

MASTERING THE CERVICAL SPINE AND THE TMJ THE “WONG WAY”



DR. KEVIN M. WONG, BS, DC, FCCA

Thank You All For Being Here !





UCDAVIS
AGGIES

UCDAVIS

UNIVERSITY OF CALIFORNIA

B.S. - 1993



PALMER

College of Chiropractic

West - 1996



(1997)



FOOT LEVELERS

Speakers Bureau

(2004)

CAL CHIRO

CALIFORNIA CHIROPRACTIC ASSOCIATION

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LASER TECHNOLOGIES

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CHIROON-SOURCE



Amsterdam,
Netherlands,
July 2025



**Foot Levelers
Representative:**

Tammy Davis



GOALS:

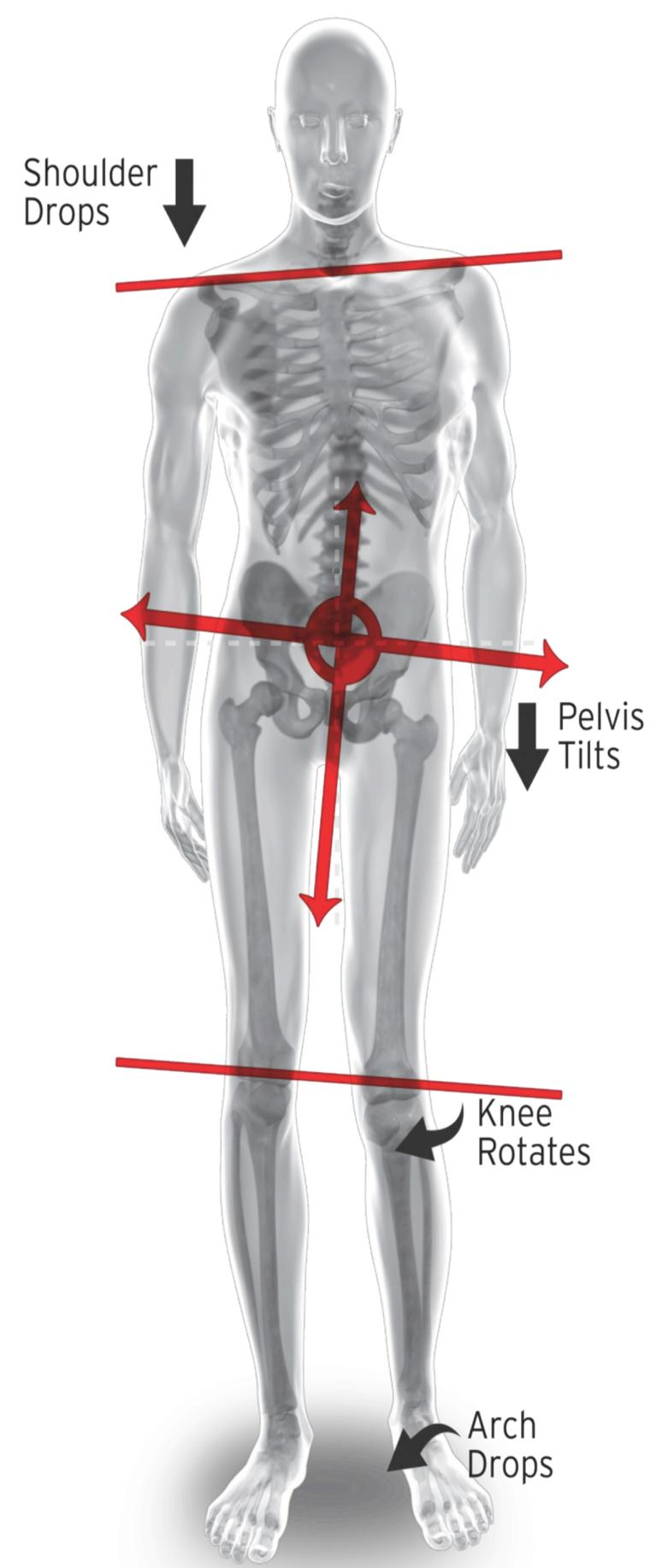
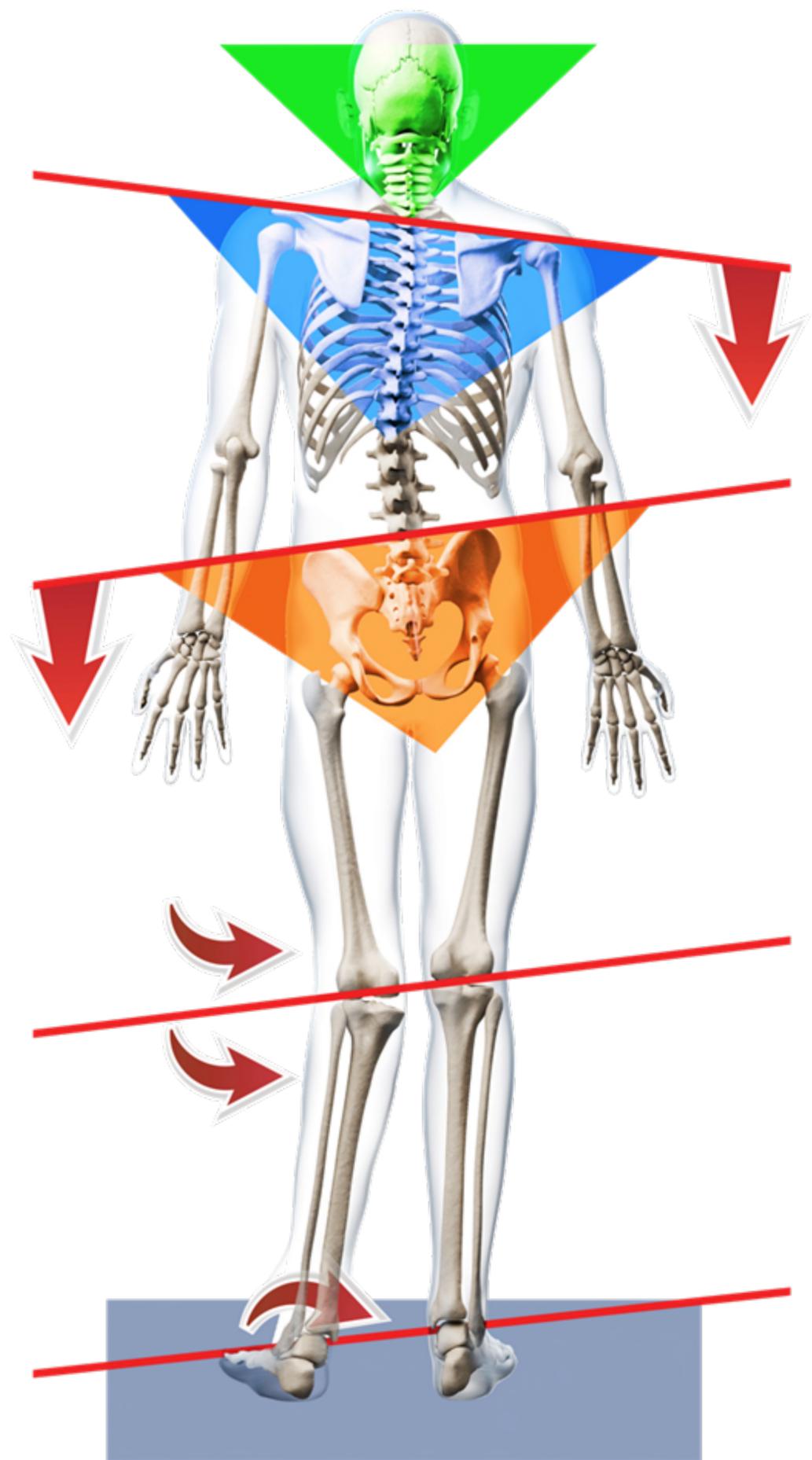


- Understand the cervical spine and its' affect on the TMJ and the head.
- Expand knowledge of the TMJ and its' critical role in neck and upper body stability.
- Discuss common clinical conditions.
- Introduce/review useful adjustments for the spine and the TMJ.

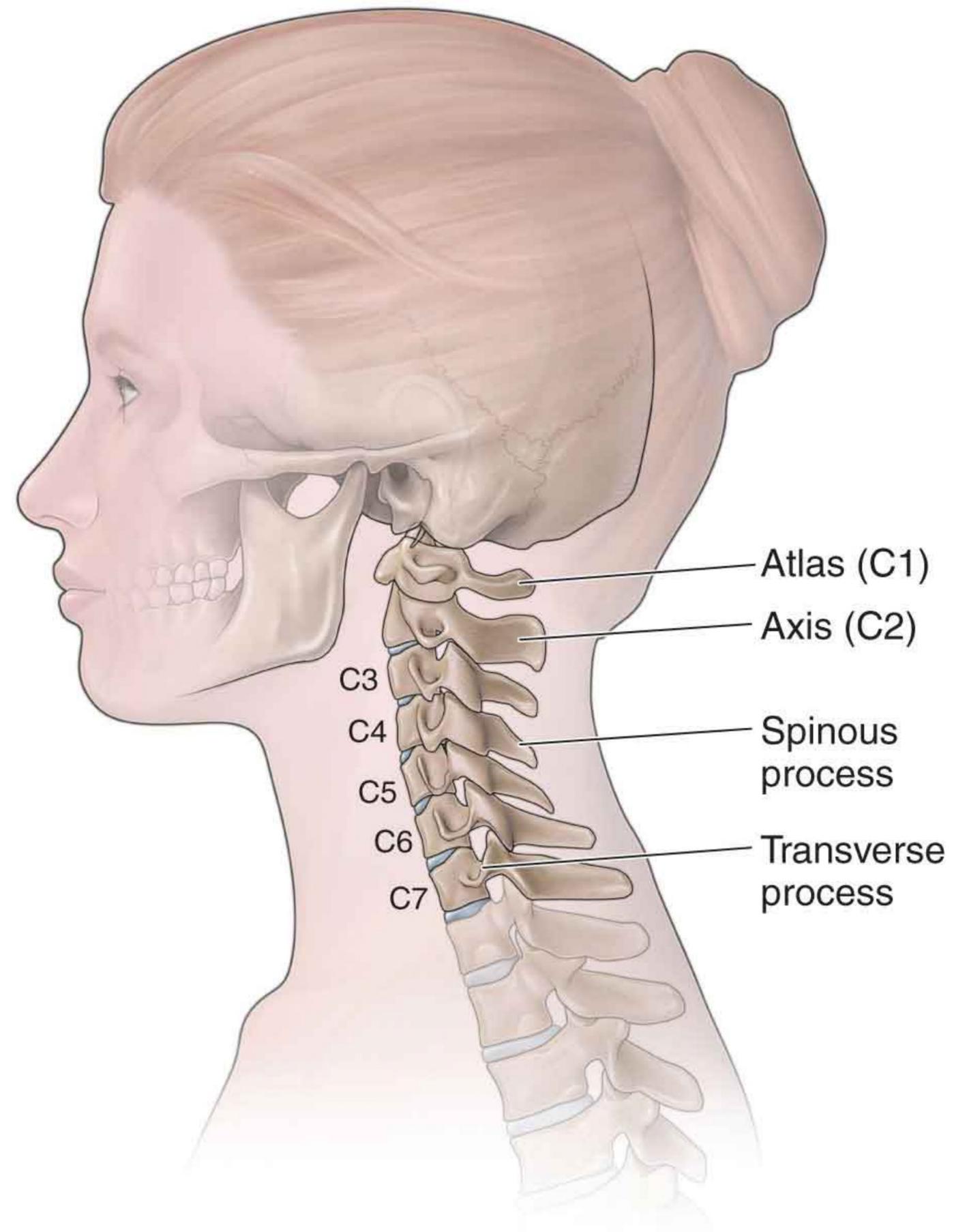
Motivate you
to scan **ALL**
your patients'
feet
because....



...they
stabilize
your entire
body from
toes to
nose.



The Cervical Spine



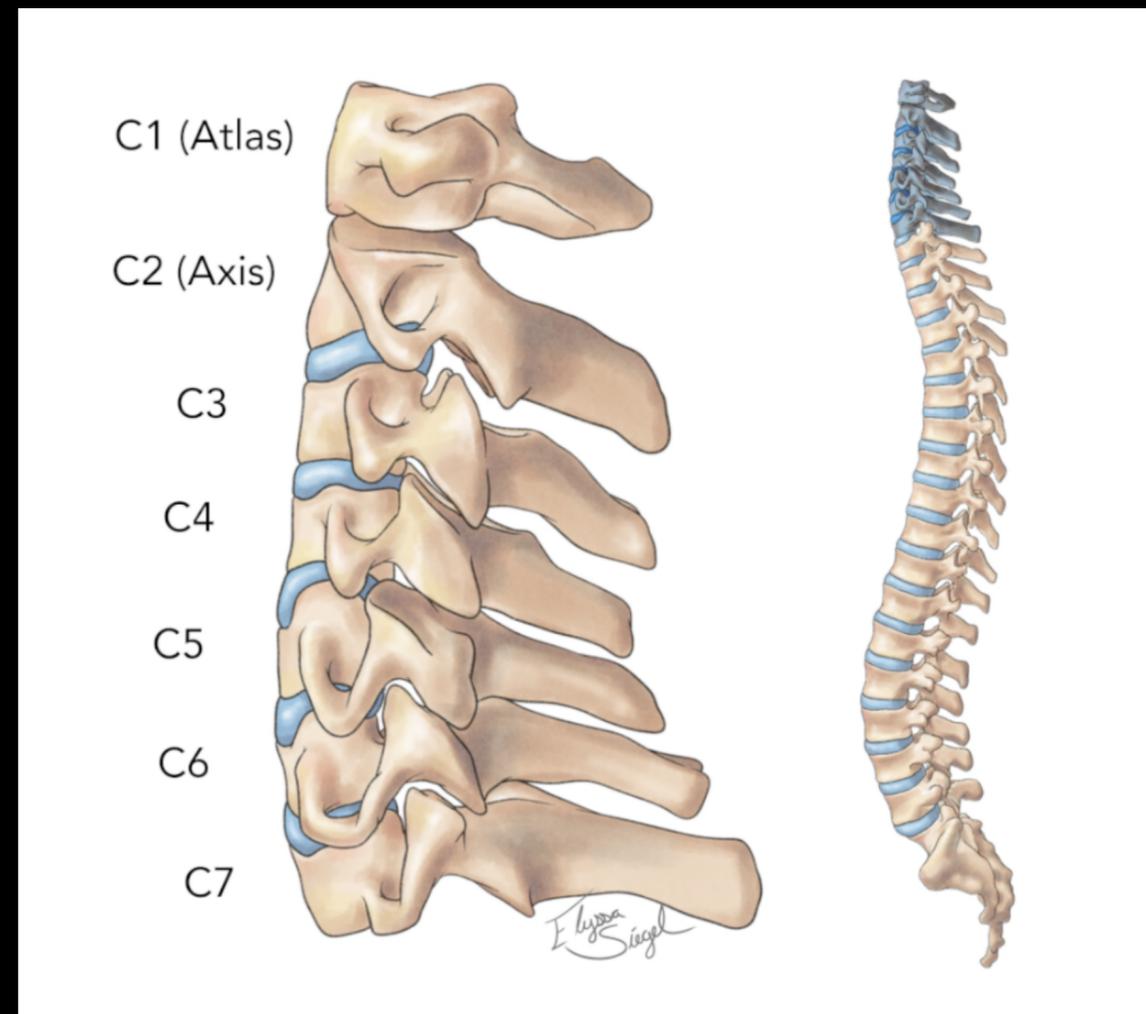
The 7 Cervical Vertebrae: C1-C7

C1 (Atlas): Ring-shaped, articulates with skull; primary rotation

C2 (Axis): Odontoid process; flexion/extension pivot

C3-C6: Typical vertebrae with uncinuate processes; disc + facet joints

C7 (Vertebra Prominens): Large spinous process; transition to thoracic



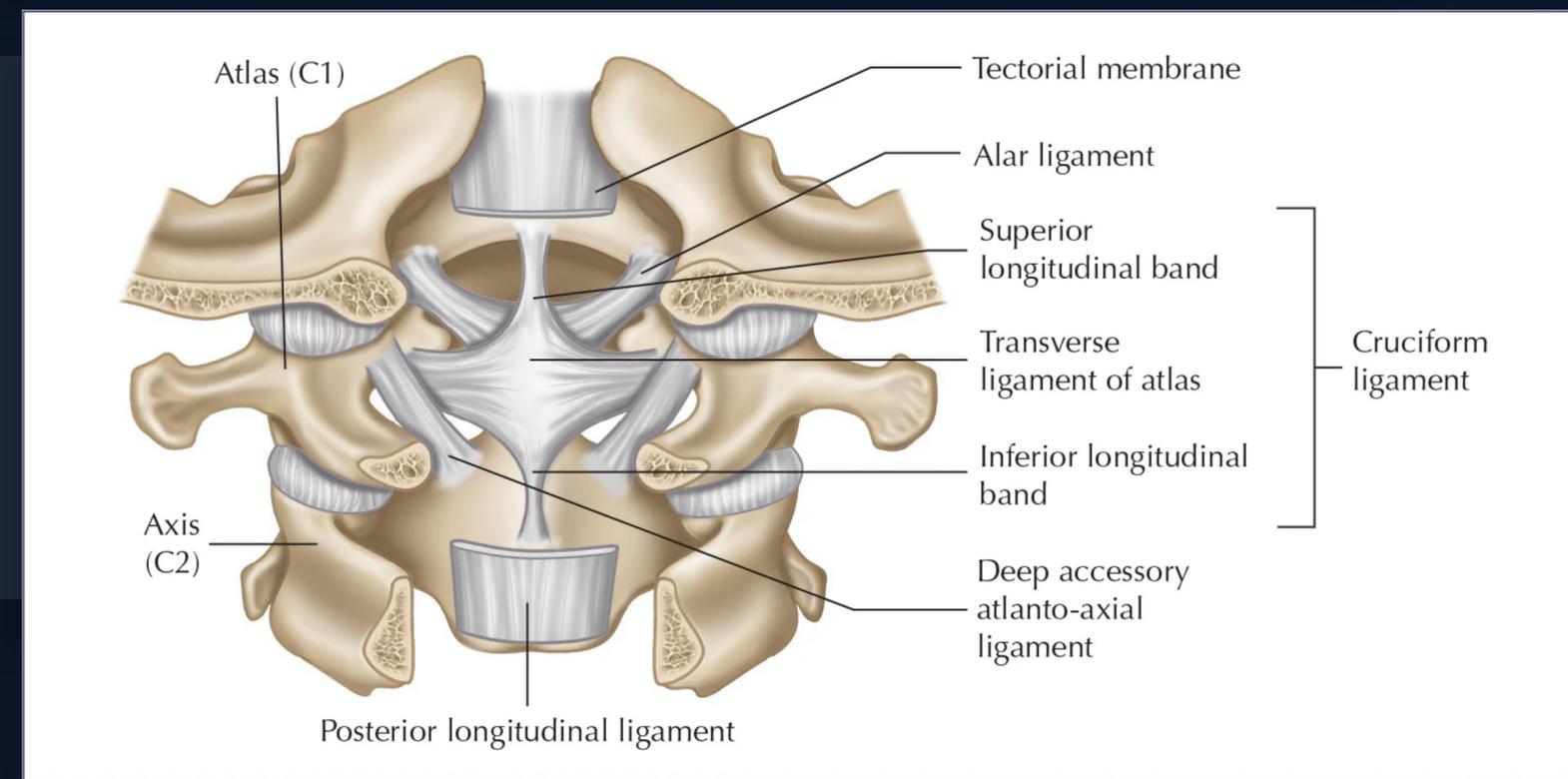
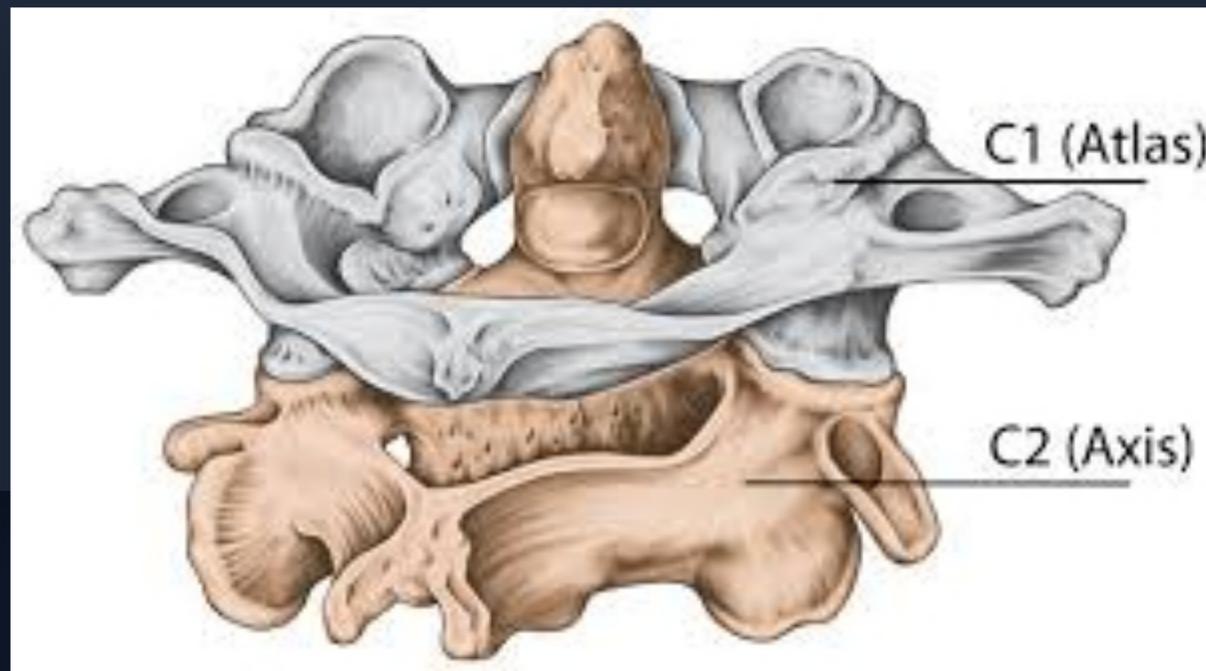
Upper Cervical: C1-C2 Unique Features

C1 Atlas

No vertebral body; anterior/posterior arches; lateral masses support skull weight; ~50% cervical rotation

C2 Axis

Odontoid process (dens) projects upward; alar/transverse ligaments stabilize; flexion/extension axis



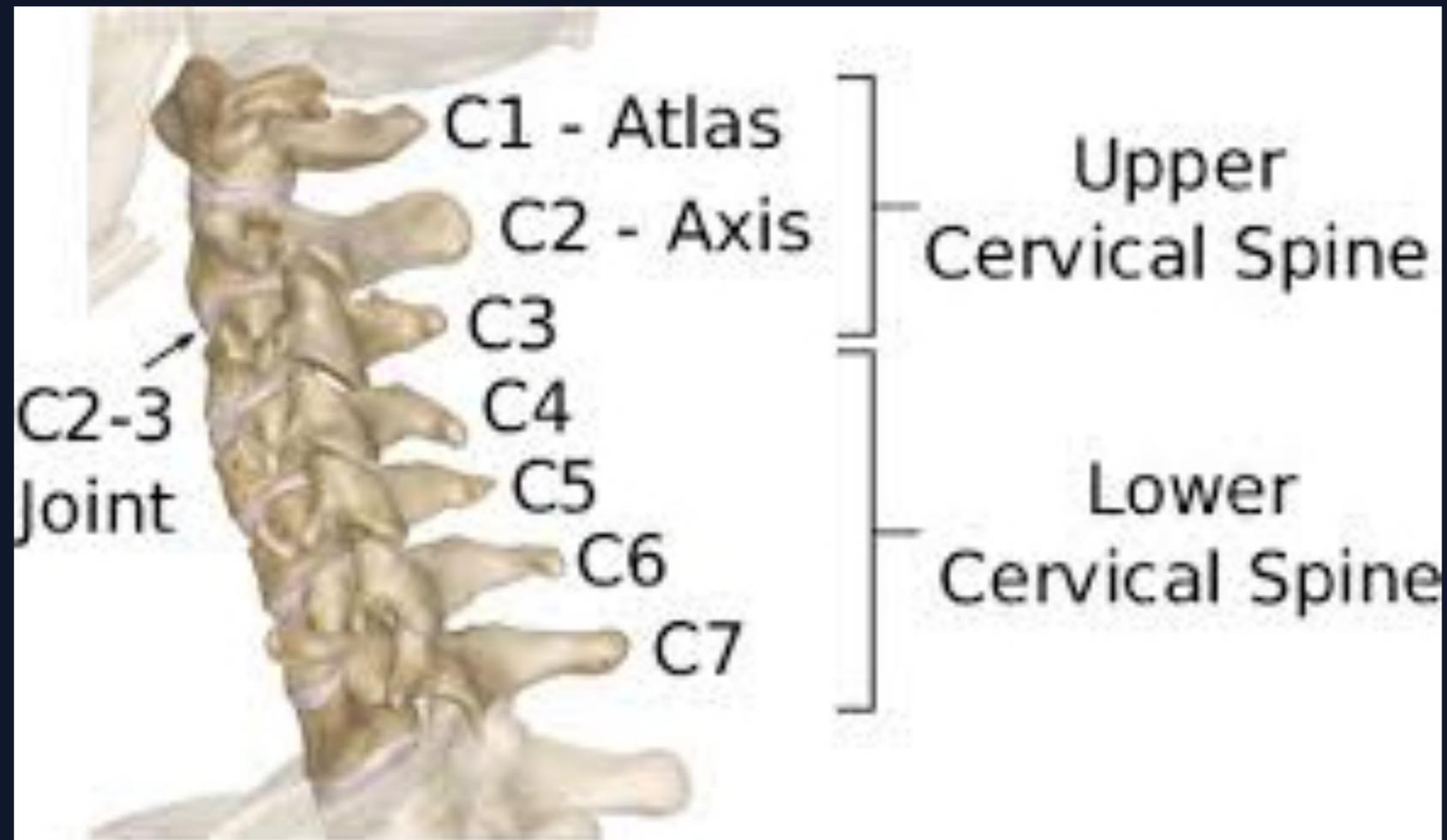
Lower Cervical: C3-C7 Standard Features

Vertebral Body: Small, cylindrical; bear less load than lower spine

Uncinate Processes: Lateral projections form uncovertebral joints (Luschka)

Facet Joints: Posterior articulations; restrict rotation

Disc Contribution: Primary flexion/extension at C5-C6, C6-C7



8 Cervical Nerves: 7 Vertebrae

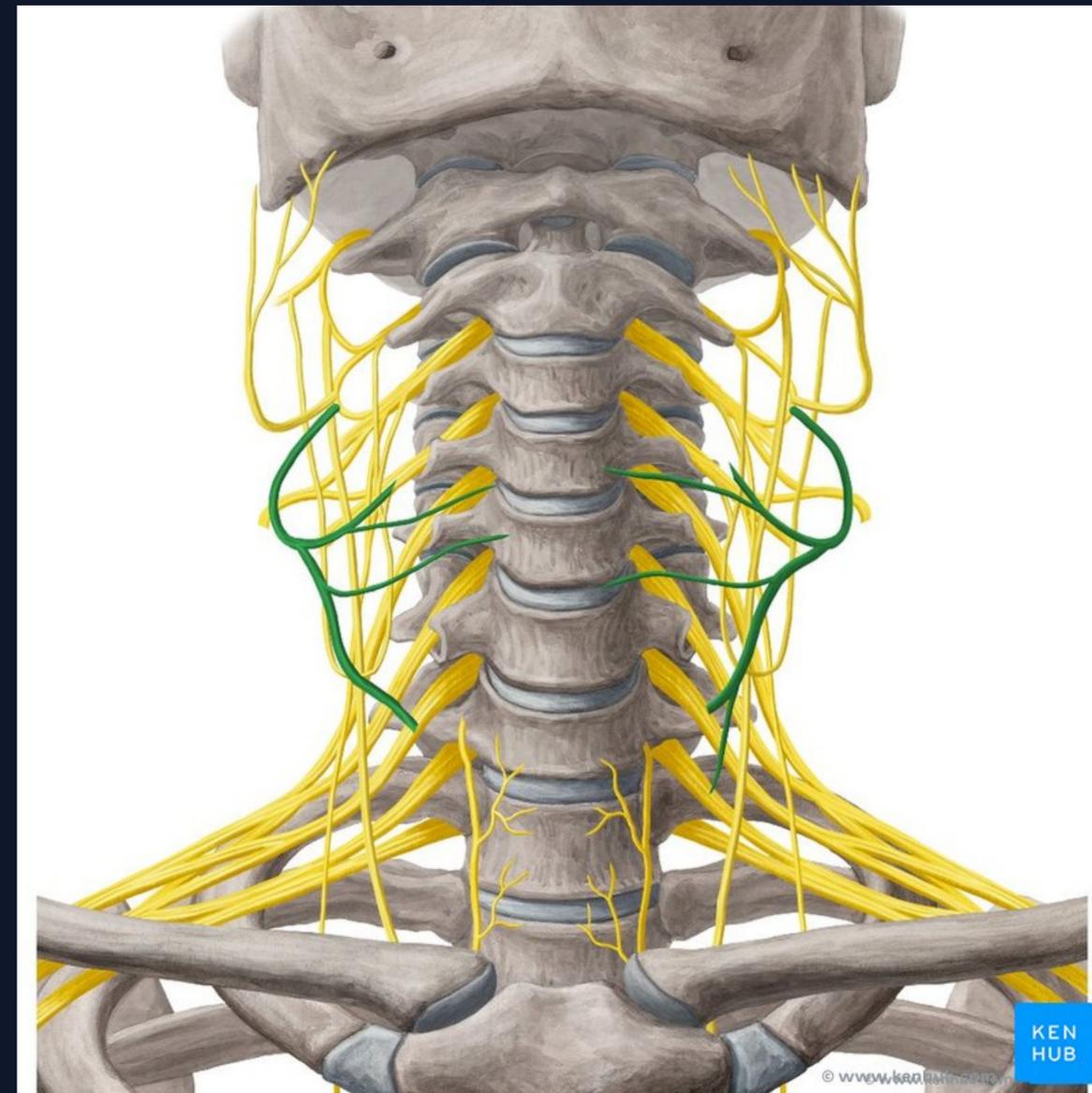
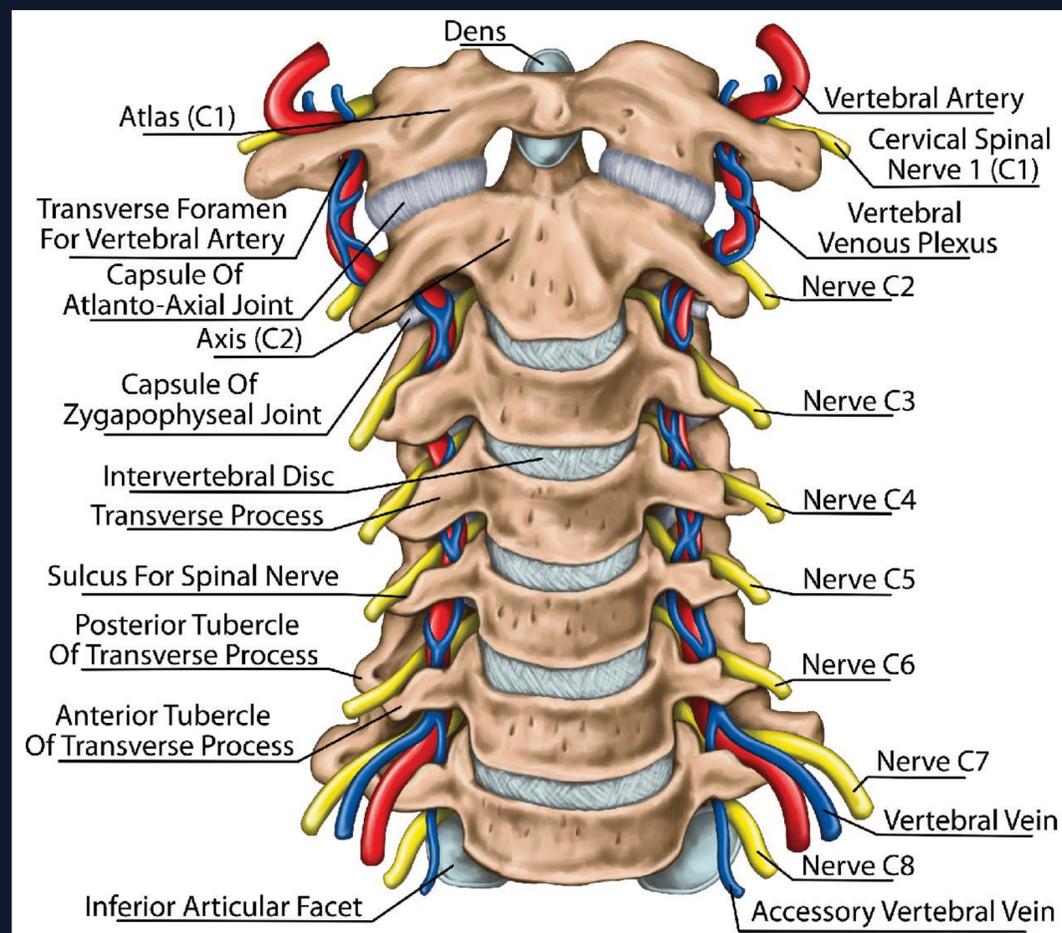
C5: Motor: shoulder abduction, elbow flexion | Sensory: lateral shoulder

C6: Motor: wrist extension | Sensory: thumb, index finger

C7: Motor: triceps, wrist flexion, finger extension | Sensory: middle finger

C8: Motor: finger abduction/adduction | Sensory: ring, little finger

Note: C1-C4 exit above corresponding vertebra; C5-C8 exit below



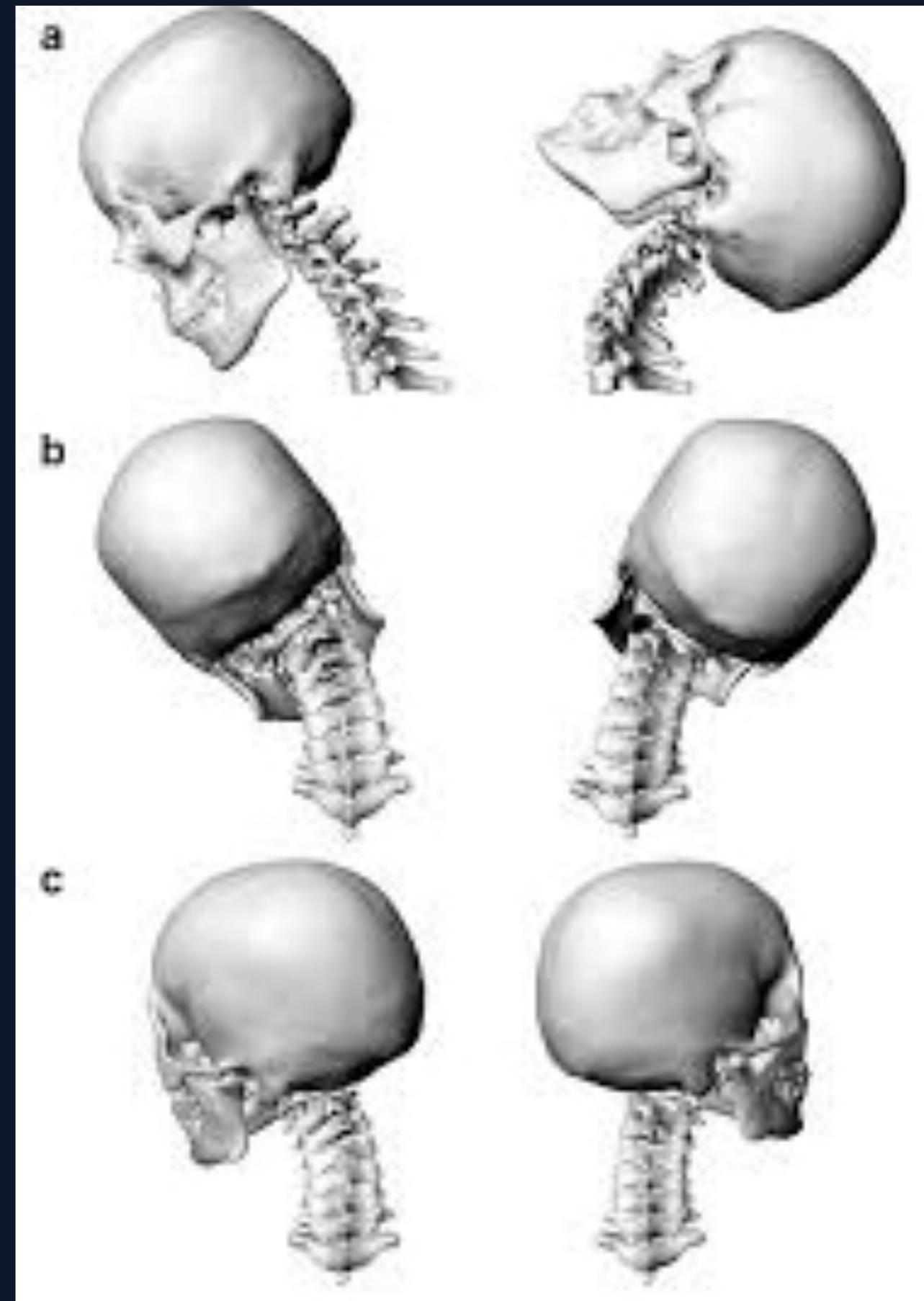
Cervical Motion & Stabilization

Rotation: ~50% at C1-C2; limited below due to facet orientation

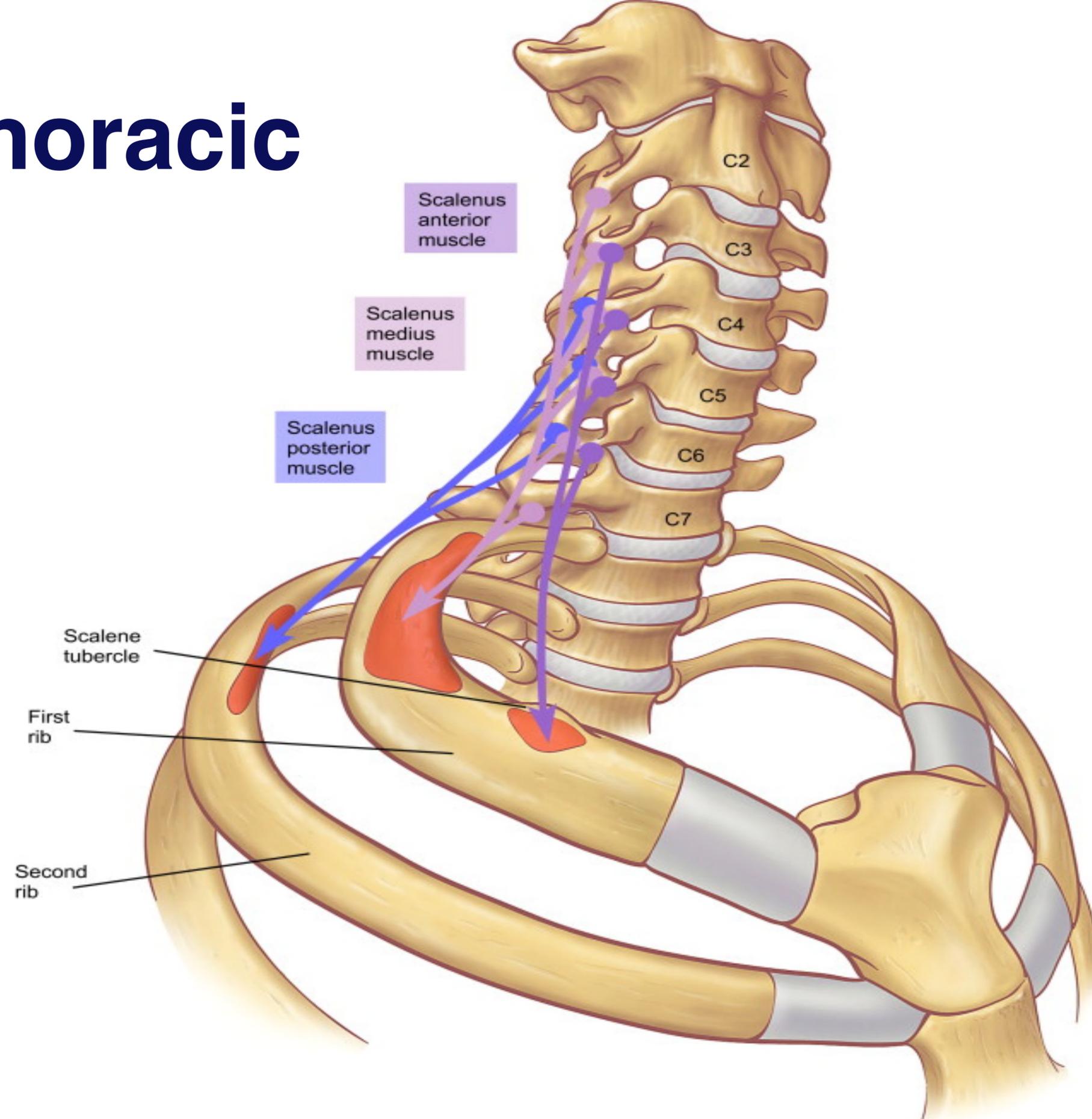
Flexion/Extension: Primary at C5-C6, C6-C7 disc levels

Lateral Flexion: Distributed across C3-C7

Stability: Alar ligaments (C1-C2), transverse ligament, disc integrity



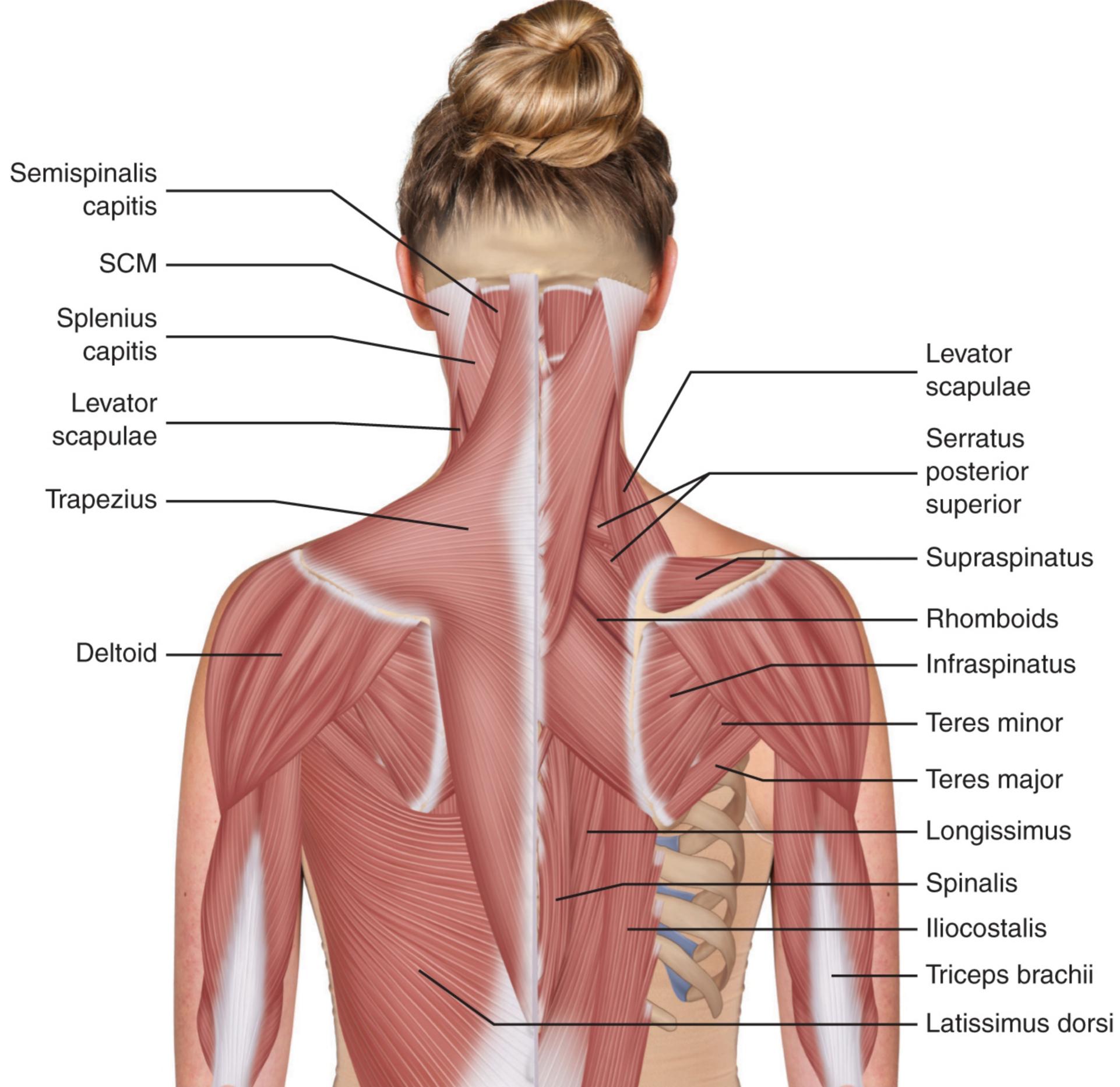
Cervicothoracic Junction



Anatomy

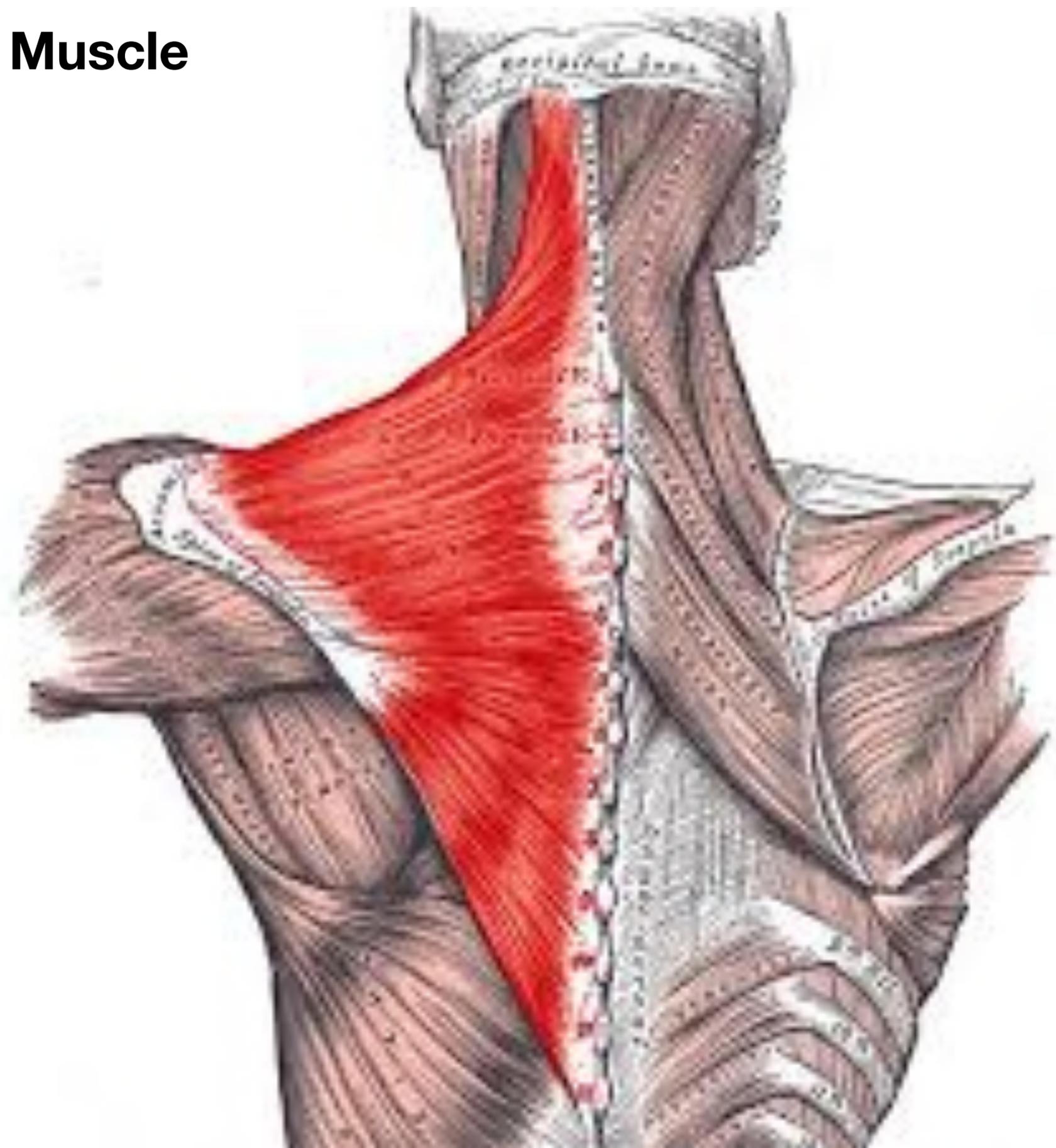
■ Cervicothoracic Junction

- The *cervicothoracic junction* (CTJ) comprises the C 7-T 1 segment, although functionally it includes the seventh cervical vertebra, the first two thoracic vertebrae, the first and second ribs, and the manubrium
- In addition, the CTJ forms the thoracic outlet, through which the neurovascular structures of the upper extremities pass

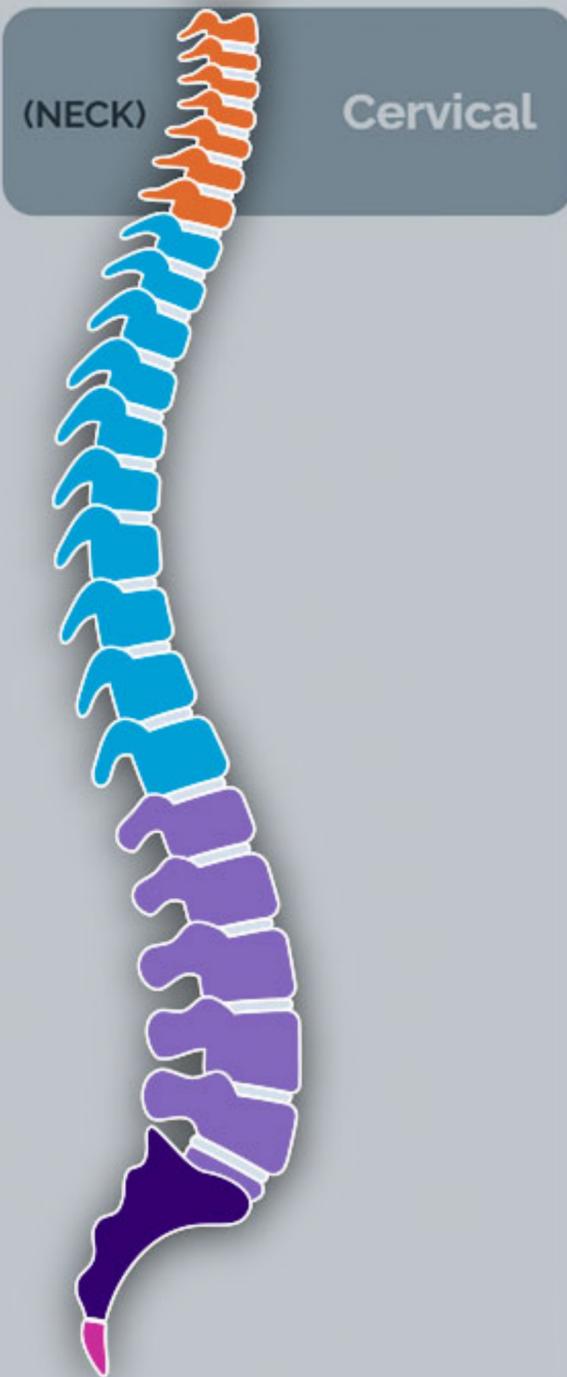


A

Trapezius Muscle



What Are Patients Complaining of when they go to their MD?



Common Conditions

- ▶ Neck Pain (cervical pain)
- ▶ Arthritis (neck arthritis)
- ▶ Herniated Disc
- ▶ Bulging Disc
- ▶ Degenerative Disc Disease
- ▶ Pinched nerve (nerve pain)
- ▶ Muscle Spasm (neck spasm)
- ▶ Muscle Strain or Strain (neck strain, neck sprain)
- ▶ Spondylosis (Cervical Spondylosis)
- ▶ Spinal Stenosis (spine stenosis, stenosis)

Common Treatments

Minimally-Invasive Procedures

- ▶ Epidural
- ▶ Facet Injections
- ▶ Injections
- ▶ Implantable Devices (spinal cord stimulator)
- ▶ Implantable Devices (pain pump)
- ▶ Trigger Point Injections
- ▶ Nerve Blocks

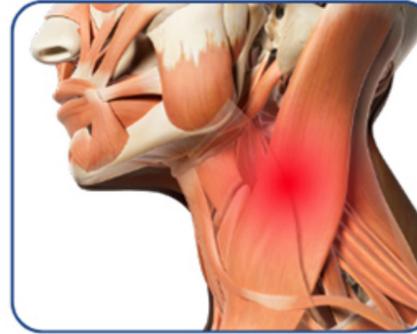
Surgical Procedures

- ▶ Cervical Fusion (fusion, back fusion)
- ▶ Cervical Laminectomy (laminectomy, neck laminectomy)
- ▶ Cervical Discectomy (discectomy)
- ▶ Foraminotomy
- ▶ Disc Arthroplasty

Neck Pain



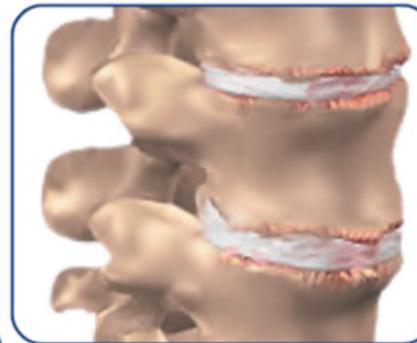
Common Causes



Muscle strain



Herniated discs

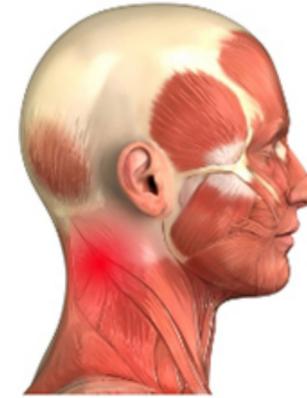


Arthritis

Go to your Chiropractor!!!!

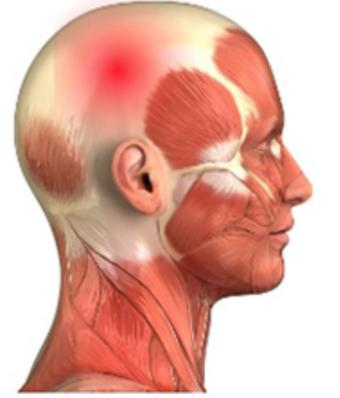
Muscular

Aching or sore neck muscles from strenuous activity or stress can lead to spasms, causing tightness and stiffness.



Headache

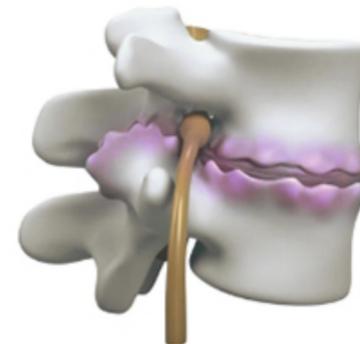
Originating at the back of the head or top of the neck, also known as cervicogenic headaches, result from muscle tension or spasms.



Types of Neck Pain

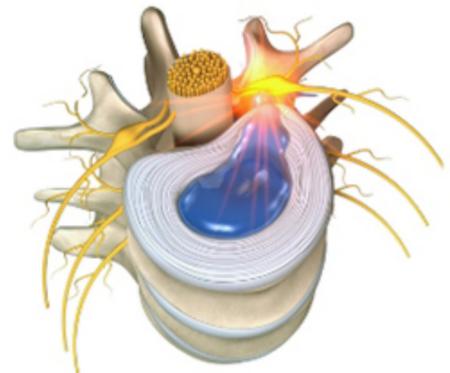
Facet Joint Pain

Arthritis in the vertebral facet joints can cause sharp or dull pain from side-to-side head movements.



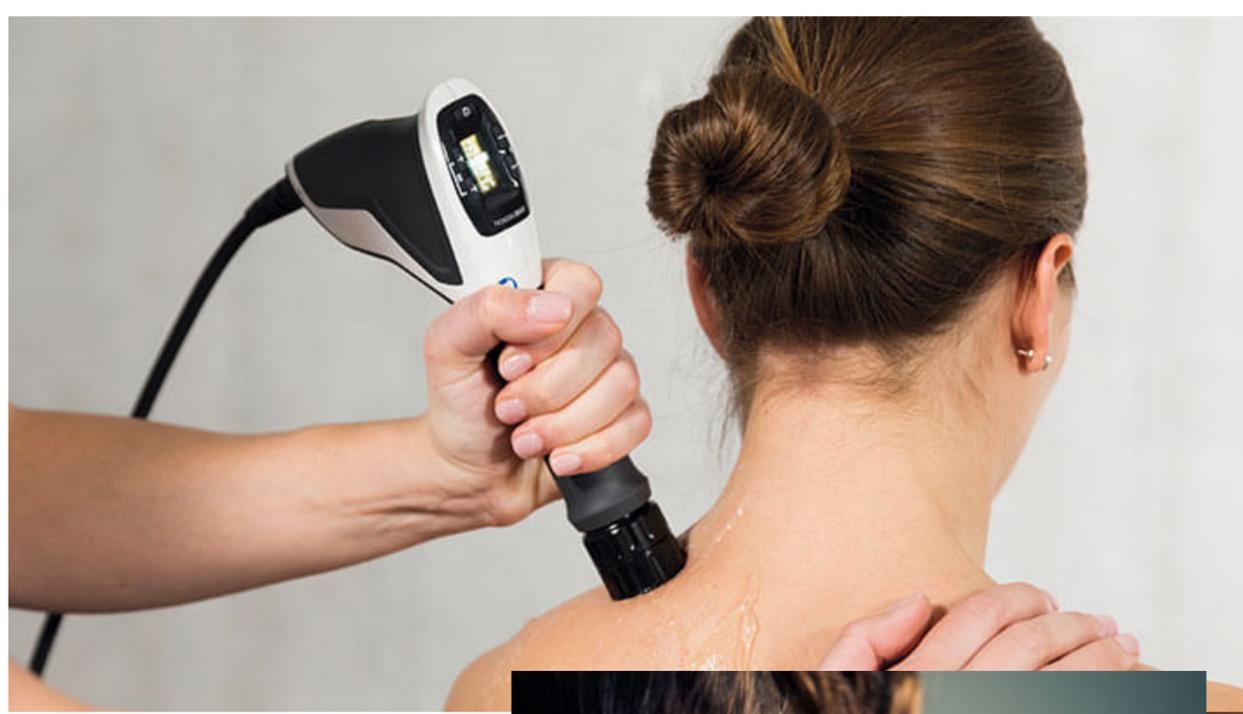
Nerve-related

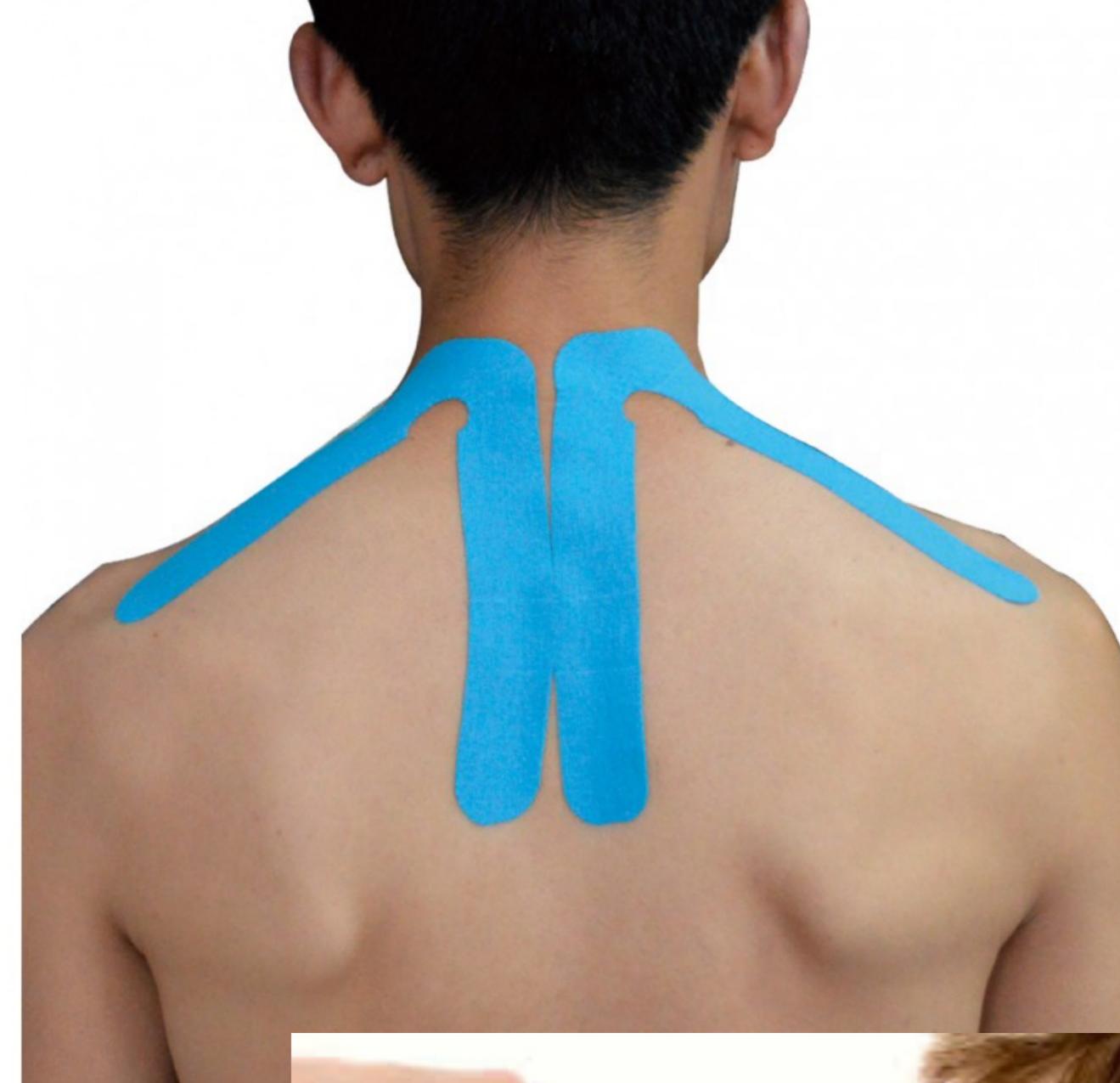
A pinched nerve can cause varying levels of pain, extending from the neck to the hands.



Treatment:

- Physiotherapy
- Elastic Taping
- Adjustments
- Rehab
- Sleeping Position
- Pillows





Neck



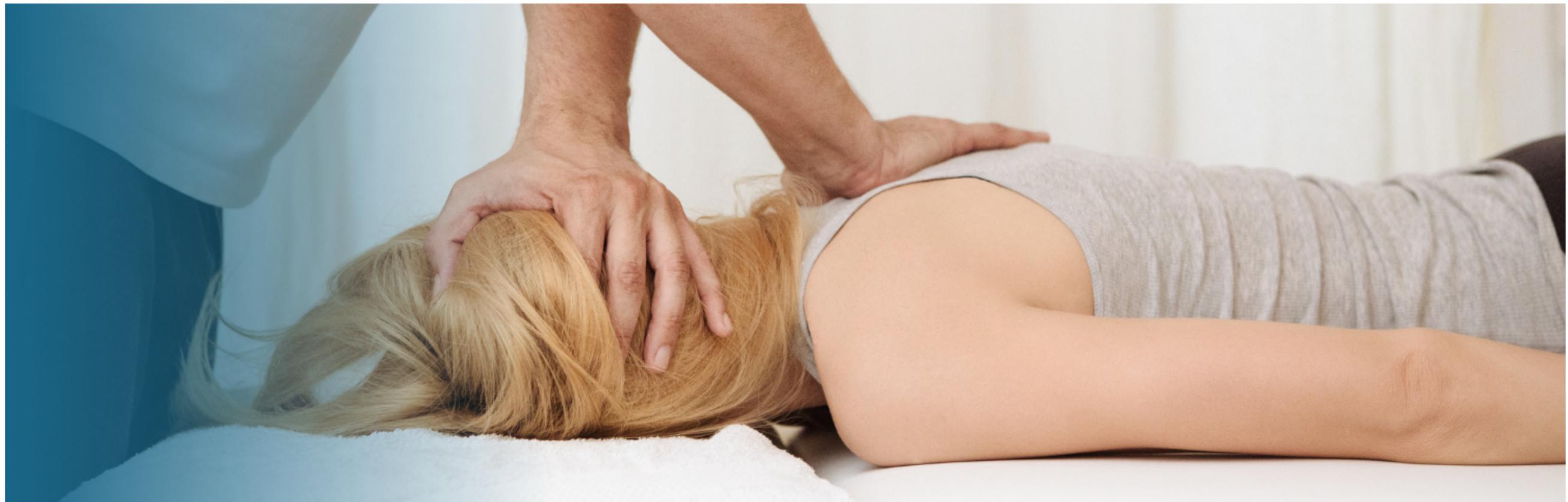
Neck H





C/T Junction

- Supine
- Prone
- Rib 1
- Anterior



C/T Prone Adjustments

- Facing cephalad (single hand, thumb)
- Head of the table (facing caudad)
- Carver bridge (double hypothenar)
- Rib 1 move



Upper T's - Supine

- Rotary Break (supine or seated)
- Modified Rotary Break
- Thumb move



Flex head piece? Bend knees?
Wiggle toes? Lift chin?



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- Carver bridge (double hypothenar)
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Upper T's - Supine

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Flex head piece? Bend knees?
Wiggle toes? Lift chin?



Middle Cervicals

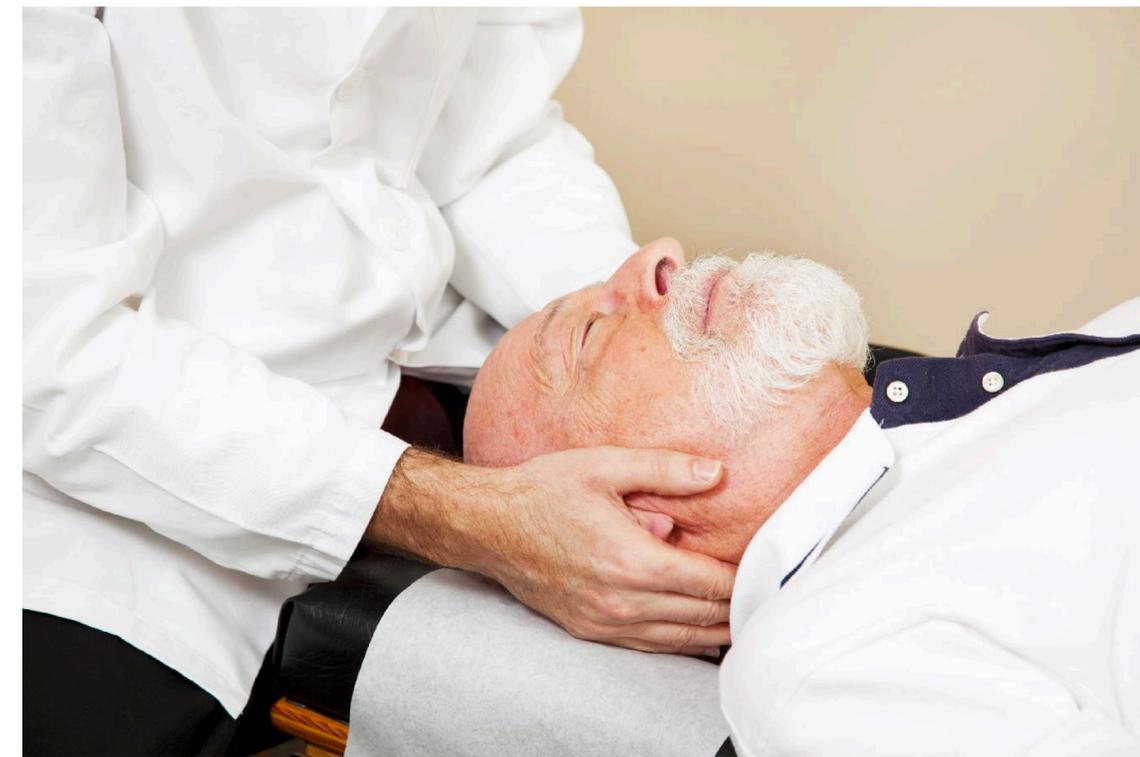
Prone - thumb, single/double hand

Supine – modified Rotary Break (MRB)

Seated – RB (in front) or diversified chair

Drop Table - cervical drop piece

Instrument Adjusting



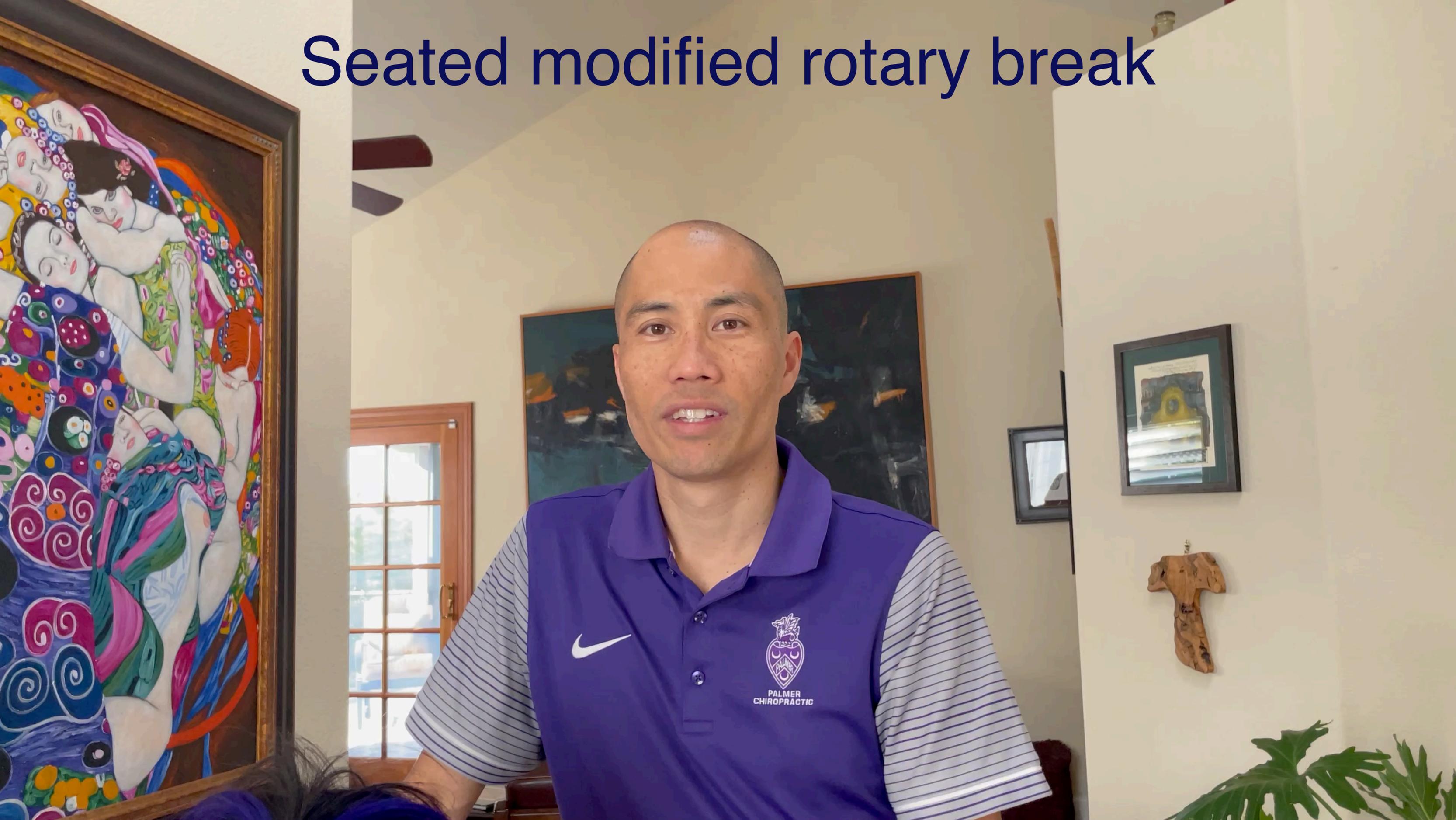
Prone Cervicothoracic Move



Rotary Break



Seated modified rotary break

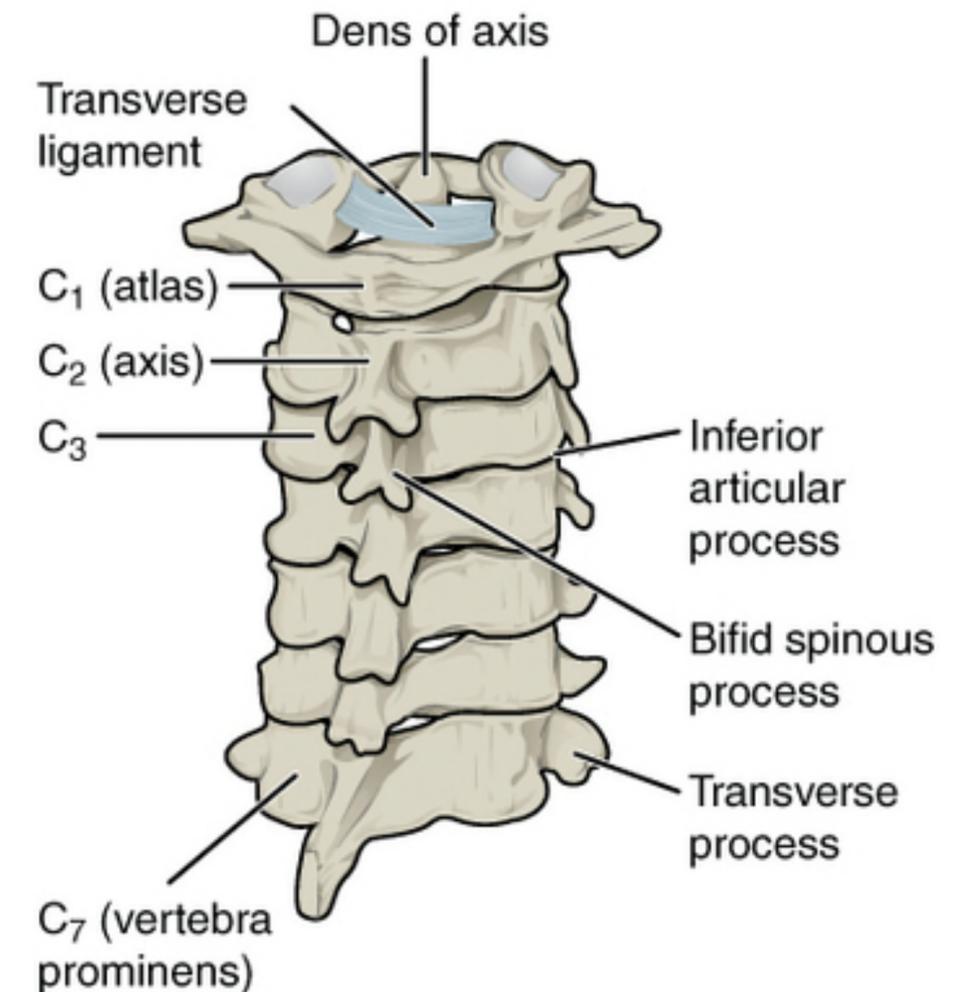


Supine modified rotary break



Upper Cervical

- Prone occiput/Atlas – watch TMJ
- Supine occiput/Atlas – Modified MRB, thumb
- Seated – RB, MRB
- Drop – occiput (prone)
- Drop – toggle Atlas
- Instrument adjusting – low force!



Sleeping Positions for Back Pain

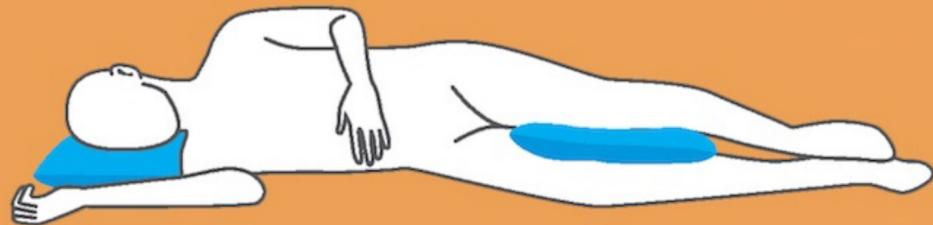
Best: Sleeping on Your Back

Distributes weight evenly on spine
Put pillow under knees to maintain natural spine curve



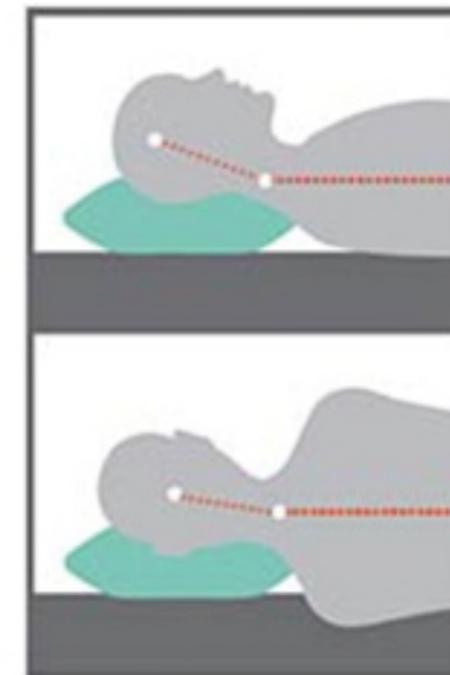
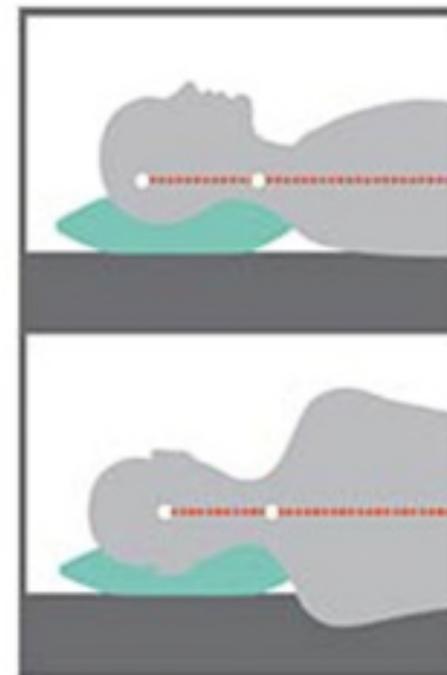
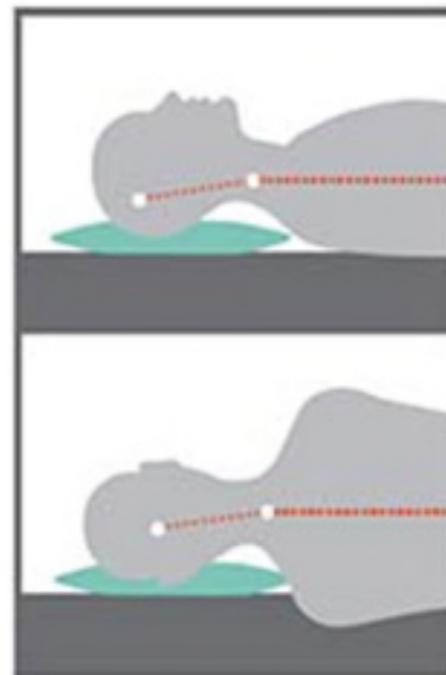
Decent: Sleeping on Your Side

Try switching sides every night
Put pillow under bent legs for best spinal curve



Worst: Sleeping on Your Stomach

Flattens natural curve of spine
Puts strain on back & neck muscles



WRONG

RIGHT

WRONG





CORRECT SLEEPING POSITION



INCORRECT SLEEPING POSITION

Pillows

• **Foot Levelers offers custom and non-custom pillows:**

- MyFit and Exclusively Yours custom pillows
- Pillo-Pedic pillows
- 4-in-1 system
- Various size options

Treat patients while they sleep

with cervical support pillows

Maintaining the cervical curve is critical to long-term wellness. The Foot Levelers Pillo-Pedic® ensures the curve in the neck is properly supported throughout the night. Learn more about Foot Levelers cervical pillows below.

[All Pillow Models](#)

[All Pillow Types](#)

Non-Custom



Escape™ Pillow

[View Escape™ Pillow ›](#)

Custom



Exclusively Yours® Cervical Support Pillow

[View Exclusively Yours® Cervical Support Pillow ›](#)

Non-Custom



Pillo-Pedic® Mini-Travler

[View Pillo-Pedic® Mini-Travler ›](#)

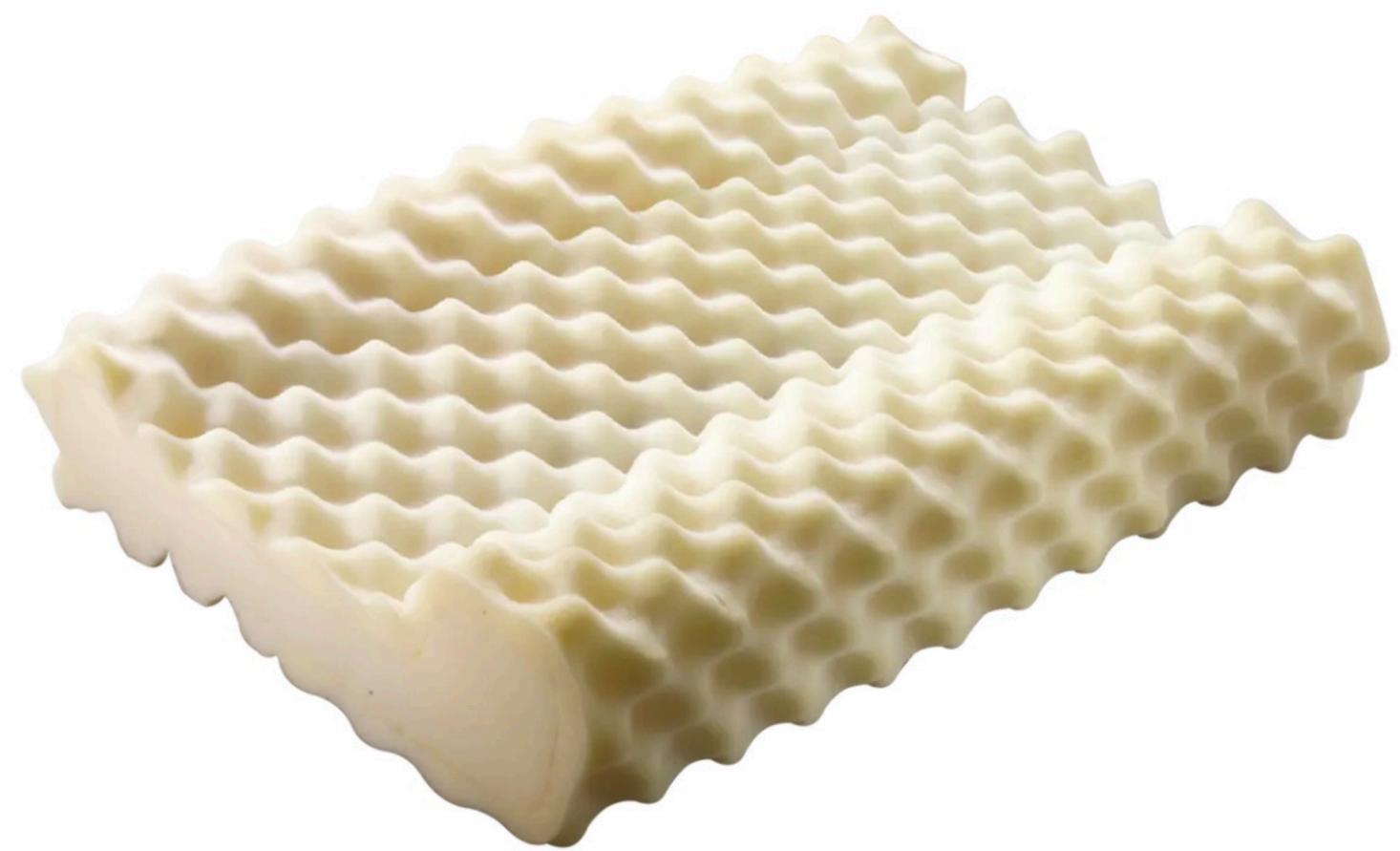
Non-Custom



Pillo-Pedic® Ultra

[View Pillo-Pedic® Ultra ›](#)

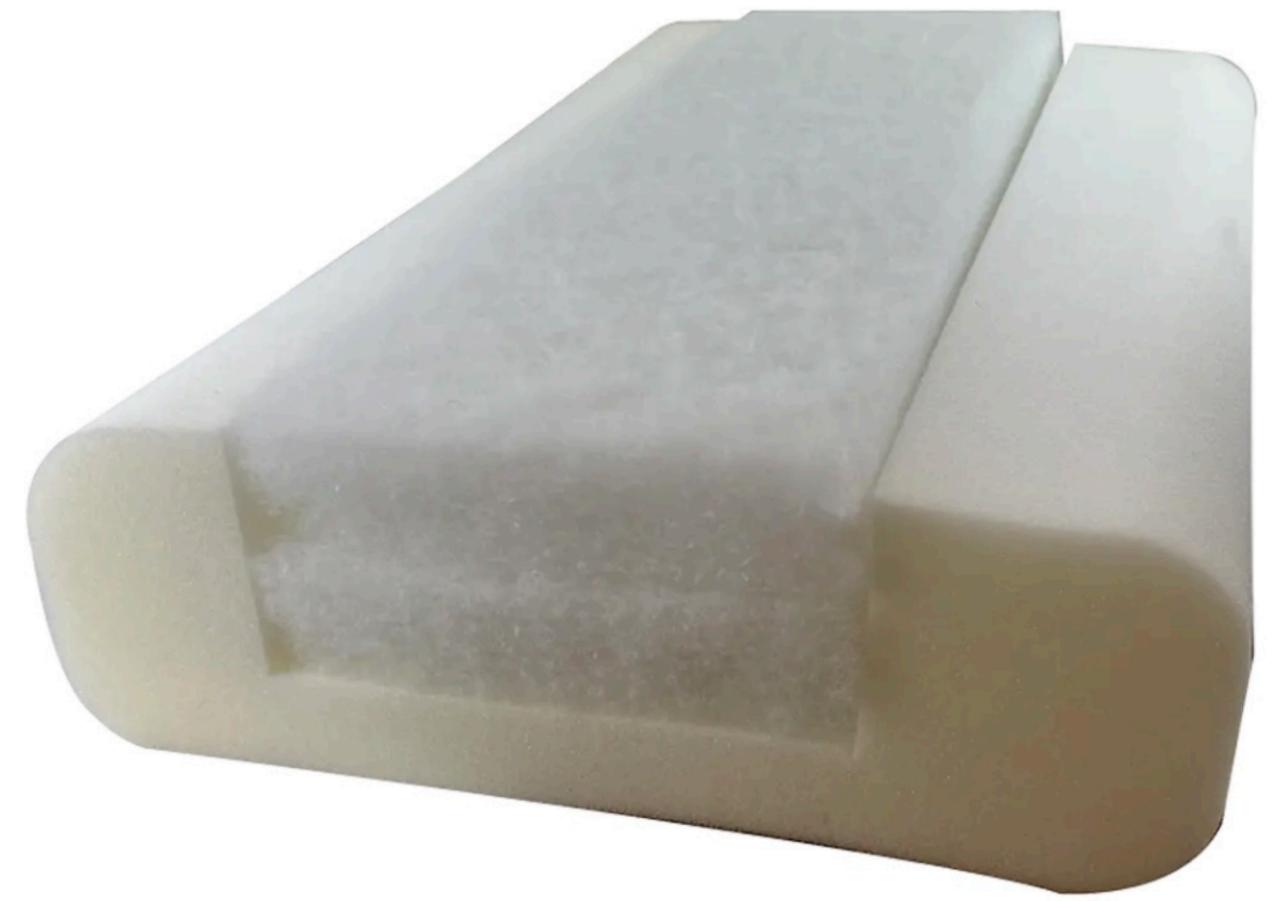
Non-Custom



Pillo-Pedic® Plus®

[View Pillo-Pedic® Plus® ›](#)

Non-Custom



Pillo-Pedic® Extra

[View Pillo-Pedic® Extra ›](#)

Custom Fit



MyFit® Custom Support Pillow

[View MyFit® Custom Support Pillow ›](#)

Requires taking measurements with a tape measure or calipers.

Non-Custom



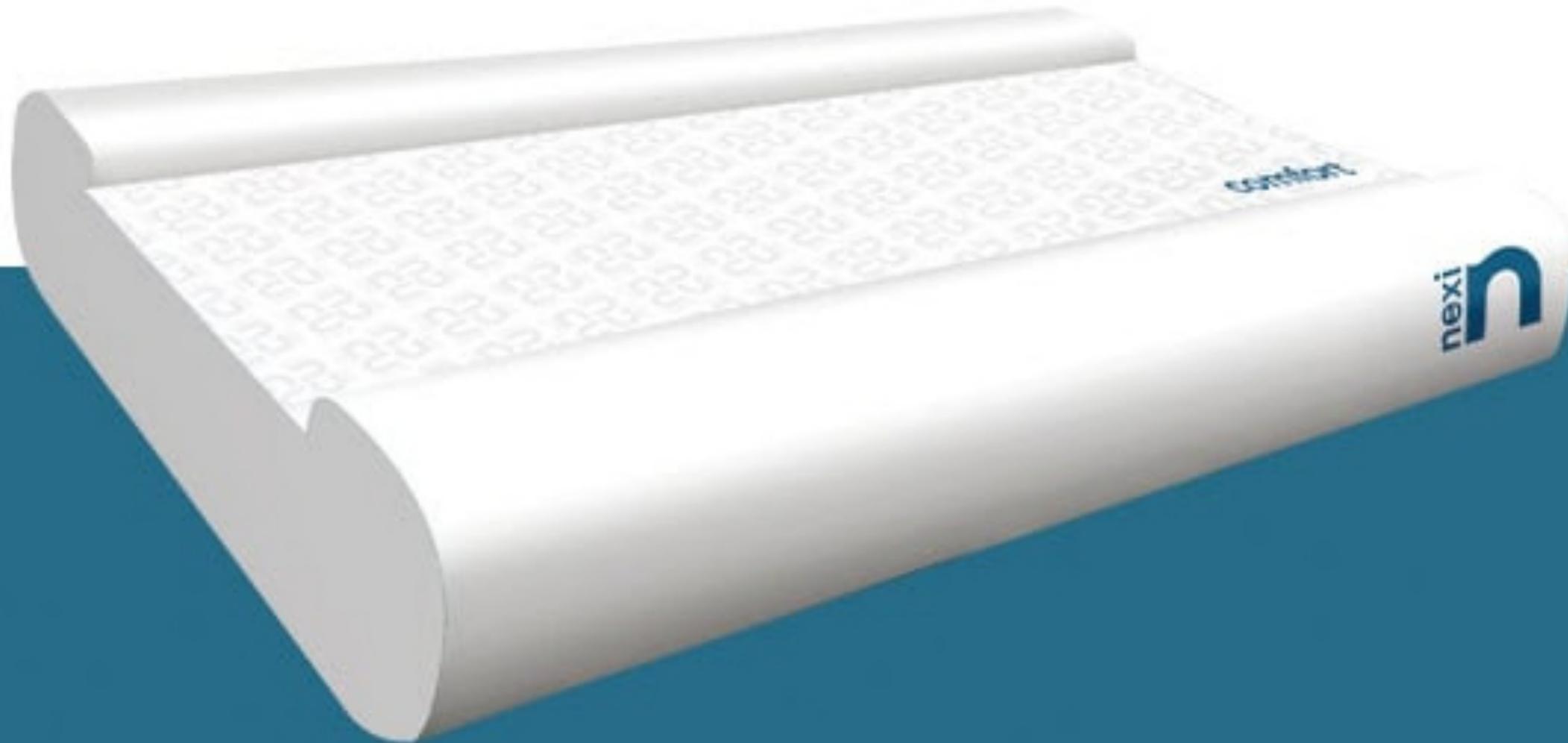
Pillo-Pedic® Jr.

for kids

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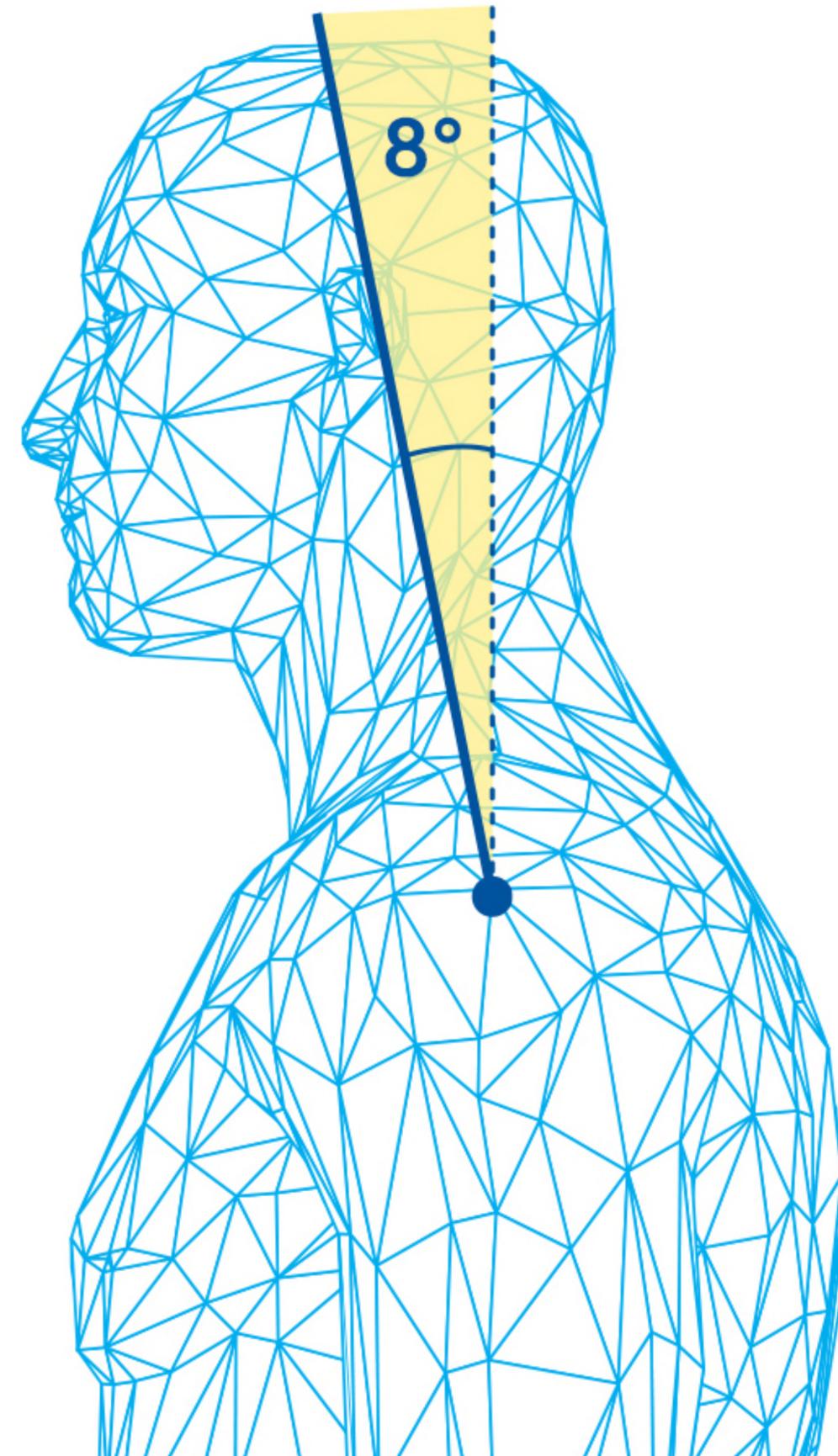


Finally, a truly custom pillow powered by innovative scanning technology, 130,000 data points from your patient's head, neck, and shoulders are used to create a pillow as unique as a fingerprint.

Each Nexi is custom-crafted to your patient's exact anatomy, designed solely for them to align their spine and support optimal sleep posture.

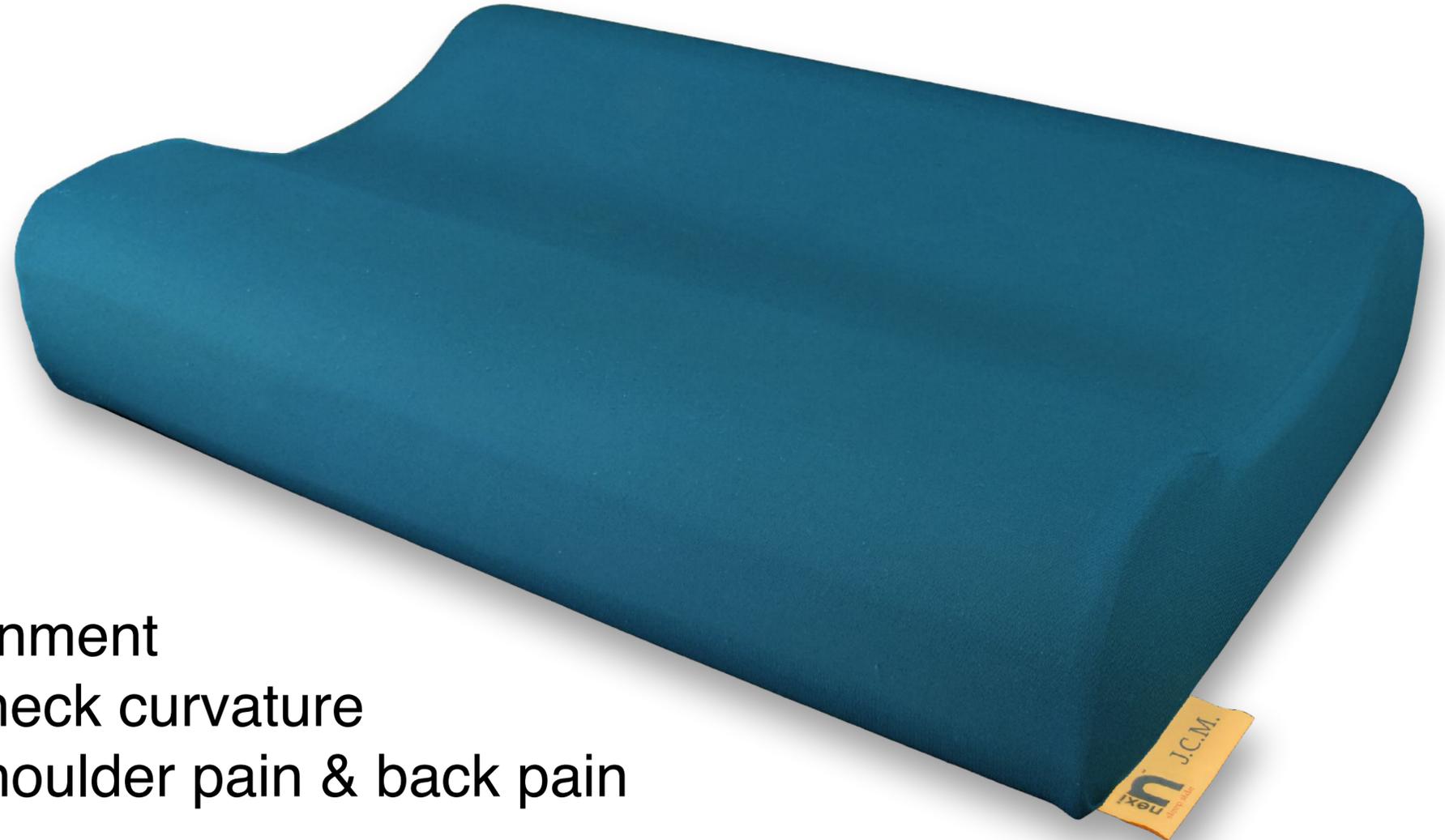


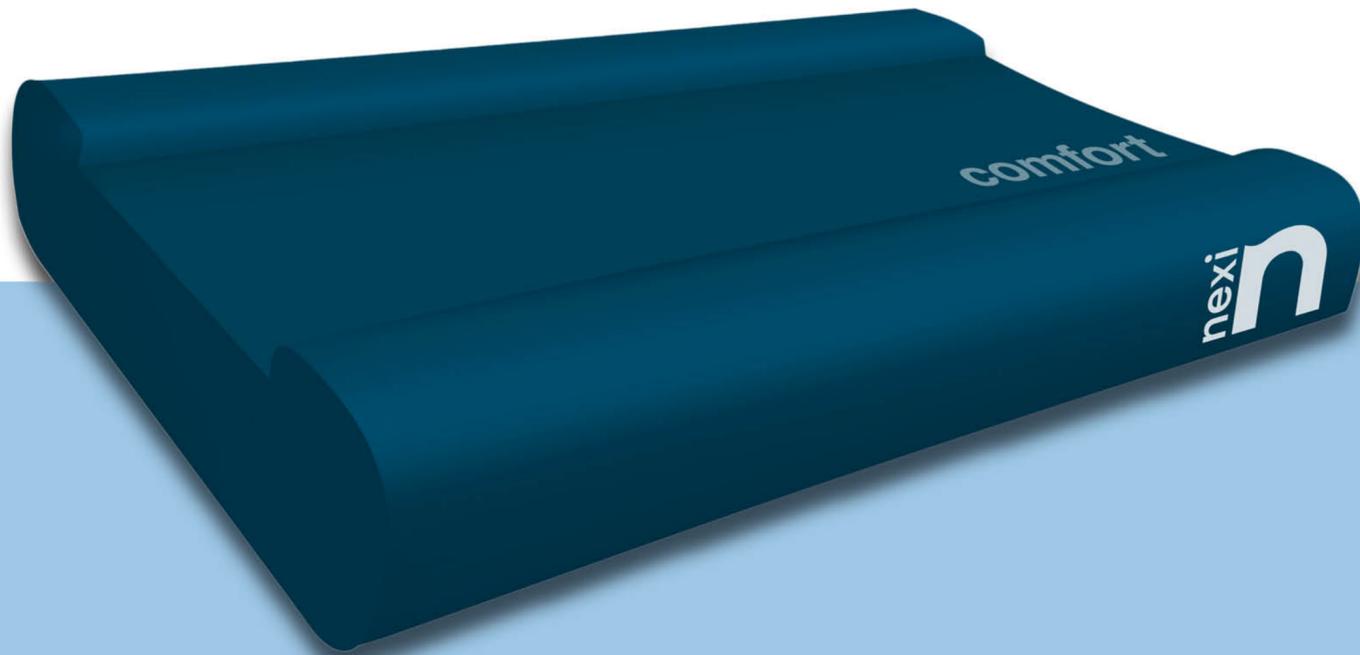
Forward head posture analysis with a Tech Neck Index™ score taken by the 3D Neck Scanner, which also uses 130,000 data points of the head, neck, and shoulder is used to build the Nexi custom pillow



Support That Works... While They Rest.

- Custom-crafted to your patient's head, neck and shoulders
- Helps maintain proper cervical alignment
- Contours to your patient's natural neck curvature
- Reduces headaches, neck pain, shoulder pain & back pain
- Maintains proper sleep posture
- Enhances sleep quality



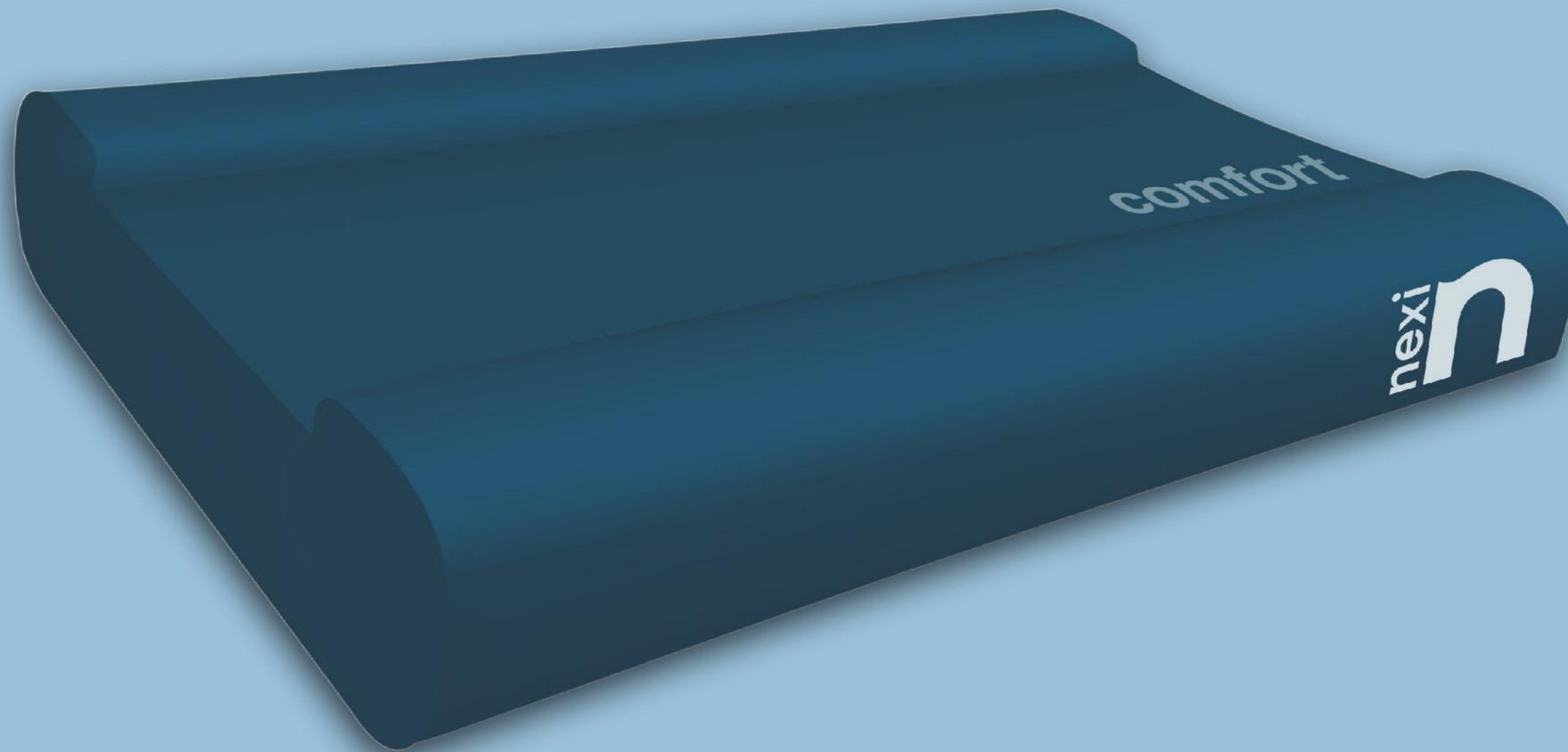


Nexi™ is the only pillow that's custom crafted based on a state-of-the-art **130,000 data point** scan of the patient's neck, head and shoulders for a truly personalized fit that can support proper alignment and relieve tension while they sleep.

- AI-driven customization ensures perfect anatomical alignment
- Geometric customization promotes ideal sleep position
- Wellness side provides gentle traction through soft foam well
- Recovery side offers therapeutic support for trauma and inflammation
- Available in four sizes: travel, standard, queen, and king

- Sleeping positions change how the pillow is made.
- Back sleeping configuration preserves the natural c-curve.
- Side sleeping design has precise shoulder to ear calibration.
- Pillow's interior is crafted with visco-elastic foam, enveloped by an antimicrobial, hypoallergenic skin, and finished with a breathable cover designed with cooling technology.





Wellness side: For daily use

- Premium comfort well with gentle cervical traction.
- Maintains optimal spinal alignment during sleep
- Custom height and angle based on patient measurements

Recovery Side: Post trauma

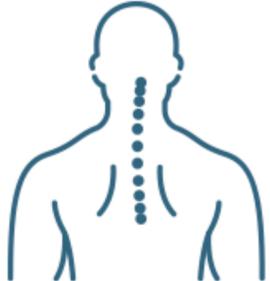
- Specialized design for post-injury healing
- Therapeutic flexion support for inflammation
- Enhance stabilization for rehabilitation

The Nexi Postural Support System



Intellicel™

Personalized for your patients' ideal sleep posture



Bioalign™

Helps your patients' maintain spinal alignment during sleep



Theracel™

Offers rehabilitative support for acute cervical conditions during recovery

Standard	\$159	Queen	\$179	King	\$199
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2 Year Warranty



HOW CAN YOU TELL IF YOUR PATIENT'S PILLOW IS DOING ITS JOB?



Try this 3-Step Challenge today:

Step 1. Have every patient bring in their existing pillow. Determine if it supports them during sleep by assessing side and back lying posture through proprioceptive testing. See the graphic for instructions.

Step 2. Repeat this test with a Pillo-Pedic® pillow. The test will also determine which side of our pillow best suits your patient.

Step 3. Send your patient home with a Pillo-Pedic for 90 days. At check-in visits, ask them about the quality of their sleep, frequency of fewer headaches, and overall well-being resulting from sleeping on a supportive pillow.

FIND A WEAK ARM

1. With patient supine on examining table, have them raise left arm vertical to body.
2. Push down on patient's arm just below wrist
3. Note strength.
4. Repeat with other arm.
5. Determine weaker arm.



TEST PATIENT'S PILLOW

6. Using weak arm, have patient place their pillow under head.
7. Test weak arm — see if there is any change in strength. If patient's pillow is not designed properly, there will be little or no increase in arm strength.



TEST PILLO-PEDIC

8. Place one of the four sides of the Pillo-Pedic (or Pillo-Pedic, Jr.) pillow under patient's neck, snug against shoulders at base of neck.
9. Repeat test of weak arm. (One of the four edges will make weak arm stronger)
10. Mark correct edge and side with an "X" to help patient remember.





Saatva Luxury Mattresses

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Take our mattress quiz



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Lifetime warranty

Why Saatva?



Premium quality without traditional retail markups

We cut out the middlemen so you get the highest quality at the best possible value. To get the same quality elsewhere, you'd have to pay way more.

[Learn more](#)



Made to order, never stuffed in a box

Every Saatva mattress is handcrafted when you order it. Unlike other internet mattresses, we'd never dream of compressing our premium beds into a small box. Instead, we deliver it factory-fresh to your room for free.

[Learn more](#)



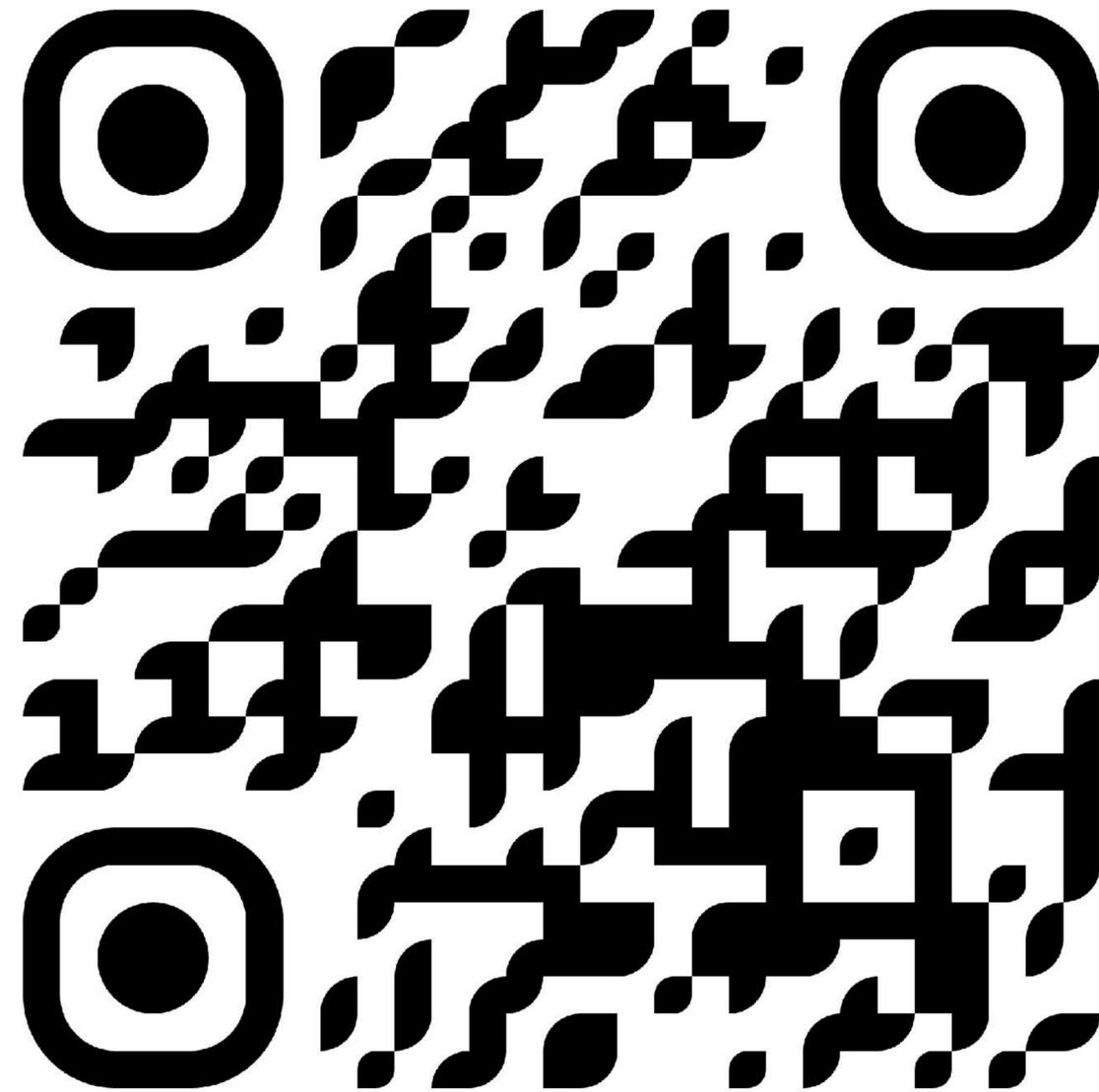
Sustainability is at the core of our brand

From responsibly sourced materials to our domestic manufacturing & delivery process that lowers our carbon footprint, our eco-friendly ethos has been at the core of our brand from day one.

[Learn more](#)

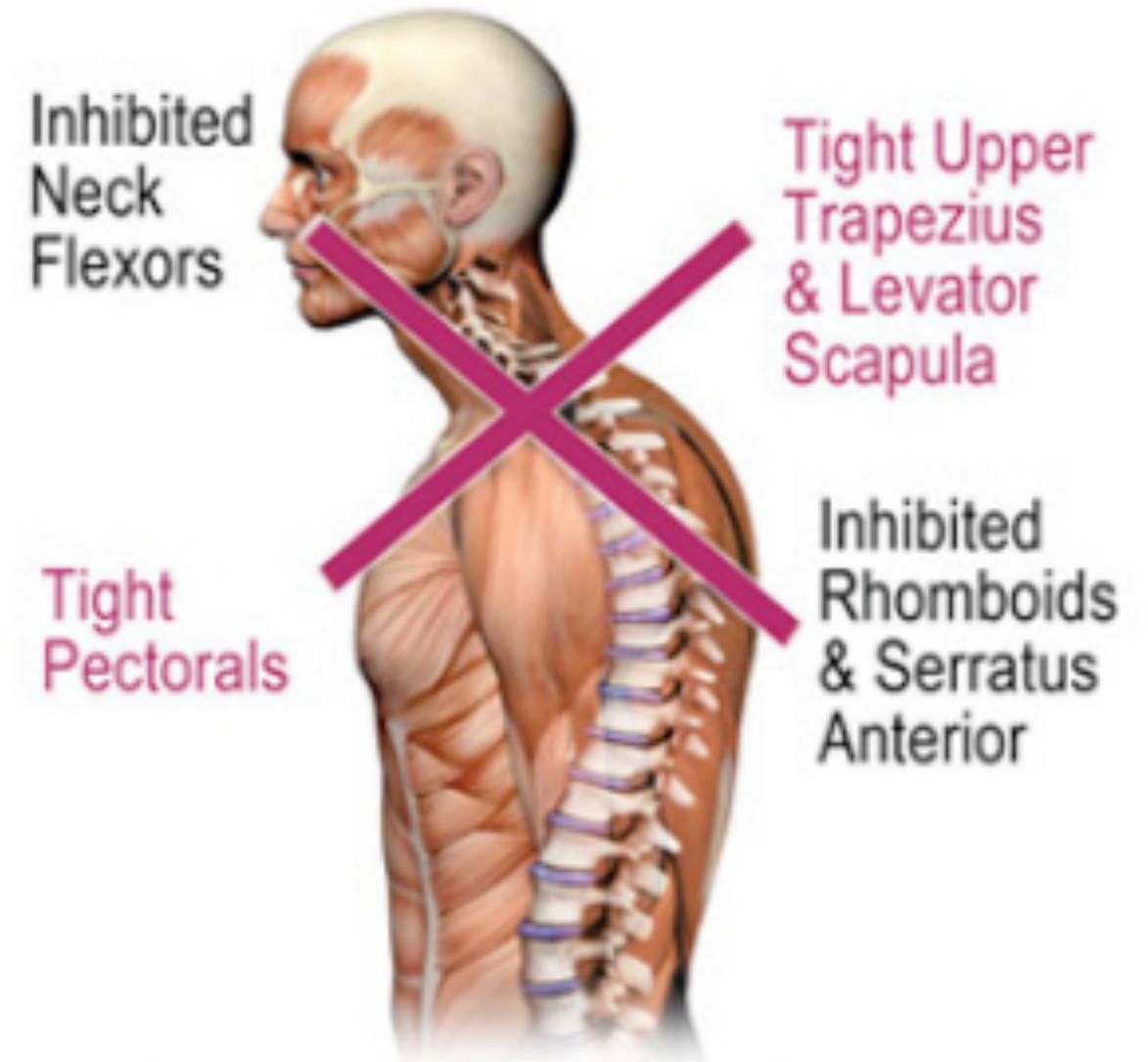


Sign up to be a Saatva Affiliate Doctor

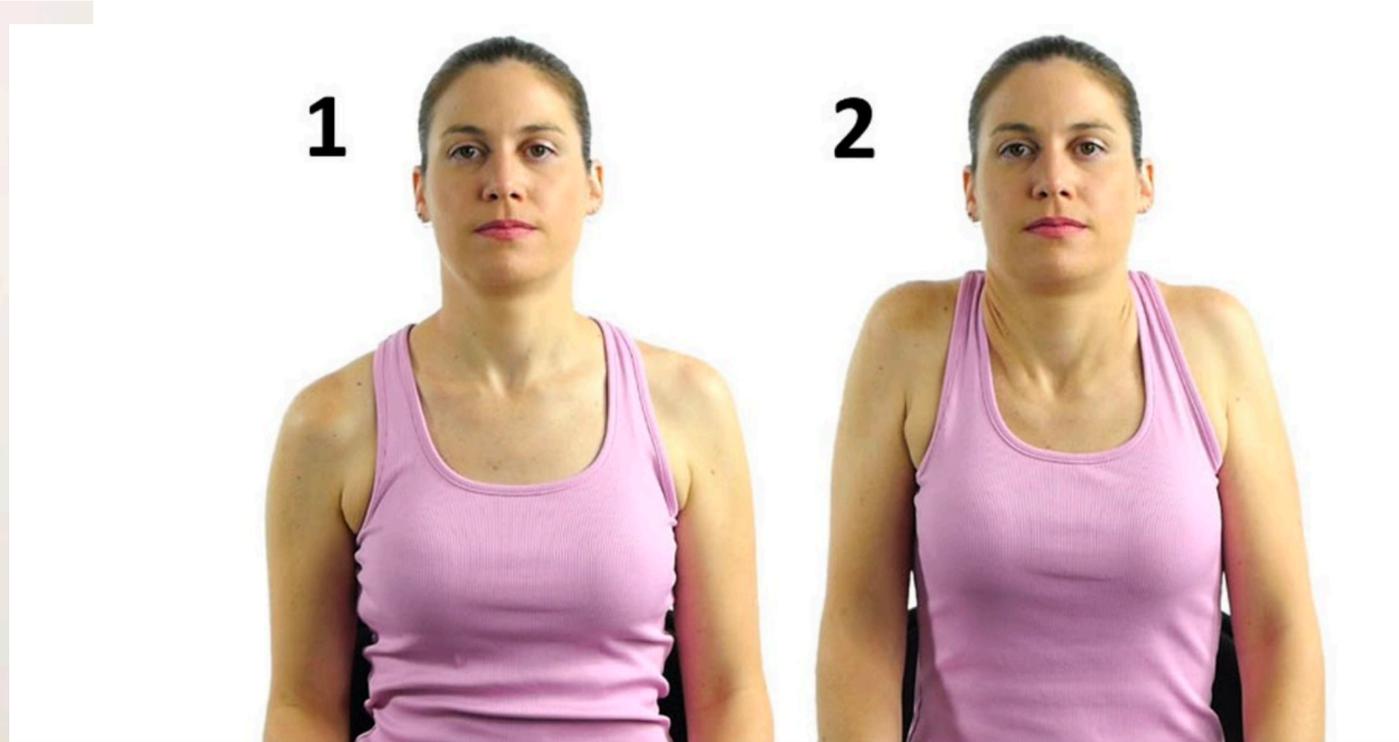


Upper Cross Rehab Protocols

- a. Corner Stretch
- b. Shoulder Shrugs
- c. Standing Row
- d. Lat Pull Back
- e. (Lumbar Bridge I and II)

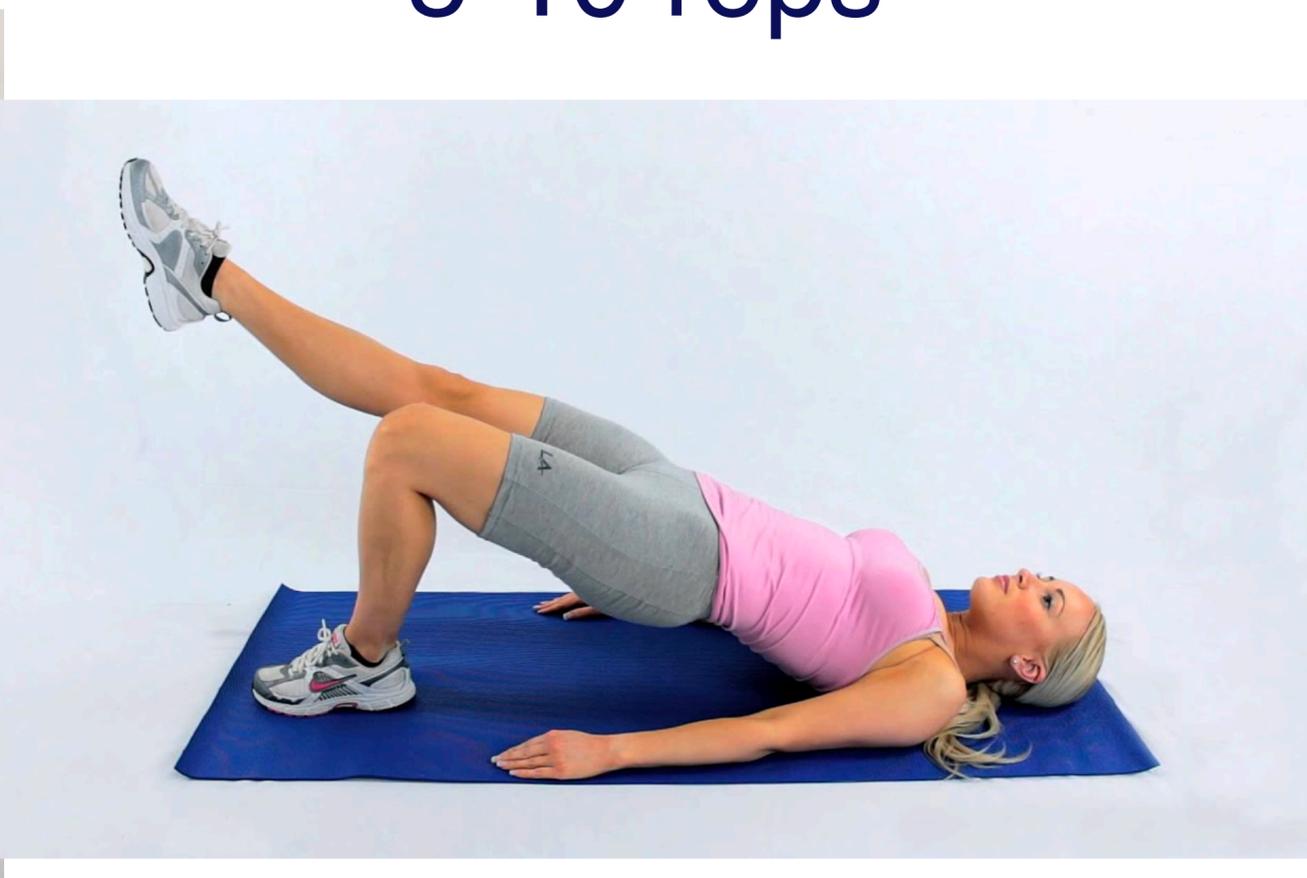


Upper Crossed Syndrome

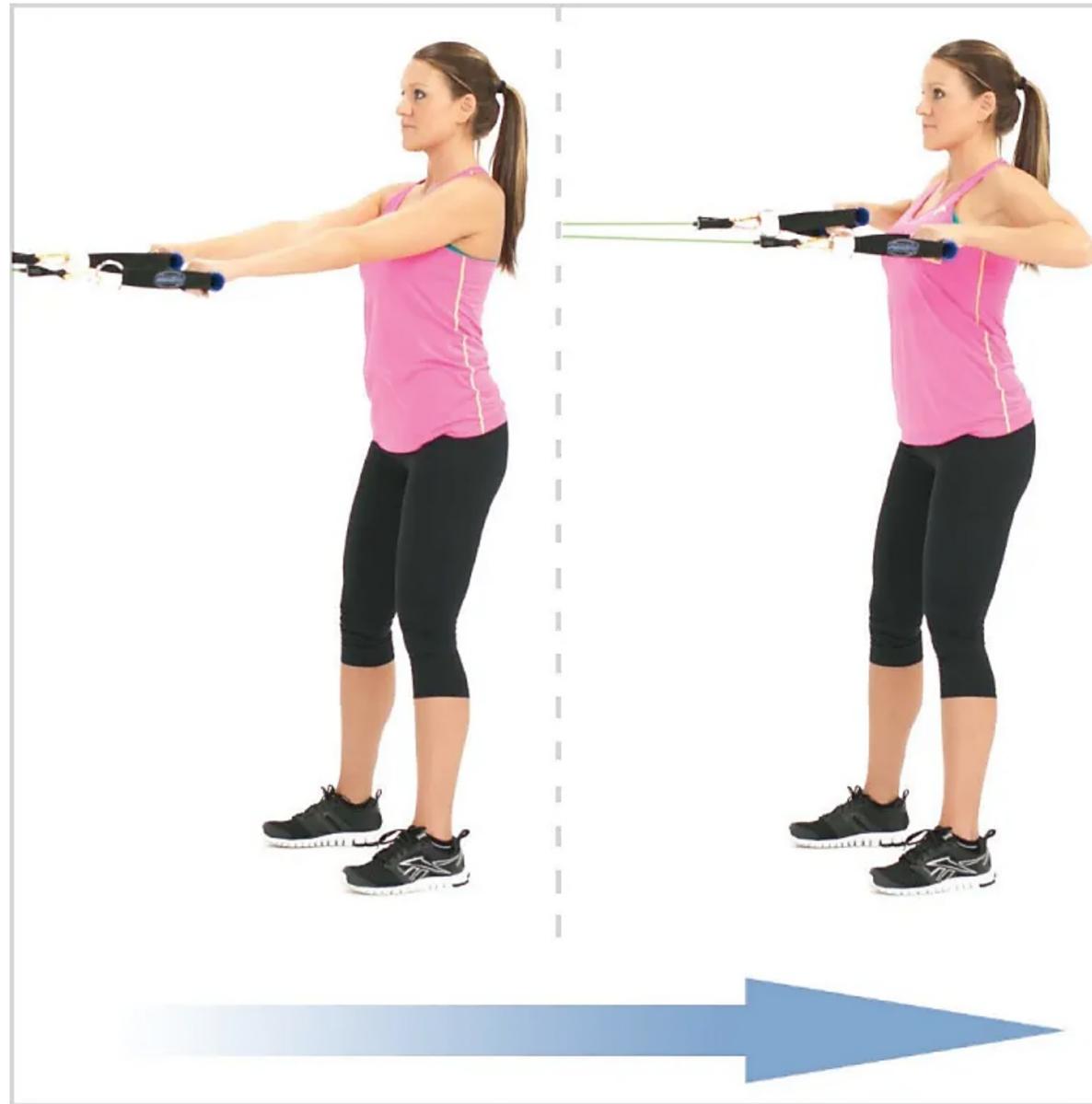


Shoulder Shrugs

Hold 10 seconds
5-10 reps



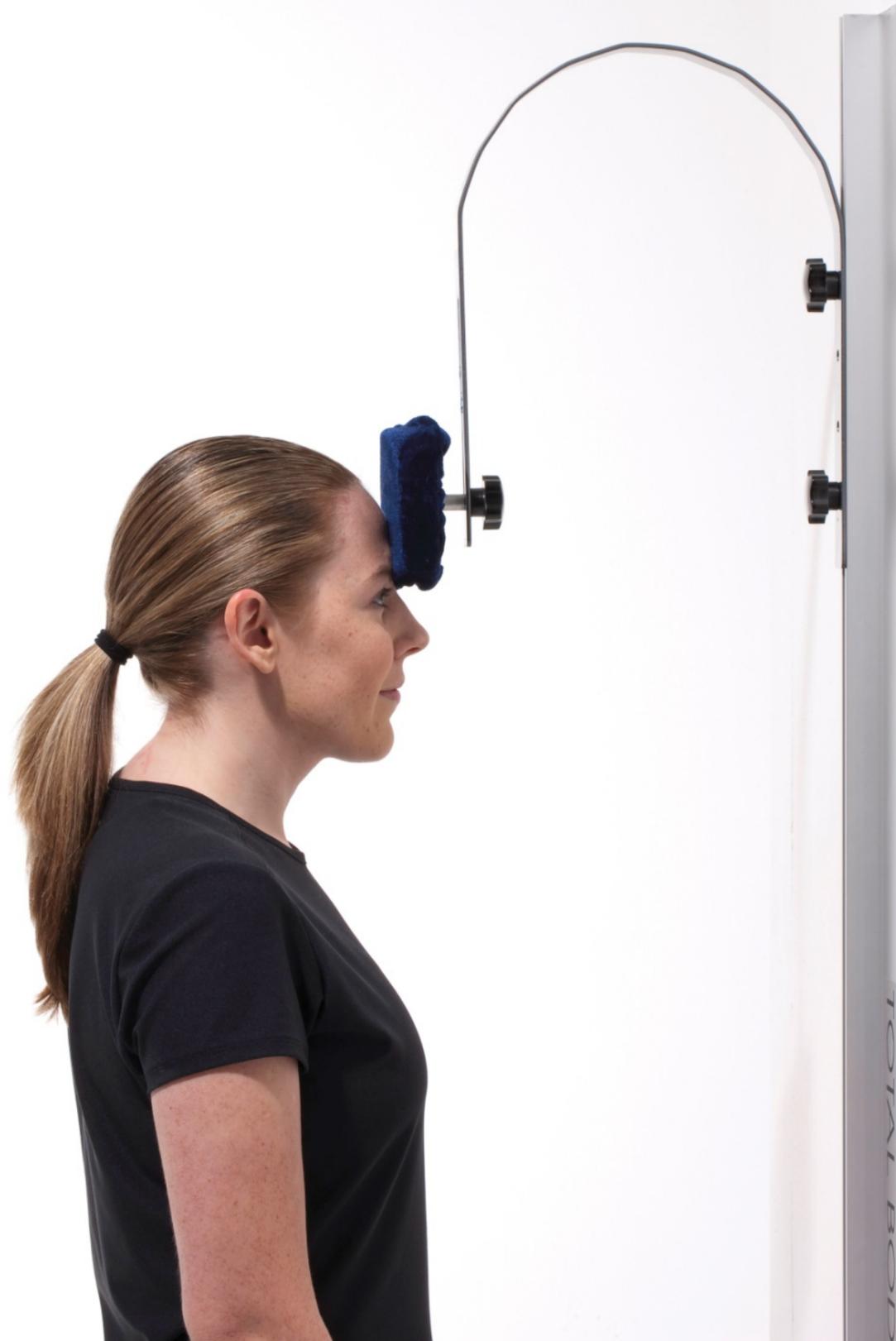
Tri-Flex Standing Row Shoulder Rehab



- Stand 3-4 feet away
- Pull Back with arms finishing at 90 degrees
- Hands stay relaxed
- 1:2 Speed Ratio
- 3S X 10R Strength
- Phase 2 : 1S X 30R
TO TOLERANCE

Start

Finish



**Cervical
Forward
Flexion**



Start



Finish

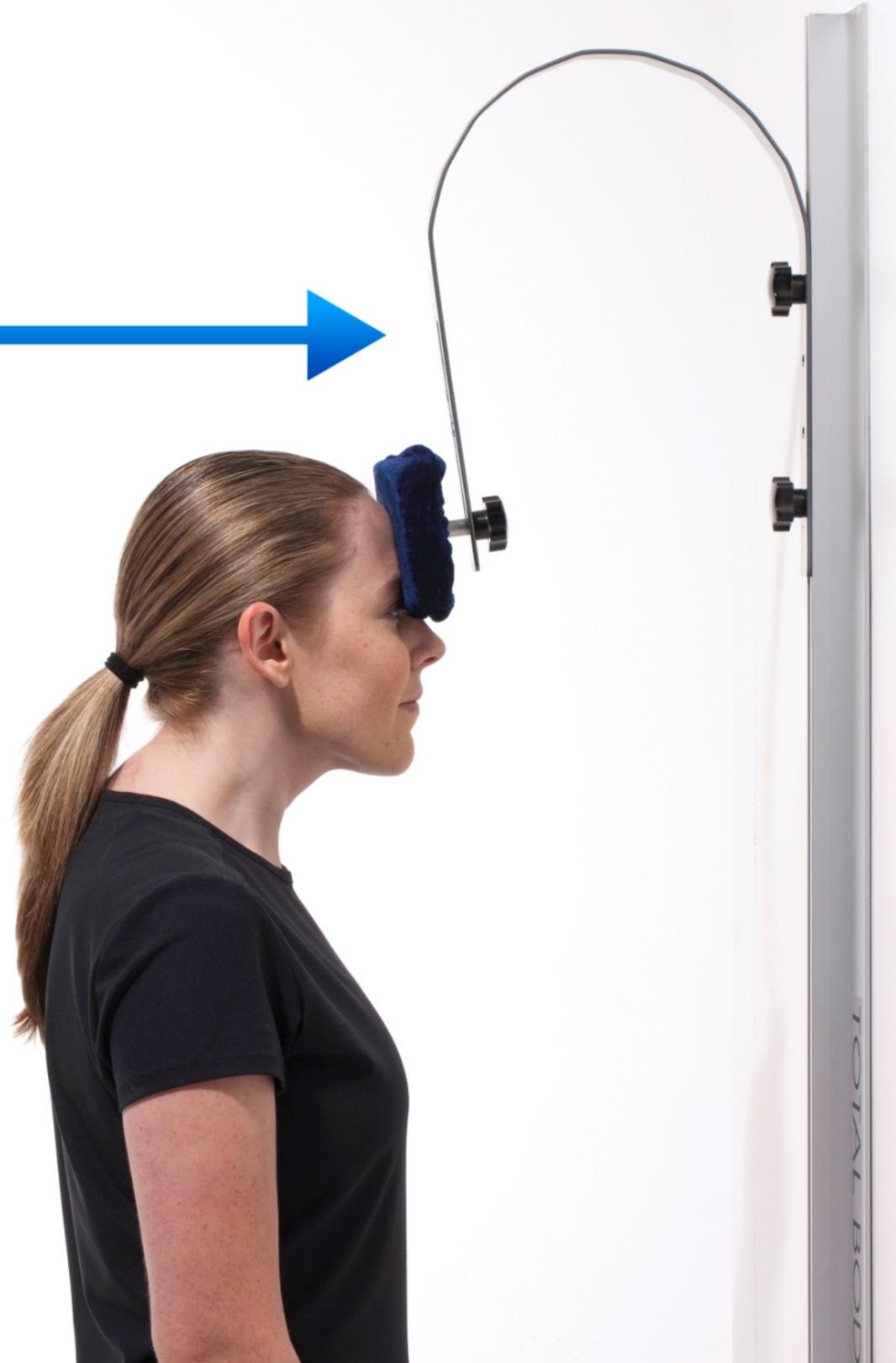
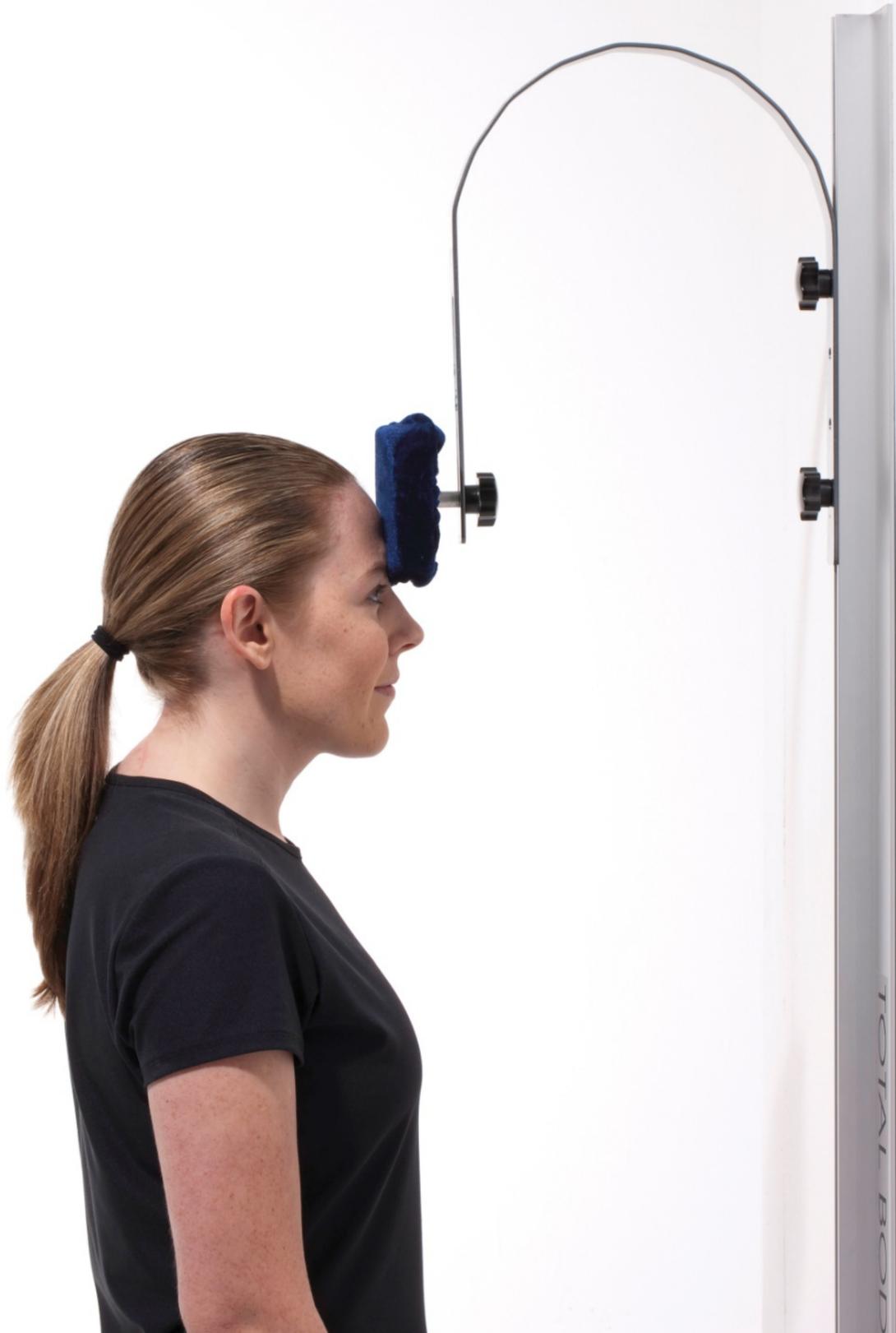


**Cervical
Extension**



Start

Finish



**Cervical
Forward
Translation**



FOOT LEVELERS

Start



Finish



**Cervical
Posterior
Translation**



Start



Finish



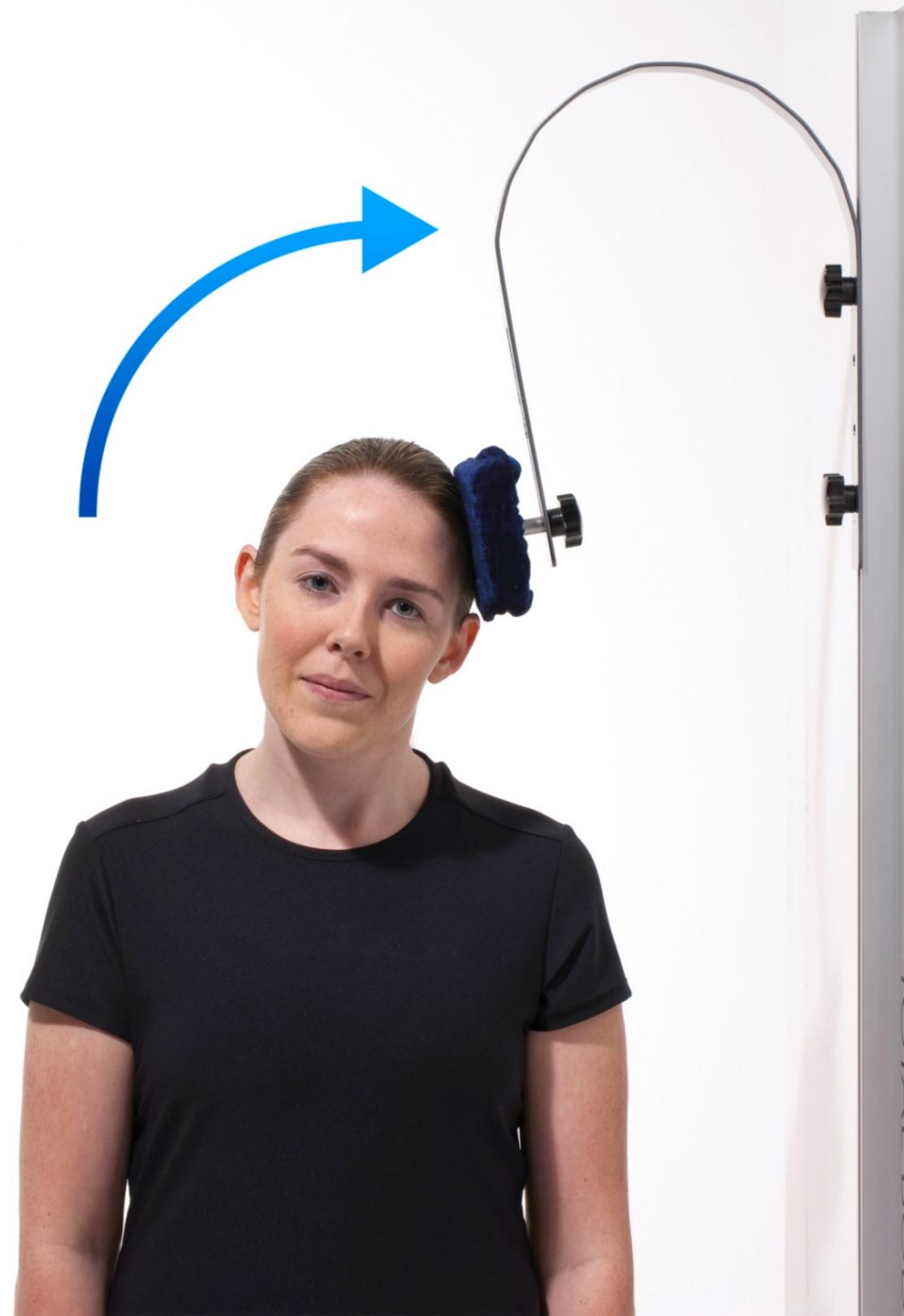
**Cervical
Rotation
(Left)**

**Then do
Right**

Start



Finish

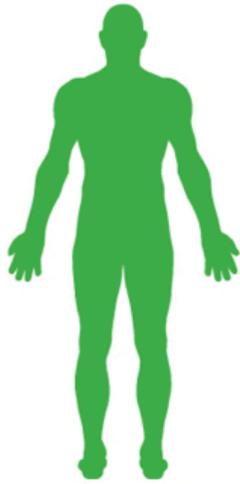


**Cervical
Lateral
Flexion**

Foot Levelers Rehab Products

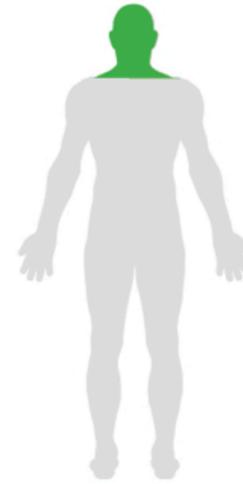
Tri-Flex®

One Unit - Whole Body Rehab



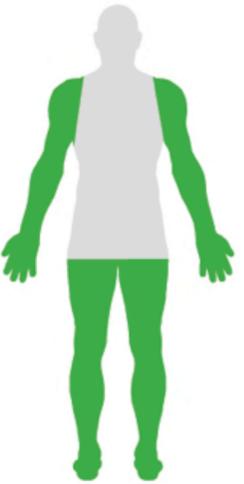
NECKSYS®

Cervical Rehab



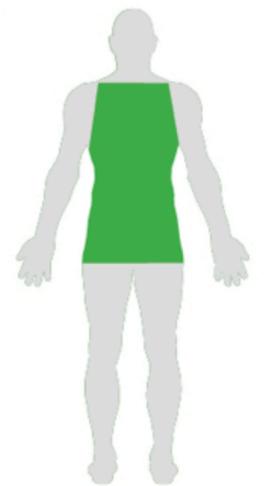
Thera-Ciser®

Extremities Rehab

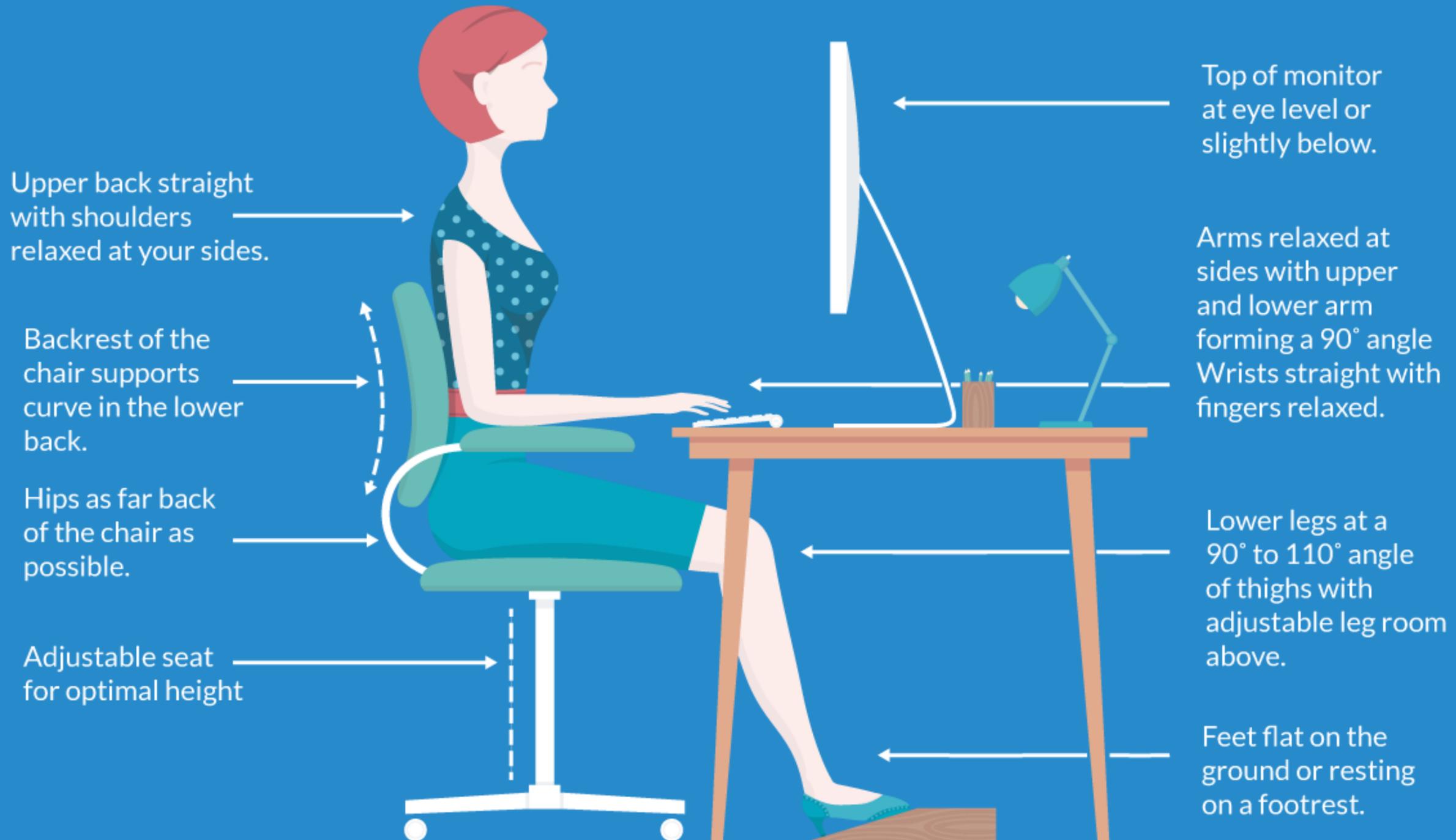


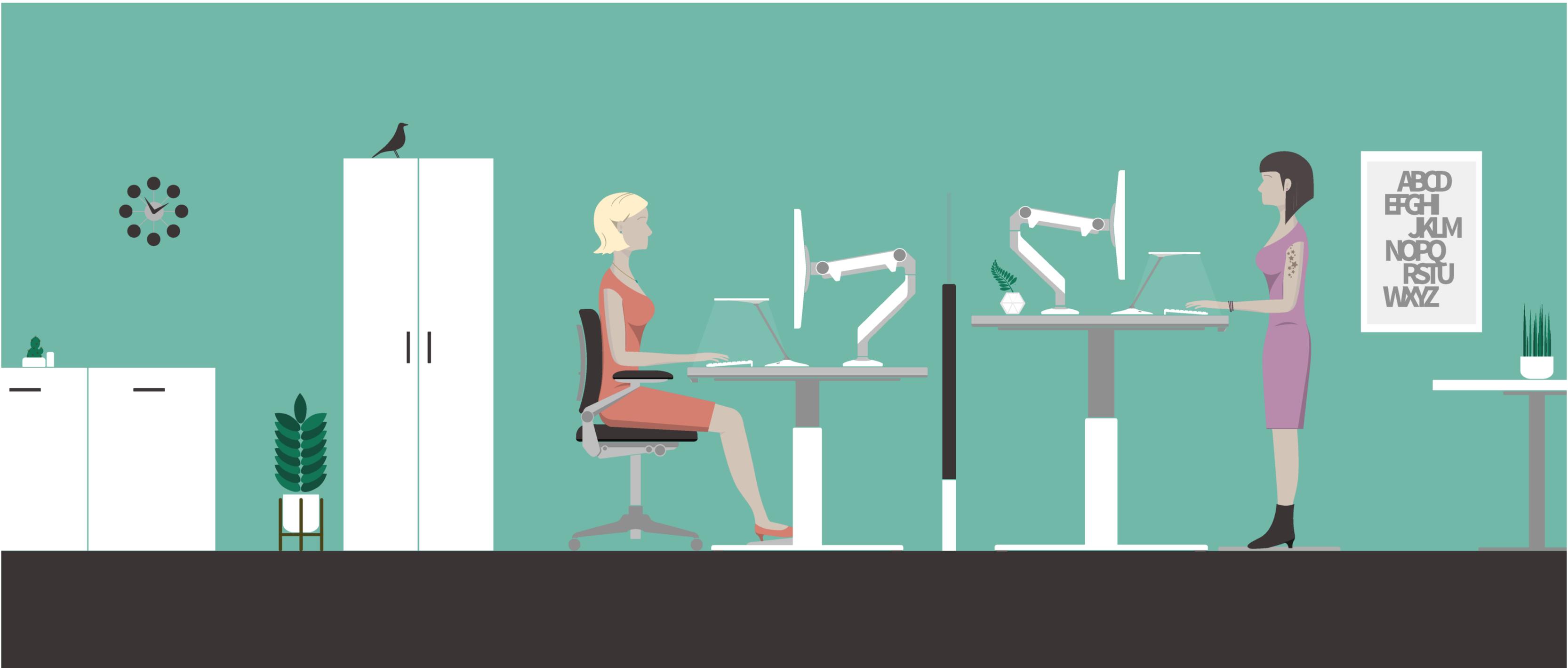
BACKSYS®

Thoracic/Lumbar Rehab

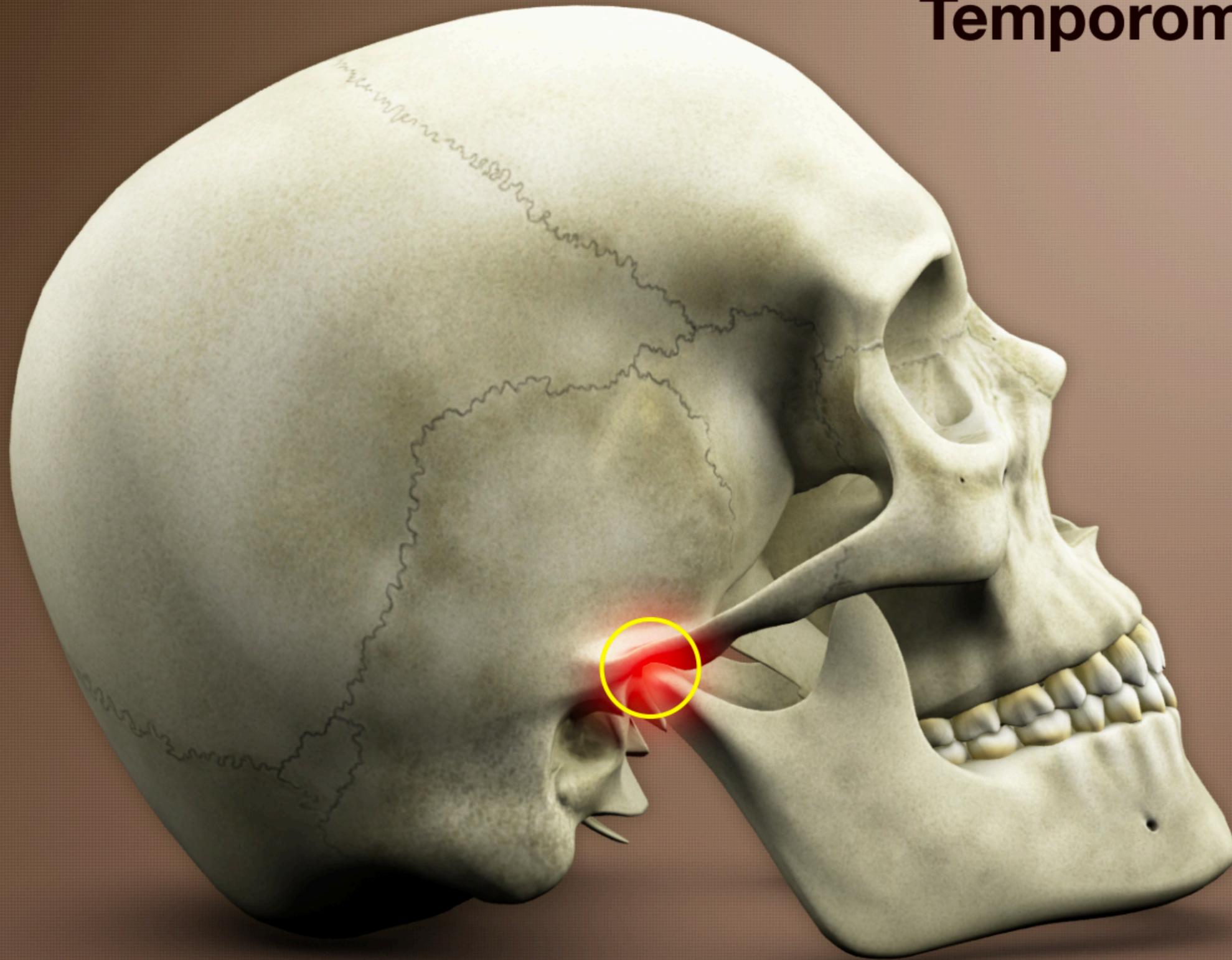


CORRECT SITTING POSTURE

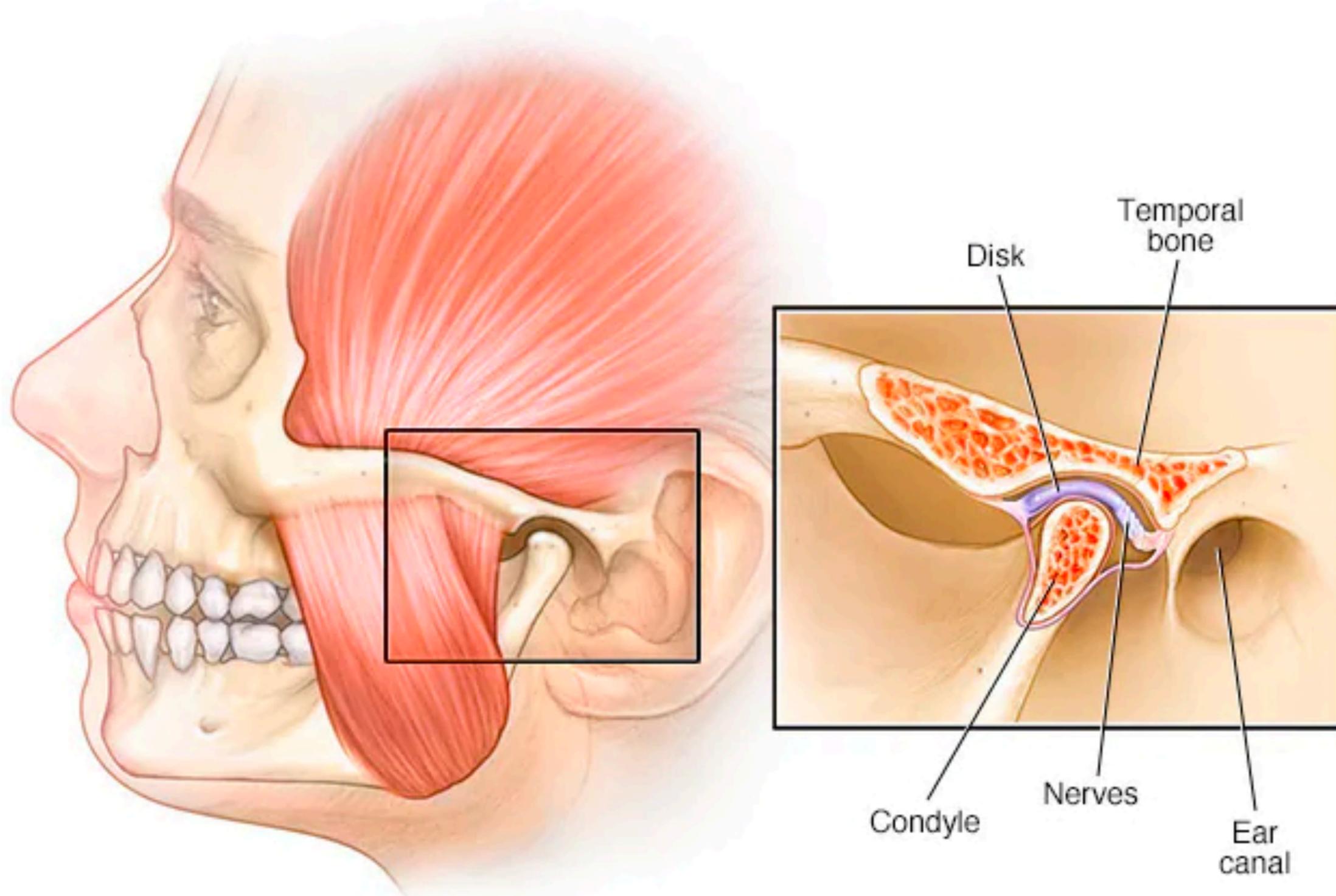




**Understanding and Treating
Temporomandibular
Disorders
(TMDs)**



The jaw is one of the most used, most necessary, and often misunderstood set of joints.



Temporomandibular disorders (TMDs) comprise a set of more than 30 health disorders associated with both the TMJs and the muscles and tissues of the jaw.

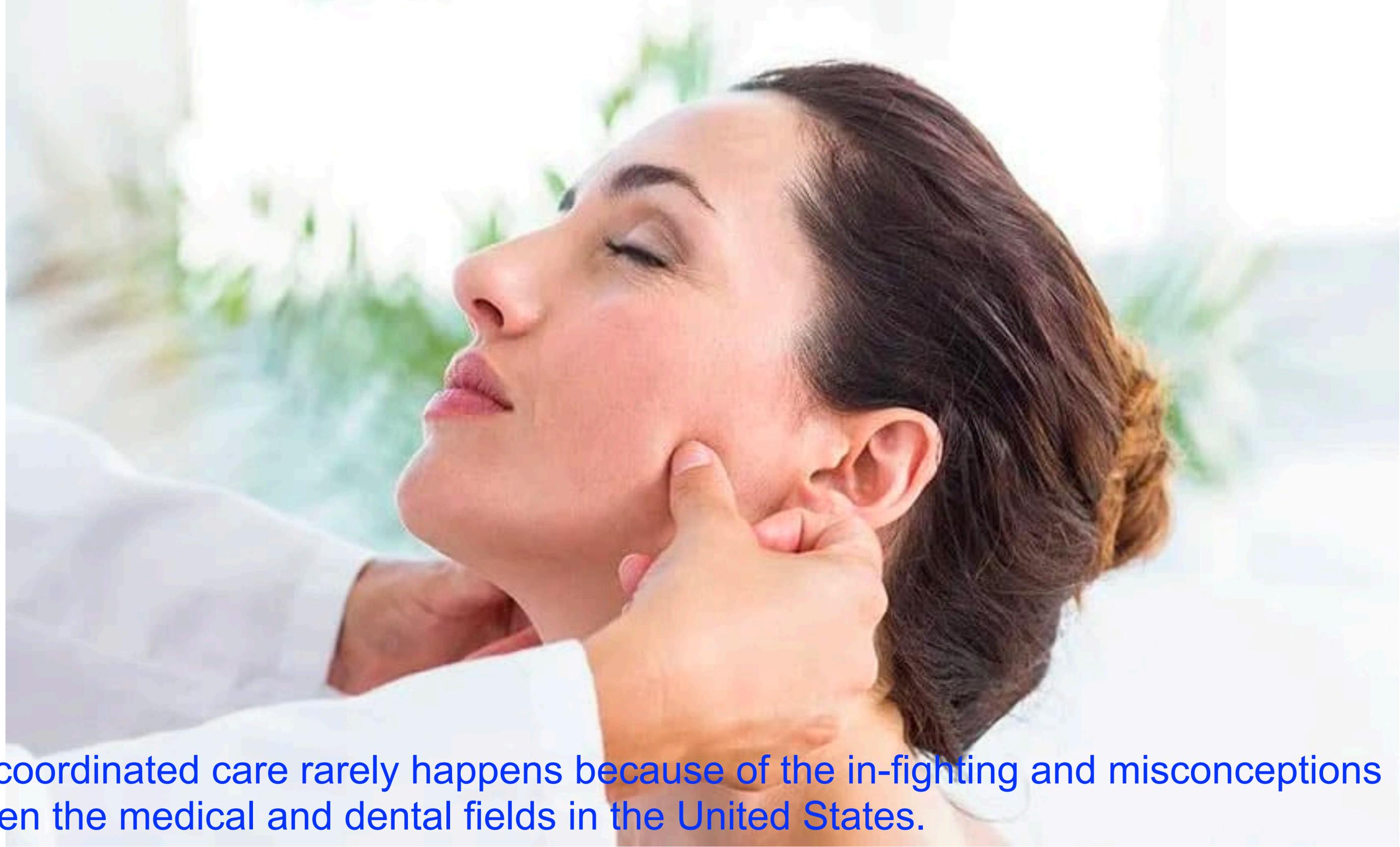


Common everyday activities that we take for granted can be negatively affected by TMD

Eating, talking, smiling, kissing and laughing can become painfully unbearable

A general lack of validation and understanding of TMD's from many health care providers leads to patients who are emotionally and physically exhausted, frustrated and desperate for solutions.

TMDs can be difficult because they may require care across multiple health disciplines (i.e. Chiropractic, Medicine, Dentistry, massage, etc.).



Such coordinated care rarely happens because of the in-fighting and misconceptions between the medical and dental fields in the United States.



Existing field practitioners can be affected by bias, limitations in their knowledge, skill and training, and constraints from the locations that they work in.

Some DC's can't work inside the mouth in certain states because it is not in their scope.

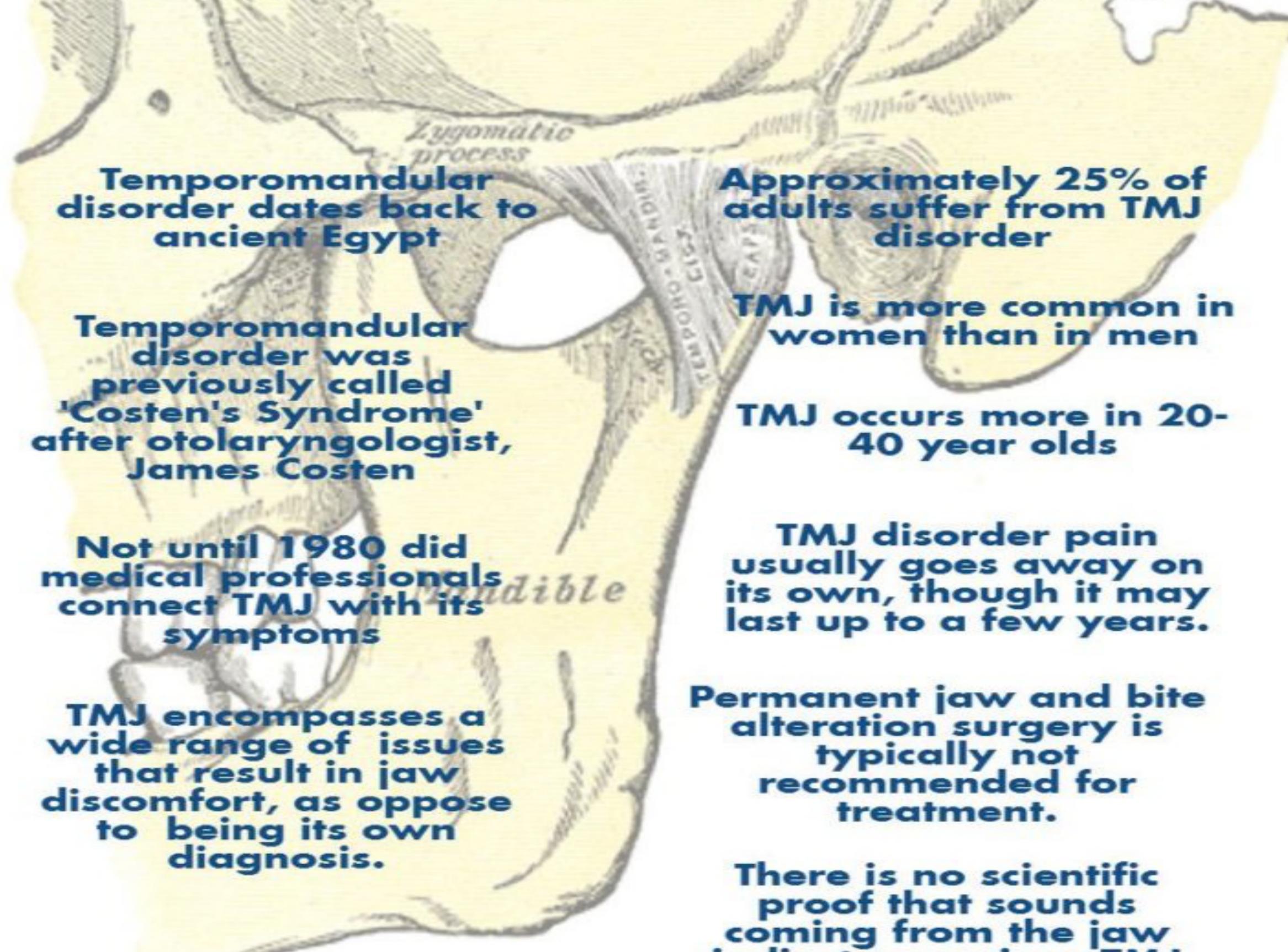


TMDs have a range of causes and are frequently associated with other painful conditions such as headache, neck, back pain, irritable bowel syndrome, fibromyalgia, sleep disorders, and chronic fatigue syndrome.



TMDs can be transient or long lasting and may be associated with problems that range from an occasional click of the jaw to severe chronic pain involving the entire orofacial region.





Temporomandular disorder dates back to ancient Egypt

Approximately 25% of adults suffer from TMJ disorder

Temporomandular disorder was previously called 'Costen's Syndrome' after otolaryngologist, James Costen

TMJ is more common in women than in men

Not until 1980 did medical professionals connect TMJ with its symptoms

TMJ occurs more in 20-40 year olds

TMJ encompasses a wide range of issues that result in jaw discomfort, as opposed to being its own diagnosis.

TMJ disorder pain usually goes away on its own, though it may last up to a few years.

Permanent jaw and bite alteration surgery is typically not recommended for treatment.

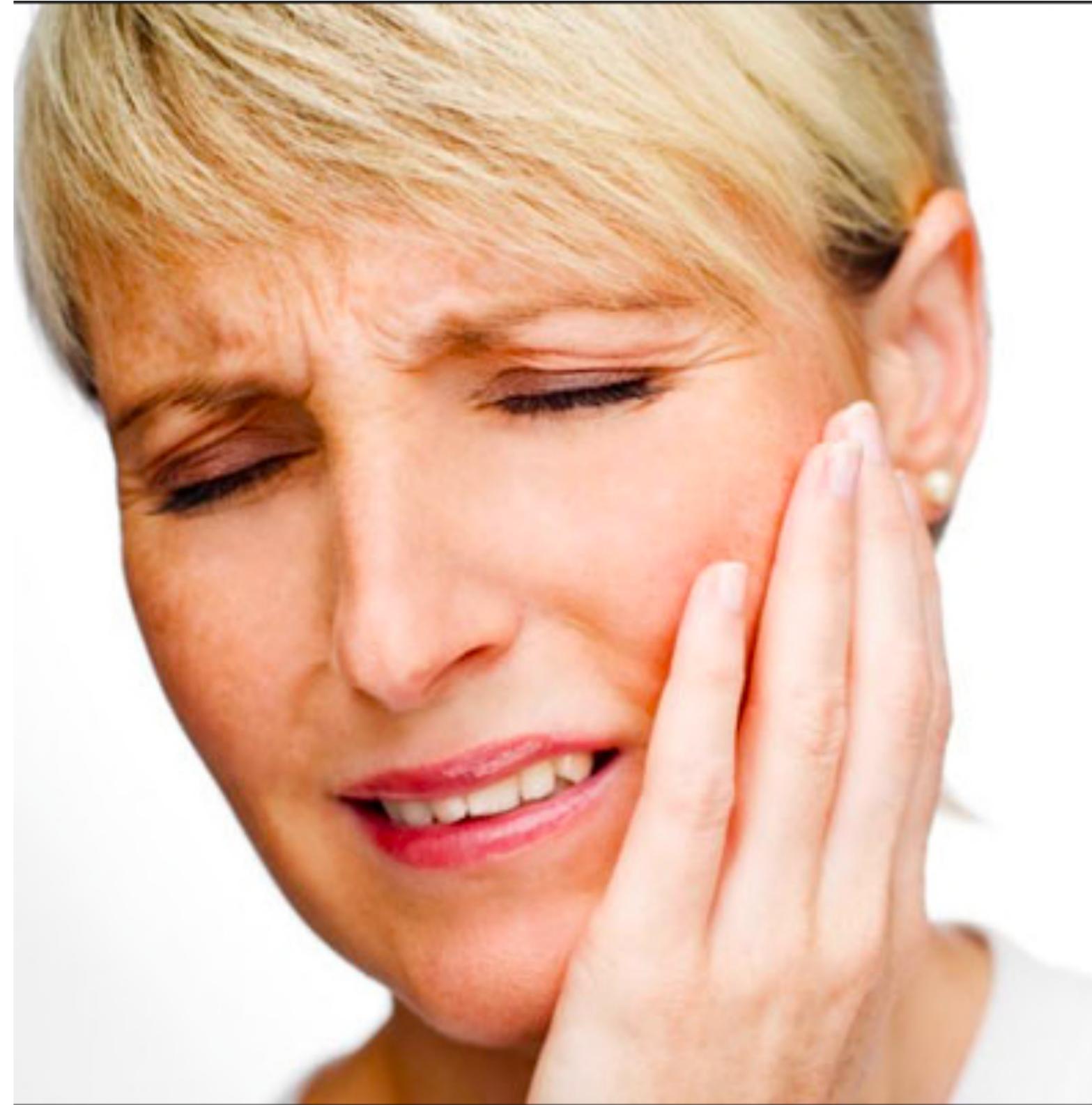
There is no scientific proof that sounds coming from the jaw indicate a serious TMJ problem

Facts from Fact Barn-
<http://www.factsbarn.com/facts-about-tmj-disorder/>
and TMJ Therapy-
<https://www.tmjtherapy.com/10>

The U.S. prevalence of TMDs is hard to estimate as it is difficult to conduct clinical exams on a large scale. According to the [National Institute of Dental and Craniofacial Research](#), the prevalence of TMJD is between **5% and 12%**.

The prevalence rates of TMJ disorders are:

- a. Higher among younger persons.
- b. 2x more in women than men.
- c. Higher in women using either supplemental estrogen or oral contraceptives.



- Treating TMD is estimated at \$4 billion annual cost including doctor's visits and medication.

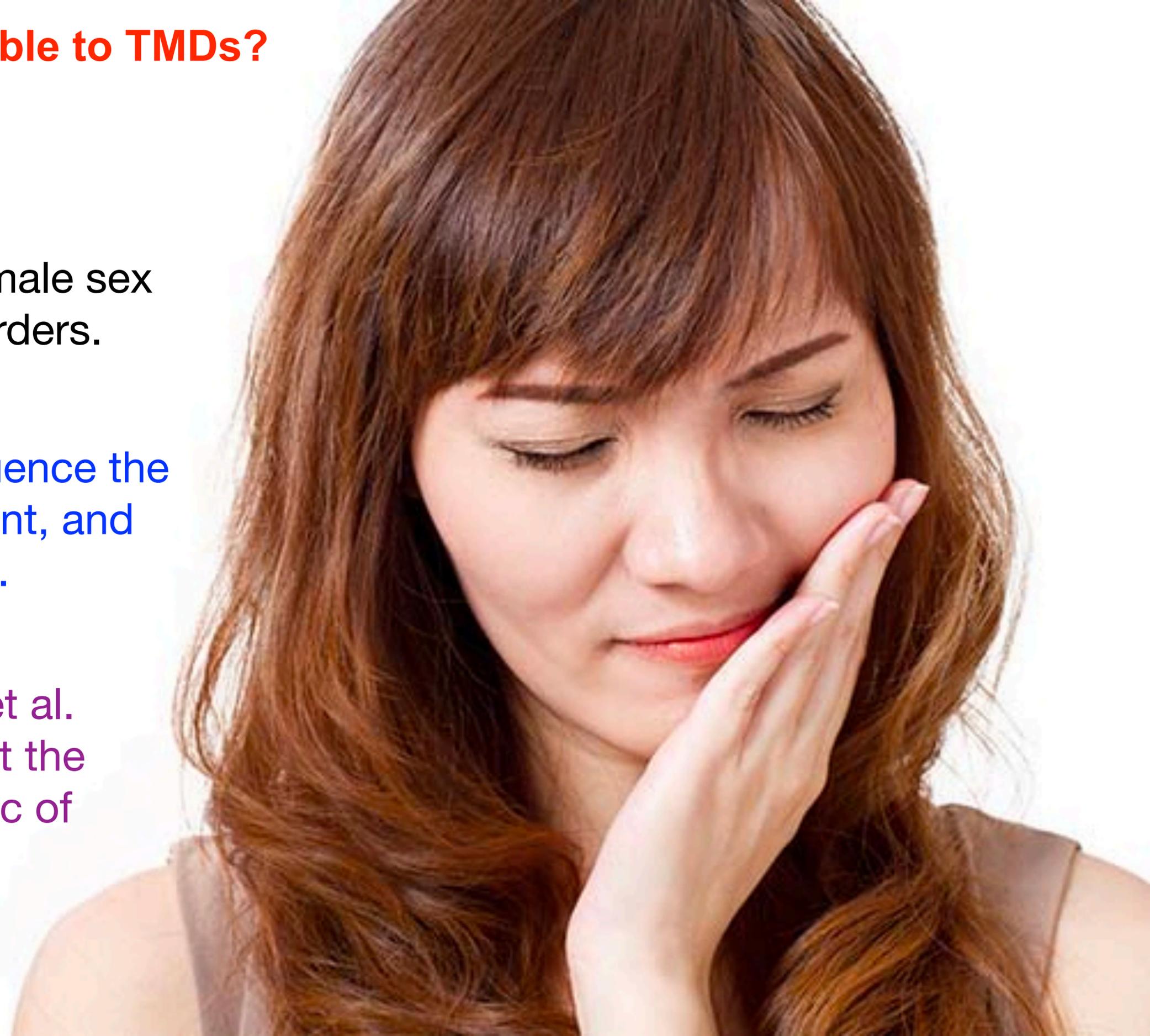


Why are Females More Susceptible to TMDs?

* Researchers suggest that the female sex hormones have a role in TMJ disorders.

* Sex hormones are known to influence the differentiation, growth, development, and metabolism of connective Tissues.

A study conducted by Abubaker et al. suggests that sex hormones affect the extracellular matrix of the TMJ disc of female rats more than male rates.



Why should DCs care about treating TMJ patients?

Common Challenges for TMD Patients:

1. Lack of coordinated care and abandonment
2. Over treatment and/or harmful treatment
3. Impact on quality of life
4. Expense
5. Finding quality health care professionals
6. Co-morbidities



Chiropractors can positively affect these challenges

Food for Thought:

- Many patients endure multiple TMD-related surgeries often with no resolution to their pain or with worsening symptoms.
- Others indicate problems with removable oral appliances, orthodontic correction of the teeth, replacement of teeth, or some combination of these treatments.

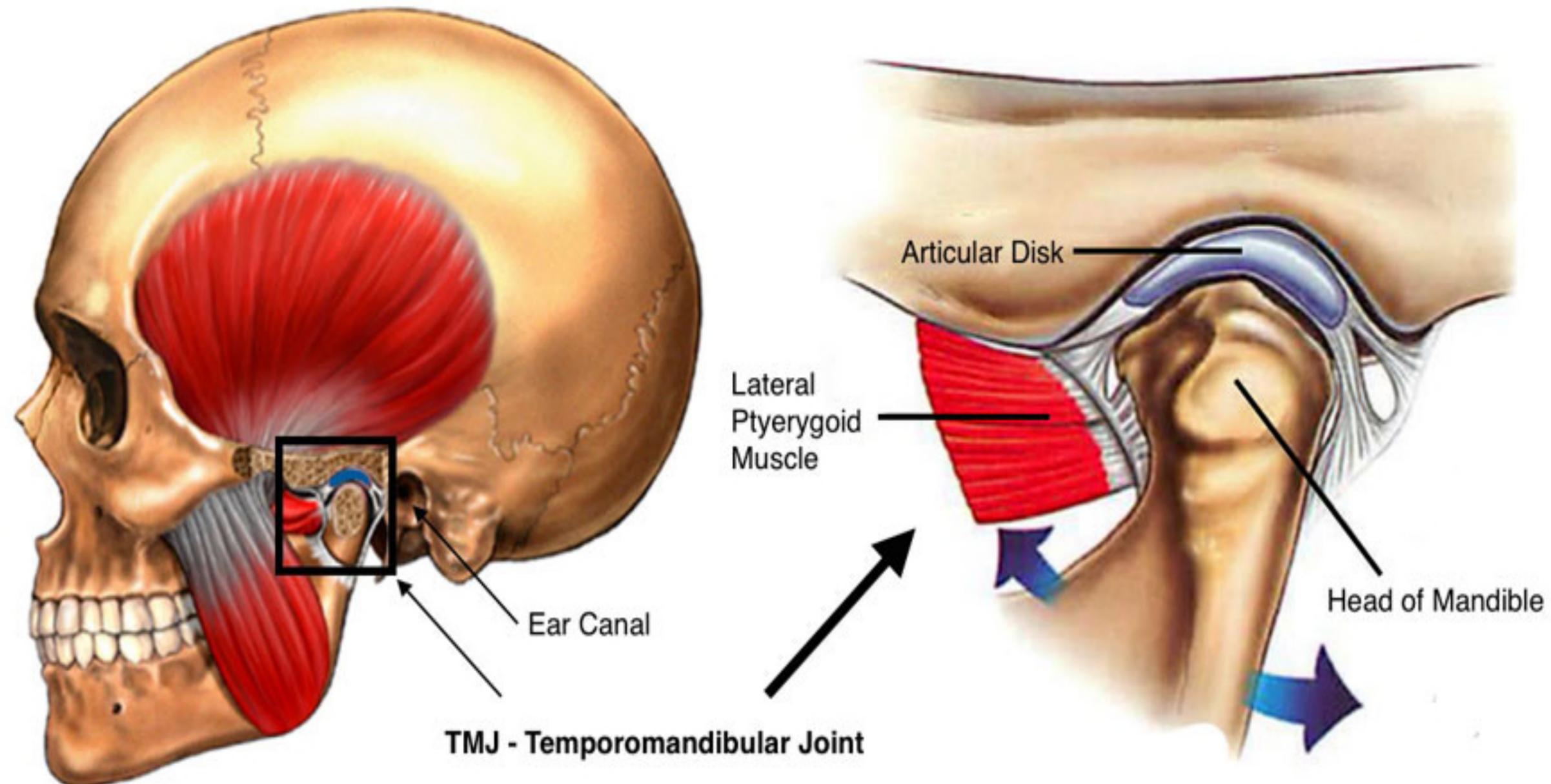


- The financial burden of seeking and receiving care for TMD tends to be high since patients receive limited insurance coverage. Expenses were paid out of pocket by the individual at costs of up to tens of thousands of dollars.
- Patients with TMD often express frustration at not knowing where to turn for quality care. Primary care, internal medicine clinicians and general dentists often do not know how to help them or locate qualified specialists who can.

TMJ Anatomy

* The TMJ is the most frequently used joint in the body, opening and closing approximately 1500 - 2000 times daily (Hoppenfeld, 1976, Magee, 1999).

* Activities of this joint range from verbal/nonverbal communications, chewing, breathing, interpersonal interactions, and facial expressions of emotions.



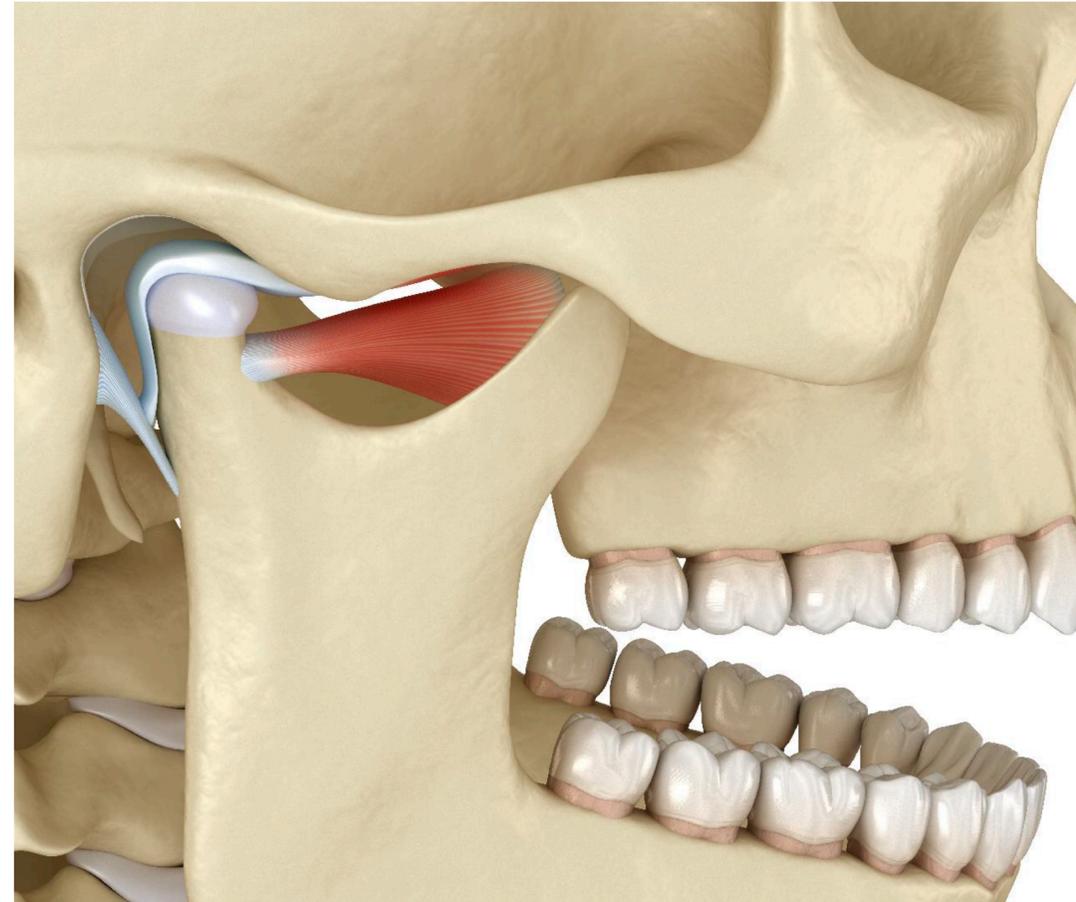
TMDs have often been lumped together as “**TMJ disorder**”.



- They are actually a set of disorders related to alterations in the structure, function, and physiology of the masticatory system.
- Thus multiple treatment care pathways are often available.

Definition of TMD

Disorders of the masticatory system (generally termed temporomandibular disorders, or TMDs) involve the muscles of mastication (chewing), the temporomandibular joints (TMJs), and associated nerves and tissues.

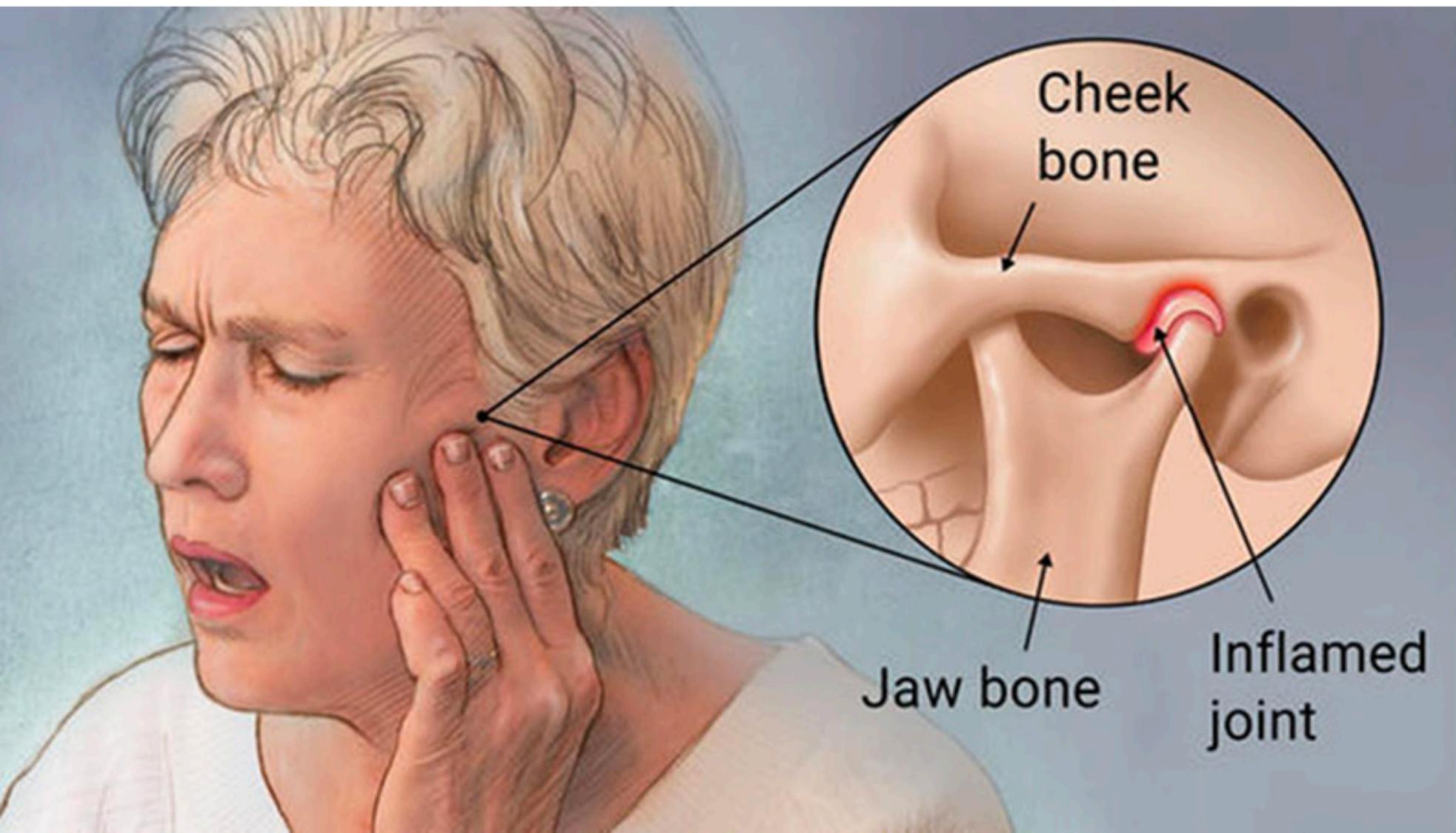


The Dental research community and the consensus report from the American Dental Association (Laskin et al., 1983) uses the term “temporomandibular disorders”. TMDs are defined as a set of diseases and disorders that are related to alterations in the structure, function, or physiology of the masticatory system and that may be associated with other systemic and co-morbid medical conditions.



FOOT LEVELERS

- * The pain associated with TMDs can range from none to severe.
- * TMDs can range from a single isolated condition to multi-system involvement and can be associated with other co-morbid and systemic disorders and overlapping pain conditions (i.e. fibromyalgia, back pain, headache, irritable bowel syndrome, inflammatory arthritis).



TMJ Classification

- Anatomic Classification:
 - Diarthrodial= literally means two articulations
 - a joint that contains the following characteristics
 - a freely movable joint (Discontinuous articulation of two bones)
 - bony surfaces are covered with hyaline or fibrocartilage
 - lined by a synovial lining and contains synovial fluid
 - Ginglymoid –Joint has hinge like movement component

TMJ Classifications:

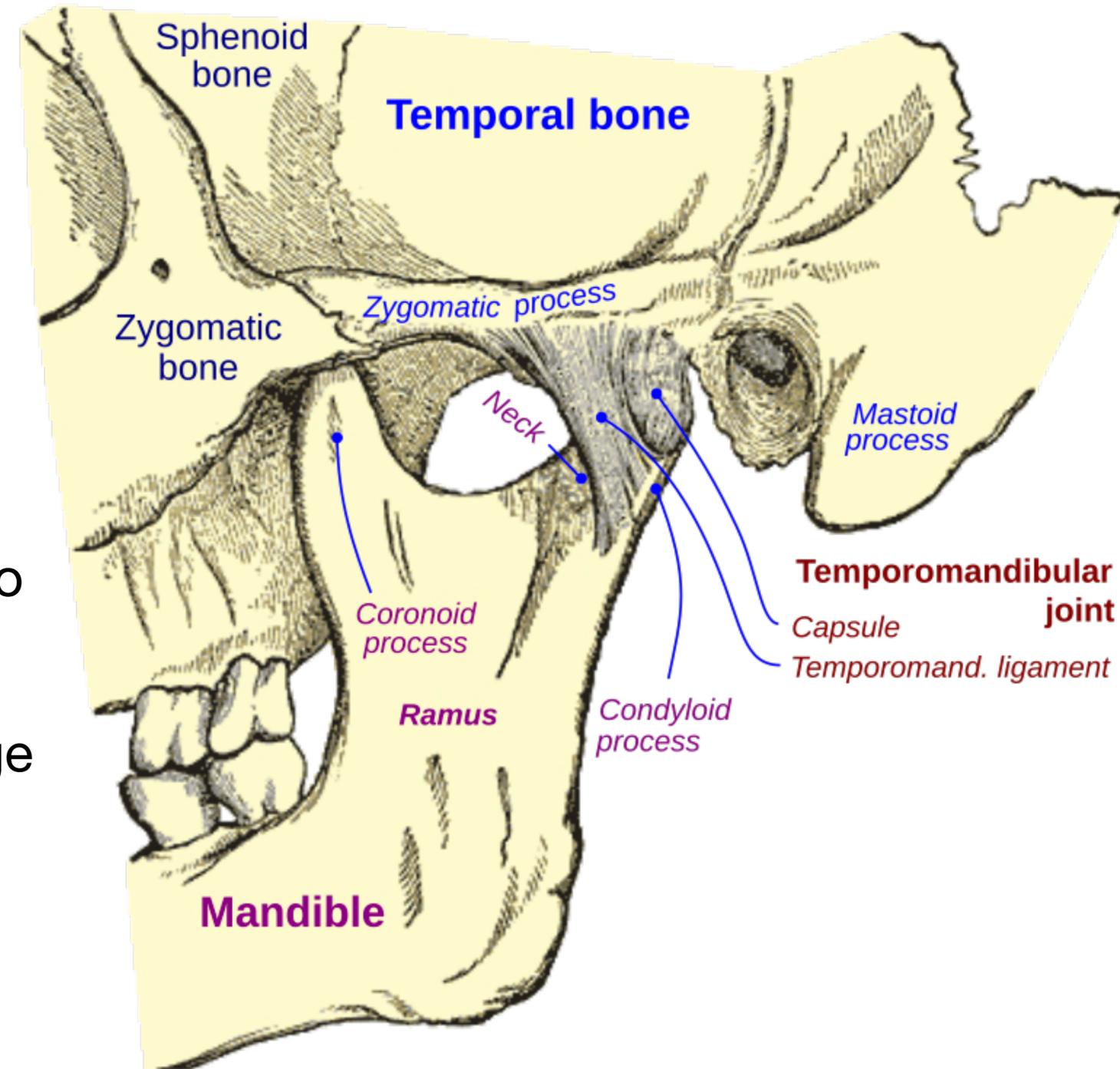
Anatomic Classification:

- **Diarthrodial** - “2 Articulations”

• A joint that contains the following characteristics:

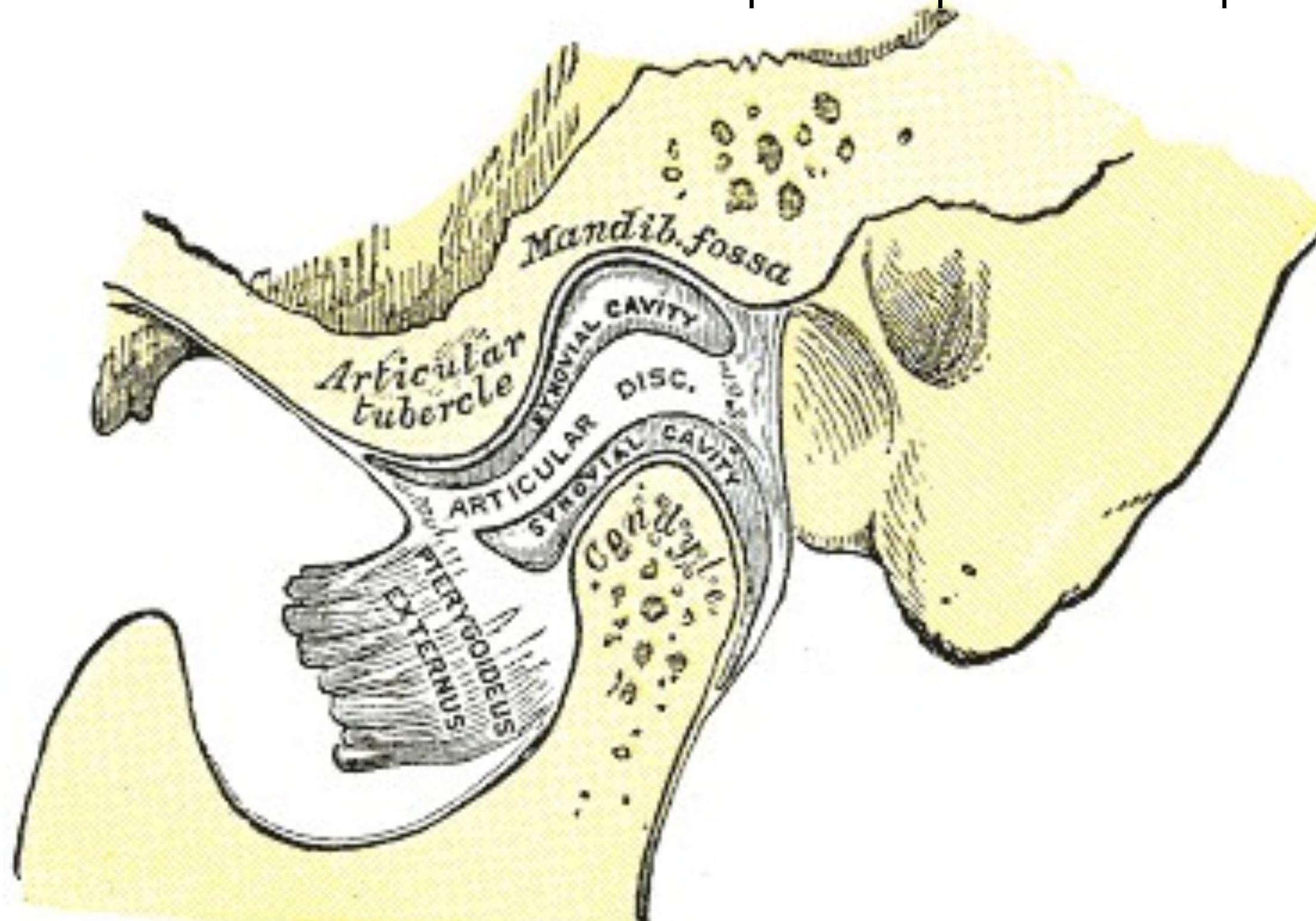
- Freely moveable joint (discontinuous articulation of two bones)
- Bony surfaces are covered with hyaline or fibrocartilage
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- **Ginglymoid** - joint has hingelike movement component

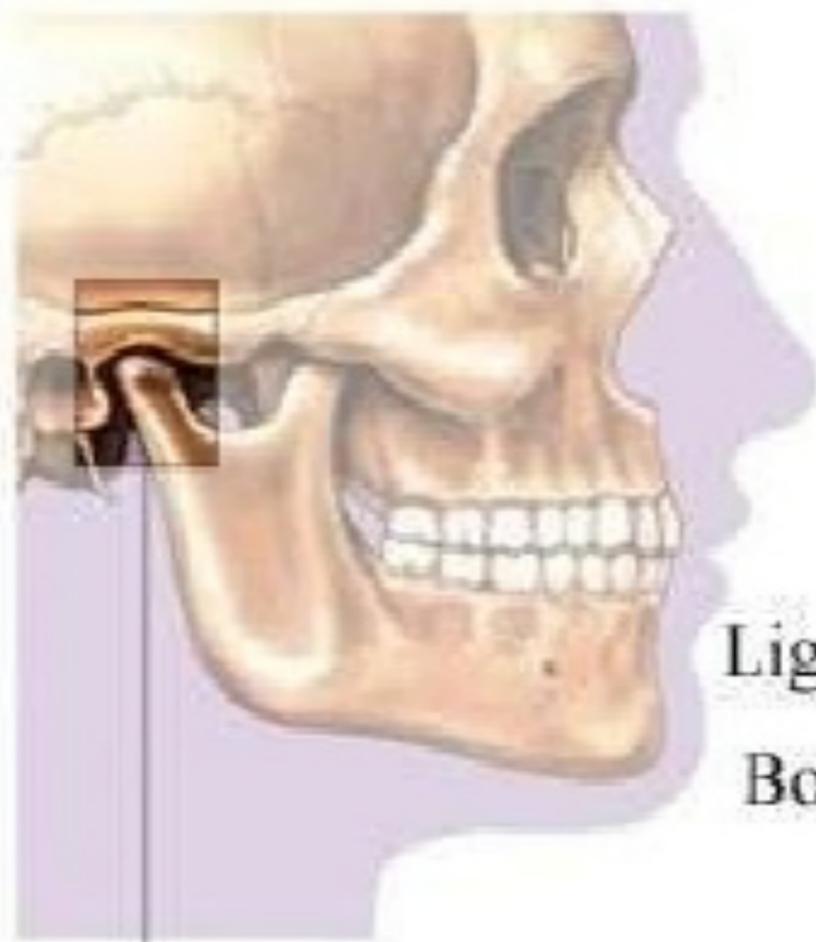


Components of the TMJ.

1. head or condyle of mandible
2. articular tubercle and mandibular fossa of squamous portion of temporal bone.



Anatomy- The 4 Joints

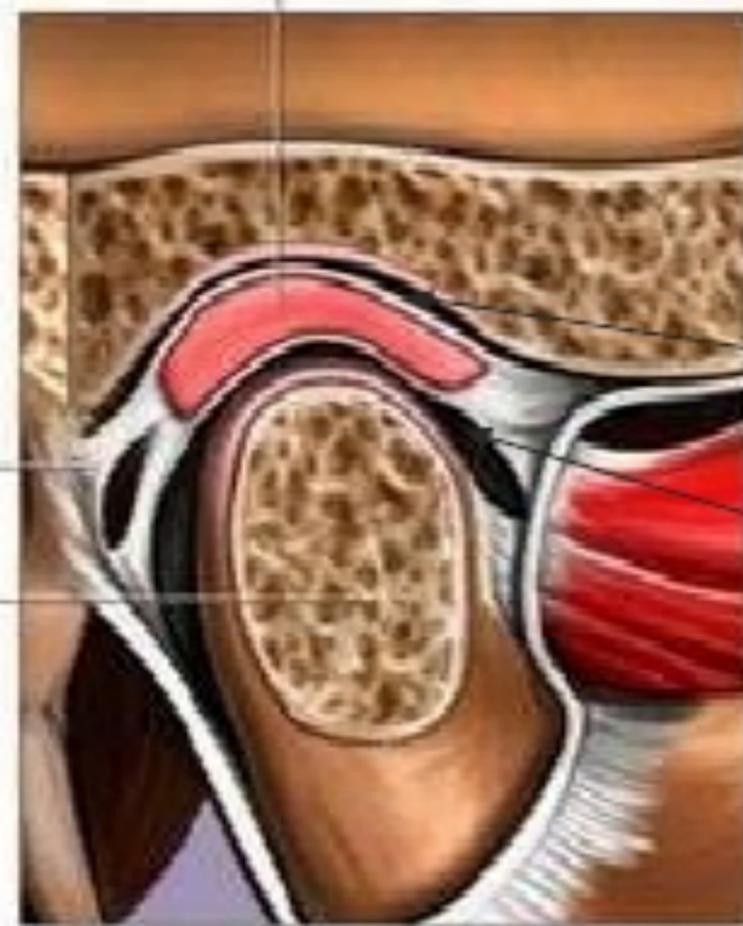


Temporomandibular joint
(TMJ)

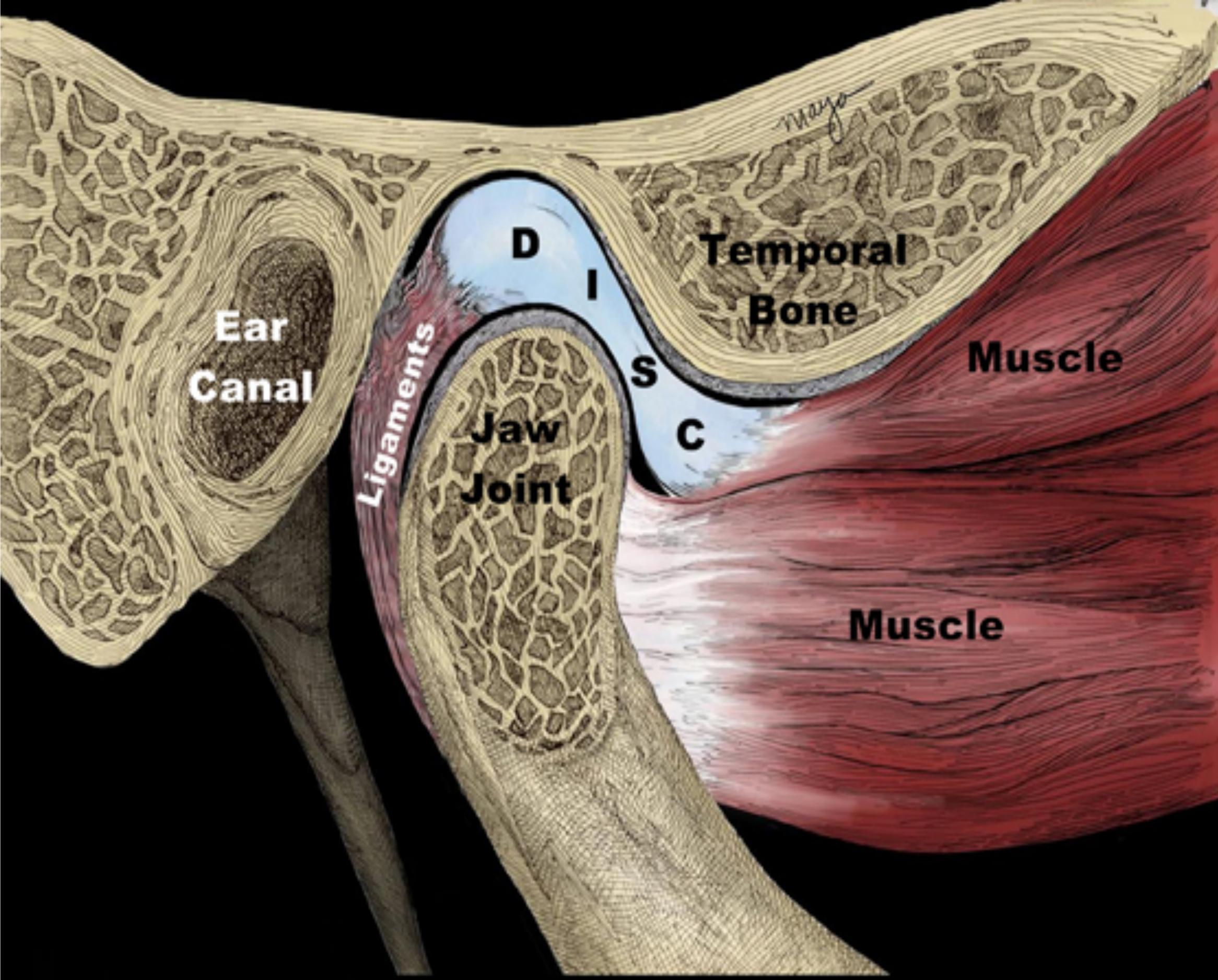
Ligament

Bone

Intra-articular disc



- Synovial joint
- Articular disc (fibrocartilage)
- Two joint cavities
 - (upper cavity) protrusion/retrusion
 - (lower cavity) hinge motion
- Extracapsular ligaments

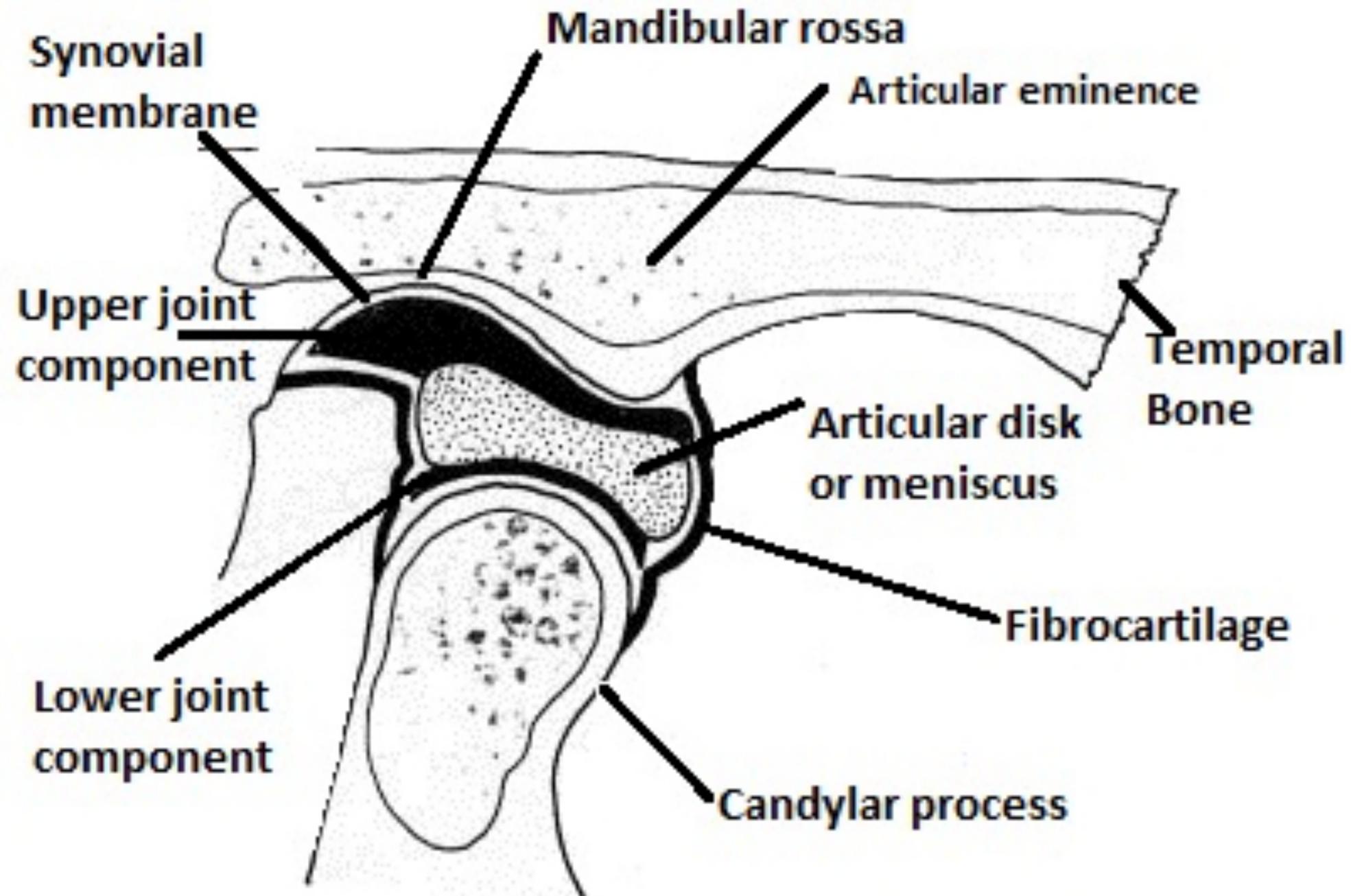


Oval Fibrocartilaginous Disc



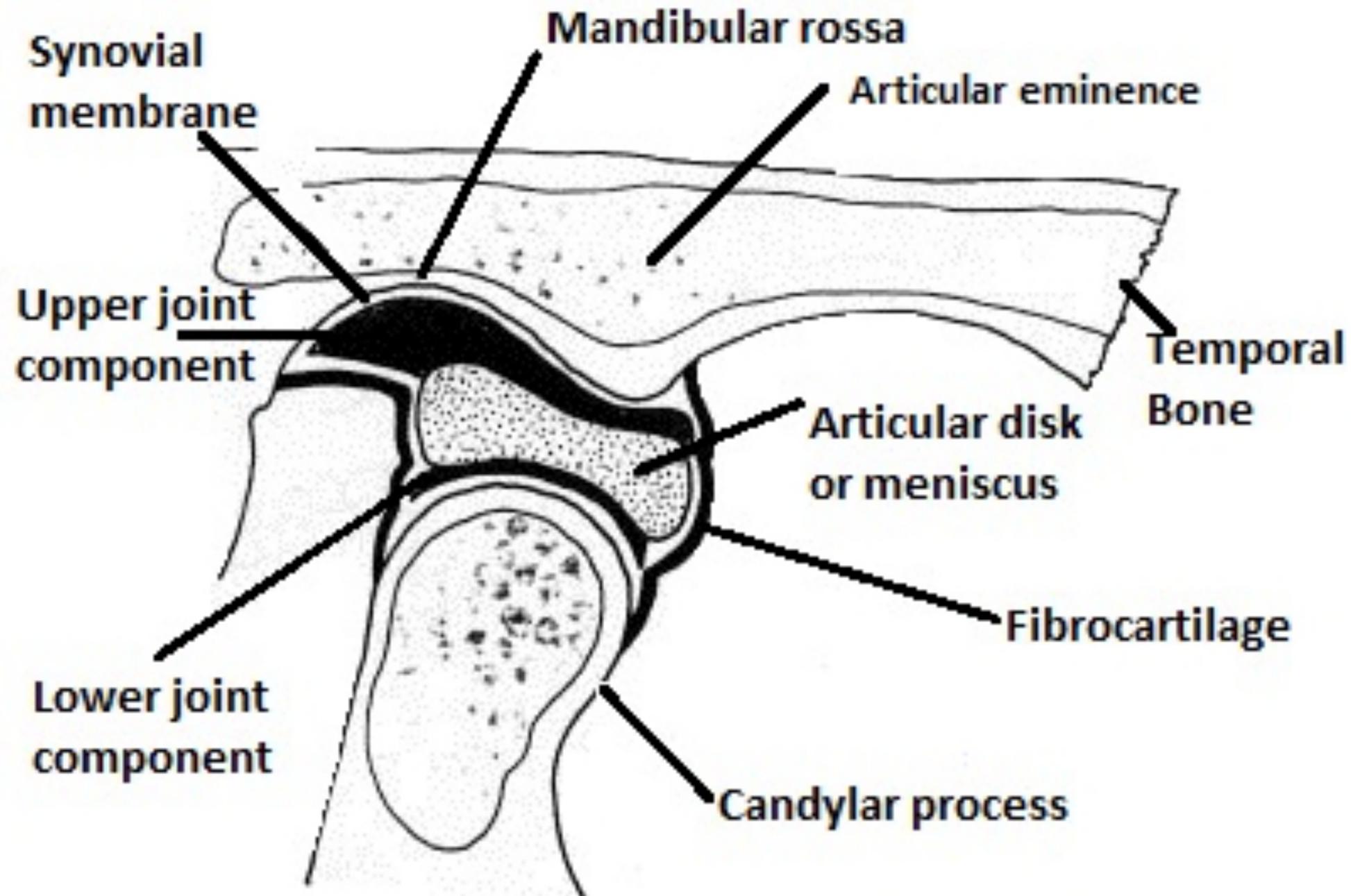
Superior Compartment:

- Articular surface of the temporal bone and the superior portion of the articular disc. **Linear movement or translation.**



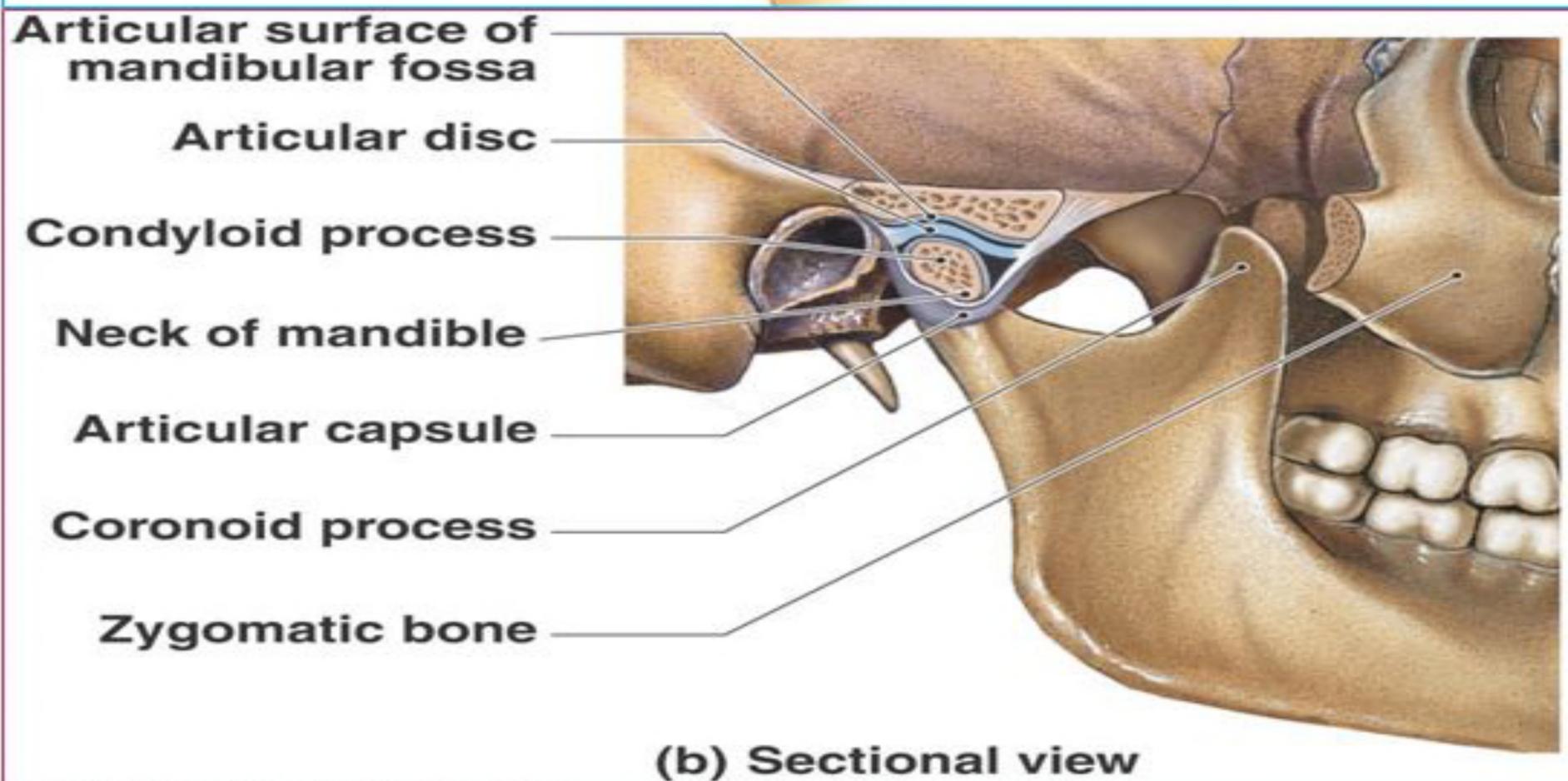
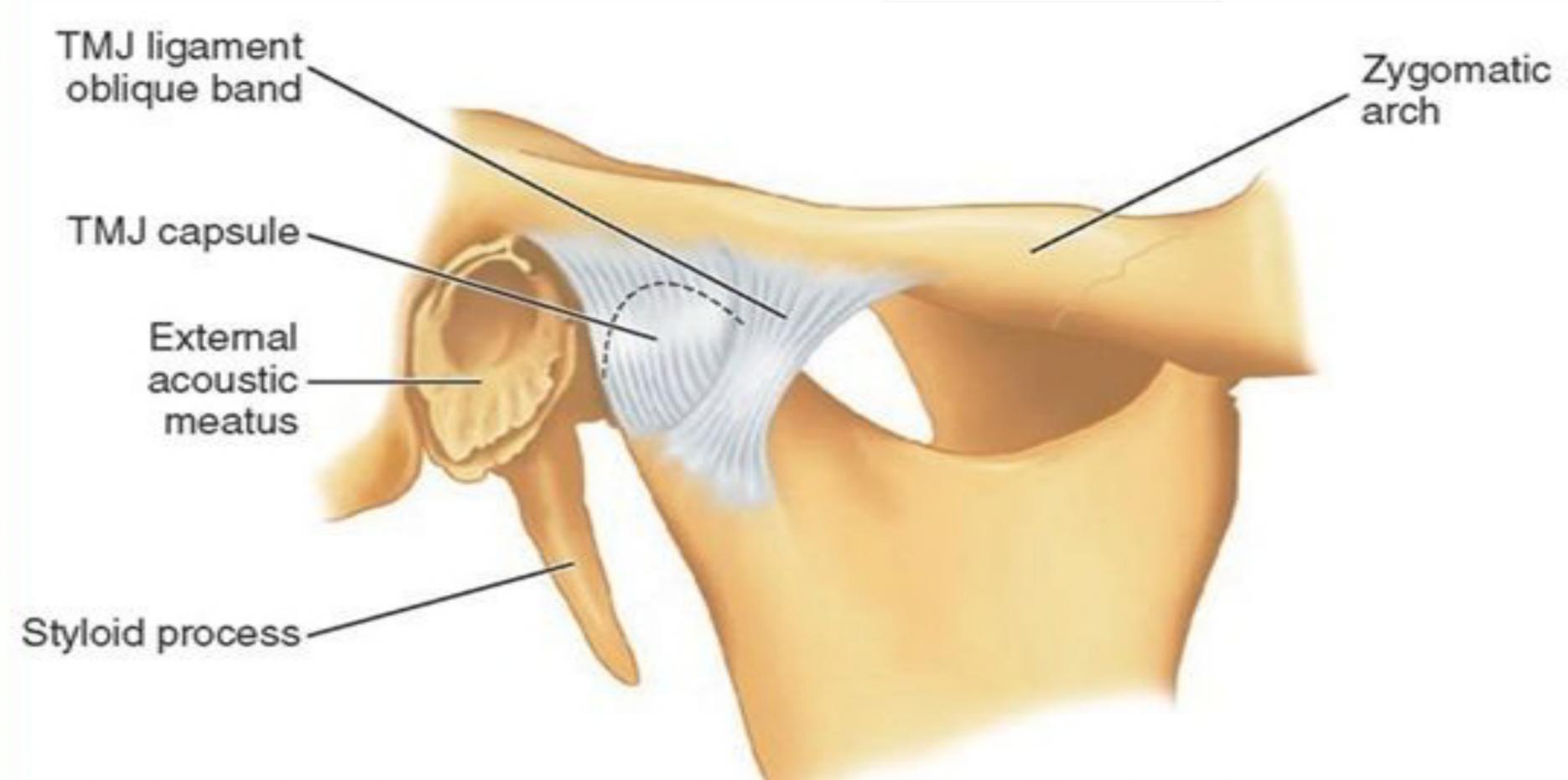
Inferior Compartment:

- Inferior surface of disc and the superior surface of the condyle.
- Full rotary motion (open or closing) of the mandibular condyle occurs here.



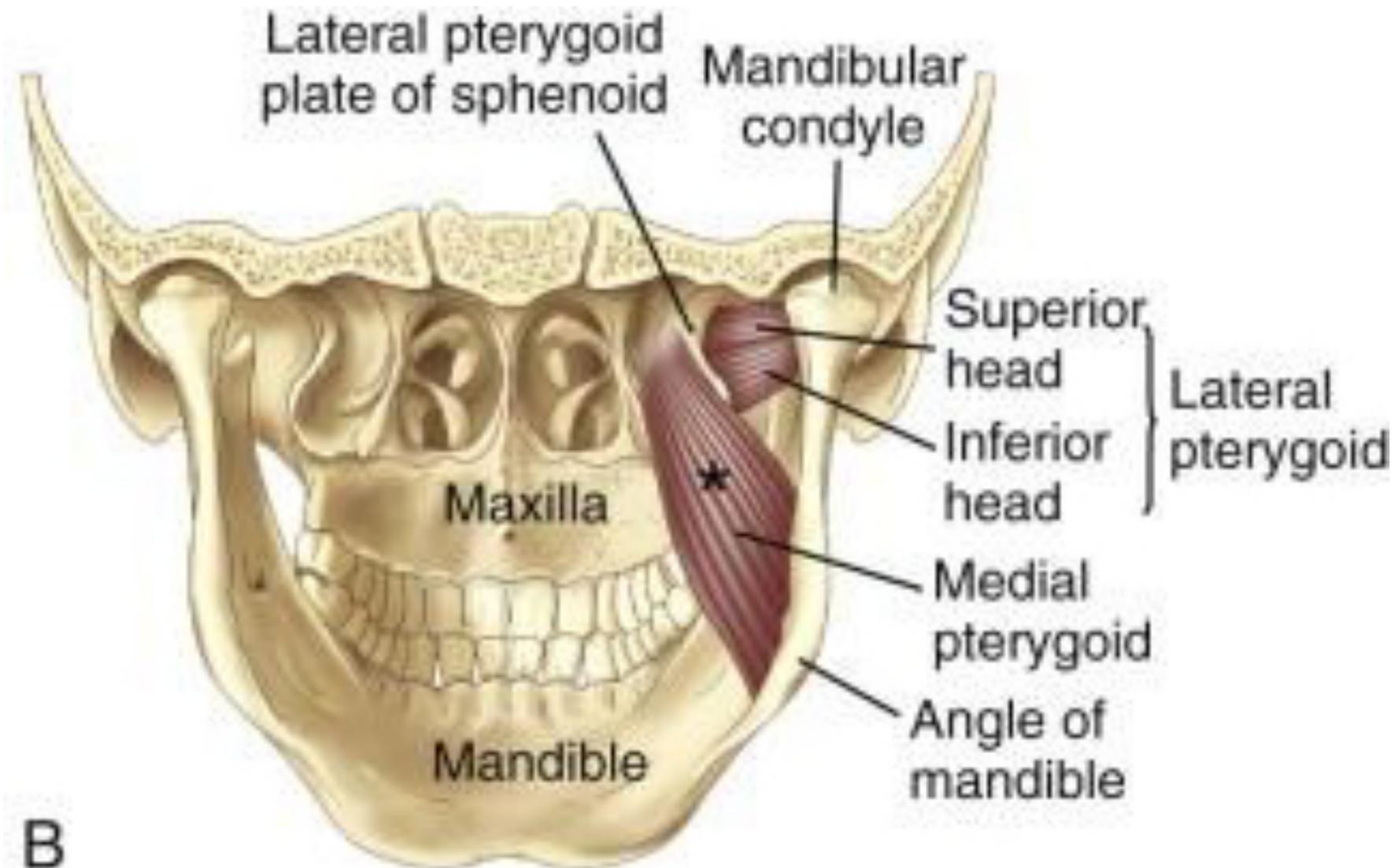
CAPSULE

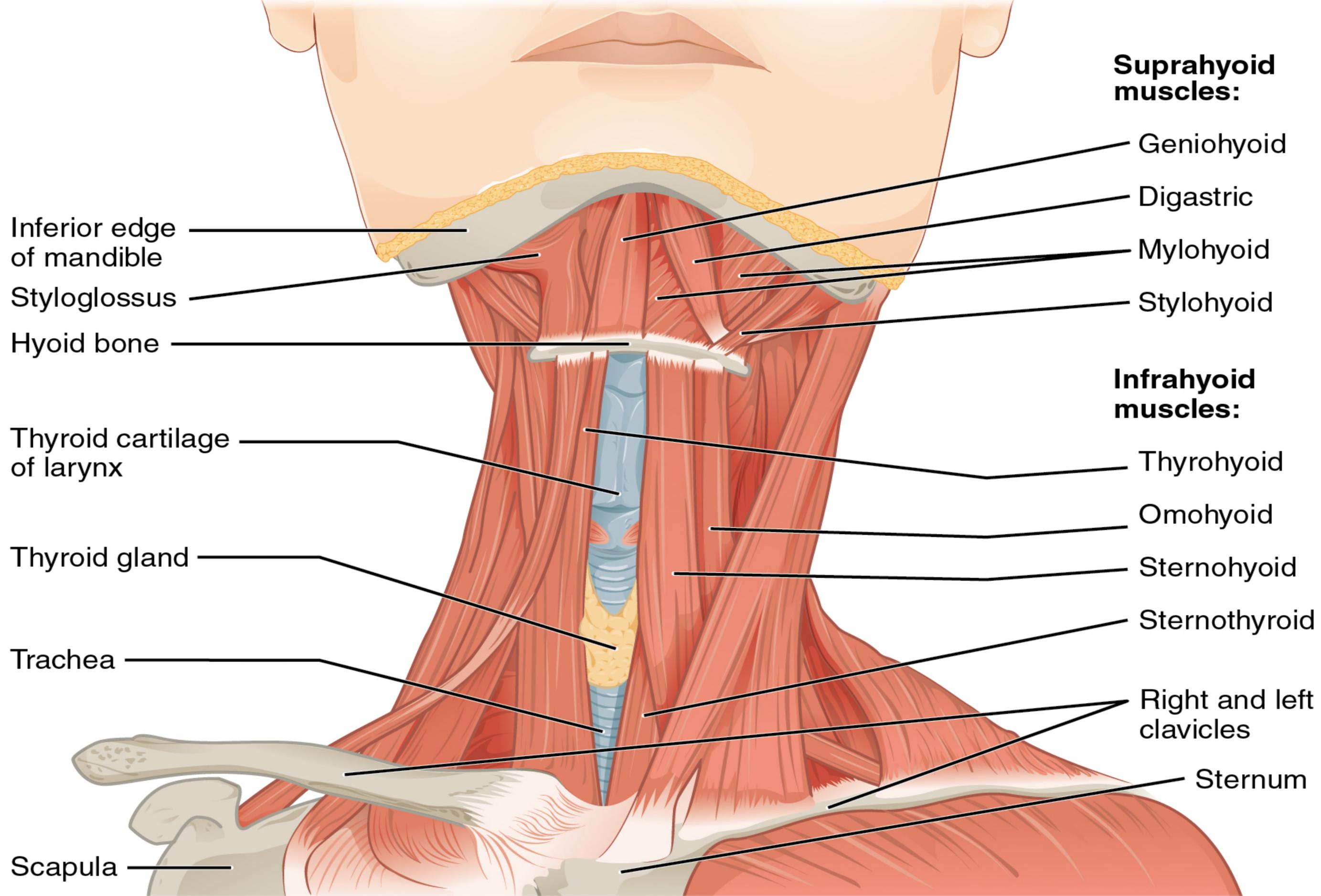
- Fibrous membrane that surrounds the joint
- Covers the joint from all around
- **Thin** above the disc and **thick** below it
- Encloses the disc
- **Attaches above:** to the margins of the mandibular fossa
- **Attaches below:** to the neck of the mandible
- The inner aspect of capsule attaches to disc
 - Above disc – capsule loose
 - Below disc - tight



TMJ Muscles

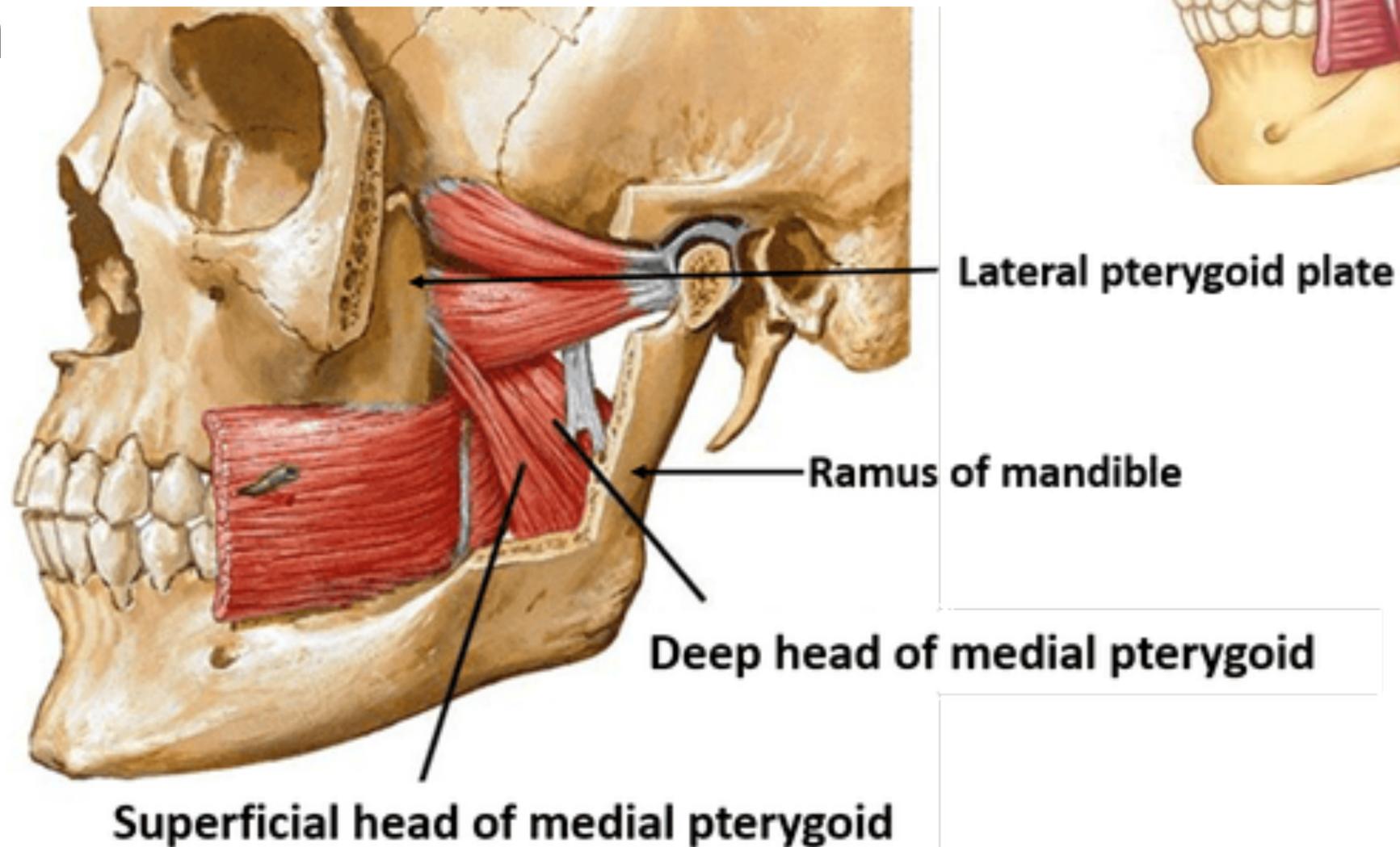
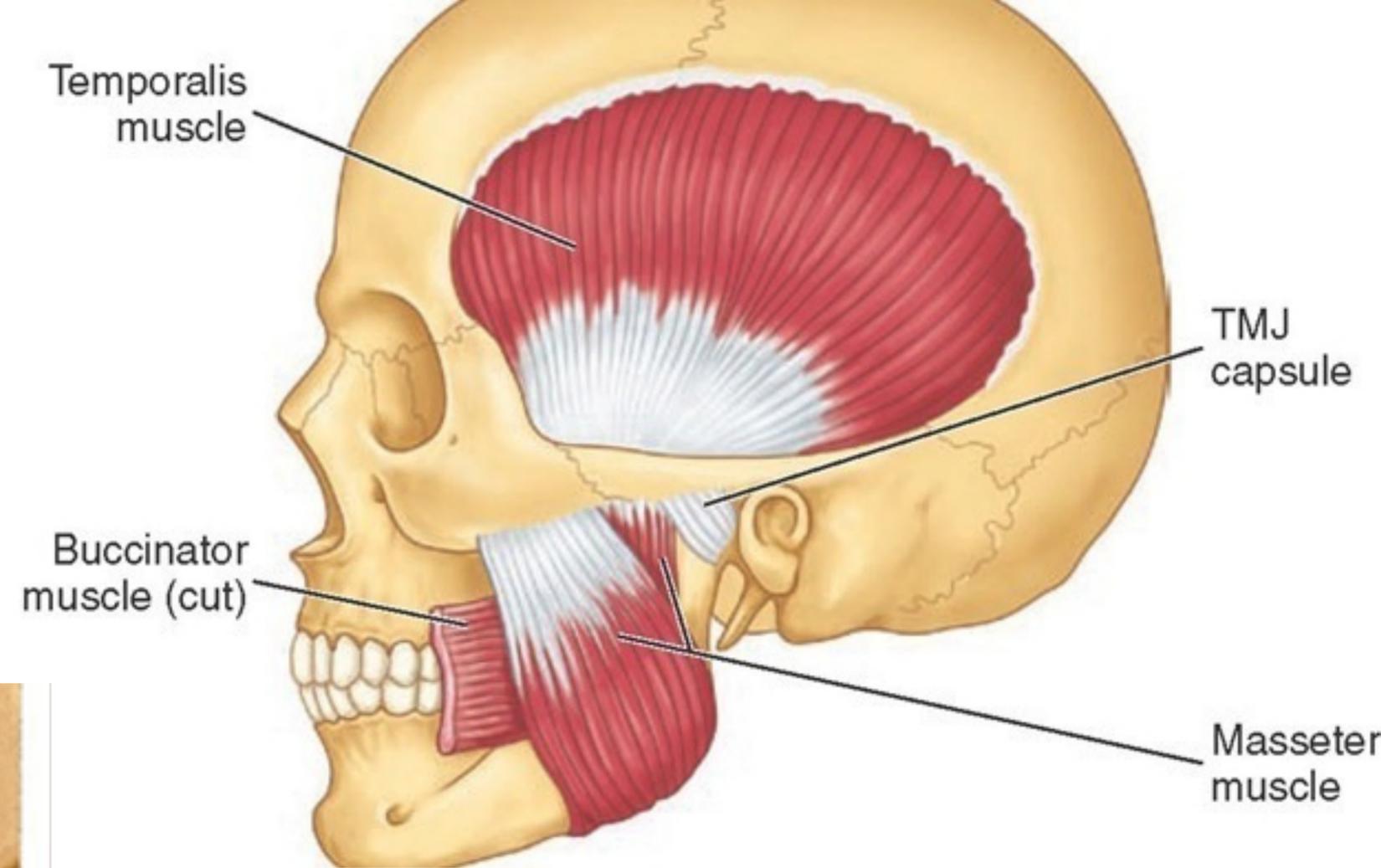
- Movements chiefly come from **muscles of mastication**.
- Lateral pterygoid, strap muscles (suprahyoid, digastric, infrahyoid) open mouth by **depressing** jaw.



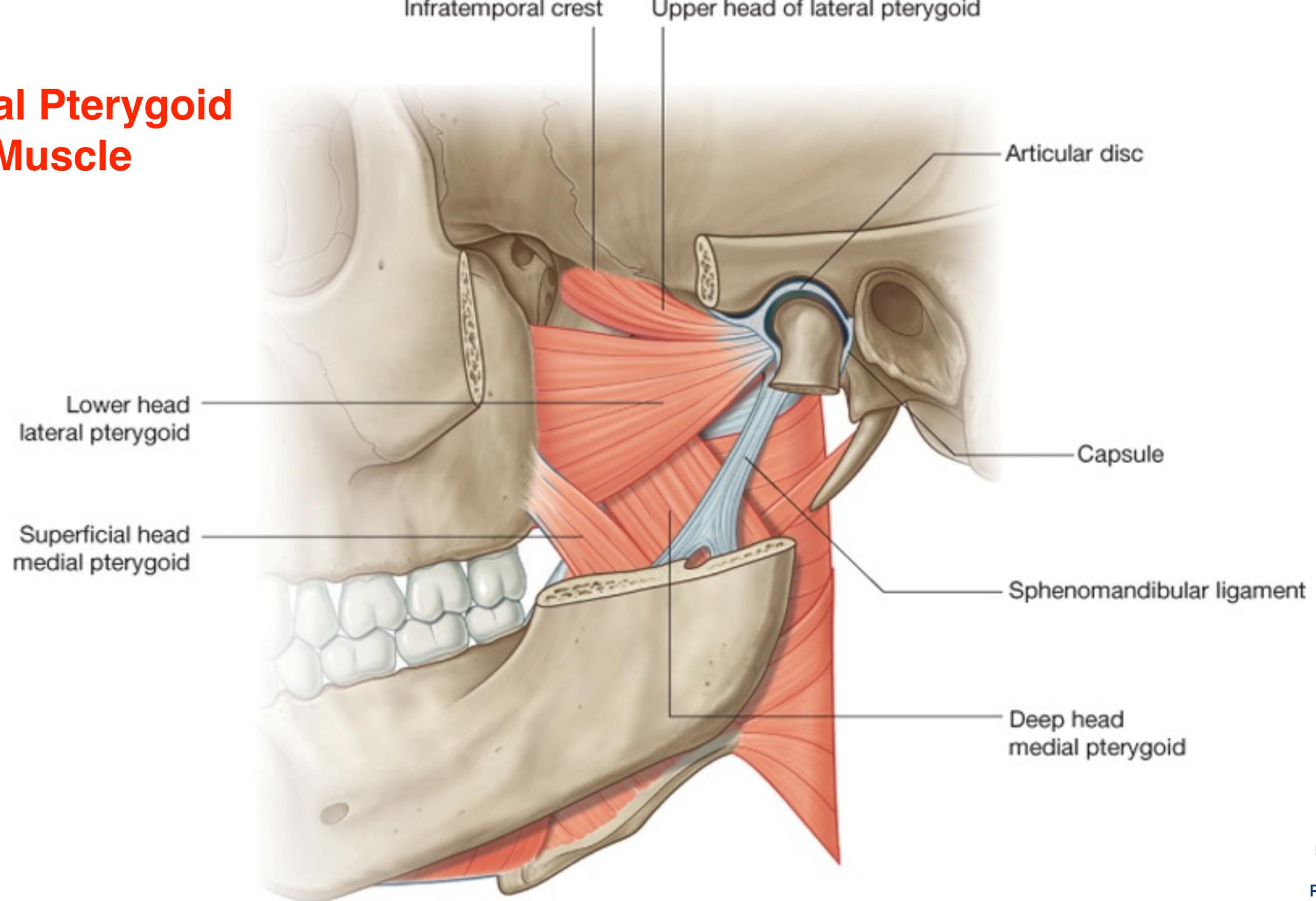


TMJ Muscles:

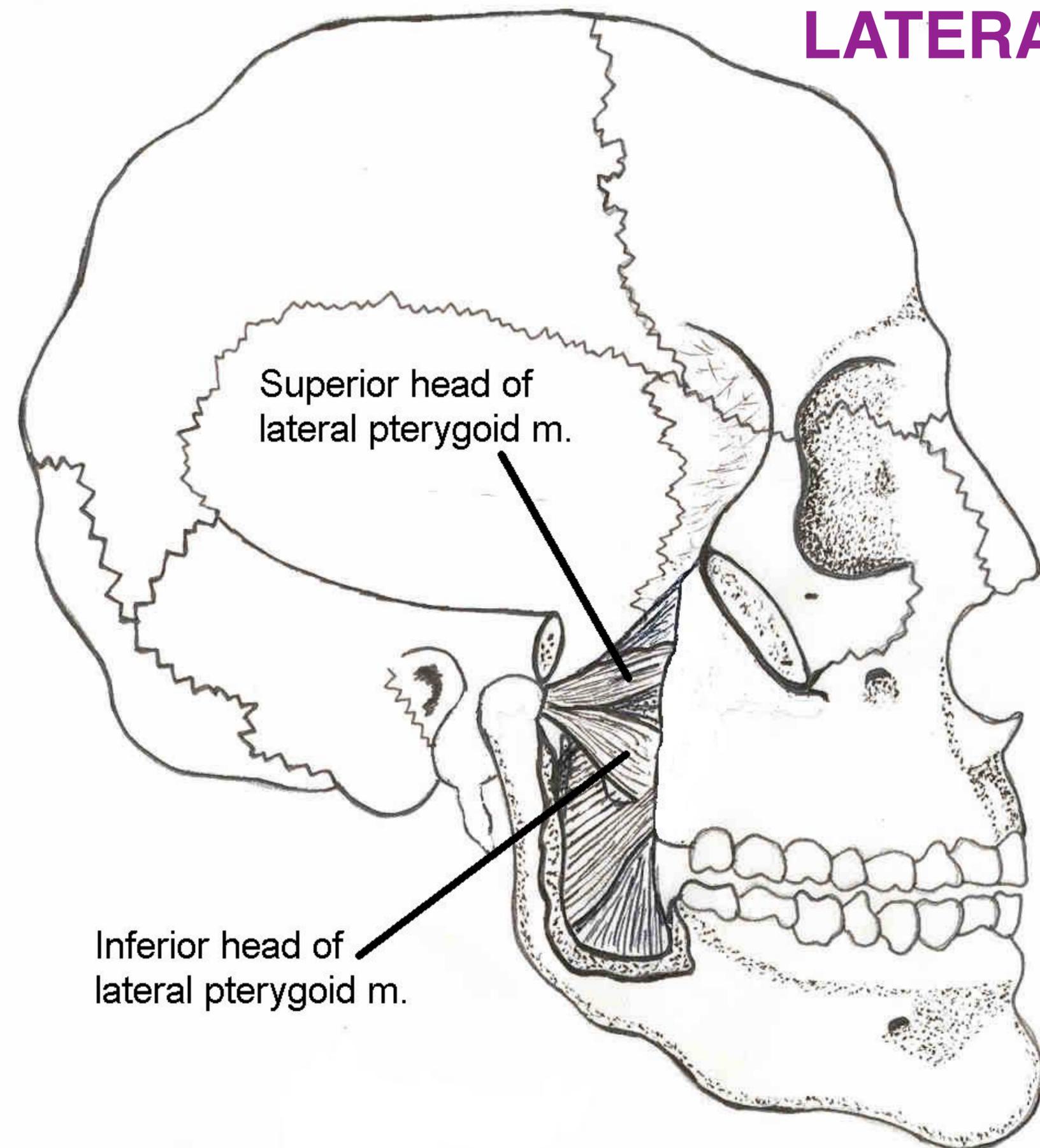
- Temporalis, masseter, medial pterygoid muscles produce biting movements.
- Elevate the mandible and close the mouth



Lateral Pterygoid Muscle

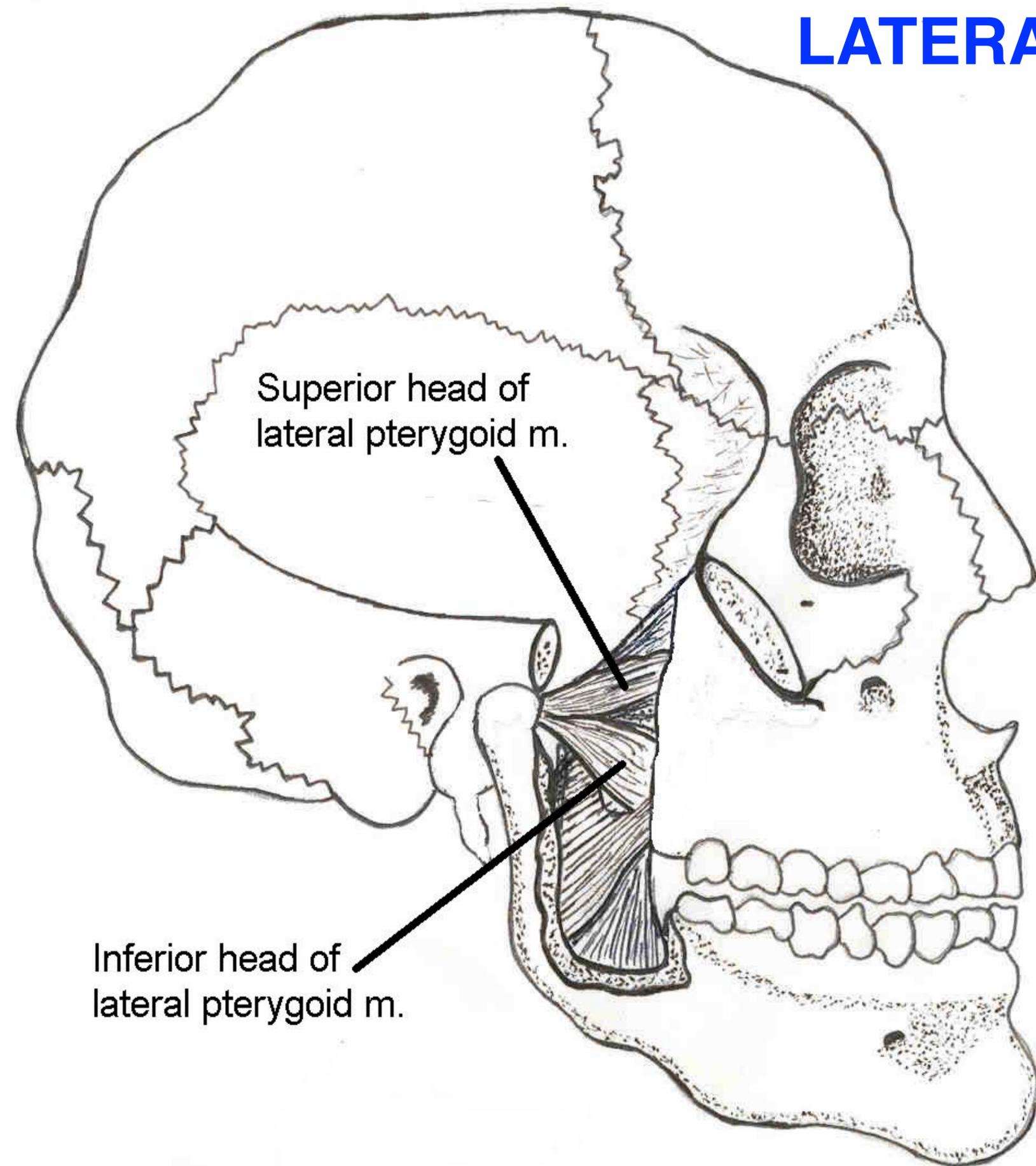


LATERAL PTERYGOID – SUPERIOR HEAD



- From greater wing of sphenoid and attaches to disc (40%) and mandibular condyle (60%).
- Stabilizes TMJ during mandibular elevation and chewing.

LATERAL PTERYGOID – INFERIOR BELLY



- From lateral pterygoid plate to neck of condyle.
- Primary role is protrusion
- Helps stabilize rotary movement of mandible.

Medial and lateral Pterygoid:

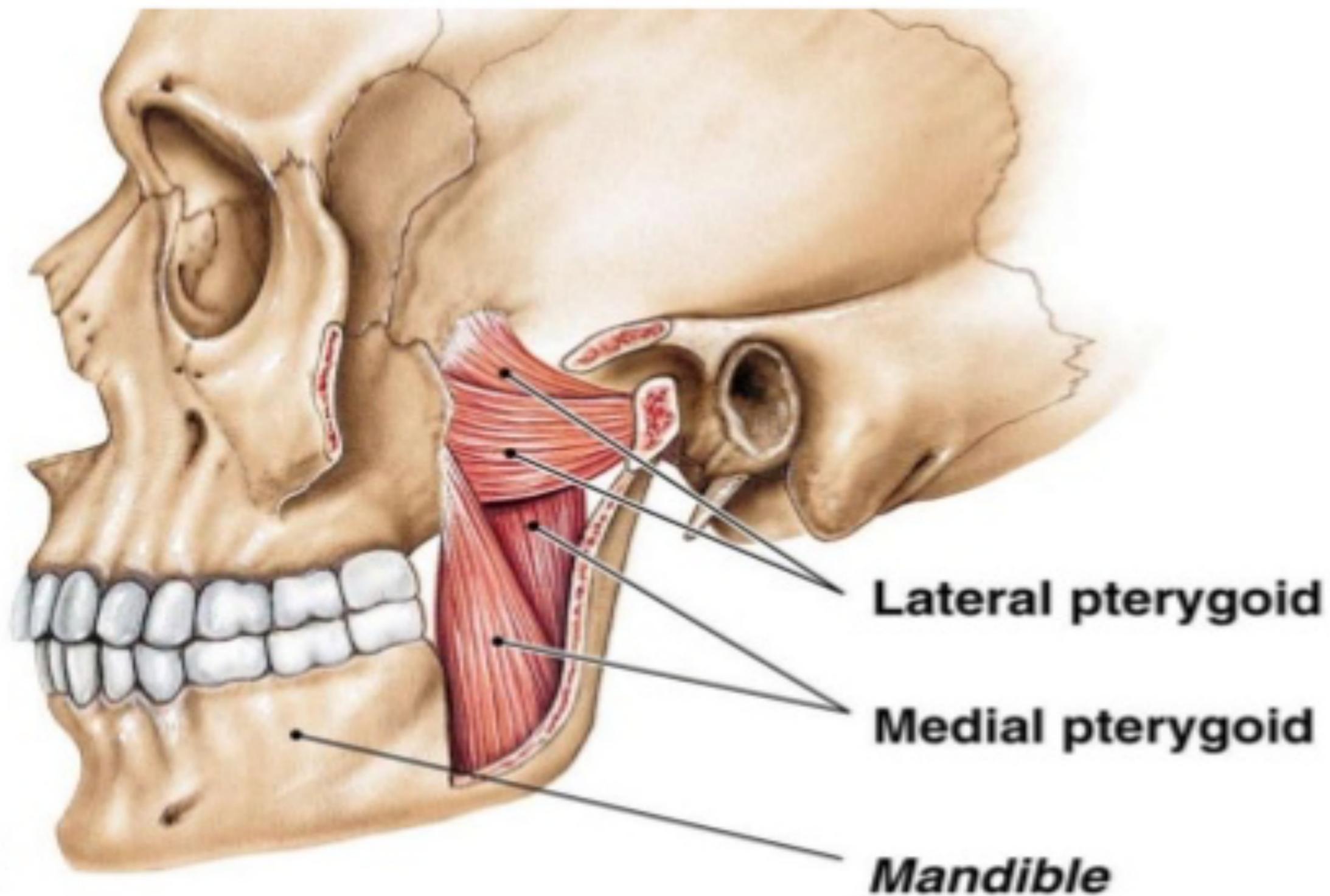
Origin: from sphenoid bone.

Insertion: in to the mandible.

Action:

Fibers of medial pterygoid run upward downward so it pull the mandible upward (elevation)

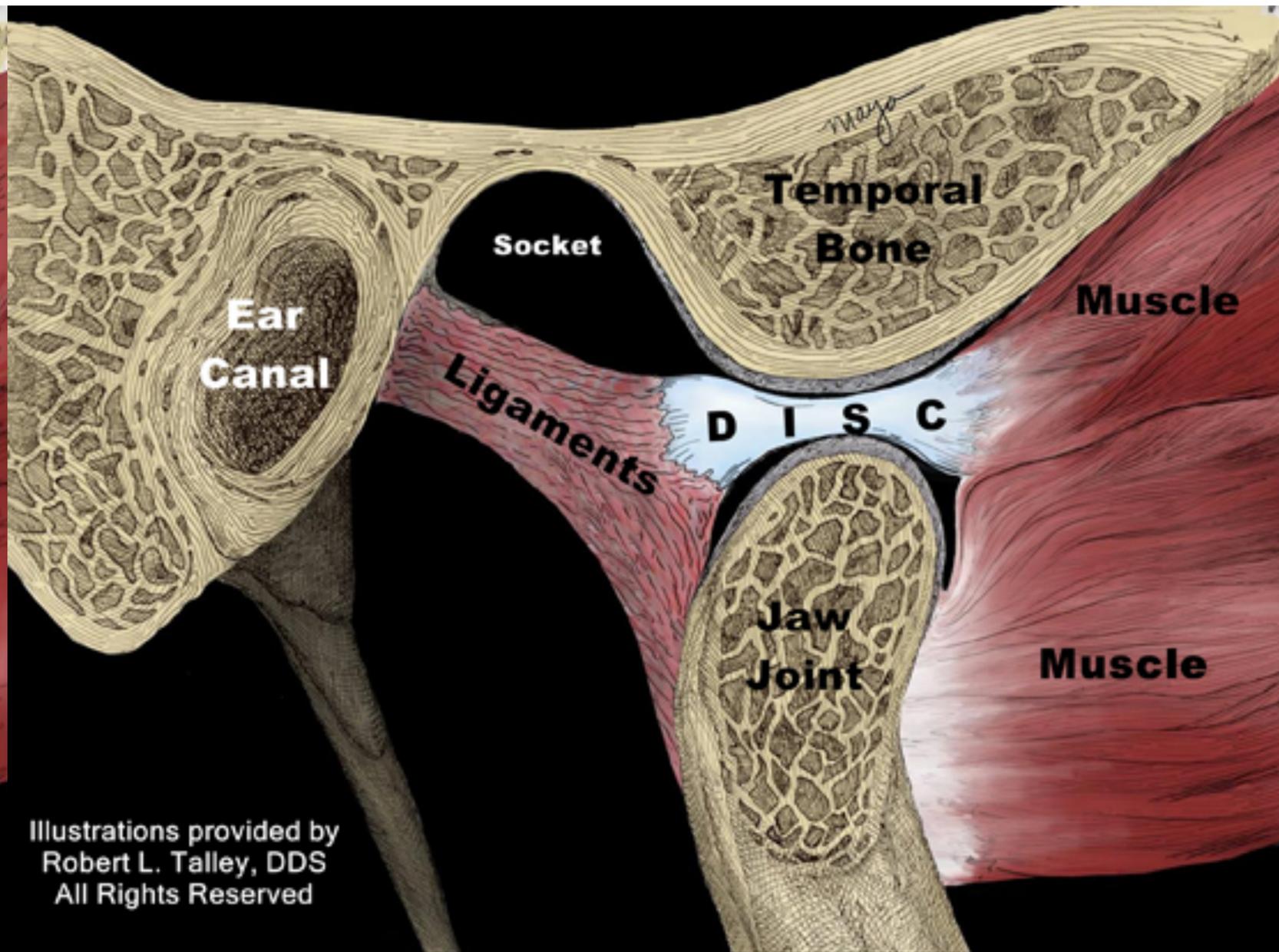
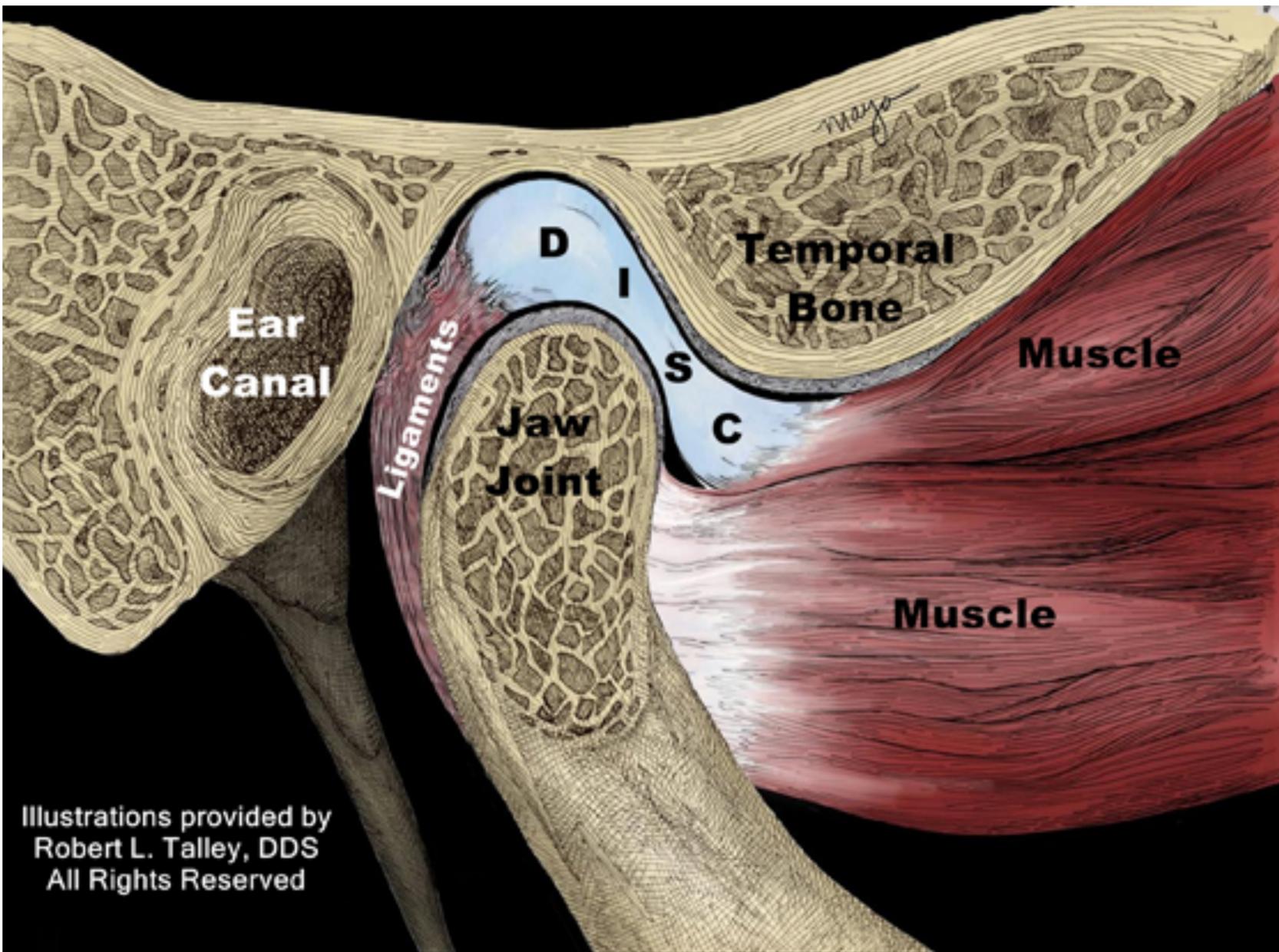
Fibers of lateral pterygoid run horizontal (transversely) so it pull the mandible forward.



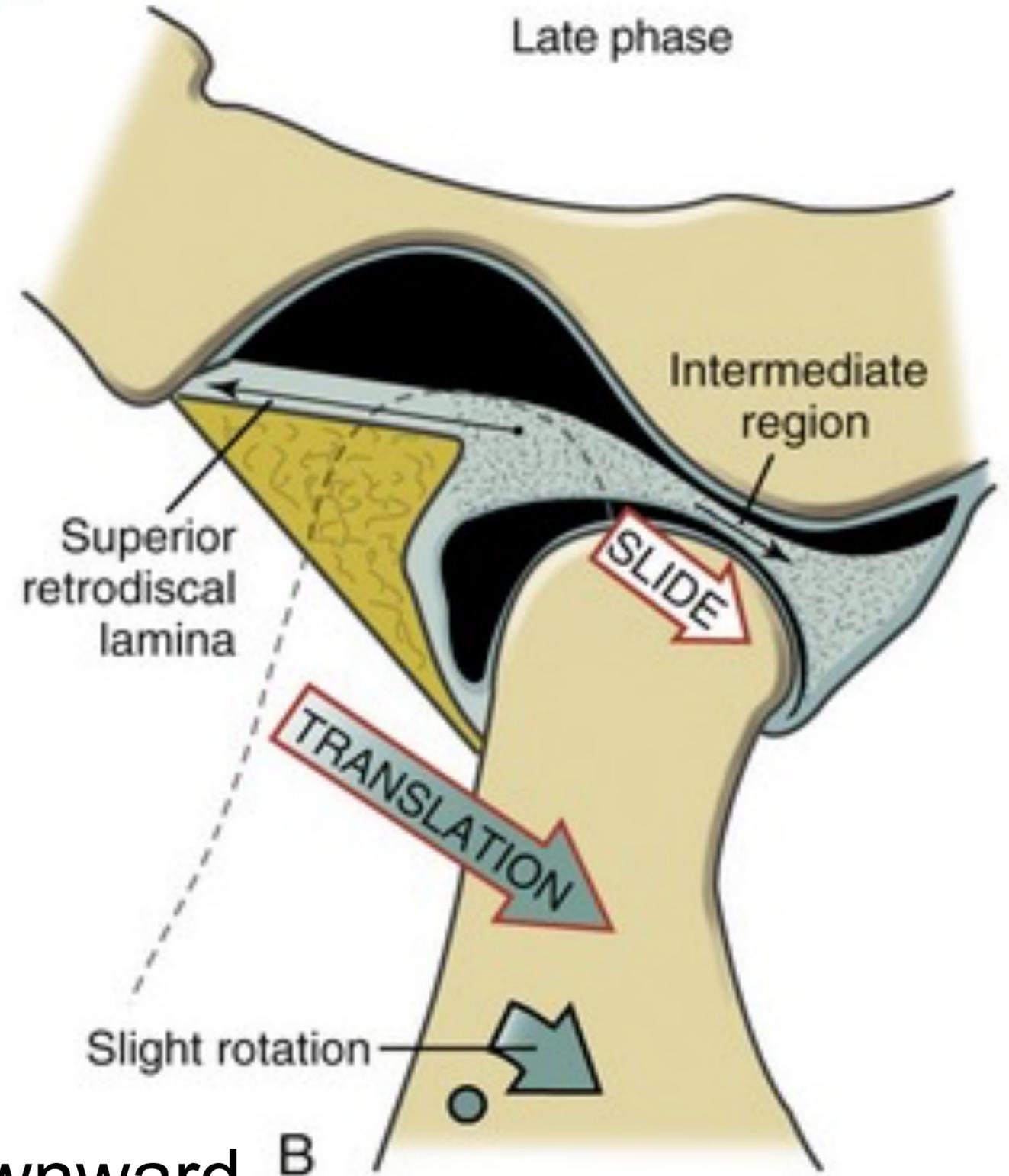
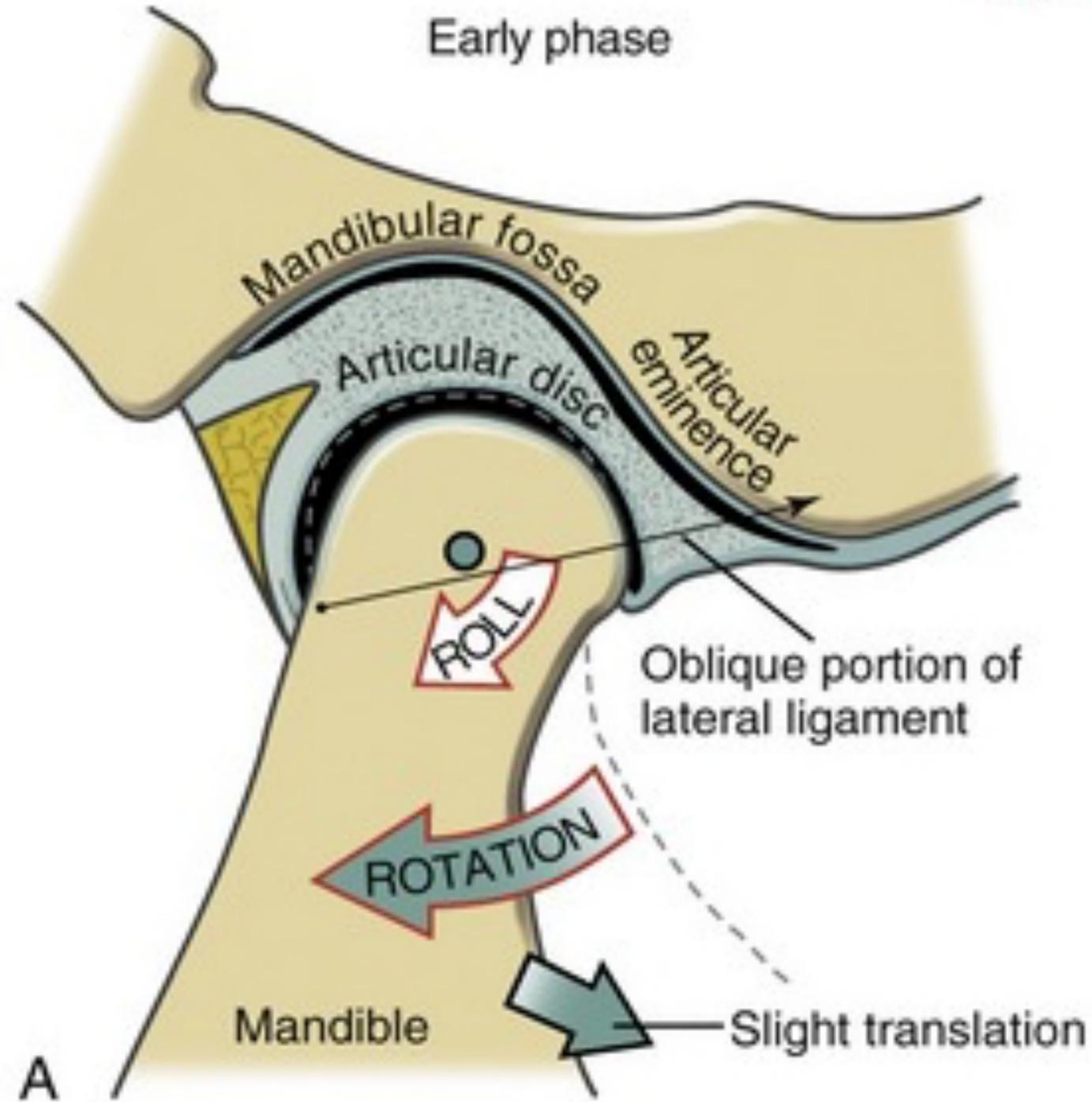
(b) Lateral view, pterygoid muscles exposed

TMJ Movement:

- Mouth opens; Sup. head of lateral pterygoid pulls on disc and condyle.
- Condyle **rotates** on disc in inferior joint space for ~2/3 of the initial opening.

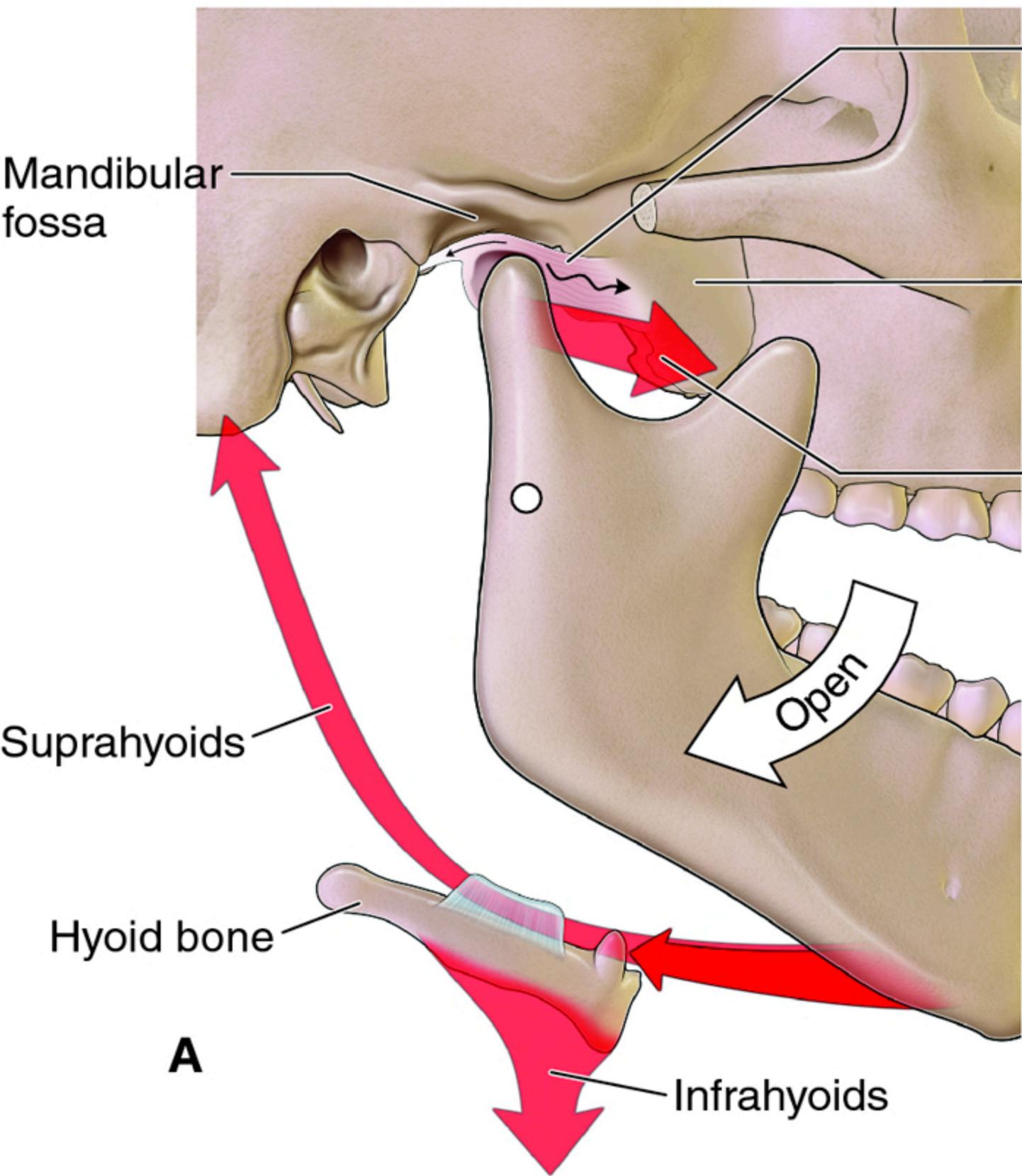


Opening the mouth

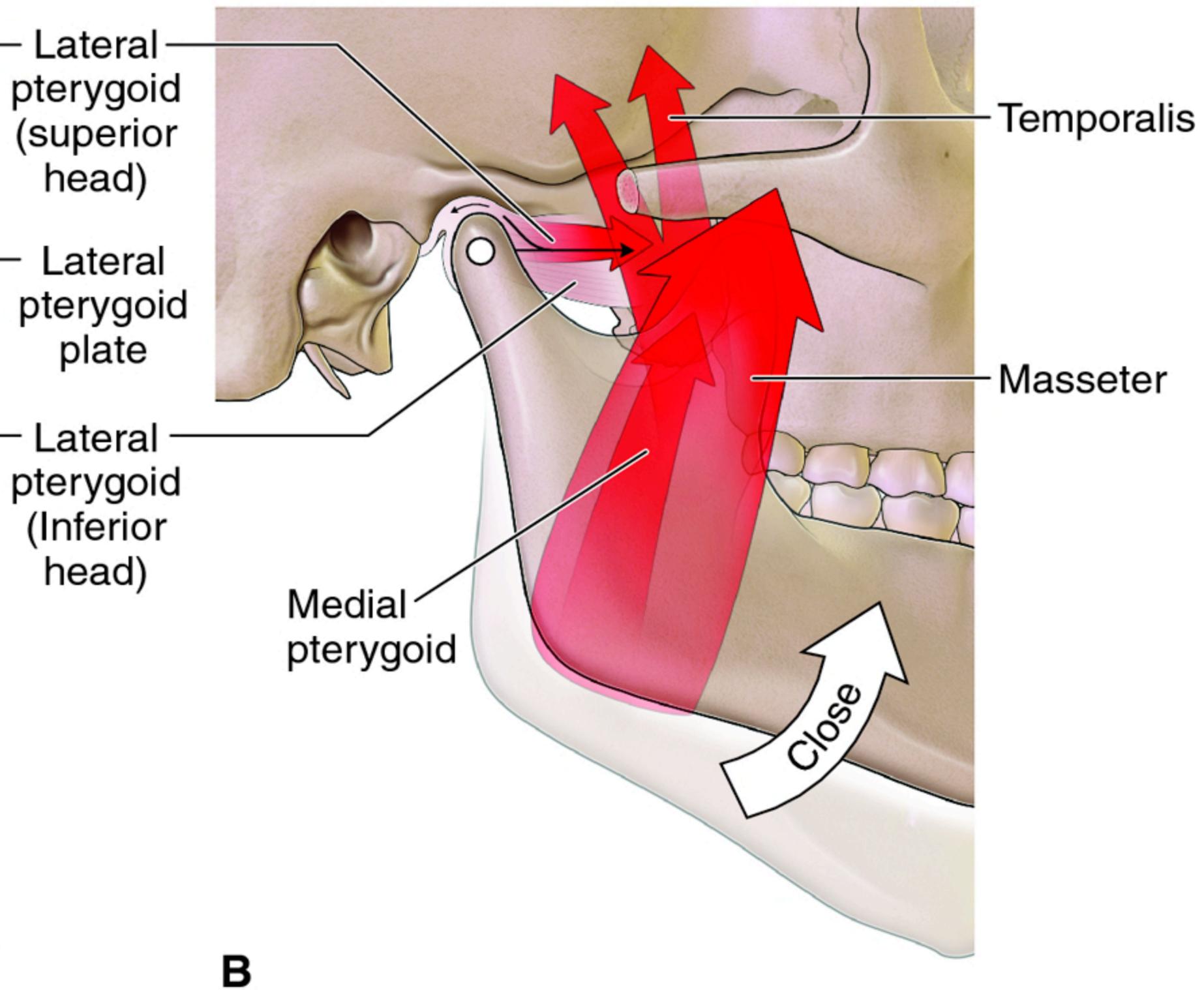


- Digastric muscle helps pull mandible downward.
- Remaining 1/3 of opening is between articular disc and temporal fossa.

Opening the mouth



Closing the mouth





Closed



**0-10%
opened**



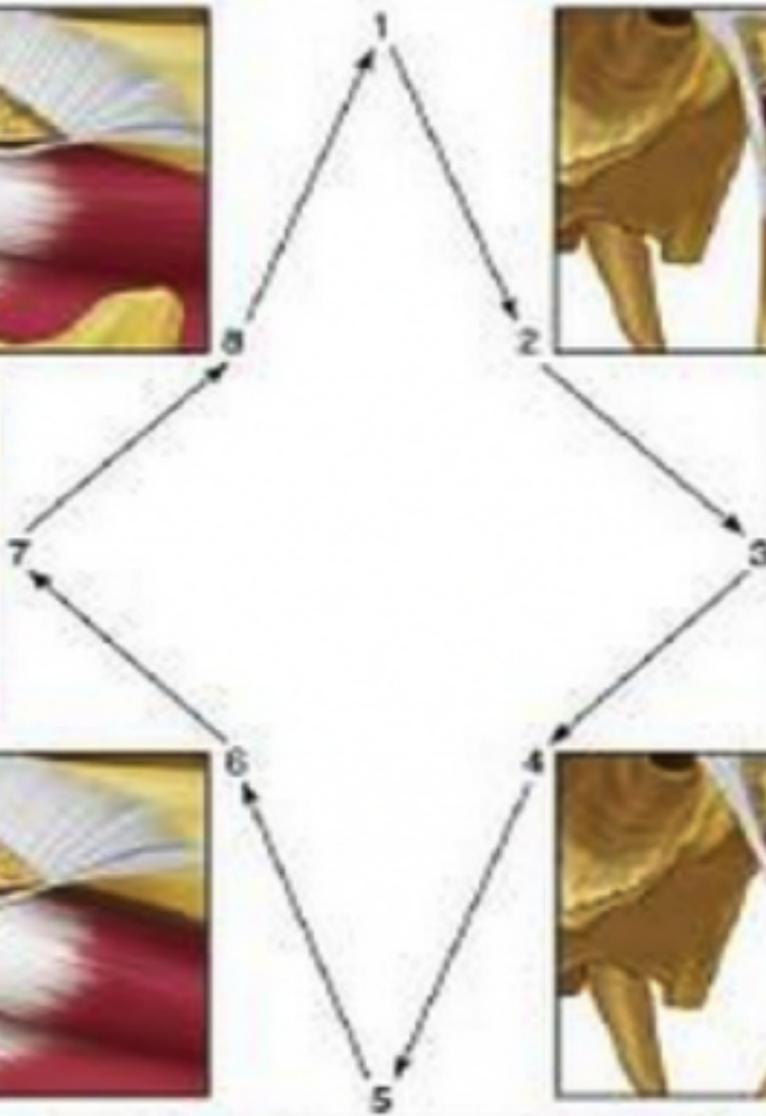
10-60% opened



60-90% opened



Fully Opened



TMJD Definition:

- **Dysfunction between temporal bone and mandible**
- **Pain, popping, clicking of TMJ and/or can't fully open mouth**
- **Cause can be Intra-articular and Extra-articular**

Possible Symptoms

Head Pain, Headache

- Forehead
- Temples
- "Migraine" Type
- Sinus Type
- Shooting Pain Up Back of Head
- Hair and/or Scalp Painful to Touch
- Brain Fog

Eyes

- Painful Behind Eyes
- Bloodshot Eyes
- May Bulge Out
- Sensitive to Sunlight
- Weeping Eyes
- Double Vision
- Problems Tracking While Reading
- Eye Muscle Twitching

Mouth

- Discomfort
- Limited Opening of Mouth
- Inability to Open Smoothly
- Jaw Deviates to One Side When Opening
- Locks Shut or Open
- Can't Find Bite

Teeth

- Clenching, Grinding at Night
- Looseness and Soreness of Back Teeth
- Tooth Sensitivity to Cold or Ice
- Abfraction or Severe Recession near the Gumline
- Generalized Wear Marks on Teeth

Ear Problems

- Hissing, Buzzing or Ringing
- Decreased Hearing
- Ear Pain, Ear Ache, No Infection
- Clogged, "Itchy" ears
- Vertigo, Dizziness
- Tinnitus

Jaw Problems

- Clicking, Popping Jaw Joints
- Grating Sounds
- Pain in Cheek Muscles
- Uncontrollable Jaw and/or Tongue Movements

Neck Problems

- Lack of Mobility, Stiffness
- Neck Pain
- Tired, Sore Muscles
- Shoulder Aches and Back Aches
- Arm and Finger Numbness and/or Pain

Throat

- Swallowing Difficulties
- Laryngitis
- Sore Throat with No Infection
- Voice Irregularities or Changes
- Frequent Coughing or Constant Clearing of Throat
- Feeling of Foreign Object in Throat Constantly
- Feeling of "Hand Resting on Throat"



Classification of TMJ disorders

- MPD
- Disc Displacement
- Degenerative Joint disease
- Systemic Arthritic Conditions
- Chronic recurrent dislocation
- Ankylosis
- Intracapsular /Extracapsular
- Neoplasia
- Infections





Classification

There are 3 official classification systems for TMJD. 2 are below:

PIPER CLASSIFICATION

- This describes TMD in relation to the progressive patterns of deformation in specific intracapsular structures.
- This is most practical method for clarifying the exact conditions.

- Stage I.... Normal healthy joint
- Stage II... Intermittent click.
- Stage III a... lateral pole click.
- Stage III b...Lateral pole lock.
- Stage IV a....Medial pole click.
- Stage IV b.... Medial Pole Lock.
- Stage V a... Perforation with Acute Degenerative Joint.
- Stage V b... Perforation with Chronic Degenerative Joint.

www.pdentalacademy.com

Clinical and radiologic findings according to Wilkes classification for TMJ ID

Stage	Clinical Findings	Radiologic Findings
I	No significant mechanical symptoms, no pain or limitation of motion	Slight forward displacement and good anatomic contour of disk
II	First few episodes of pain, occasional joint tenderness and related temporal headaches, increase in intensity of clicking, joint sounds later in opening movement, beginning transient subluxations or joint locking	Slight forward displacement and beginning anatomic deformity of disk, slight thickening of posterior edge of disk
III	Multiple episodes of pain, joint tenderness, temporal headaches, locking, closed locks, restriction of motion, difficulty (pain) with function	Anterior displacement with significant anatomic deformity/prolapse of disk, moderate to marked thickening of posterior edge of disk, no hard tissue changes
IV	Characterized by chronicity with variable and episodic pain, headaches, variable restriction of motion, and undulating course	Increase in severity over intermediate stage, early to moderate degenerative remodeling hard tissue changes
V	Crepitus on examination, scraping, grating, grinding symptoms, variable and episodic pain, chronic restriction of motion, difficulty with function	Gross anatomic deformity of disk and hard tissue, essentially degenerative arthritic changes, osteophytic deformity, subcortical cystic formation

Adapted from Wilkes CH. Internal derangements of the temporomandibular joint: pathological variations. Arch Otolaryngol Head Neck Surg 1989;115:469-7.

What are TMJ Disorders?

TMJ disorders fall into three main categories:

- **Myofascial pain**, the most common temporomandibular disorder, involves discomfort or pain in the muscles that control jaw function.
- **Internal derangement** of the joint involves a displaced disc, dislocated jaw, or injury to the condyle.
- **Arthritis** refers to a group of degenerative or inflammatory joint disorders that can affect the temporomandibular joint

For us
D.C.'s,
let's
keep it
simple!

TMD Etiology

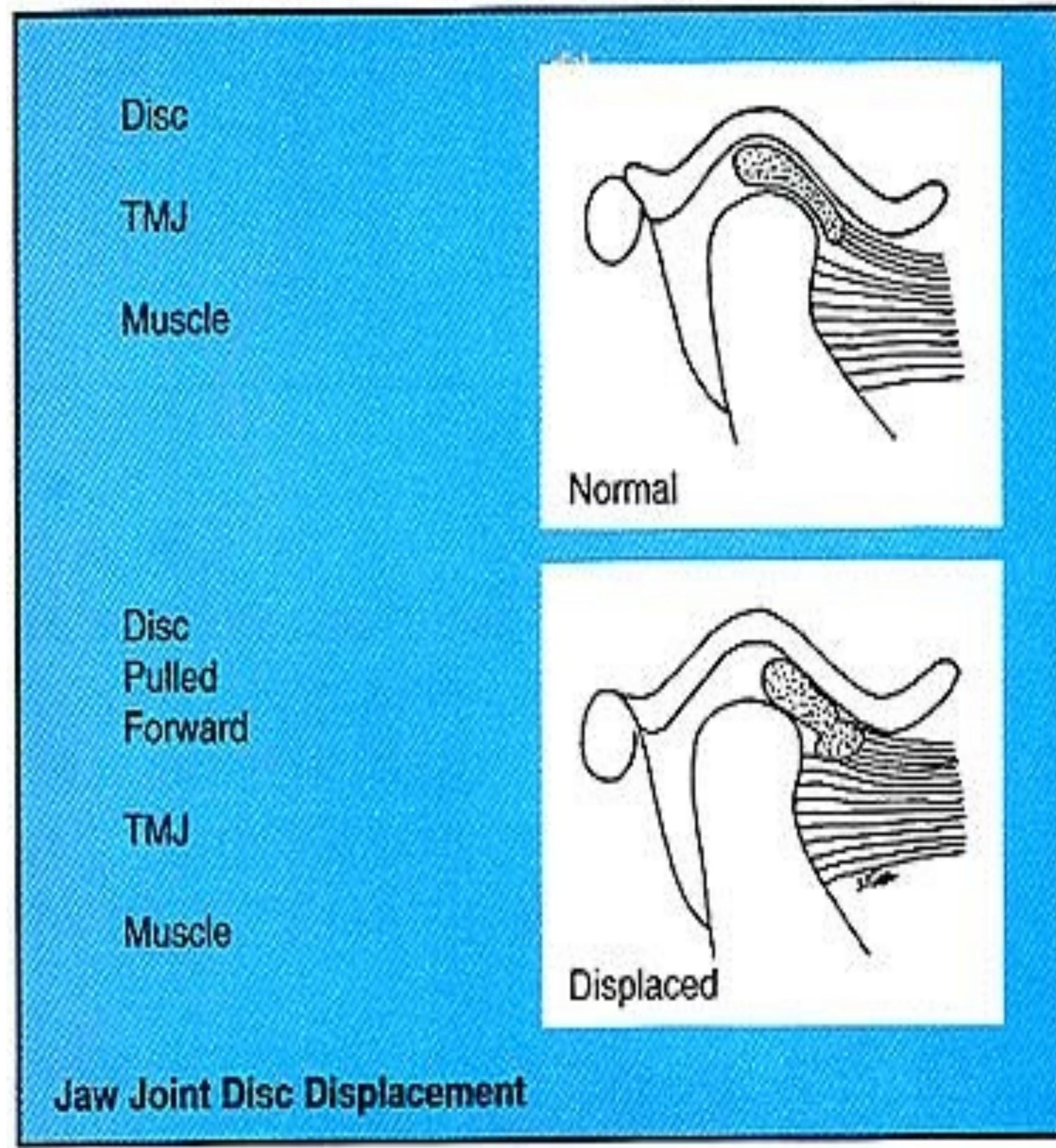
- Dental malocclusion
- Bruxism, clenching or grinding teeth
- Faulty dentures
- Over pronation
- Emotional strain/stress
- Hypertonicity/imbalance of Muscles of mastication
- Braces or hx. of braces
- Past whiplash injury



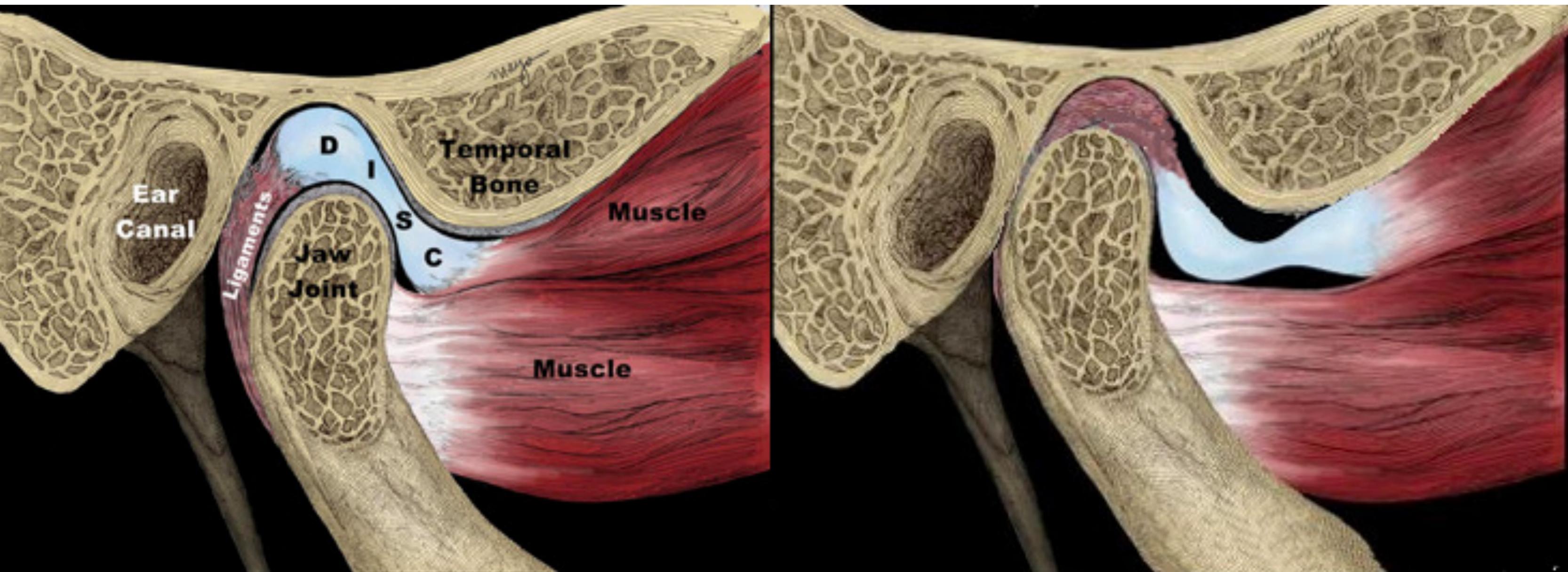
TMJ DYSFUNCTION:

Faulty Biomechanics:

Contraction of superior head of lateral pterygoid muscle may cause head of the mandible to become hypermobile or dislocate

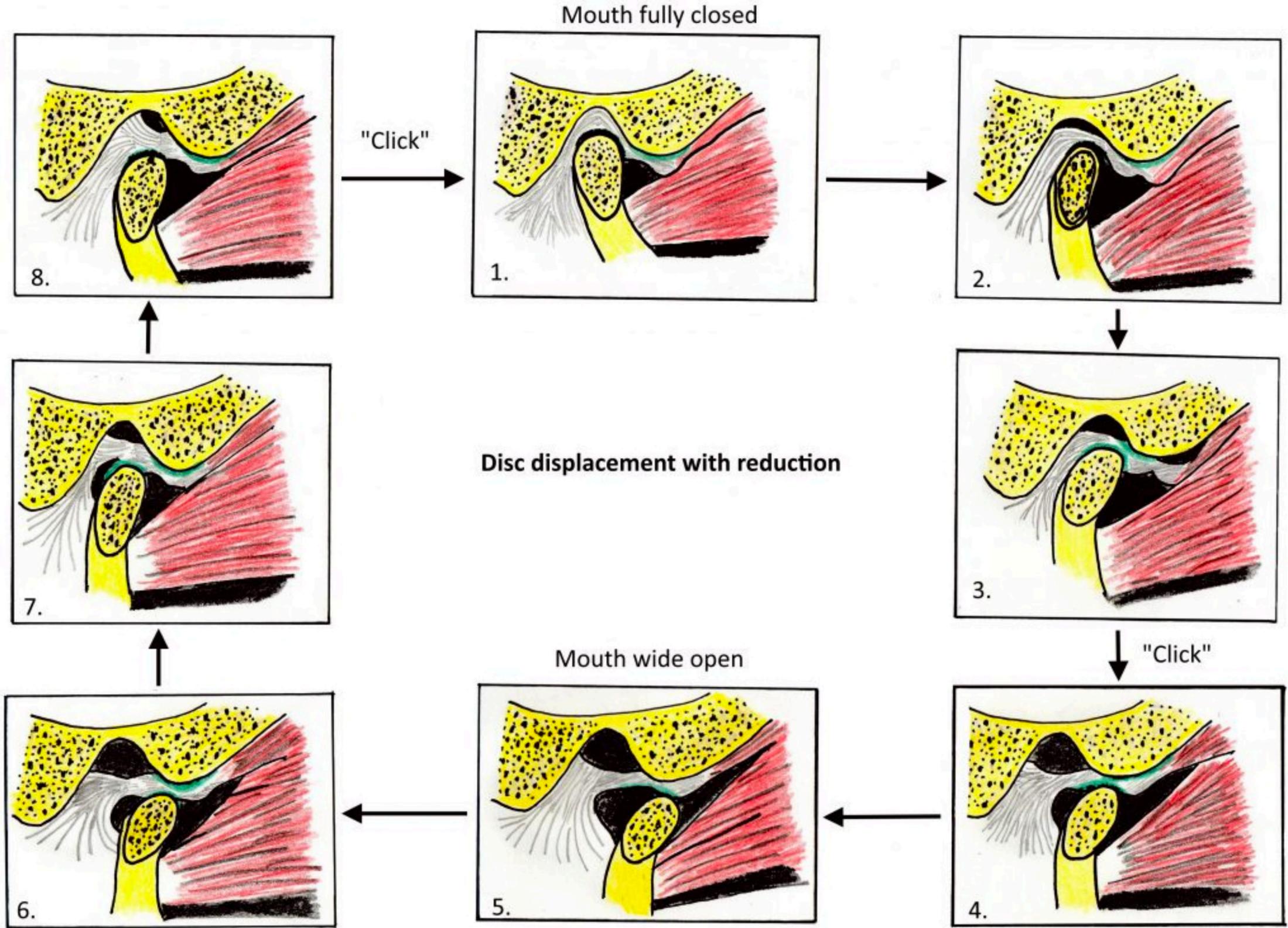


TMJ Dysfunction:

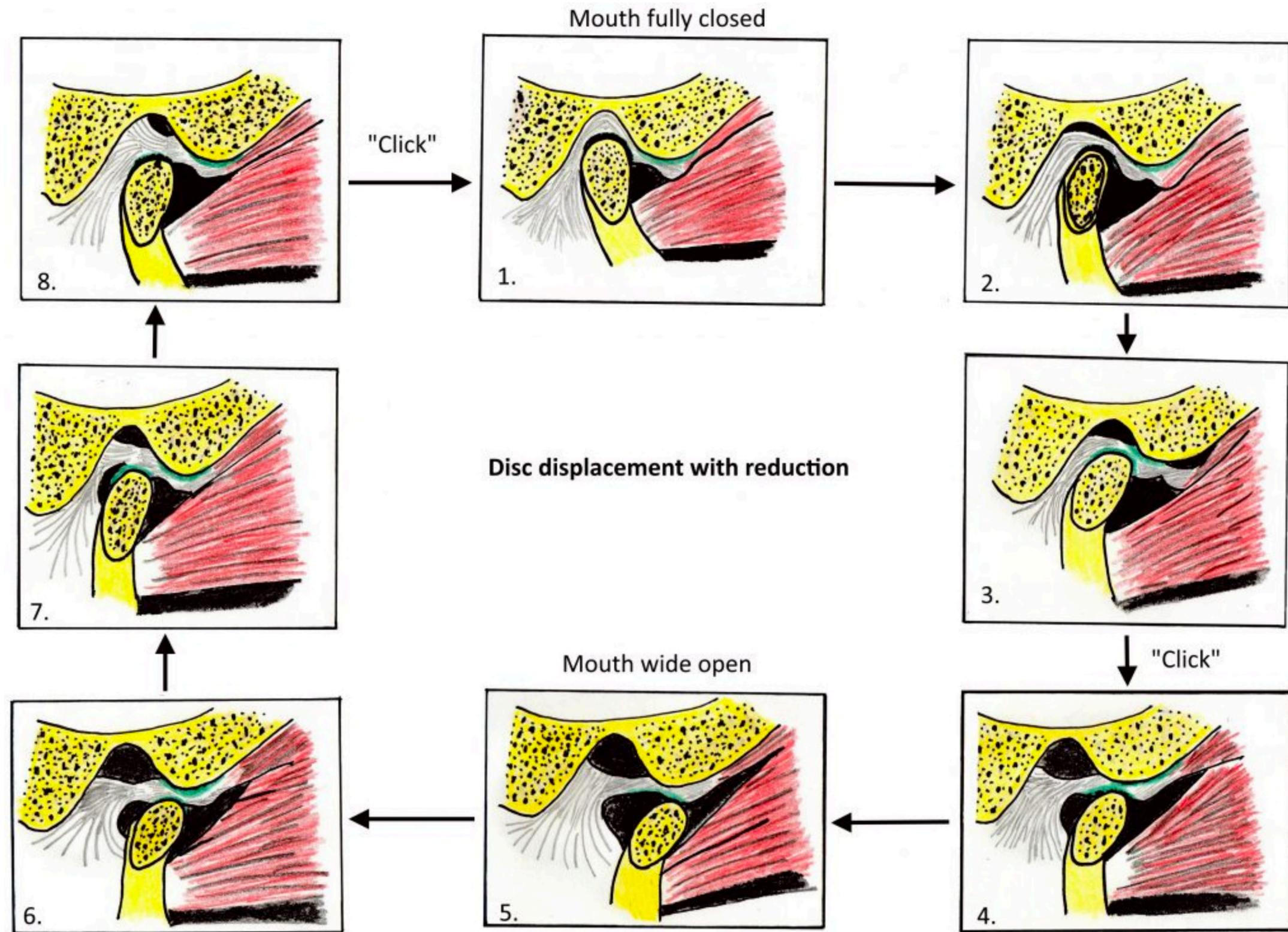


Thus the condylar head becomes positioned behind posterior portion of disc

- With opening, condyle overrides posterior portion and a pop is heard.
- Condyle then retains its normal position until full closing.



- During closing, condyle is pulled back behind posterior portion of the disc. This may cause a pop or click again.
- A closing click by itself may indicate a weak posterior ligament that is failing to retract the disc.



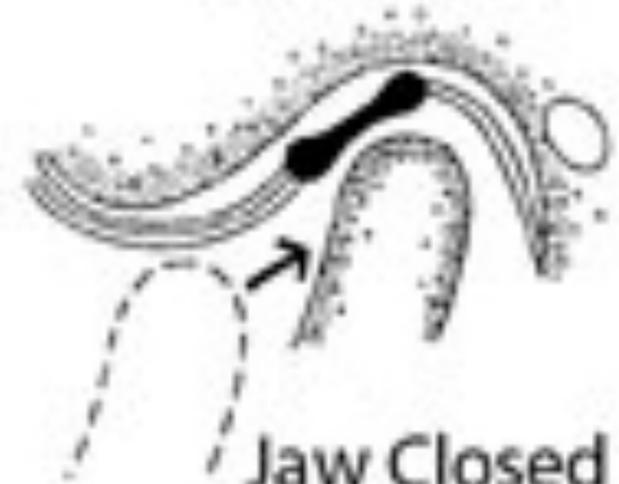
Normal



Jaw Closed



Jaw Open



Jaw Closed

Clicking



click



click

Locking

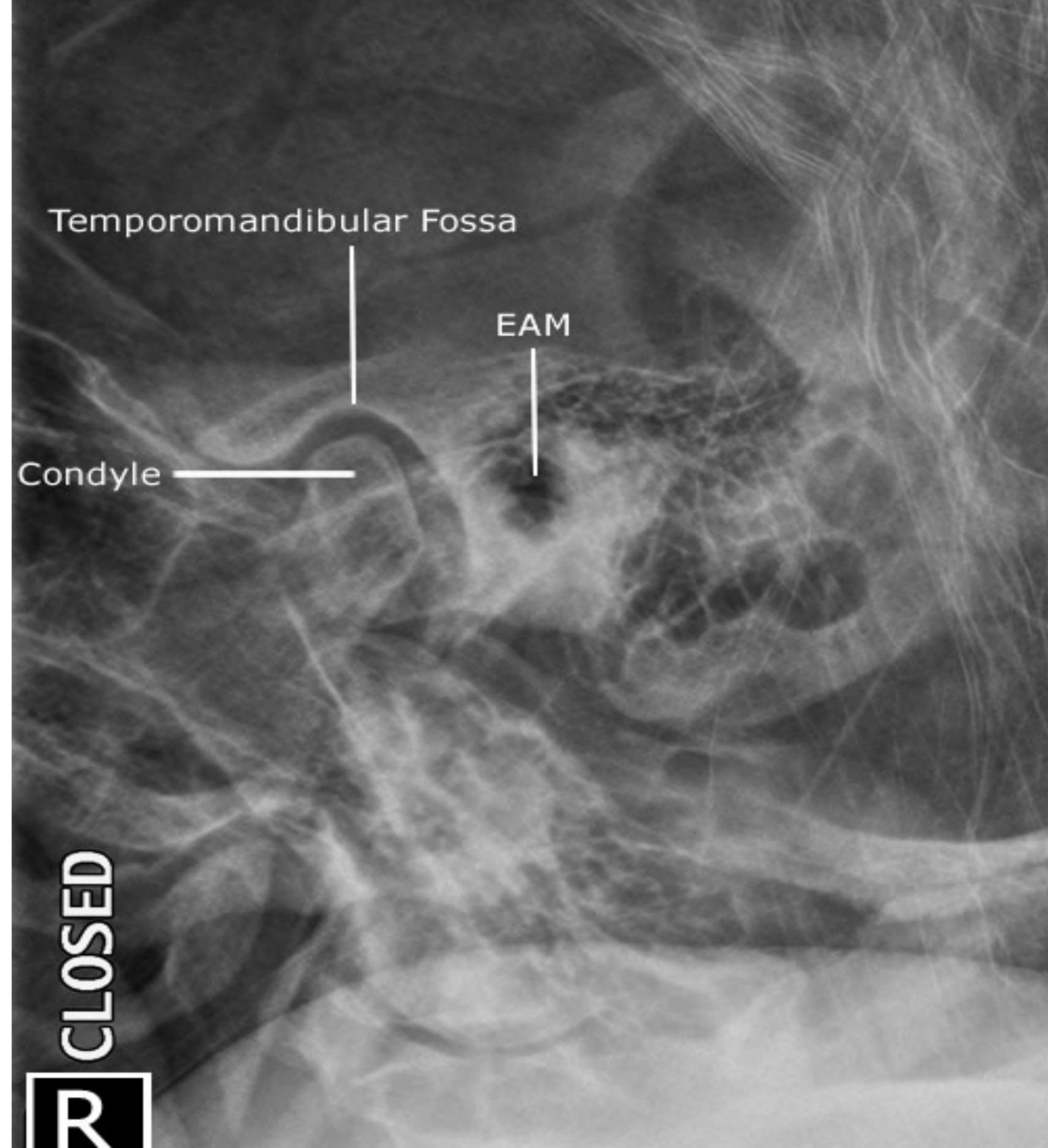


stuck behind
cartilage



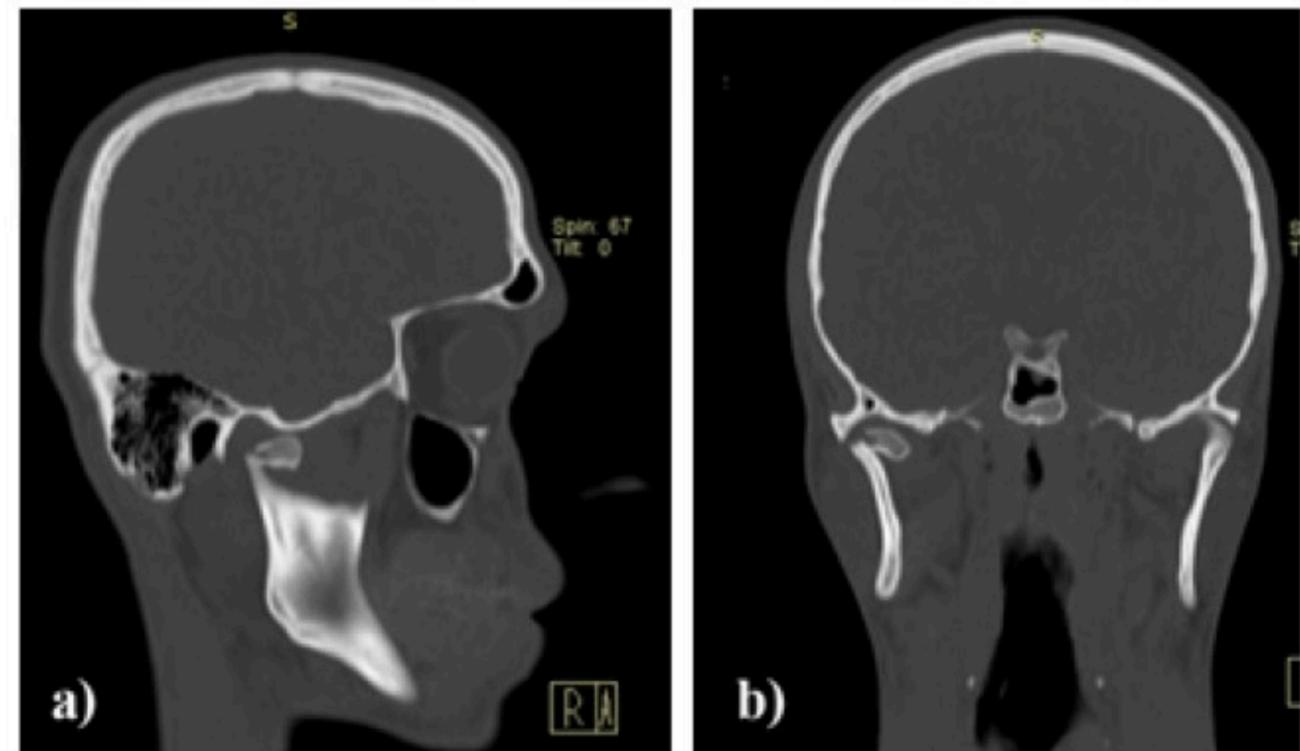
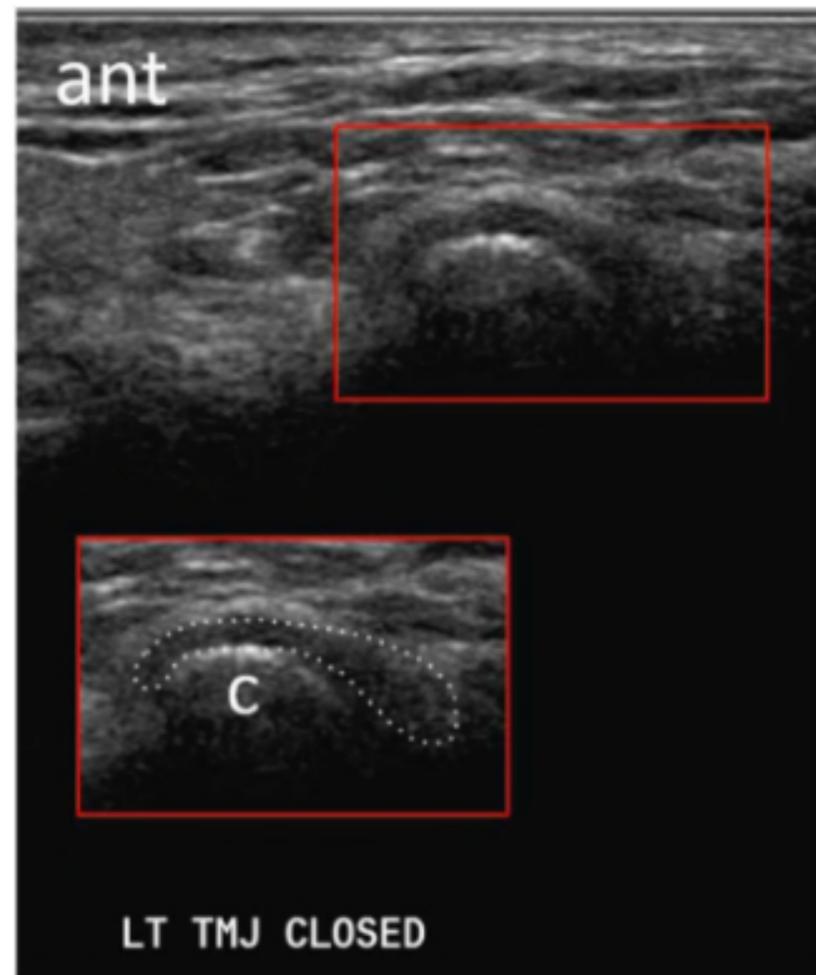
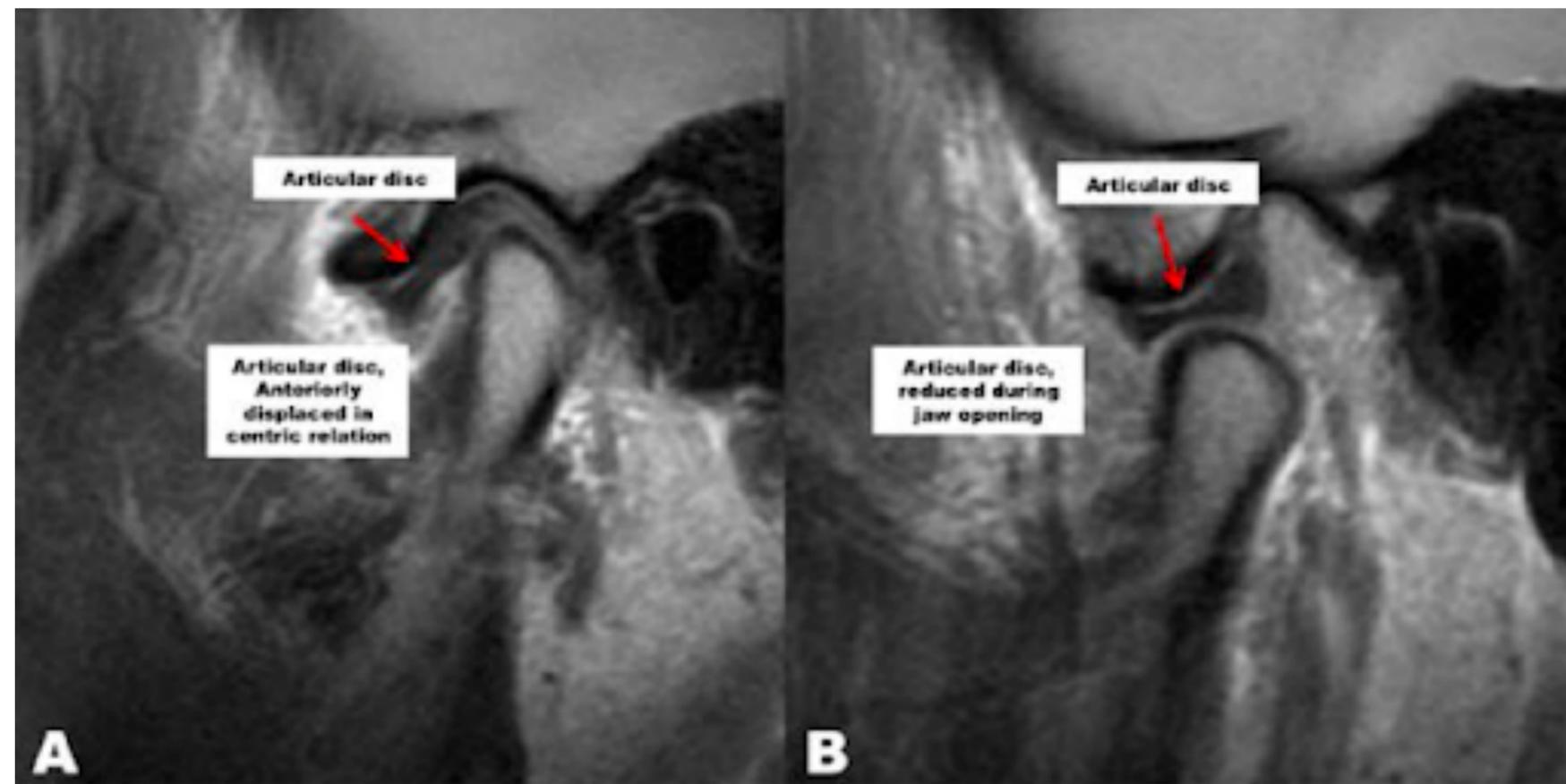
TMJ Radiography:

- **Findings** are usually negative, but biomechanical changes can cause arthritis at the joint
- Problem: X-rays are 2-d (3-d imaging is often more helpful)



TMJ Special Imaging:

- CT (Cone beam CT)
- MRI considered gold standard (can see the disc, early signs of joint effusion)
- High resolution Ultrasonography (diagnoses disc displacements)



TMJ Evaluation:

No orthopedic testing is indicated.

Muscle testing: Opening Muscles

Lateral Pterygoid:

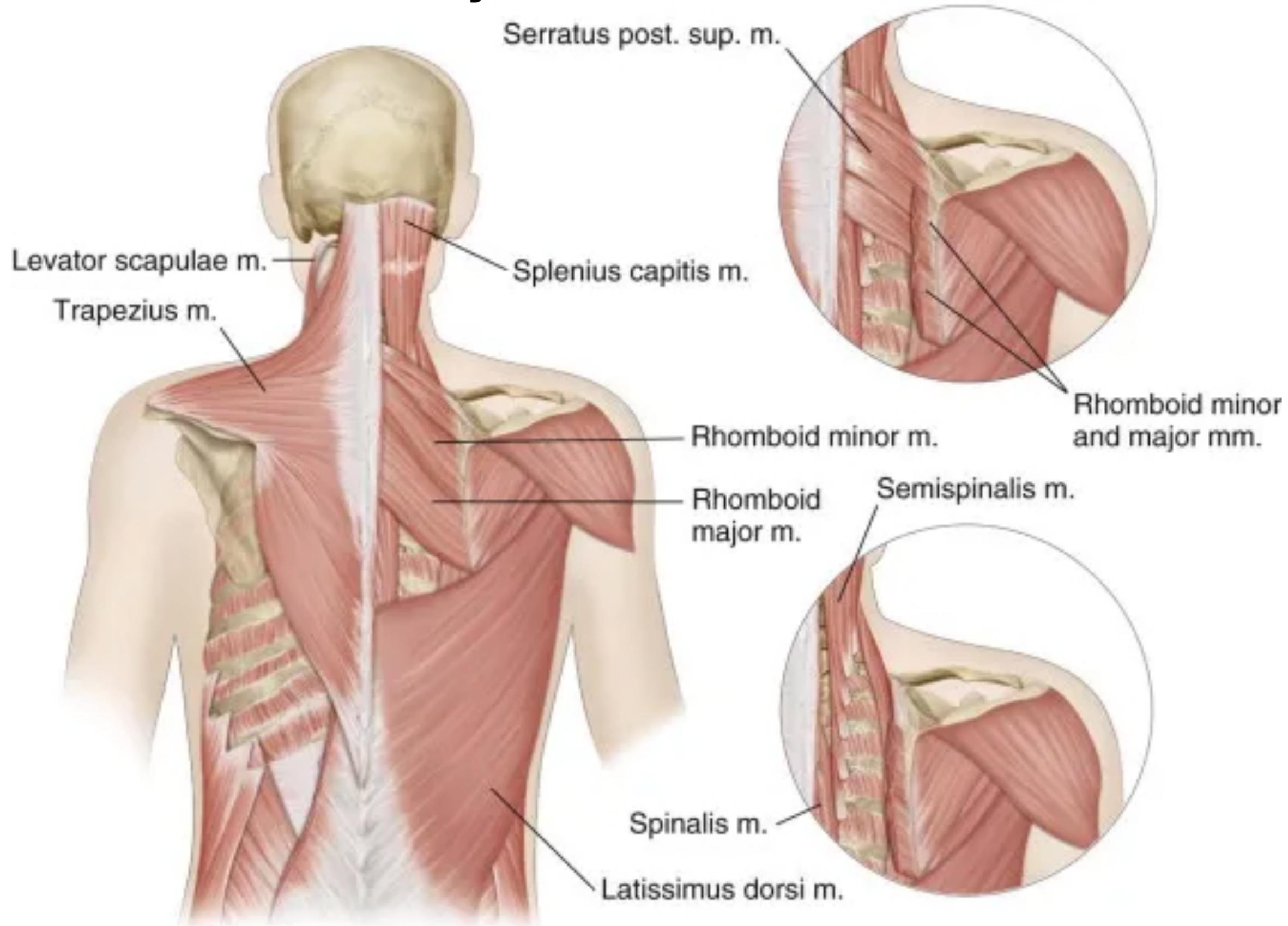
- place one hand under the chin and the other on the EOP. Have the patient open slightly. Pain usually indicates ipsilateral joint derangement.

TMJ Evaluation:

- Closing Muscles: Masseter, Temporalis, medial Pterygoid
- Using finger cot/gauze on lower teeth, patient gently resists jaw closing.
- Or, put gauze on back teeth and have pt. bite down to see if there's pain.



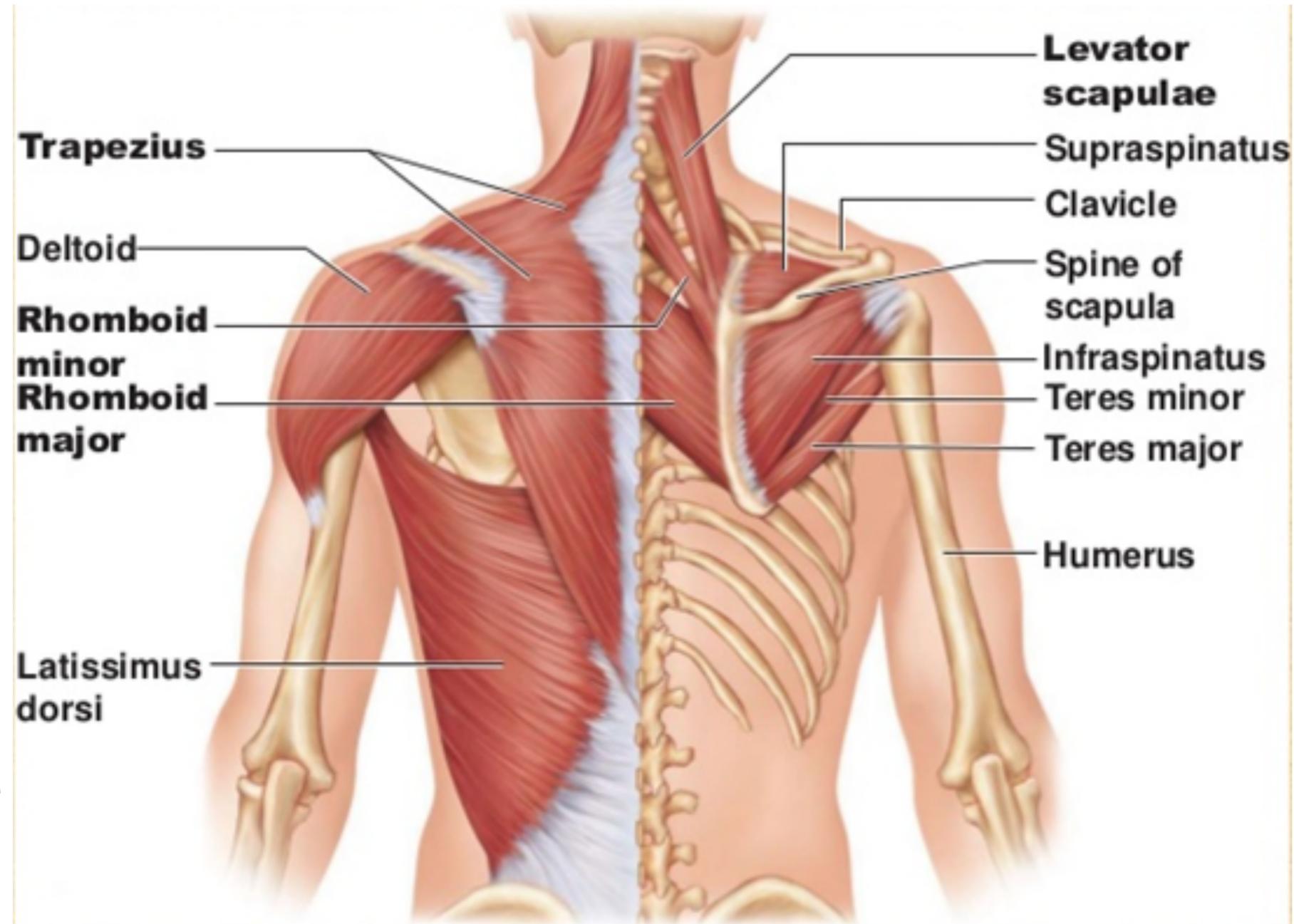
Remember the Anatomy



TMJ Evaluation:

Palpate the muscles/bones bilaterally:

- C/T junction
- Lower to mid cervical
- Upper cervical, especially C2, C1, Occiput
- TMJ region
- Masseter, Temporalis, sagittal suture



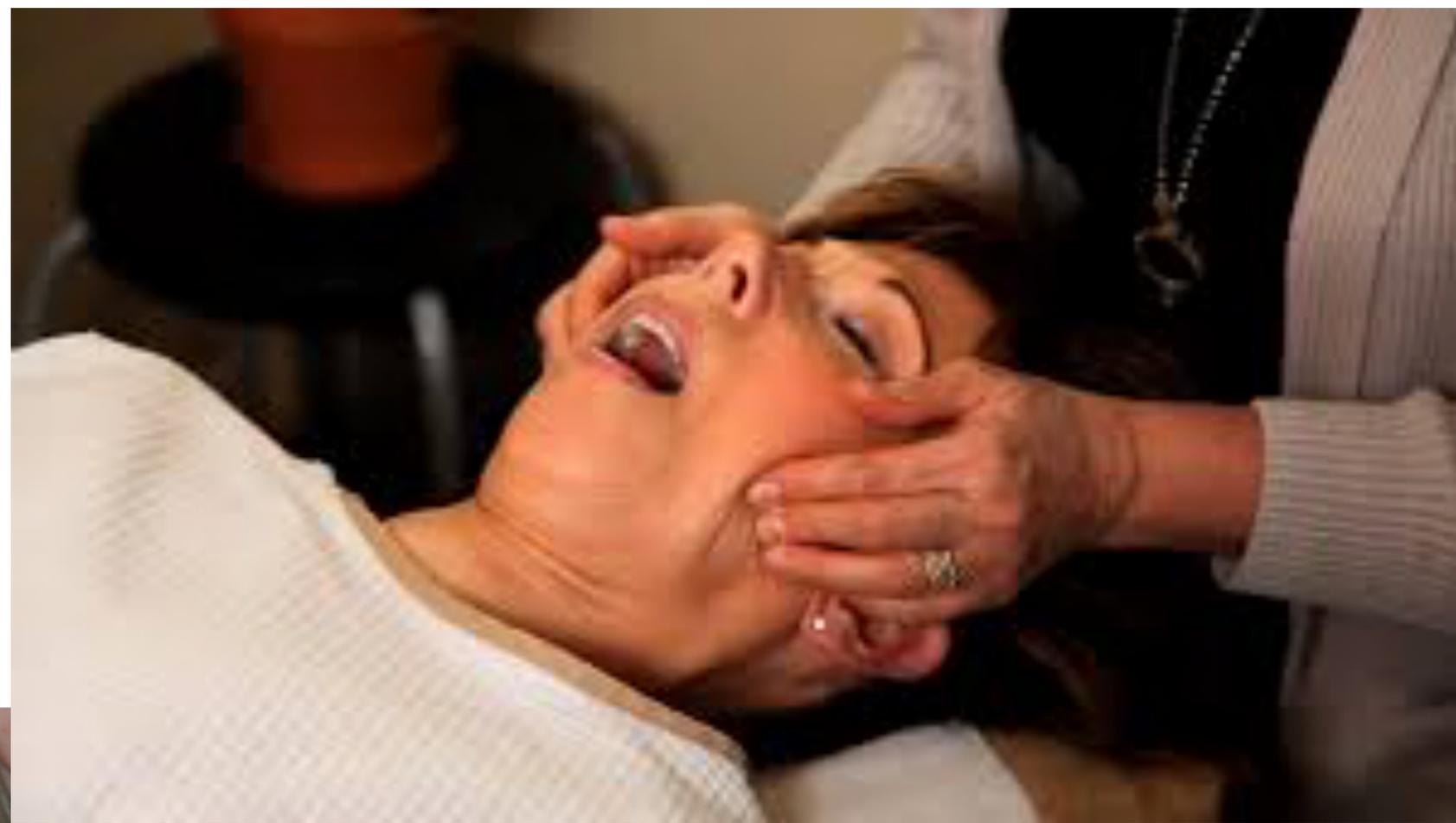
TMJ Evaluation:



Diagnosing TMJ



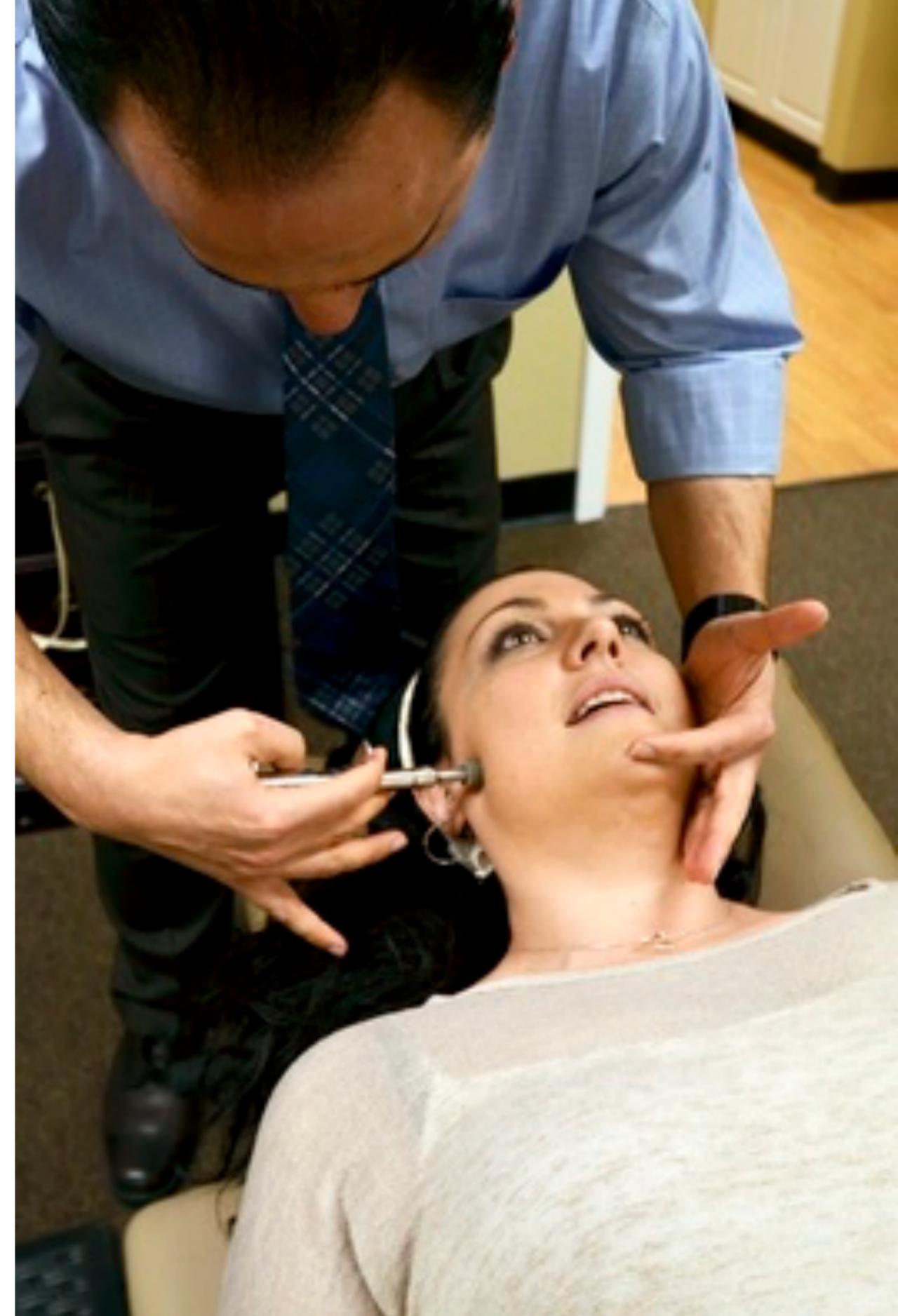
TMJ OPENING



FOOT LEVELERS

TMJ Treatment:

- Physiotherapy modalities (laser, US etc.)
- Moist Heat for muscle relaxation, mobilization
- Chiropractic adjustments to TMJ, neck, thoracic
- Home care - jaw exercises



SOFT TISSUE THERAPY

- Temporalis
- Masseter, mandibular head
- Medial/Lateral Pterygoid
- Sublingual muscles



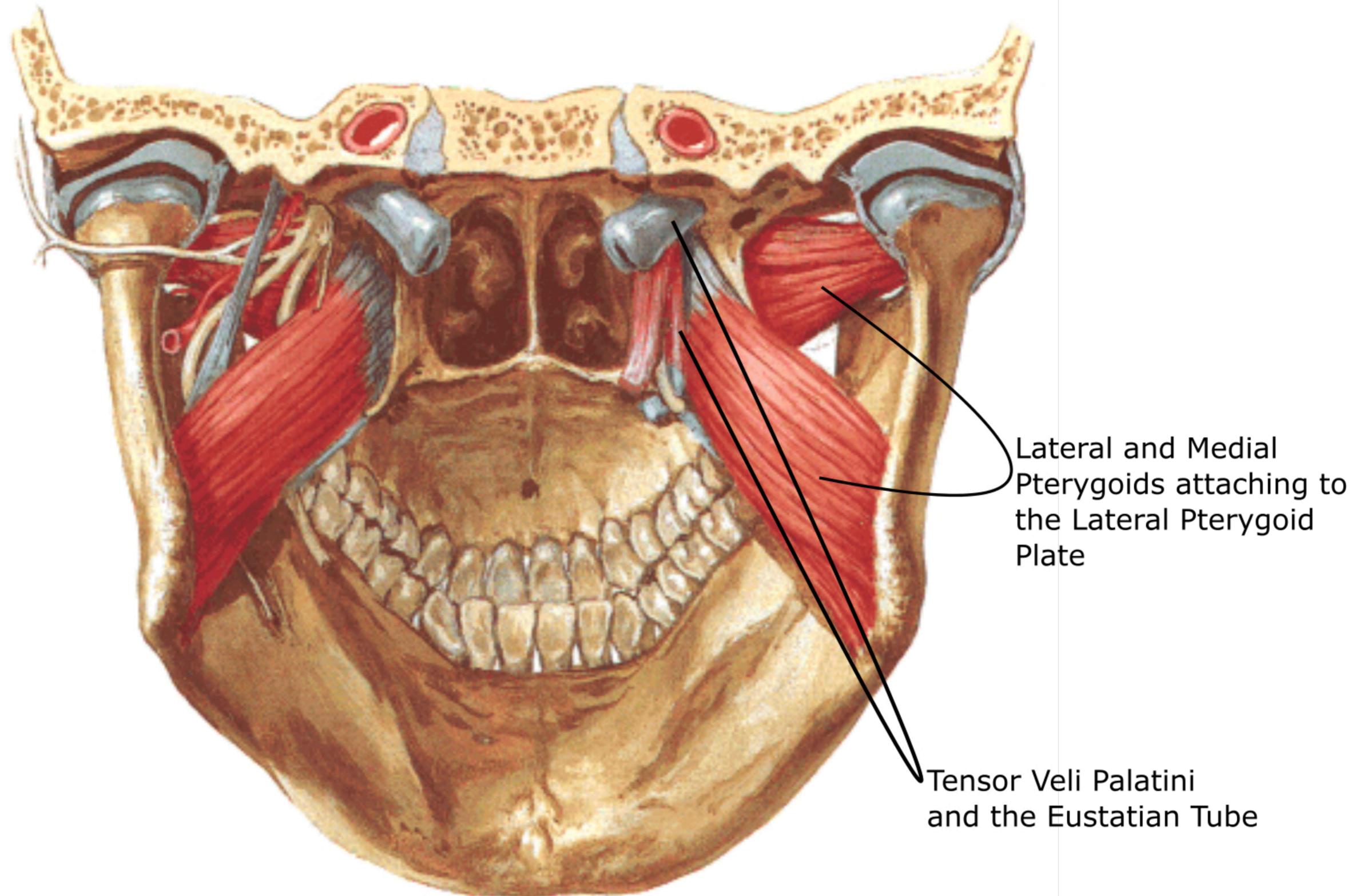
PALPATION OF LATERAL PTERYGOID MUSCLE

The muscle is palpated by using the little or index finger and placing it lateral to maxillary tuberosity and medial to coronoid process. The finger presses upwards and inwards and a painful response can be determined .



Muscles Involved in Mastication [Deep]

Posterior View



Medial Pterygoid



TMJ Adjustments:

- Cranials (sphenoid bone, temporal, saggital suture, occiput)
- Lateral pterygoid (superior) release
- Figure 8
- Modified mandibular break
- Lateral to medial finger pressure with jaw opening
- Downward traction
- Activator, impulse



TMJ Suggestions:

- Avoid gum, chewy candy/meat
- Conscious control of clenching or grinding during daytime
- Jaw exercises (i.e. lips together, teeth apart)
- Teach patient to do soft tissue work on themselves (pterygoids, masseter, etc.)



HOME EXERCISES FOR TMD (TEMPOROMANDIBULAR JOINT DYSFUNCTION)



**ISOMETRIC
OPENING**



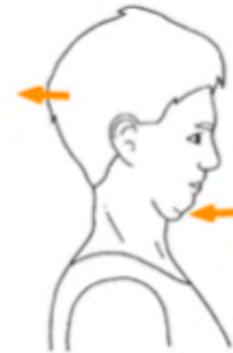
**TONGUE
CLICKS**



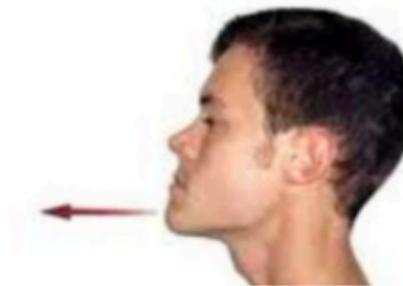
**ISOMETRIC
DEVIATION**



**MASSETER
RELEASE**



**CHIN
RETRACTIONS**



**JAW
PROTRACTION**

Home Exercise

Myofascial Release

Lateral Pterygoid



- Place index finger inside mouth, under cheek bone. Point finger up and towards opposite eye. Apply pressure to muscle until it relaxes. To check positioning of finger, actively move jaw in opposite direction and muscle will contract under finger.
- Hold until relaxes - do 1x, 1-2x/day.

Home Exercise

Controlled Opening



- Place hands on sides of jaw. Feel motion of rotation and then sliding forward as mouth opens.
- Practice opening so motion is even on both sides.
- Do not cause click/noise - limit opening.



TMJ Homecare

- Hard splints (used to reposition condyle or stabilize)
- Soft splint/Mouth guard from dentist/orthodontist
- Cervical Pillow
- Flexible Orthotics



TMJ

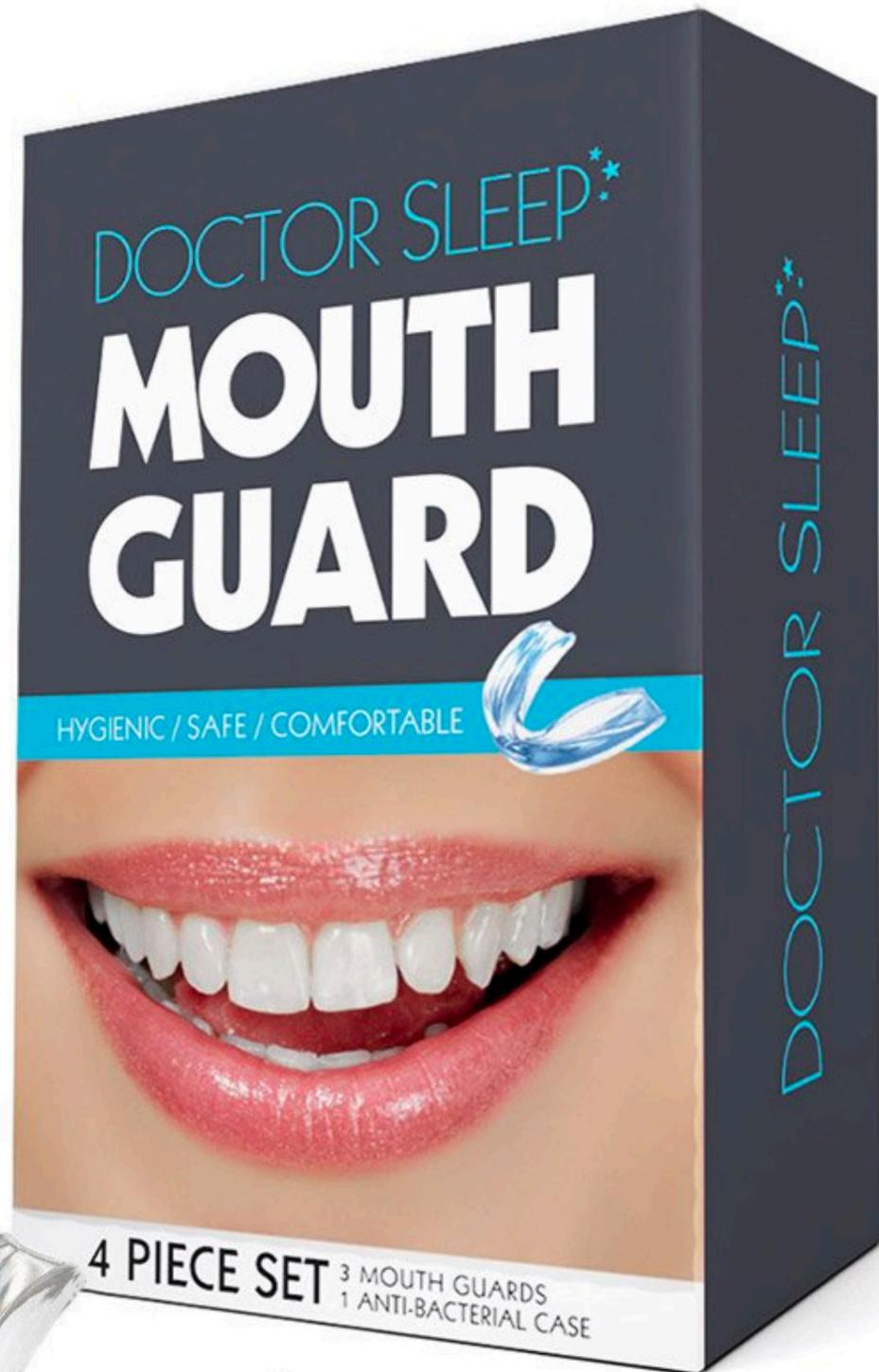
MOUTH GUARDS

A TMJ mouthguard is a mouthpiece primarily used to protect teeth and/or gums from injury.

This appliance is typically fitted on the upper jaw and works by “absorbing” the pressure your jaw subconsciously puts on your teeth. Essentially, it acts as a cushion piece for your teeth.

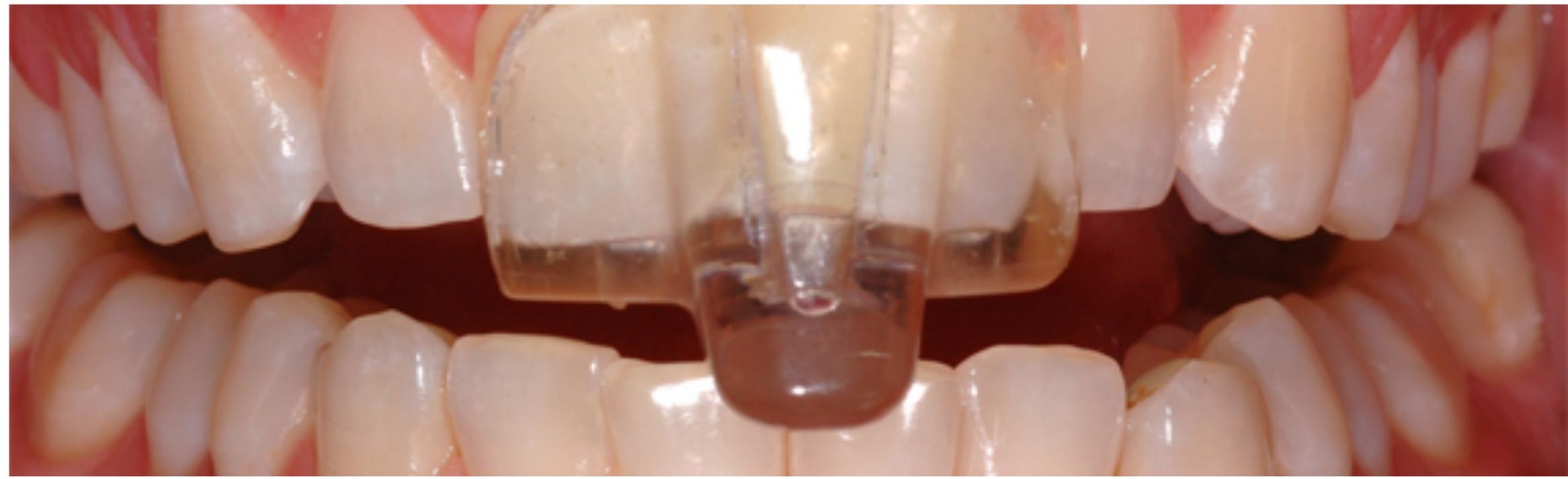


FOOT LEVELERS



Mouth Guard







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FOOT LEVELERS