compression
dura = tension

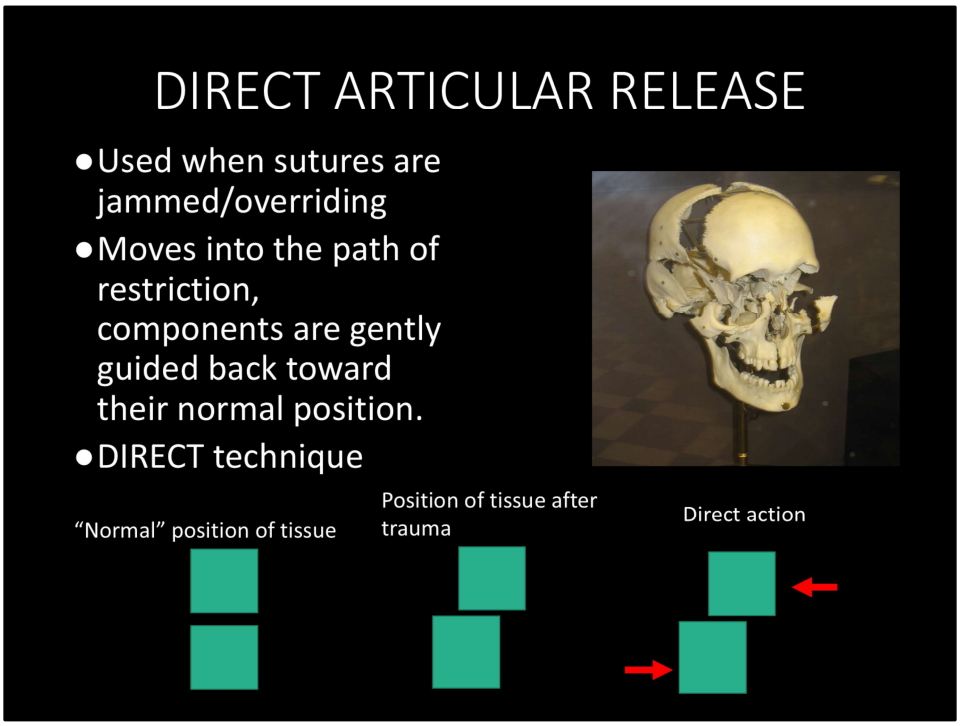
EXAGGERATION/Indirect Action

- The abnormal relationships are increased (or exaggerated), by moving the involved structures further into the direction they were lesioned.
- Hold at this point until you feel the release
- Do not use: With children under the age of five
- This is INDIRECT



FOM

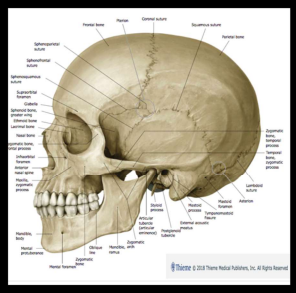
one approach



(Direct articular release) Usually sense an increase in tension as you approach the barrier

DISENGAGEMENT

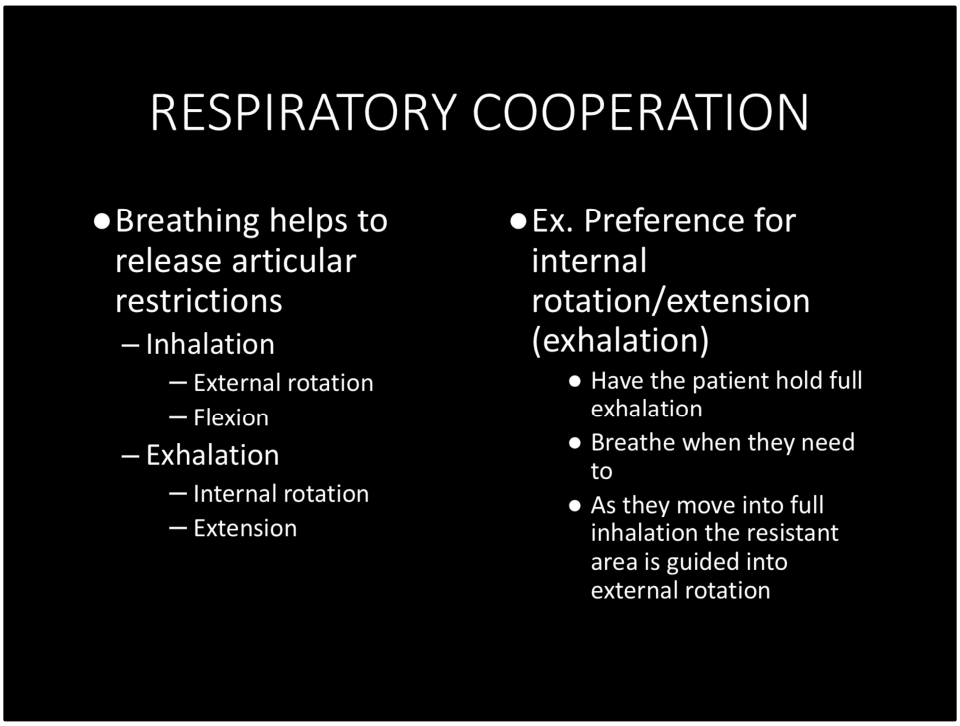
- Usually used for articular restrictions
- It is the separation of opposing surfaces



Disengagement

"Normal" position of tissue

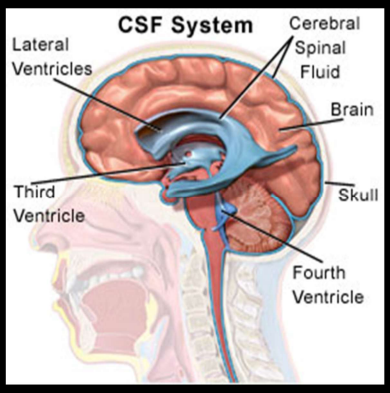
Position of tissue after trauma



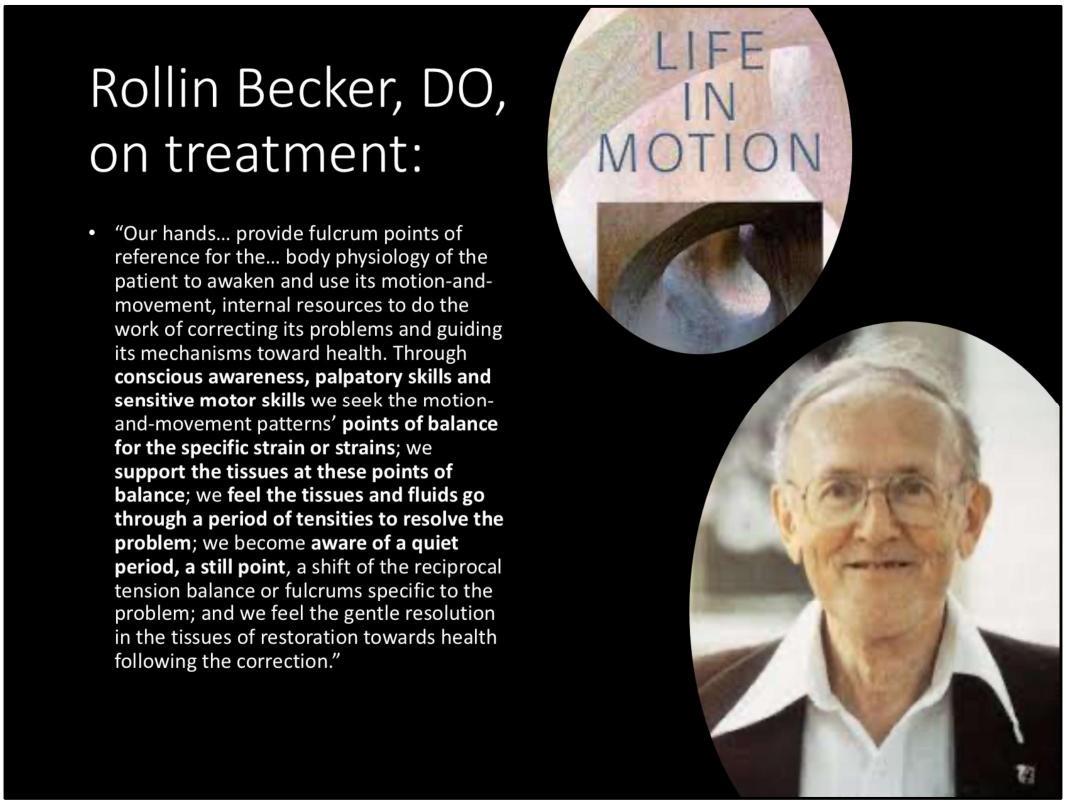
Exhalation accentuates internal rotation and extension

CEREBROSPINAL FLUID FLUCTUATION
(directing the tide)

- Fluid motion can be directed
- Can be used to reestablish the normal fluctuation of the CSF or release membranous or articular restrictions
- Example: V-spread Technique



gentle impulse on one part of cranium to affect and help release tension on the opposite side in this case will be occipitomastoid suture



Rollin Becker, DO Life in Motion Motion: The key to diagnosis and treatment, Pg. 57 GREAT resource for your learning.

quiet, still point

Contraindications to OCMM treatment:

- Absence of patient consent (absolute)
- Acute or progressing intracranial hemorrhage (absolute)
- Low patient vitality and clinical friability – especially hospitalized (relative)
- Significant acute cranial laceration or soft tissue injury (relative)
- Acute cranial fracture (relative)
- Significant cranial neoplasm (relative)

don't want to overwhelm someone's system

don't want to dislodge something

maybe someone with a lot of experience in OCMM

Cranial Mini Review

	Motion	Axis	Hands	How to name?
1.	Flexion	2 transverse	inferior and wider (giving a gift)	SBS -- superior
2.	Extension	2 transverse	superior and inward (taking the gift back)	SBS – inferior
3.	Torsion			Sphenoid Greater wing
	a. Right	AP	right superior/ left inferior (like wheels)	
	b. Left	AP	left superior/right inferior (like wheels)	
4.	Sidebending Rotation	Sidebending -- 2 vertical Rotation axis – AP		convexity
	a. Right		right inferior and fans fingers out Left superior and fingers approximate	
	b. Left		left inferior and fan fingers out Right superior and fingers approximate	
5.	Vertical	2 transverse		Base of sphenoid
	a. Superior		finger tips down and wrists up/superior	
	b. Inferior		finger tips up and wrists down/inferior	
6.	Lateral	2 vertical		Base of sphenoid
	a. Right		45 degrees to the left both hands/ pinkies point to the R	
	b. Left		45 degrees to the right both hands/ pinkies point to the L	

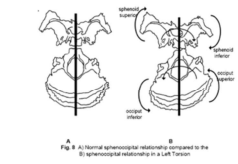


Fig. 8 A) Normal sphenoccipital relationship compared to the B) sphenoccipital relationship in a Left Torsion


Fig. 14 Superior Vertical Strain


Fig. 12 Posterior View of a Left Sidebending Rotation Dysfunction

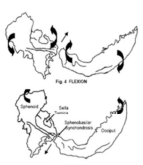


Fig. 4 FLEXION

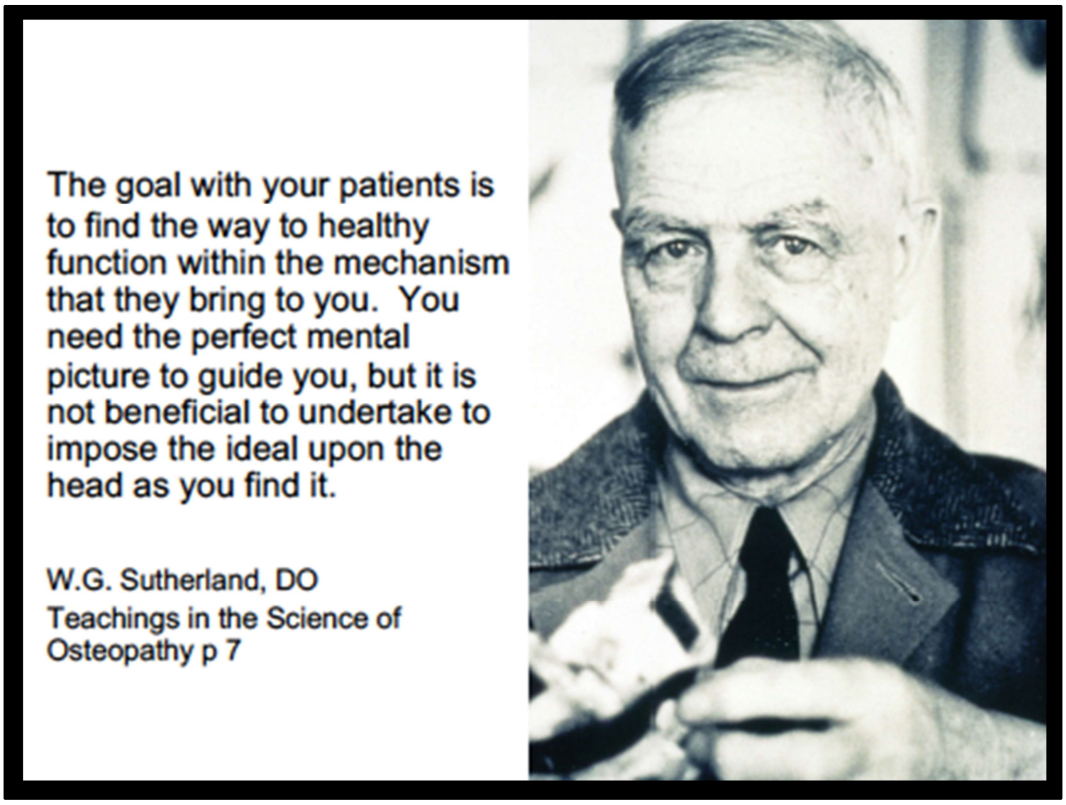
Fig. 5 EXTENSION


Fig. 16 Left lateral strain

Fig. 11 Left Sidebending Rotation viewed from above

Primary Respiratory Motion	Extension	Flexion
Respiratory Phase	Exhalation	Inhalation

HTTP://WWW.DOCSTOC.COM/DOCS/104168858/CRANIAL-MINI-REVIEW



won't need to know what each individual head is supposed to feel like, be open to how know when things are moving toward release, and balance

PRACTICE 1

- Flexion-Extension
  - How many axes are present in the description of this motion?
  - Where are the axes?
  - Do they move in the same direction or opposite?
  - Physiologic or non physiologic?
  - What would air hands look like?

PRACTICE 2

- Torsions
  - How many axes?
  - Where are the axes?
  - Move in the same direction or opposite?
  - Physiologic or non physiologic?
  - What would air hands look like?

PRACTICE 3

- Sidebending Rotation
  - How many axes?
  - Where are the axes?
  - Move in the same direction or opposite?
  - Physiologic or non physiologic?
  - What would air hands look like?

PRACTICE 4

- Vertical Strains
  - How many axes?
  - Where are the axes?
  - Move in the same direction or opposite?
  - Physiologic or non physiologic?
  - What would air hands look like?

PRACTICE 5

- Lateral Strains
  - How many axes?
  - Where are the axes?
  - Move in the same direction or opposite?
  - Physiologic or non physiologic?
  - What would air hands look like?

PRACTICE 6

- Compression
  - How many axes?
  - Where are the axes?
  - Move in the same direction or opposite?
  - Physiologic or non physiologic?
  - What would air hands look like?

PRACTICE 7

- You are treating a patient with a headache. You palpate in the vault hold:
  - Right index finger and the right pinky finger moves anterior and superiorly
  - The Left index finger and the left pinky finger move posterior and inferior
  - What is the strain?
  - How many axes?
  - Which direction do they rotate?

PRACTICE 8

- You are treating a patient with neck pain. You palpate in the vault hold:
  - Your right index finger and pinky finger approximate and move superiorly (towards you)
  - Your left index finger and pinky finger widen and move inferiorly (away from you)
  - What is the strain?
  - How many Axes?
  - Which direction do they rotate?

PRACTICE 9

- You are treating a patient with sinusitis. You palpate in the vault hold:
  - Both hands- index fingers and pinky fingers widening and moving inferiorly
  - Very little motion with fingers approximating and moving superiorly
  - What is the strain?
  - How many axes?
  - Which direction do they rotate?

PRACTICE 10

- You are treating a patient with low back pain. You palpate in the vault hold:
  - Both your index fingers moving posterior and inferior
  - Both your pinky fingers moving posterior and superior
  - What is the strain?
  - How many axes?
  - Which direction do they rotate?

PRACTICE 11

- You are treating an infant with plagiocephaly and torticollis. You palpate in the vault hold:
  - Your bilateral index fingers move to the left
  - Your bilateral pinky fingers move to the right
  - What is the strain?
  - How many axes?
  - Which direction do they rotate?

BIBLIOGRAPHY

- Ettlinger, H. and Gintis, B. An Osteopathic Approach to Diagnosis and Treatment: Chapters 103-105.
- Seffinger. Foundations of Osteopathic Medicine 4th edition
- Brooks, Rachel. Osteopathy in the Cranial Field: The Approach of WG Sutherland. Physical Medicine and Rehabilitation: State of the Art Reviews. Hanley and Belfus: 2000.
- Magoun, H. *Osteopathy in the Cranial Field*
- Dr. Pena, Dr. Hiserote, Dr. Pierce-Talsma and Dr. Newman's lectures