



# ANCILLARY ADJUSTMENTS WITH MUSCLE TESTING

Instructor: Dr James Glenn Drewry



## INTERPHALANGEAL MOBILIZATION:

Whether the interphalangeal joint is compressed, rotated, flexed, or extended, this is the best "all purpose" finger mobilization. This maneuver will address most interphalangeal subluxations/fixations.



As shown in the above picture, this procedure is easily accomplished by the doctor grasping both sides of the joint with fingers, then distracting the joint, and then performing figure "8" motions. These figure "8" motions are done in both directions on both sides of the joint.



## WRIST TAPING

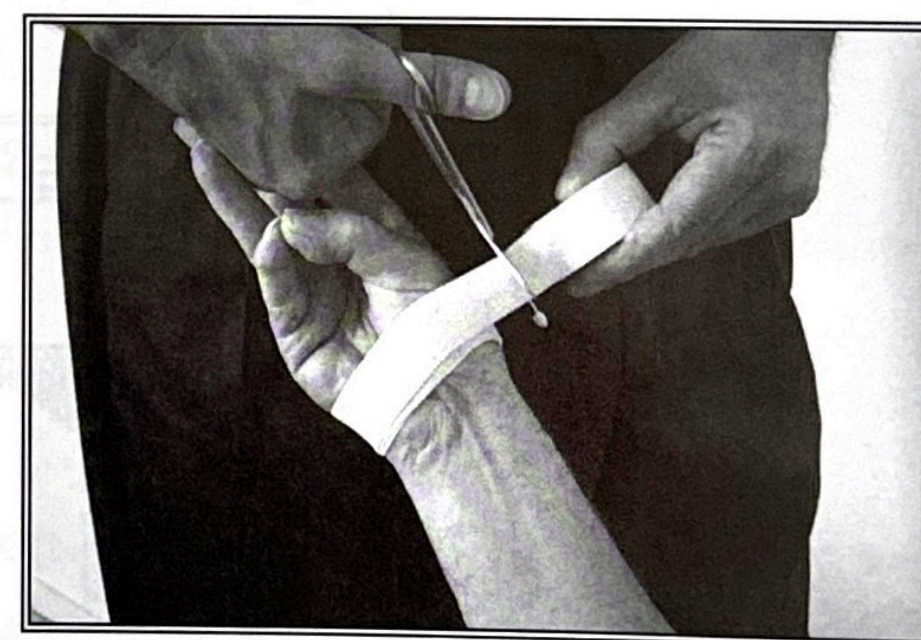
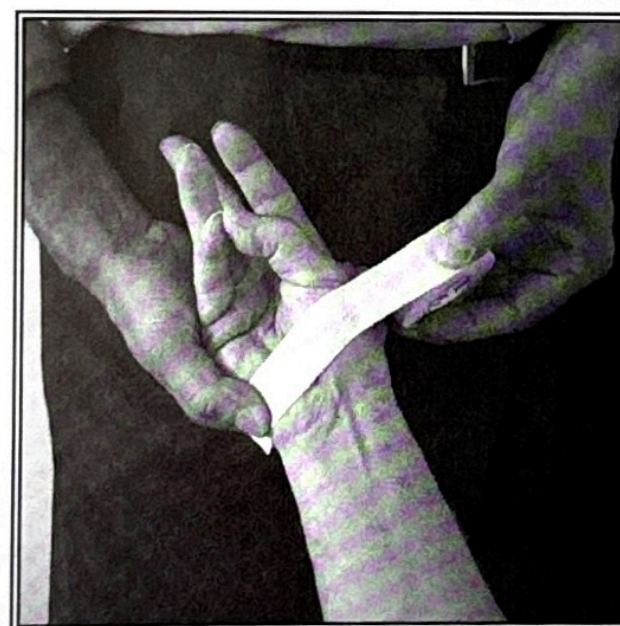
Stabilizing the wrist after an adjustment is crucial. The wrist easily re-subluxates with the wrist in extension and an I to S or S to I force applied. Therefore, taping the wrist is essential to long-term stability.

I recommend using 1" tape.

The doctor instructs the patient to touch the thumb tip to the little finger tip as shown.



Doctor applies tape using 2-3 rotations with medium tension on tape.



The tape is worn by the patient 24 hours per day and it is common to use this taping procedure for up to three months.

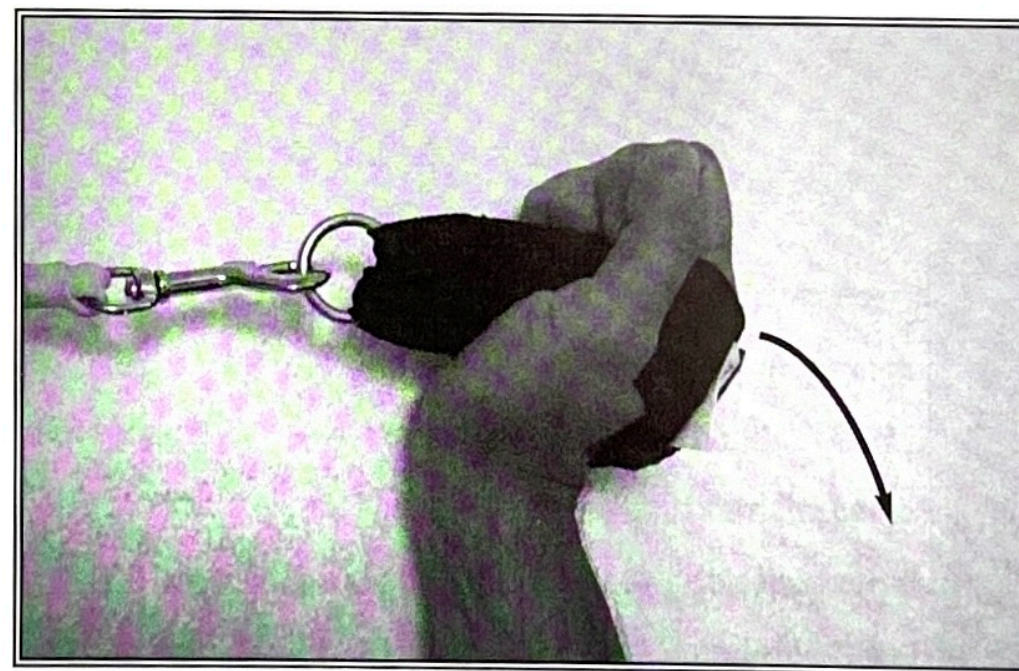
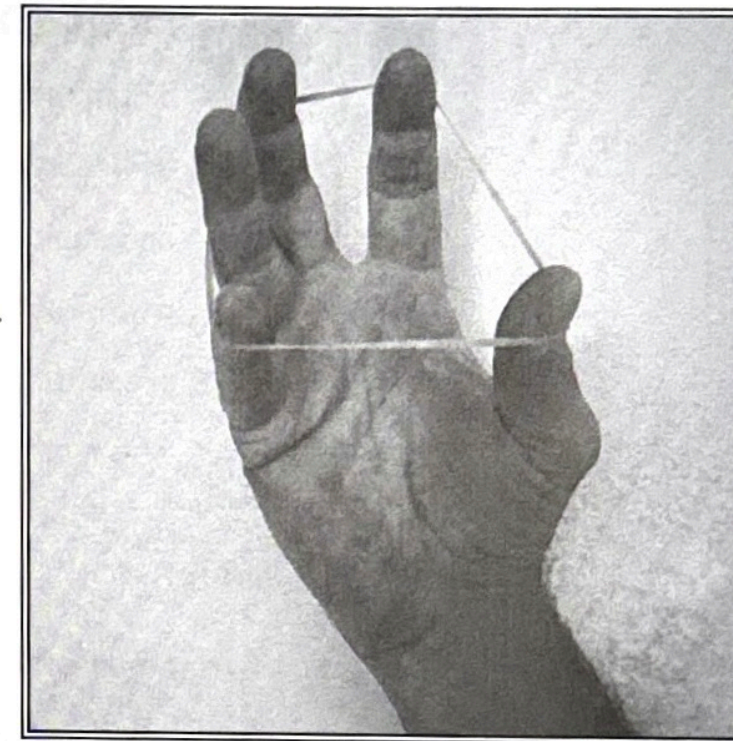


## WRIST REHABILITATION - TARGETED EXERCISES

In the vast majority of symptomatic wrist patients, the extensor muscles of the fingers and wrist are much weaker than the flexors. Therefore, extension exercises for the fingers and wrist should be utilized to enhance and restore optimal wrist and hand function.

### FINGER EXTENSION EXERCISE:

Patient puts a rubber band around the distal joints of the fingers and extends the fingers as shown. Twenty repetitions are recommended twice daily for three months.



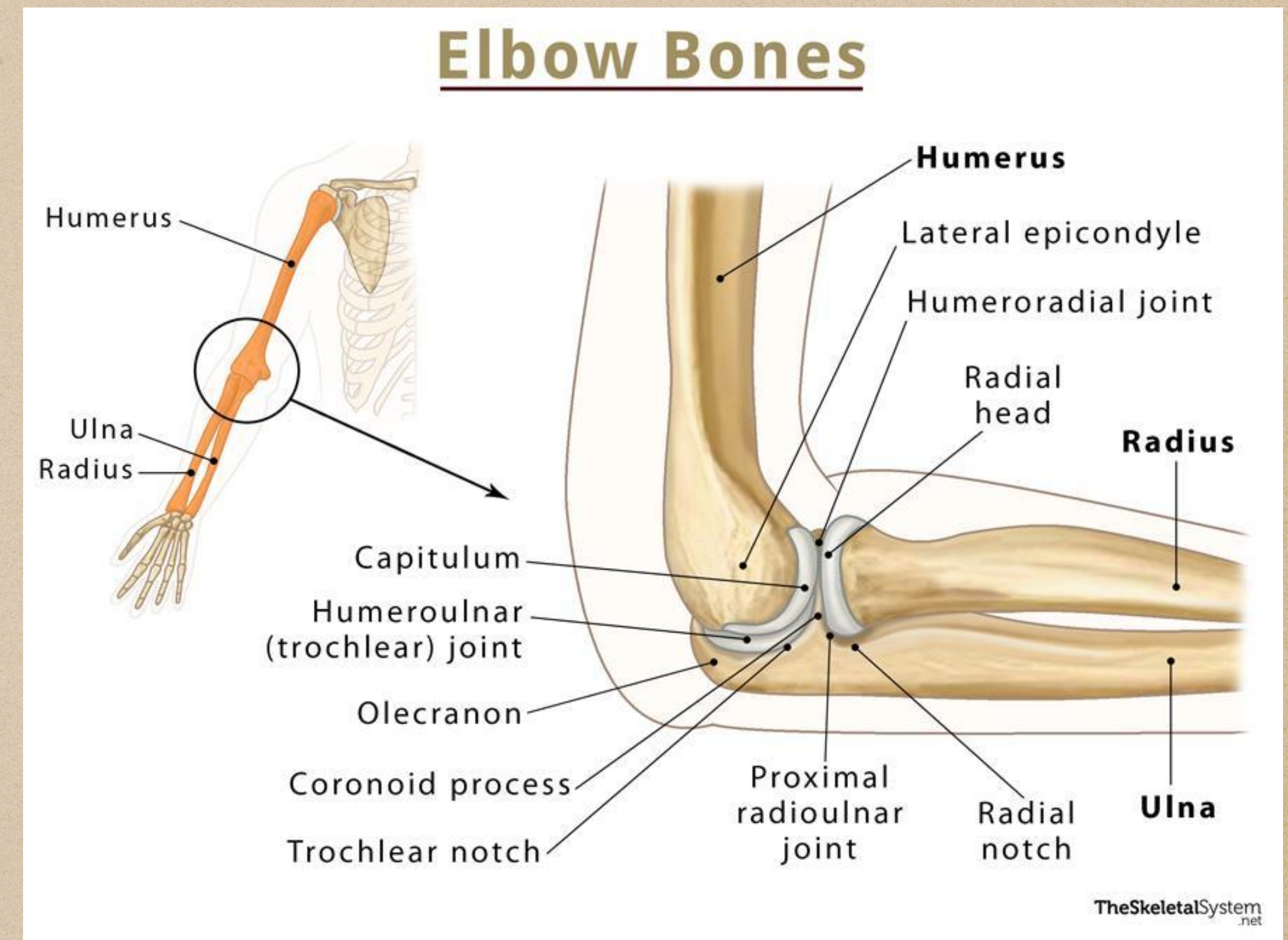
### WRIST EXTENSION EXERCISE:

Utilizing flexible tubing or a strong rubber band, the patient extends wrist as shown. This utilizes the extensor carpi radialis brevis muscle. Twenty repetitions are recommended twice daily for three months.



# The Elbow:

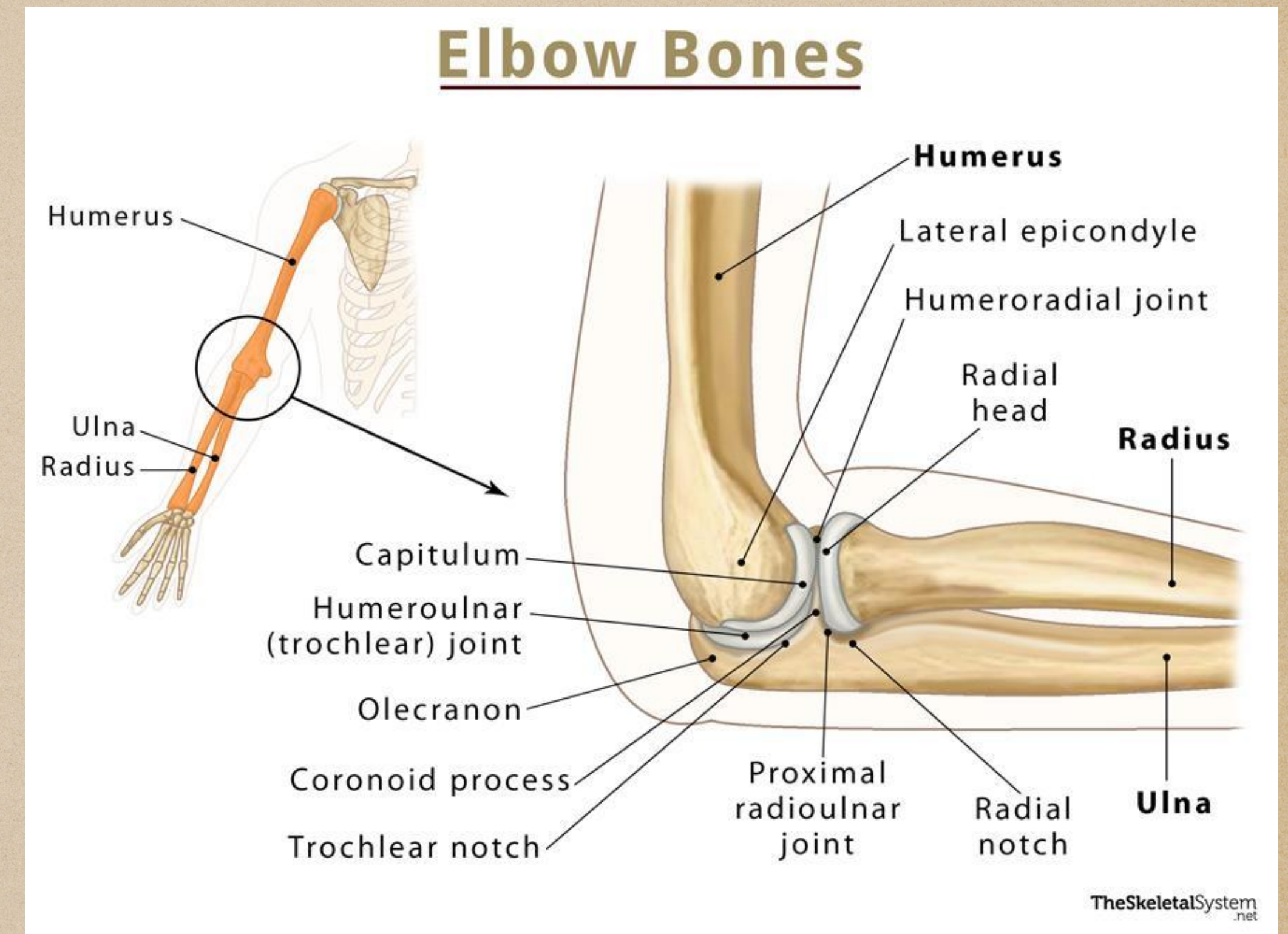
- ◆ Hard vs. Soft End-Range of Motion: Grab the patient's wrist (inside hand) and elbow. Move through supination and pronation feeling the end-range.
- ◆ If there is no radial head subluxation the end-finish will be hard on both supination and pronation.
- ◆ 90% pattern- Pronation end is soft 90% of the time. Your first impression is always right.
- ◆ Neutralize the fixations by performing cross-friction massage with the thumb tip at the tendons of the medial or lateral epicondyle based on the listing.





# The Elbow:

- ◆ Adjust the radial head. Thumb tip to lat aspect of radial head. Bring to tension and thrust P-A without using wrist as a lever.
- ◆ Humeral-Ulnar Joint- Indicated by palpating and visualizing a difference from R to L. (Old way)  
More common on dominant side. The ulna subluxates posterior/medial.
- ◆ Take the thumb and index finger or a flat palm and contact the olecranon. Thrust (slightly) P-A and medial to lateral without using the wrist as a lever.
- ◆ For a valgus deformity (medial wedge), thrust is M-L and I-S.





## Elbow:

- ◆ Relatively uncomplicated mechanics.
- ◆ May be difficult to adjust.  
Prone to inflammations/overuse injuries.

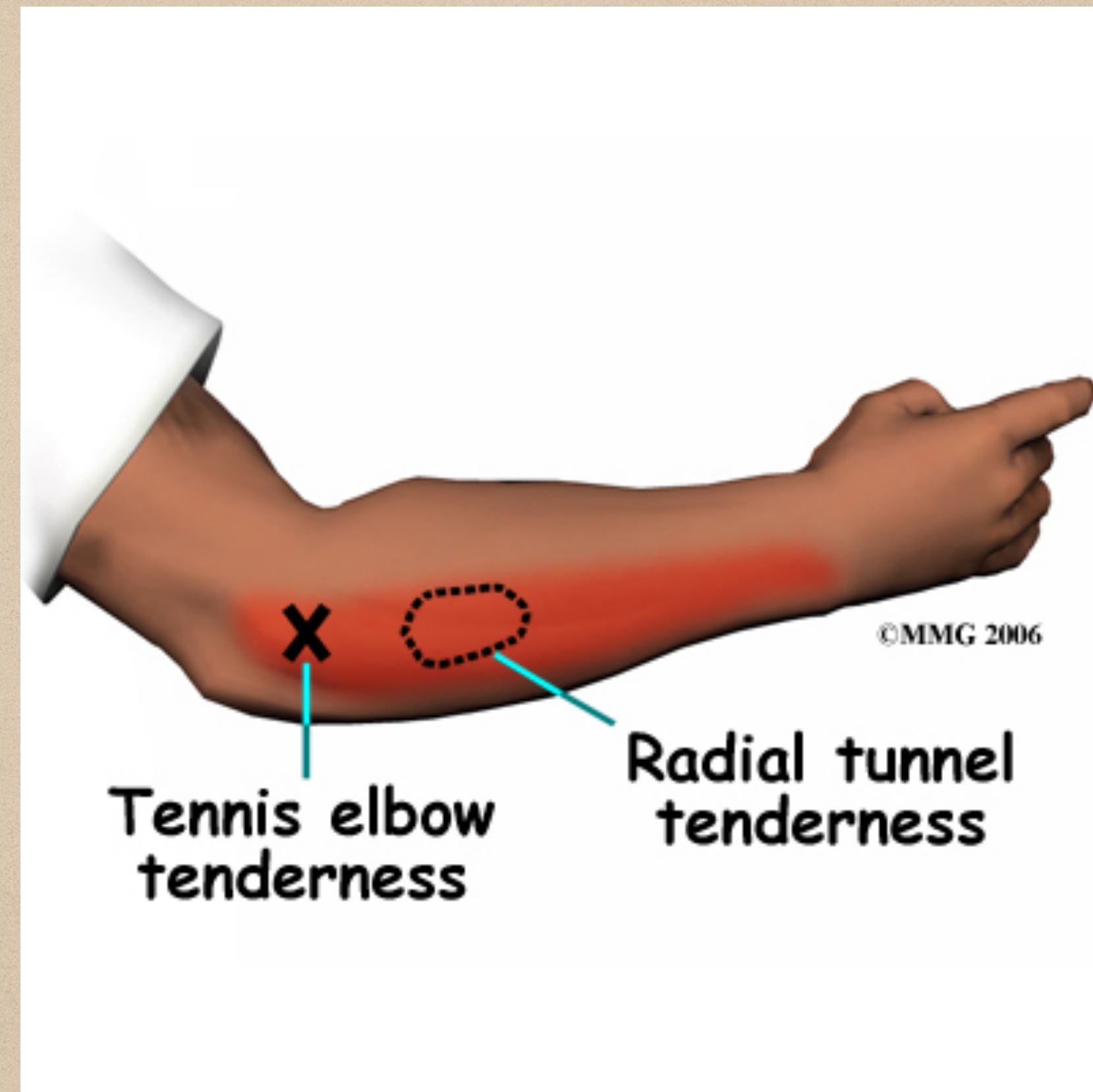
## Beware:

- ◆ Nerve entrapment syndromes.
- ◆ Ligament ruptures.
- ◆ Avulsion fractures.





# Tennis elbow vs radial tunnel syndrome





# Medial epicondylitis/golfers elbow

- ◆ Similar to lateral epicondylitis in etiology and histology, but generally caused by overuse of and repetitive microtrauma to the flexor and supinator musculature of the forearm.
- ◆ Pain is located on or close to the medial epicondyle of the elbow.
- ◆ Commonly seen in non golfers, very often seen in cyclists, cross fit athletes.
- ◆ Can often be mistaken for mild variants of throwers elbow/goalkeepers elbow





08/16/2023

## Weak Extensors Lead To "Recreational" Tennis Elbow

Sensors:

"Recreational players exhibited significantly higher extensor activity during most of the follow through phase compared to the experienced players for both spin levels, potentially putting them at greater risk for developing lateral elbow tendinopathy."

Improve wrist extensor strength with this [video](#) from ChiroUp.

Rigozzi CJ, Vio GA, Poronnik P. Comparison of Grip Strength, Forearm Muscle Activity, and Shock Transmission between the Forehand Stroke Technique of Experienced and Recreational Tennis Players Using a Novel Wearable Device. *Sensors*. 2023 May 28;23(11):5146. [Link](#)



# Testing

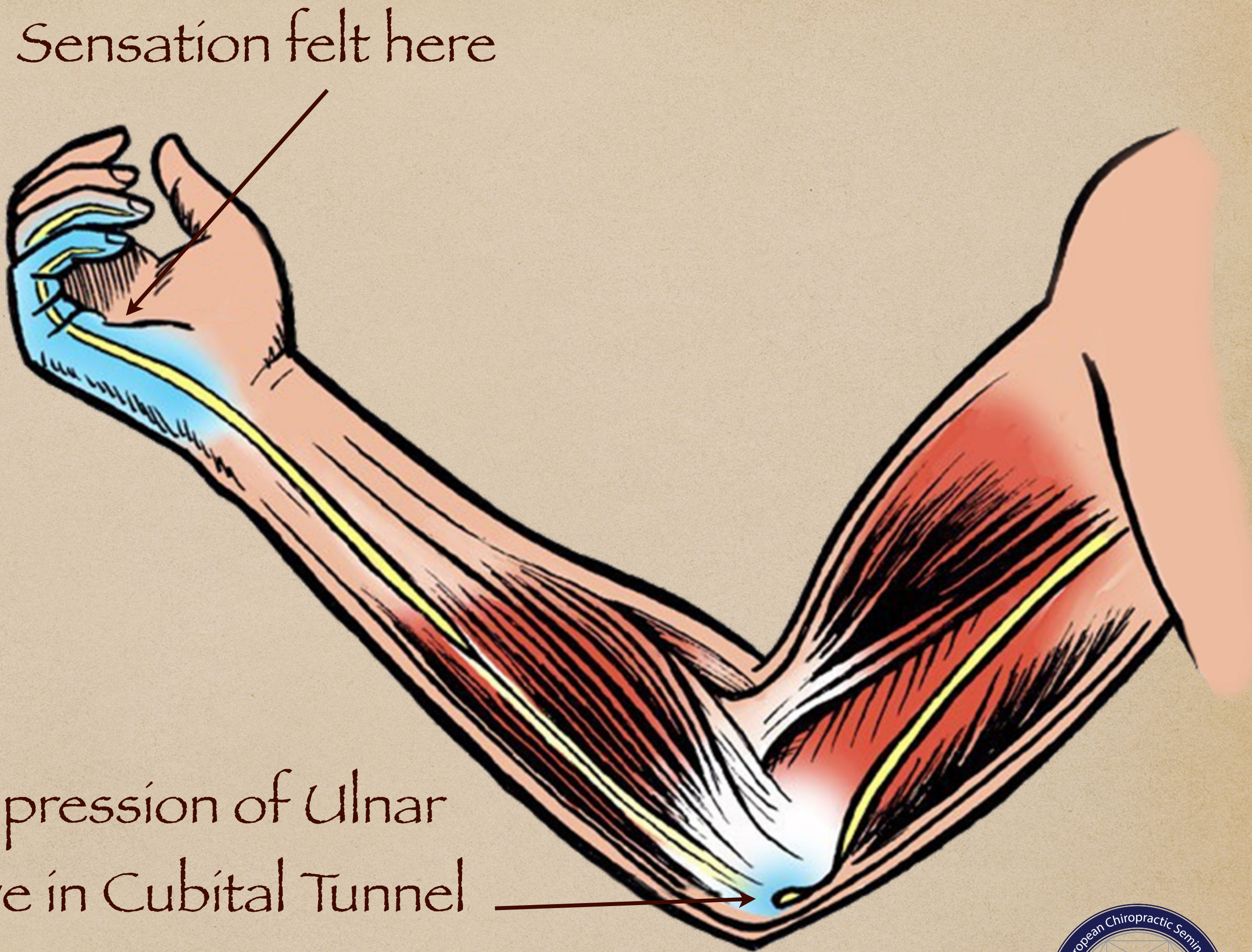
- ◆ Patient flexes elbow and wrist against resistance.
- ◆ Pain on or close to medial epicondyle is a positive



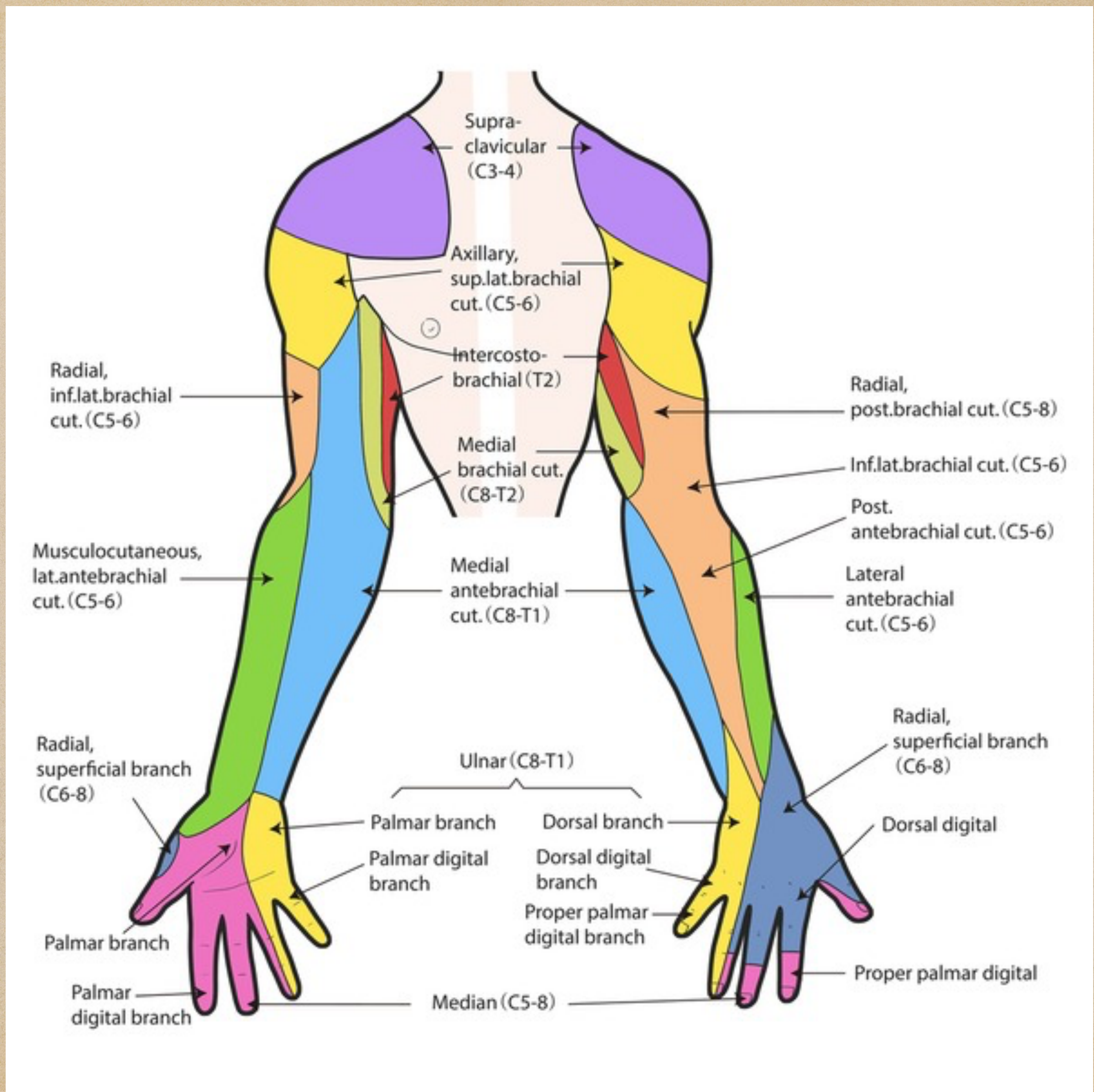


# Cubital Tunnel entrapment

Ulnar Nerve Compressed









# Fat pad signs

◆ Indication of fracture

◆ Anterior: sail sign

◆ Posterior fat pad – sure indication of fracture.

◆





# Common chronic disorders

- ◆ Lateral epicondylitis- tennis elbow.
- ◆ Medial epicondylitis - golfers elbow.
- ◆ Goalkeepers elbow - repeated hyperextension, with or without valgus stress/ supination. Numbness/radiation to little finger. Often leads to valgus deformity and instability.
- ◆ Triceps tendinopathy.
- ◆ Osteochondritis dissecans
- ◆ Mother's arm





- ◆ Ulnar nerve neuritis cubital tunnel syndrome – most common entrapment syndrome next to cts.
- ◆ Median nerve entrapment in the elbow/pronator teres syndrome.
- ◆ Radial nerve entrapment a.K.A. Supinator syndrome.
- ◆ Student elbow – chronic olecranon bursitis.
- ◆ Stress fractures of the ulna often seen in e.G. Motocross, combat sports and increasingly in cross fit athletes.
- ◆ Rabdomyolysis





## Lateral epicondylitis/tennis elbow

- ◆ Related to excessive wrist extension and/or pronation and is actually more common in non-tennis players. In general, microscopic evaluation of the tendons does not show signs of inflammation, but rather angiofibroblastic degeneration and collagen disarray. Light microscopy reveals both an excess of fibroblasts and blood vessels that are consistent with neovessels or angiogenesis.]
- ◆ The tendons are relatively hypovascular proximal to the tendon insertion. This hypovascularity may predispose the tendon to hypoxic tendon degeneration and has been implicated in the etiology of tendinopathies.
- ◆ The primary pathology seems to be tendinosis of the ext. Carpi radialis brevis tendon 1-2 cm distal to its attachment on the lateral epicondyle
- ◆ A shoulder problem, wrist problem or neck/upper back problem will often be involved in the etiology of a tennis elbow





# Elbow adjustments

◆ Do not **hyperextend!!!**

## Radius

◆ Short thrust

◆ In direction of fixation.... Test for extension in different degree of rotation

◆ Lateral wedge-lift from the neck of the radius

## CP

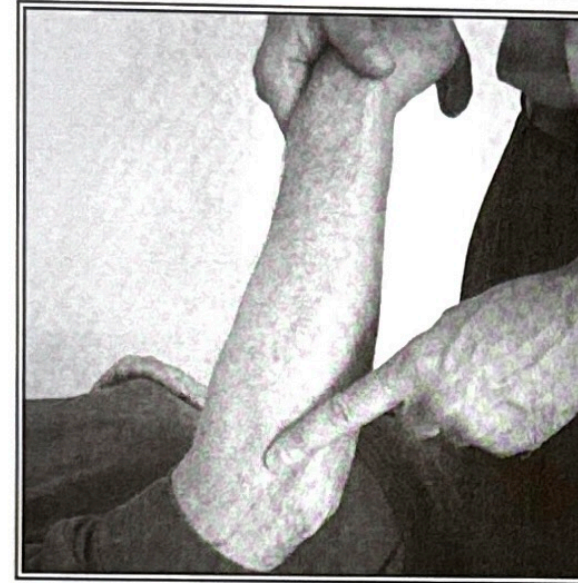
◆ Just below the head of the radius





## THE ELBOW RADIO-ULNAR JOINT

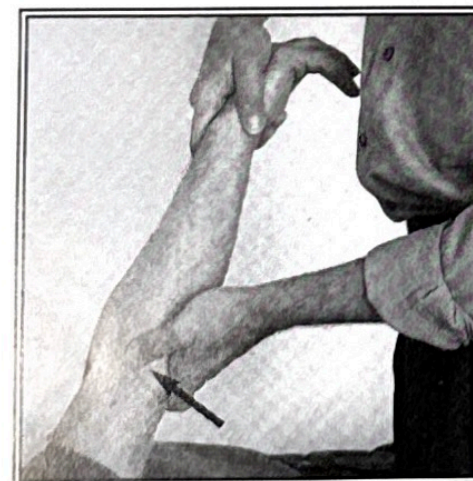
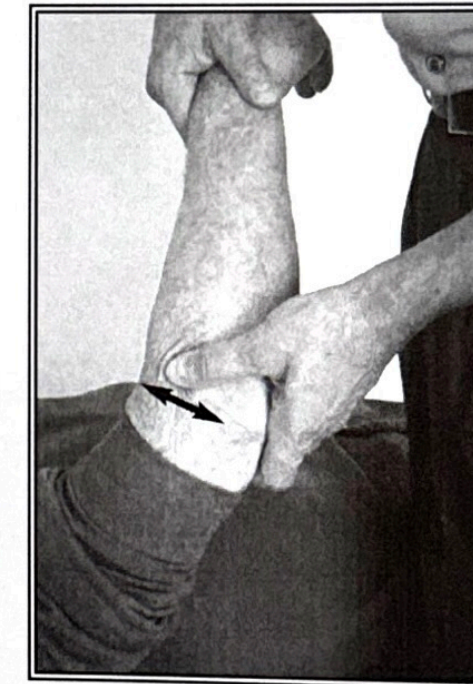
It is typical to find point tenderness around the radio-ulnar joint along with restricted pronation or supination of the joint.



### PROCEDURE:

Thumbpad of "outside" hand contacts lateral aspect of radial head while "inside" hand grasps patient's forearm. "Inside" hand pronates and supinates forearm. If no subluxation/fixation exists, "clean" end points of range of motion will be felt. When subluxation/fixation is present a typical "sponginess" is felt on either pronation or supination. The most common pattern is to feel the "sponginess" on pronation.

First, a mental note is made of which direction "sponginess" was felt. Prior to the adjustment, a cross-fibering type action is made on the tendonous area of the wrist/hand extensor attachments on the lateral epicondyle of the humerus. The thumbtip of the "outside" hand is placed on the lateral aspect of the radial head as the doctor's "inside" hand grasps patient's forearm.



"Inside" hand brings radio-ulnar joint to its pronation or supination tension along with extension of the elbow as thumbtip of "outside" hand thrusts in a posterior to anterior direction.

Audible release is extremely common with this adjustment.

It is recommended that a "tennis elbow" brace be used with anyone repeatedly traumatizing the joint (i.e. baseball pitchers, tennis players) causing plastic deformation of the soft tissue retaining mechanism.

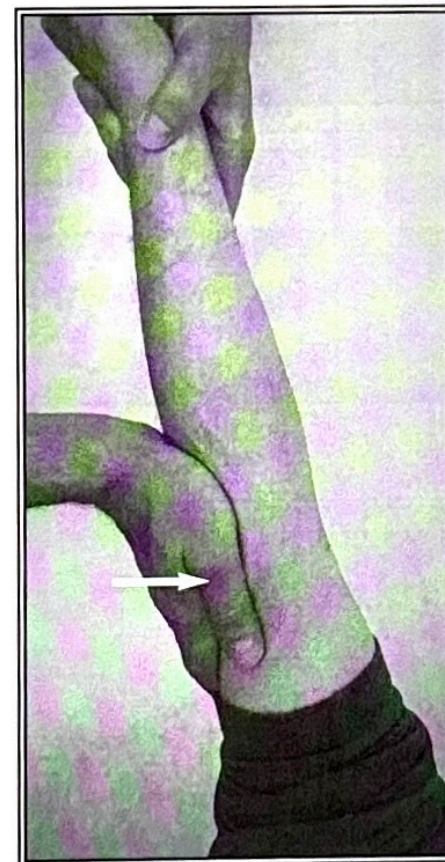
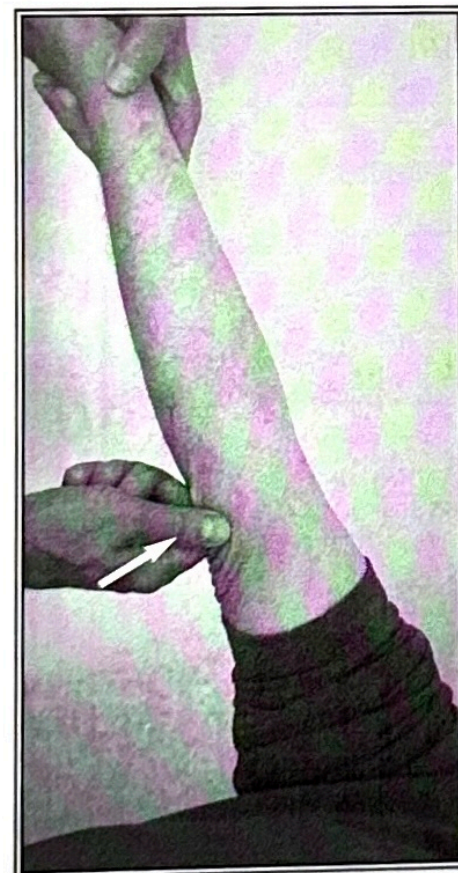
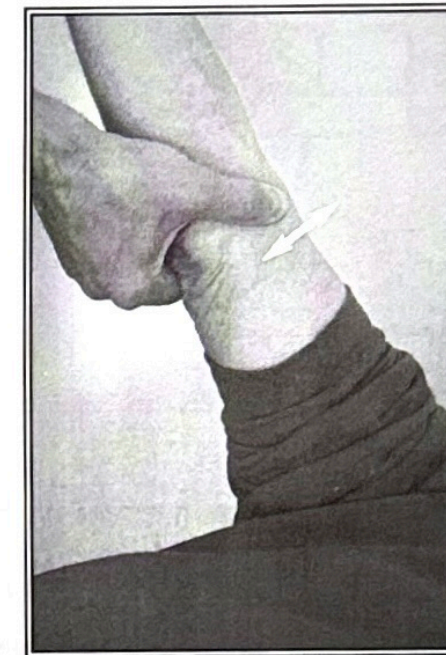


## HUMERO-ULNAR JOINT



This joint most commonly subluxates/fixates with the humerus misaligning in a posterior direction. The medial epicondyle of the humerus will become increasingly tender to pressure as the degree of posterior subluxation increases.

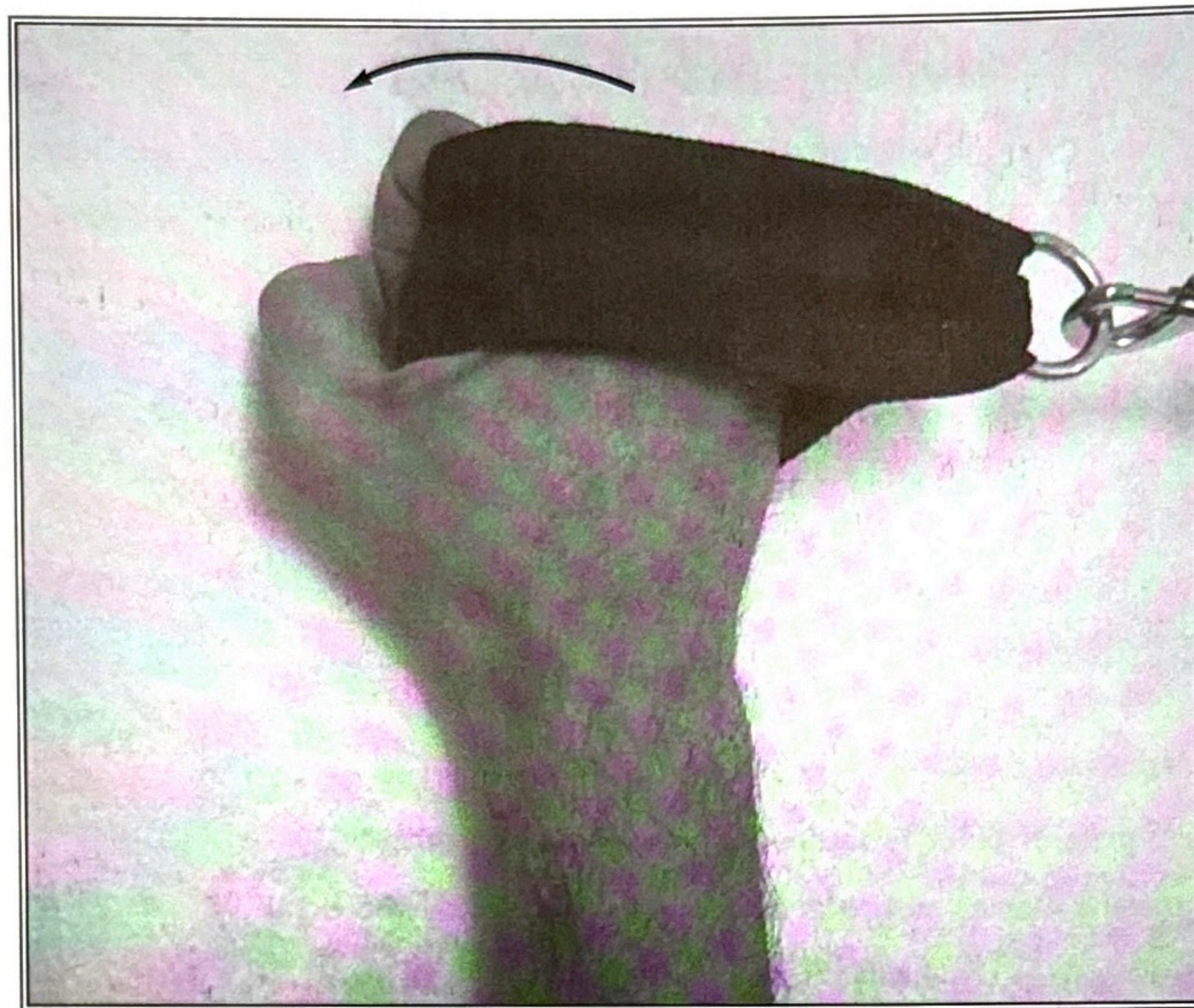
After finding a degree of point tenderness on the medial epicondyle of the humerus, a cross-fibering motion is done on this same area where the wrist/hand flexors attach. This will aid in the stabilization of the joint.



After cross-fibering, the doctor contacts the olecranon process of the ulna with the flat palm of the "inside" hand while the "outside" hand grasps patient's wrist. The joint is brought to its extension TENSION and the THRUST is in a posterior to anterior direction but is not overly forceful.



## ELBOW EXERCISE



The most common exercise for the radio-ulnar joint is forearm pronation. This will utilize the pronator teres muscle. In this example, the patient is using flexible tubing and pronating the elbow against resistance. The patient is instructed to perform twenty repetitions twice daily for two months.



# Hour 5

## Shoulder





Brittany  
Around 1880





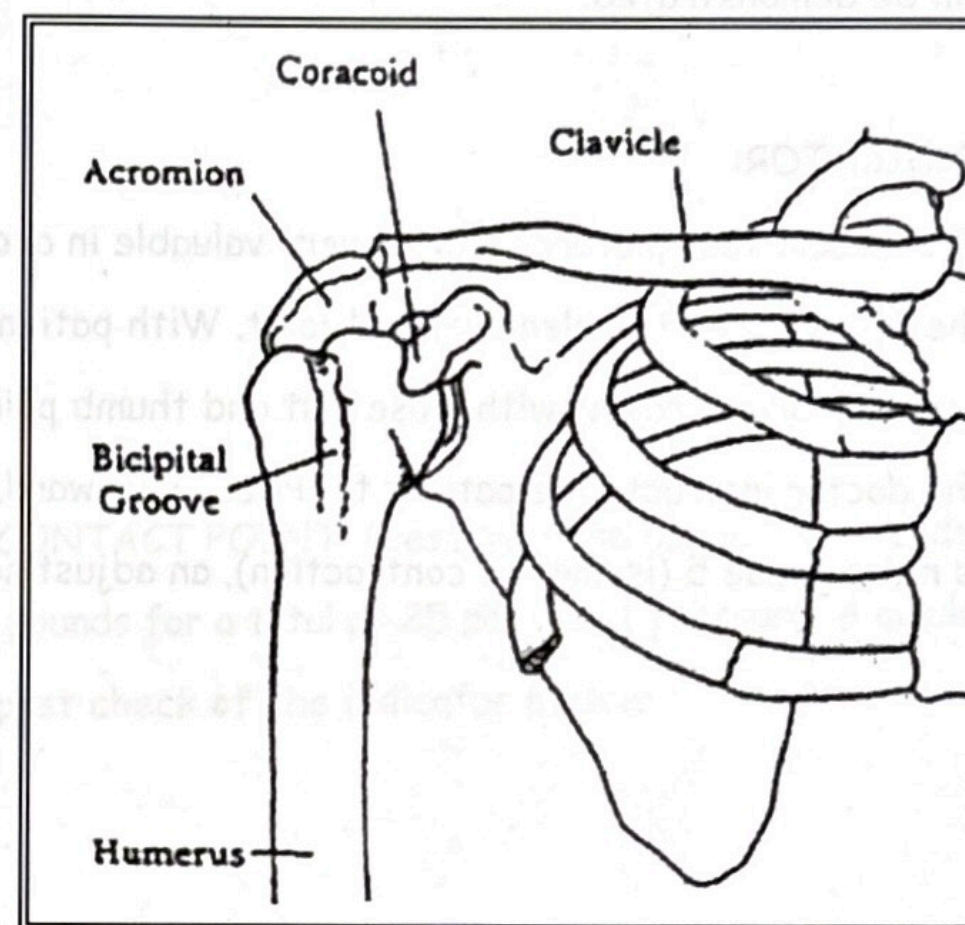




## THE SHOULDER

### The Shoulder Joints

1. Glenohumeral Joint
2. Acromioclavicular Joint
3. Sternoclavicular Joint
4. Costoscapular Articulation



### SHOULDER SUBLUXATION/FIXATION PATTERN

Joint/Articulation	Subluxation/Fixation
Glenohumeral Joint	Anterior
Acromioclavicular Joint	Distal Clavicle — Superior
Sternoclavicular Joint	Proximal Clavicle — Anterior & Medial
Costoscapular Articulation	Hypomobility



# Shoulder

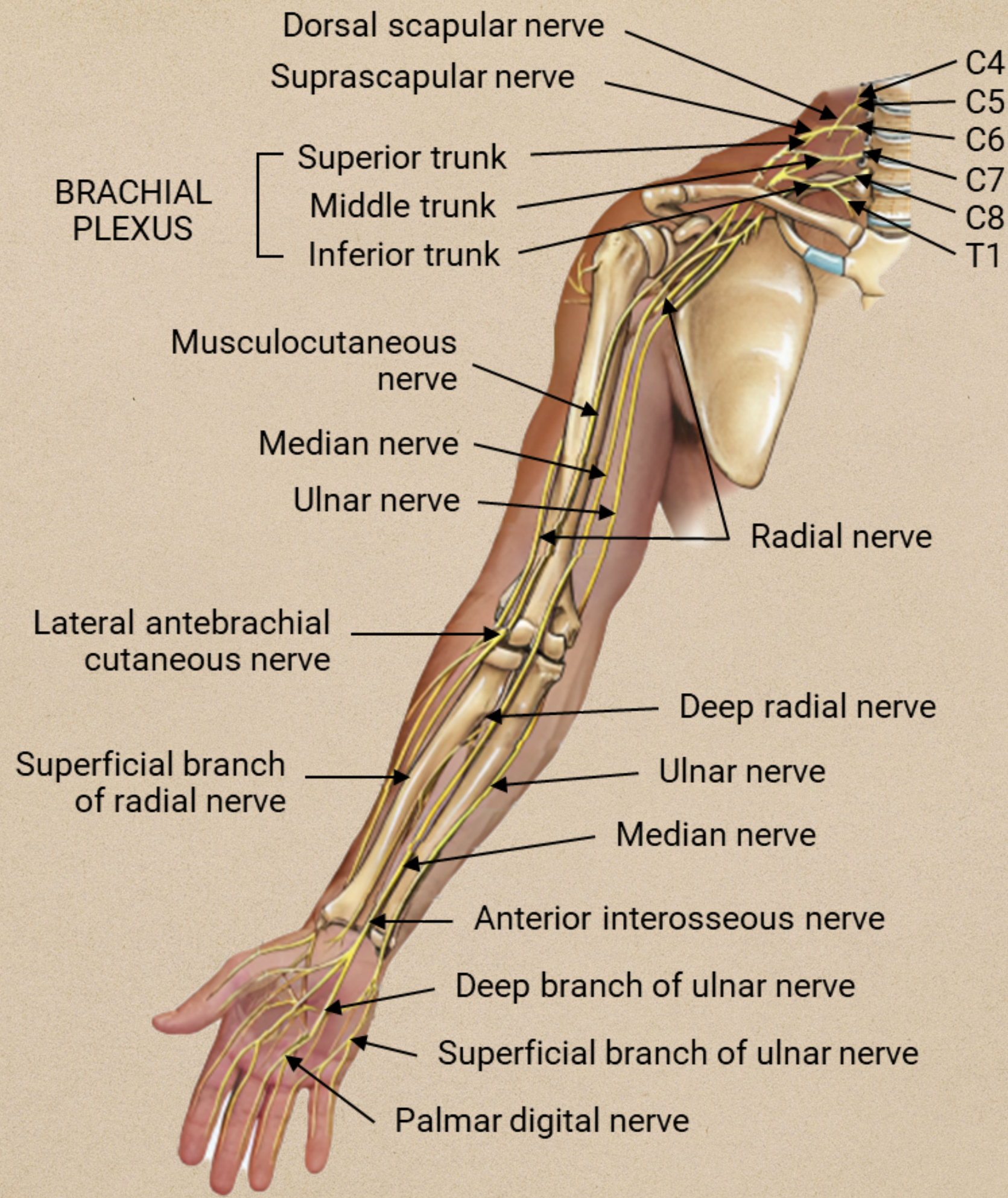
- ◆ Glenohumeral Joint
- ◆ Acromioclavicular Joint
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- ◆ Costoscapular Articulation

## Shoulder Subluxation Pattern:

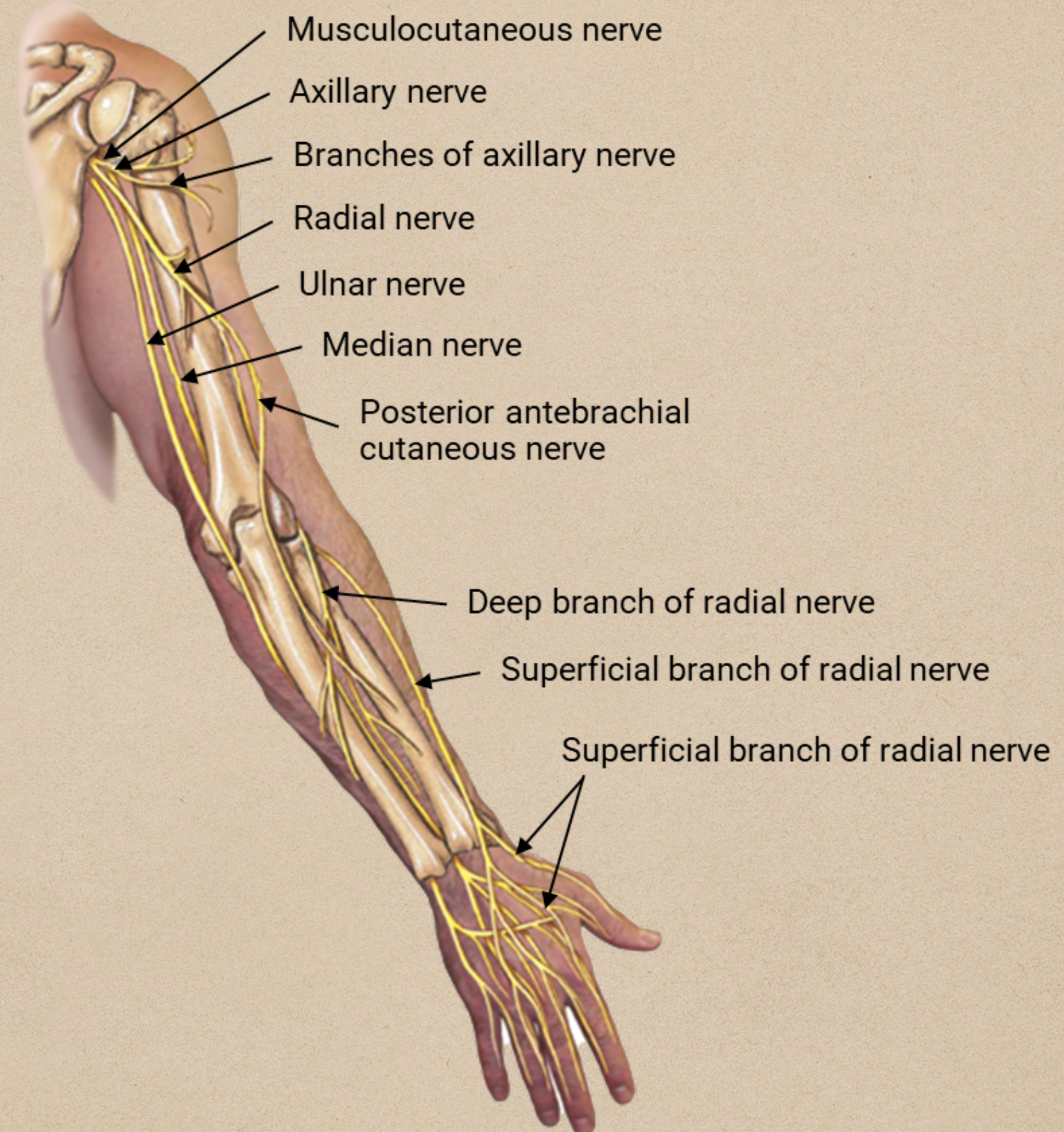
- ◆ Glenohumeral Joint- Humeral Head Anterior
- ◆ Acromioclavicular Joint- Distal Clavicle Superior
- ◆ Sternoclavicular- Proximal Clavicle Anterior and Medial
- ◆ Scapulothoracic- Fixation/Hypomobile
- ◆ First Rib- Anterior







(b) Anterior view



(c) Posterior view





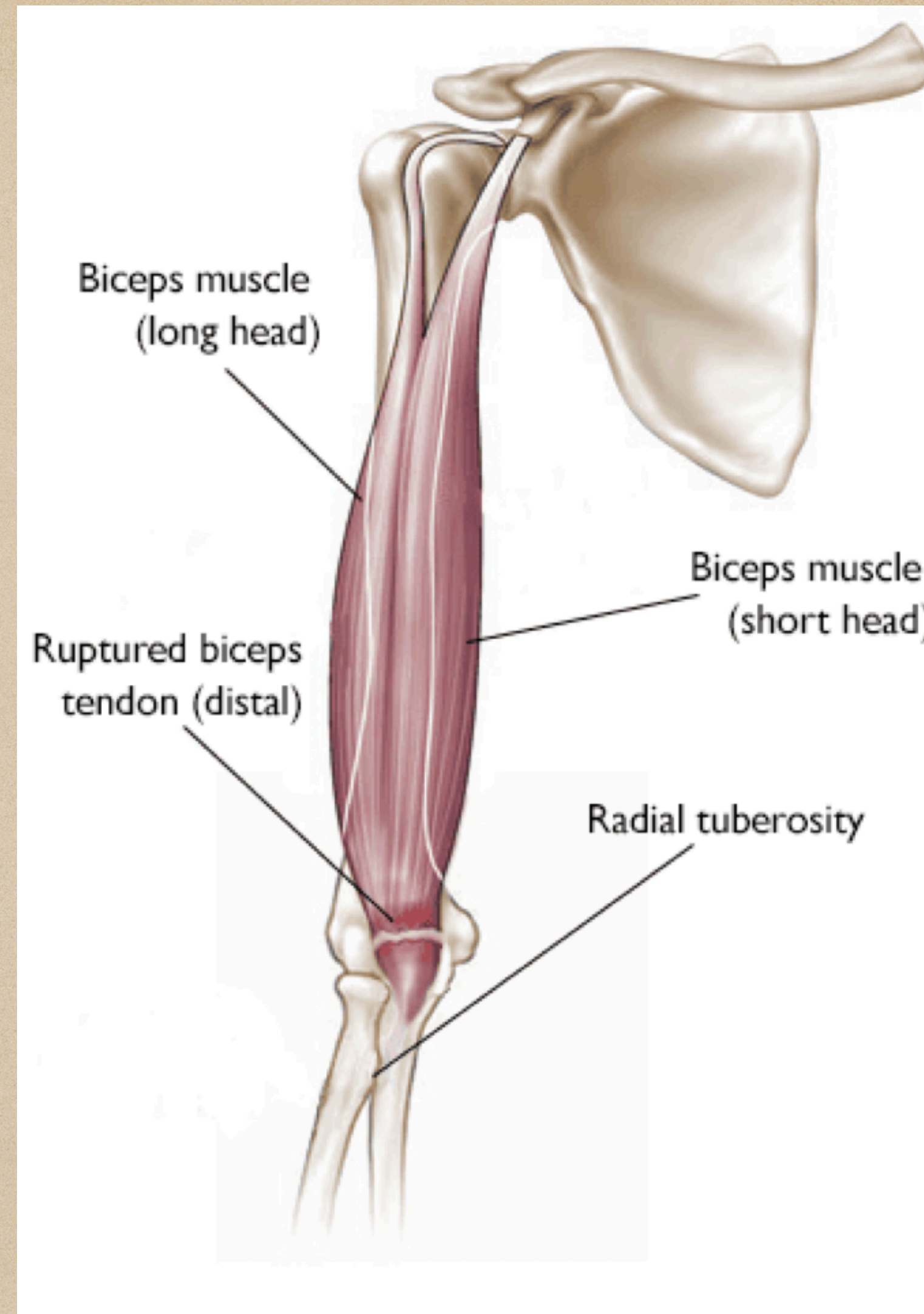
# Bicipital Tendon

◆ Medial 80%

◆ Lateral 20%

◆ Tendonitis

◆ Stretching/damage





10/03/2023

## Biceps Tendon Pathology Persists After Symptoms Resolve

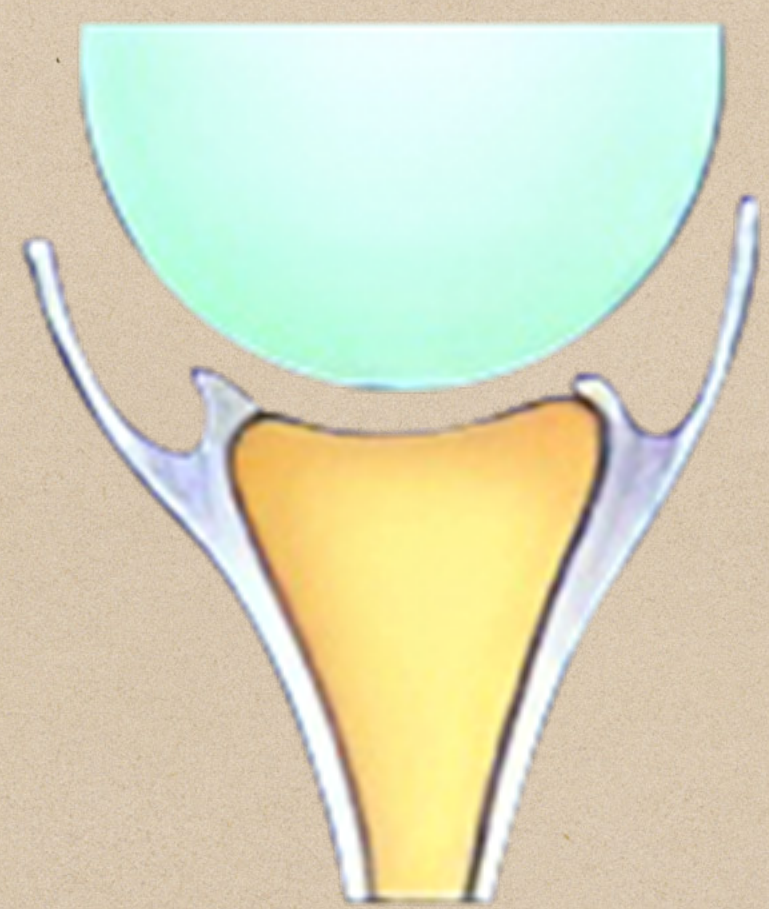
Clinics in Shoulder and Elbow:

"The finding that distal biceps MRI signal changes consistent with tendinopathy are common even in asymptomatic elbows reduces the probability that symptoms correlate with pathology on imaging. The accumulation of signal changes with age, also independent of symptoms, suggests that tendon pathology persists after symptoms resolve, that some degree of distal biceps tendinopathy is common in a human lifetime, and that tendinopathy may often be accommodated without seeking care."

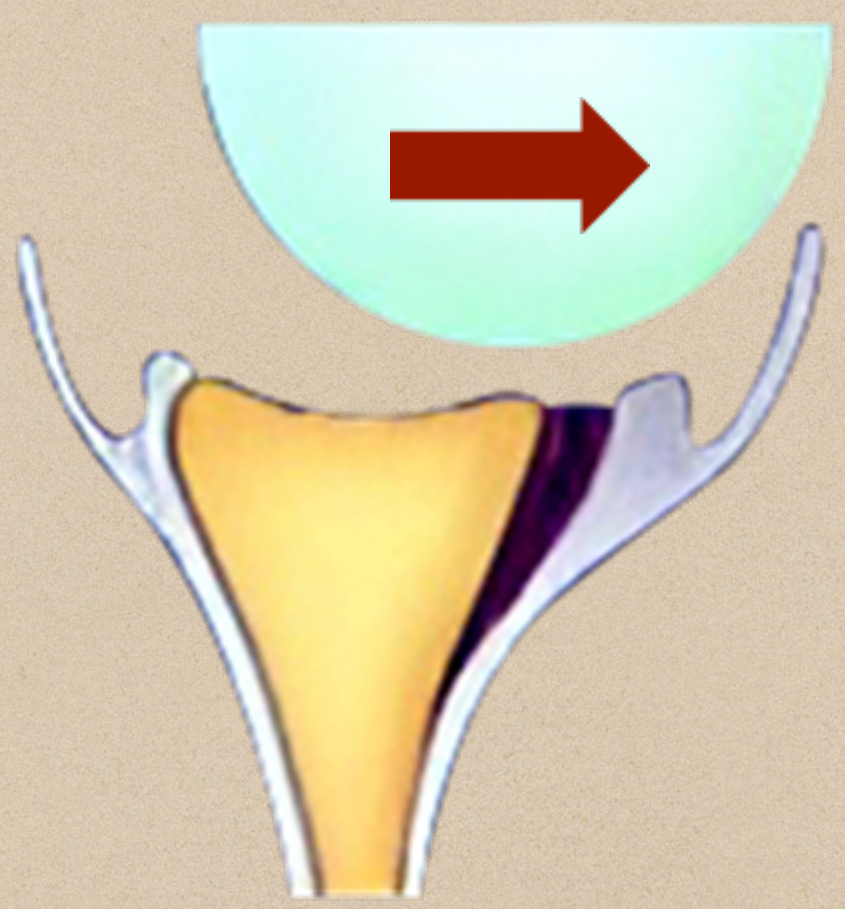
Kim E, Kortlever JT, Gonzalez AI, Ring D, Reichel LM. Prevalence of incidental distal biceps signal changes on magnetic resonance imaging. Clinics in Shoulder and Elbow. 2023 Aug 11. [Link](#)



# Bankart Lesion



Normal



Bankart Lesion





## Bankart's Repair Best Choice For Chronic Shoulder Dislocates

Knee Surgery, Sports Traumatology, Arthroscopy:

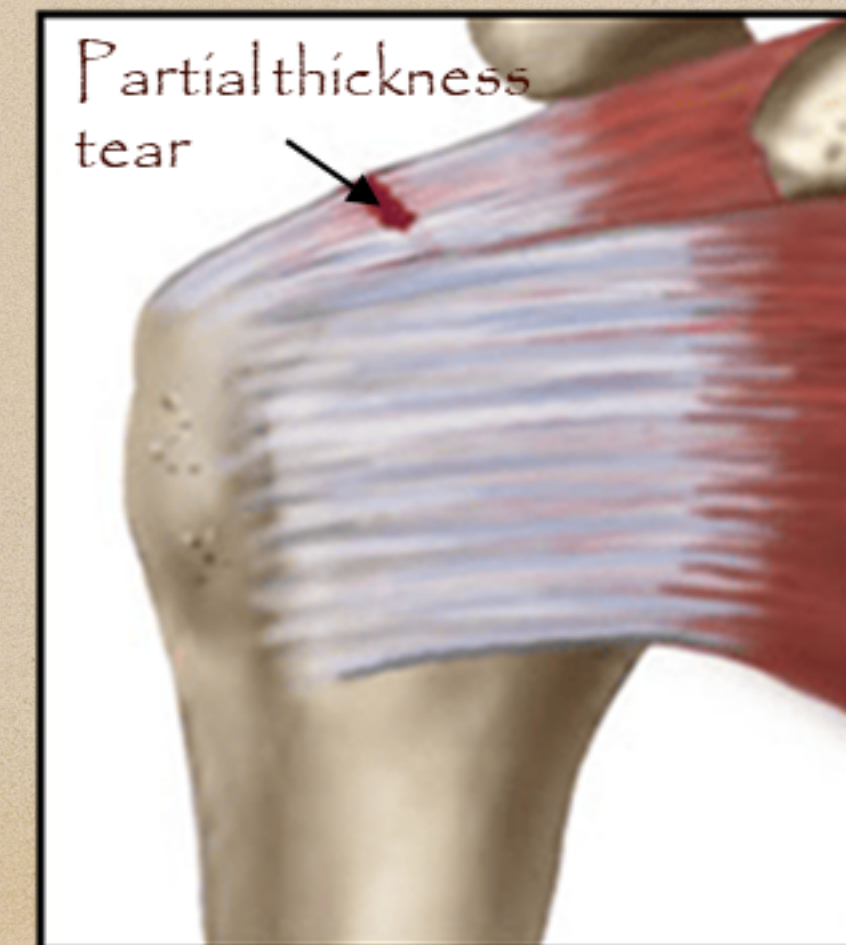
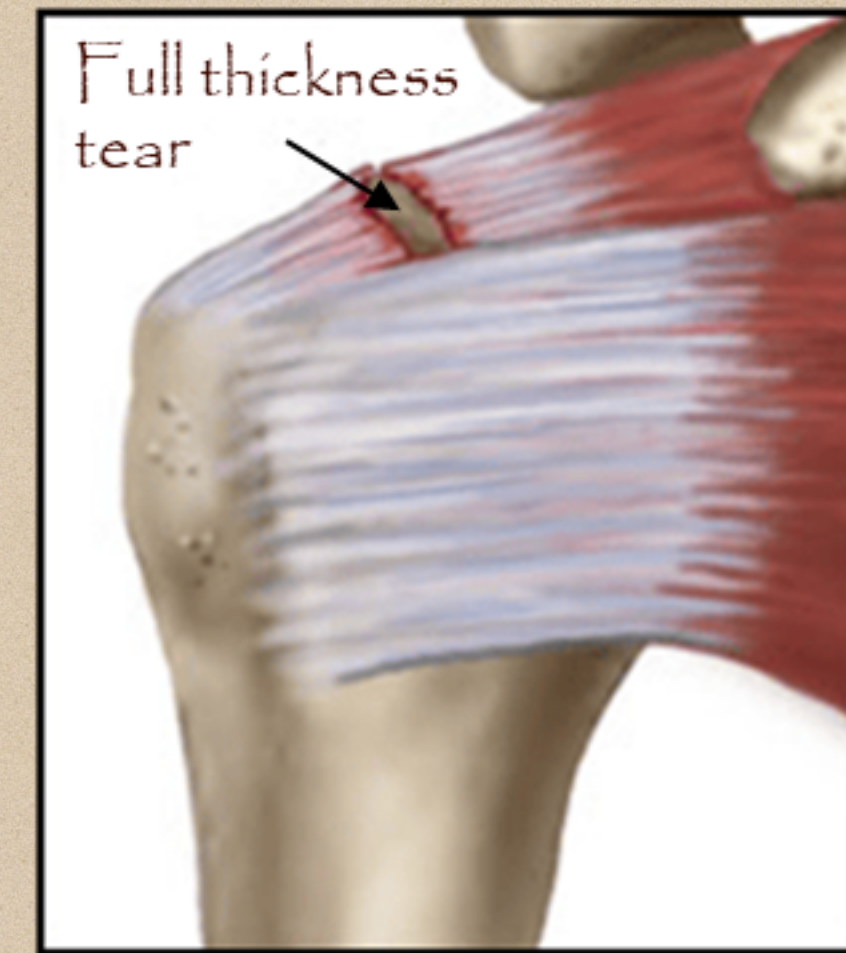
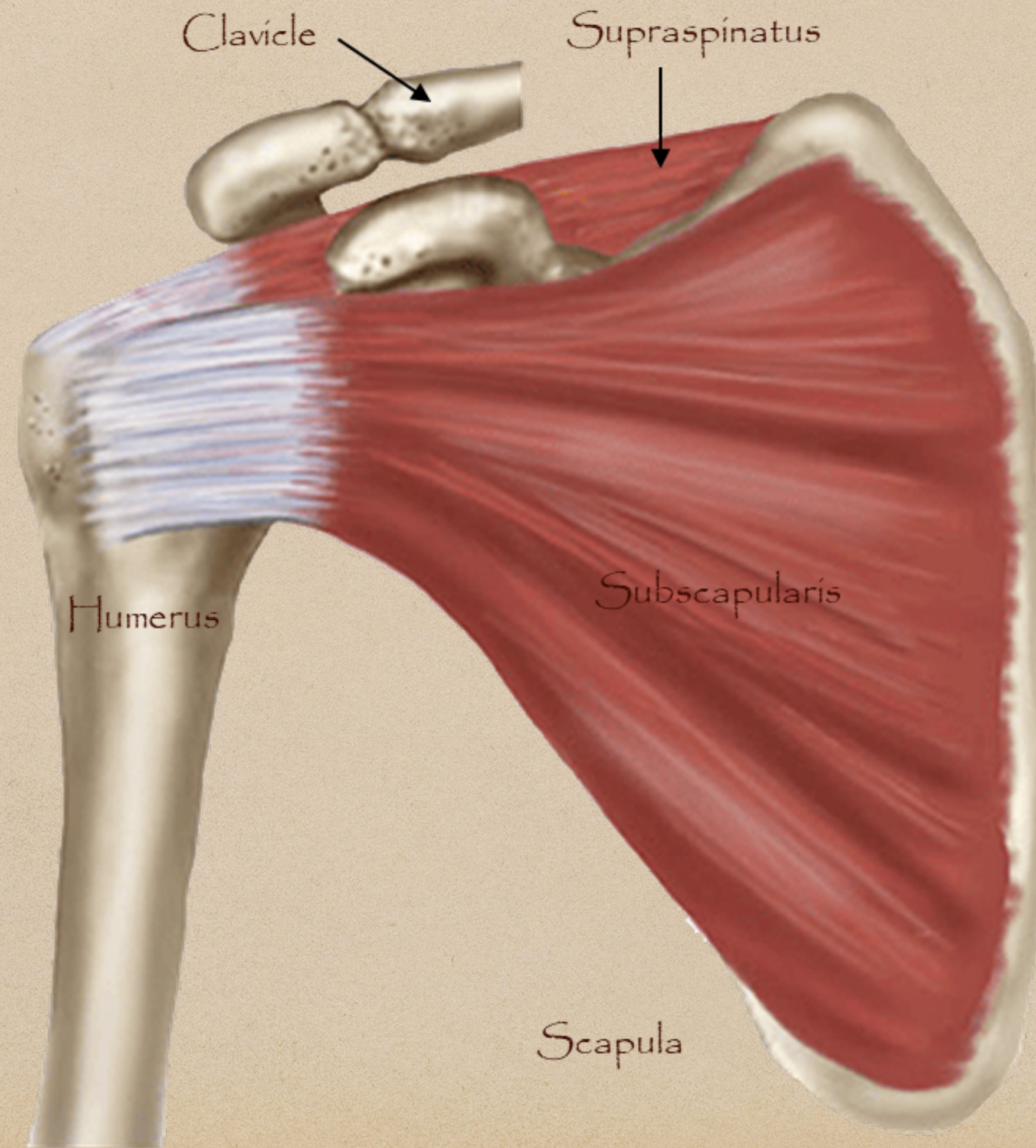
"Despite clinical improvement in patients who completed conservative treatment without recurrence, functional outcome scores and sport/recreation activity levels were better in the patients who underwent arthroscopic Bankart repair. Therefore, for recurrent anterior shoulder instability, even without subjective apprehension, surgical treatment is warranted over conservative treatment."

Improve your shoulder diagnostic skills with these [protocols](#) from ChiroUp.

Do WS, Kim JH, Lim JR, Yoon TH, Shin SH, Chun YM. High failure rate after conservative treatment for recurrent shoulder dislocation without subjective apprehension on physical examination. Knee Surgery, Sports Traumatology, Arthroscopy. 2023 Jan;31(1):178-84. [Link](#)



# Rotator cuff tears





04/19/2023

## Rotator Cuff Responds Better To Eccentric Exercise

Journal of the Korean Academy of Rehabilitation Medicine:

"[In a study with forty patients with rheumatoid arthritis and rotator cuff tendinopathy] Eccentric exercises were more effective than concentric exercises in improving shoulder function and pain intensity. However, neither of the two types of exercises was superior in improving tendon characteristics or disease activity."

Wahba MM, Selim M, Hegazy MM, Elgohary R, Abdelsalam MS. Eccentric Versus Concentric Exercises in Patients With Rheumatoid Arthritis and Rotator Cuff Tendinopathy: A Randomized Comparative Study. Journal of the Korean Academy of Rehabilitation Medicine. 2023 Feb 15. [Link](#)



# Shoulder testing:

- ◆ Apleys scratch test.
- ◆ Duga's test .
- ◆ Mazion test
- ◆ Apprehension test (ai luxation/subluxation).
- ◆ Adson's test (tos).
- ◆ Yergasons test (biceps tendinitis).





- ◆ Tendinitis (biceps, teres, pec. Minor, supraspinatus and the lateral head of the triceps are the most common)
- ◆ Bursitis, especially of the subacromial and subcoracoid bursa.
- ◆ Impingment syndromes.
- ◆ Slap lesions
- ◆ Frozen shoulder (adhesive capsulitis)





Chapter 8

### Supraspinatus

**Origin:** medial two-thirds of supraspinatus fossa of scapula.

**Insertion:** superior facet of greater tuberosity of humerus and capsule of shoulder joint.

**Action:** abducts arm with deltoid. Holds head of humerus in glenoid cavity.

**Test:** The seated or standing patient abducts his arm approximately 15°, with the antecubital fossa facing anteriorly. The examiner contacts the wrist and directs force toward adduction of the arm with slight extension. The deltoid is synergistic in this test, and must be correlated to make final determination of the supraspinatus muscle function.

**Nerve supply:** suprascapular, C5, 6.

**Neurolymphatic:**

**Anterior:** below coracoid process.

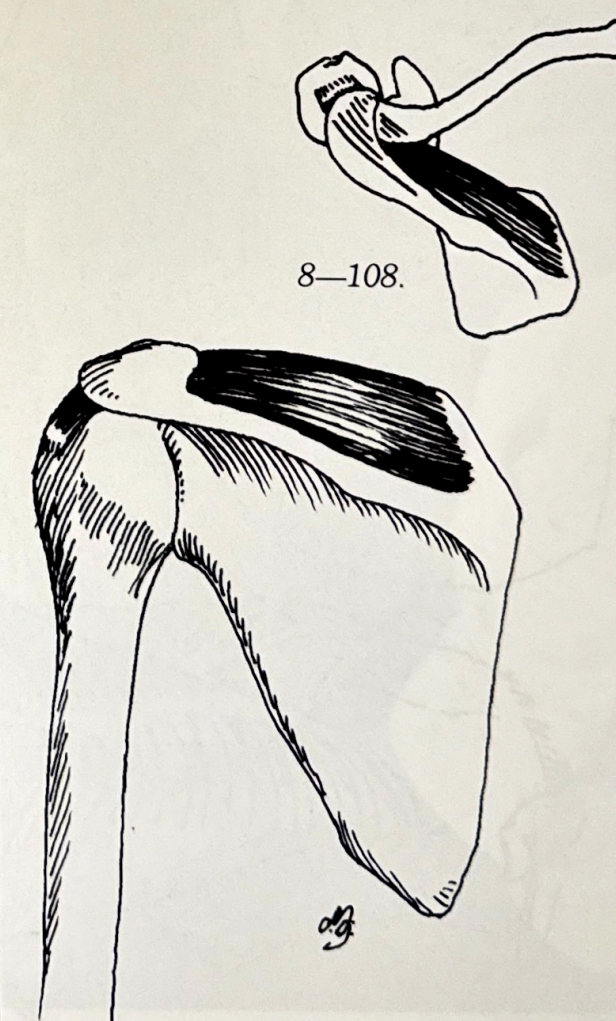
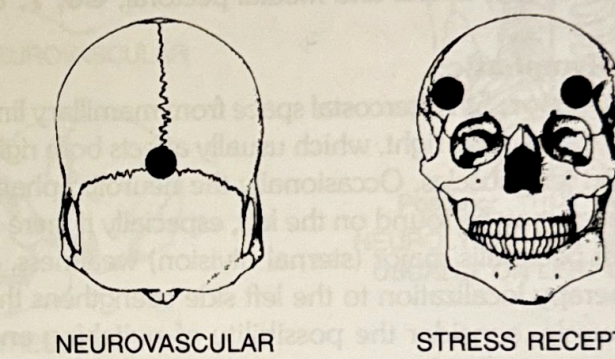
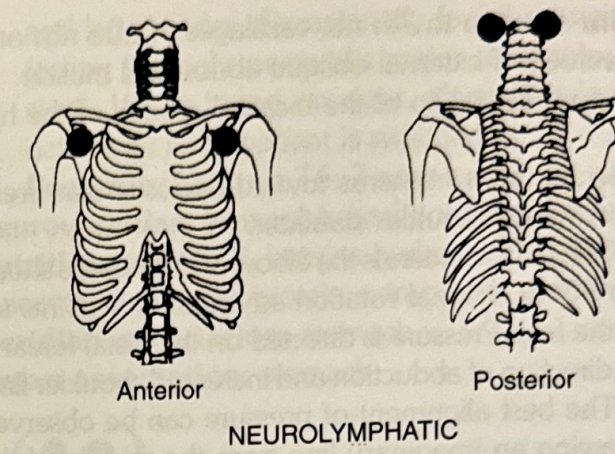
**Posterior:** posterior to transverse process of atlas.

**Neurovascular:** bregma.

**Nutrition:** RNA, brain concentrate or nucleoprotein extract.

**Meridian association:** conception vessel.

**Organ association:** brain.

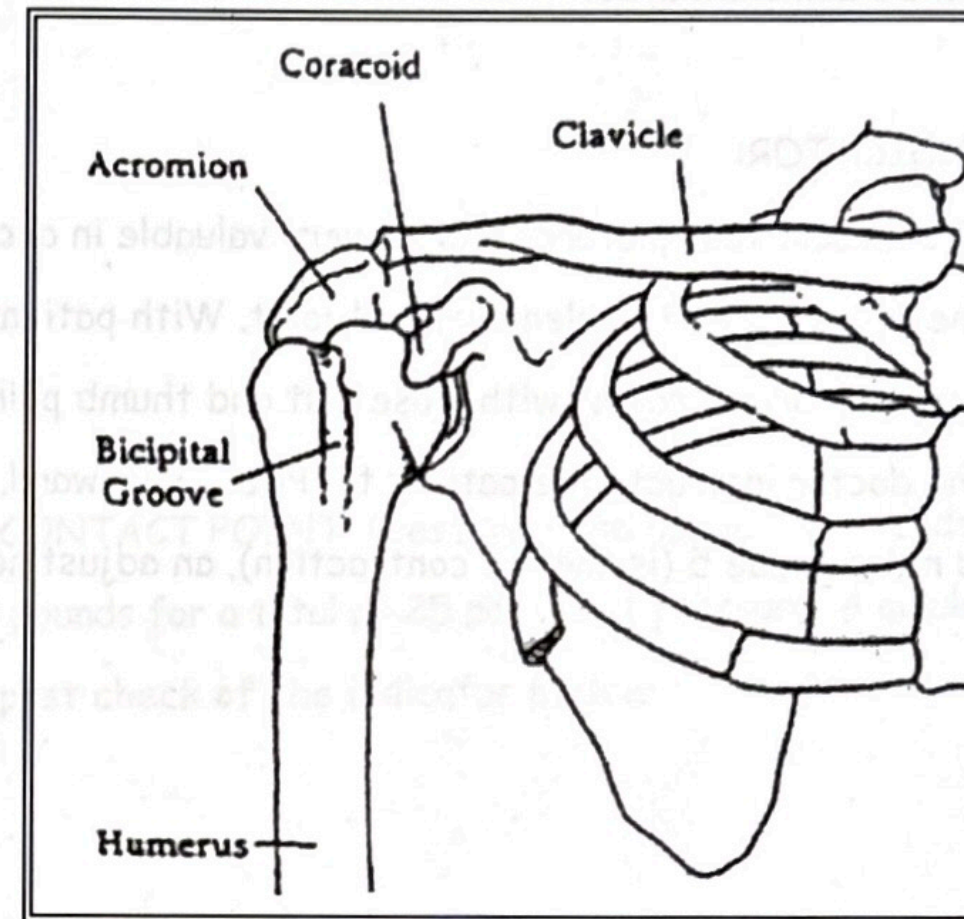




# THE SHOULDER

## The Shoulder Joints

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## SHOULDER SUBLUXATION/FIXATION PATTERN

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Costoscapular Articulation	Hypomobility



- ◆ General test with patient supine, seated, or standing. Arm straight overhead. Thumb pointing up, elbow straight. Doctor pushes I to S. Full lock is a grade 5.
- ◆ Anything less than grade 5 is almost always either an ipsilateral c5 or C6 subluxation, anterior Glenohumeral, or slipped bicipital tendon. Less often an a/c, s/c.
- ◆ Failure to strengthen due to pain, or pain after strengthening, is often inflammation in one or more bursae.



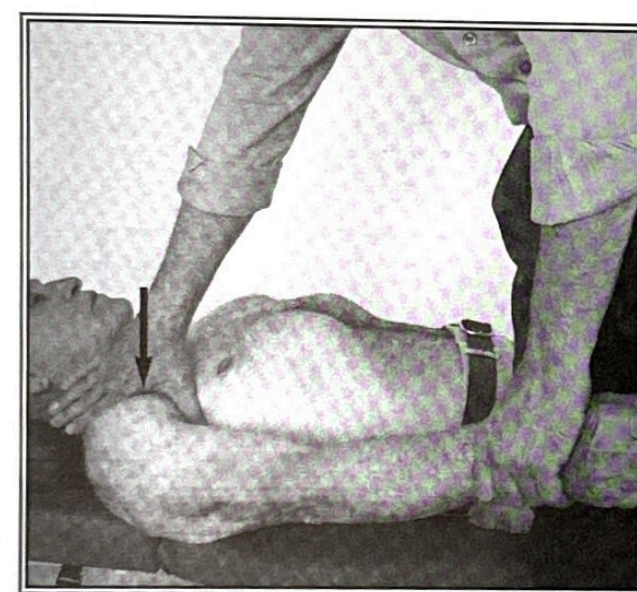
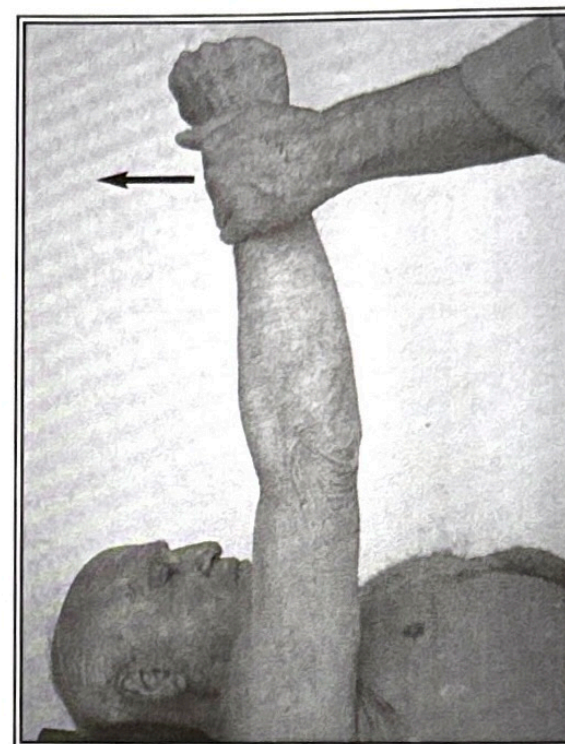


## Glenohumeral Joint — Anterior Subluxation/Fixation

The most common direction of subluxation/fixation of this joint is in an anterior direction. Some say as much as 90% of glenohumeral joints subluxate in this direction. Three easy methods of correction will be demonstrated.

### INDICATOR:

The muscle test pictured will be very valuable in accessing the integrity of the glenohumeral joint. With patient supine, and patient's arm straight with loose fist and thumb pointed superior, the doctor instructs the patient to "PULL" headward. If the response is not a grade 5 (isometric contraction), an adjustment is indicated.



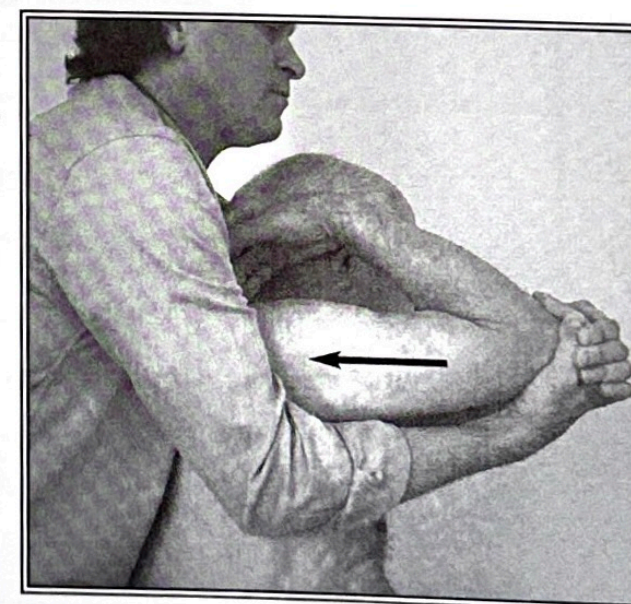
### ADJUSTMENTS:

#### 1. Thumbweb Contact Adjustment:

With patient supine, doctor's "inside" hand thumbweb contacts pectoral-deltoid groove of patient. The "outside" hand abducts arm of patient as shown. Thrust is via "inside" hand thumbweb in an anterior to posterior direction. Post check by using the same muscle test.

#### 2. Sitting Diversified Adjustment:

With patient seated and doctor standing behind patient, doctor contacts patient's elbow with both palms and brings joint to TENSION by flexing glenohumeral joint and applying anterior to posterior pressure. Doctor stabilizes posterior aspect of patient's shoulder with his/her sternum. A quick thrust in an anterior to posterior direction will achieve correction.

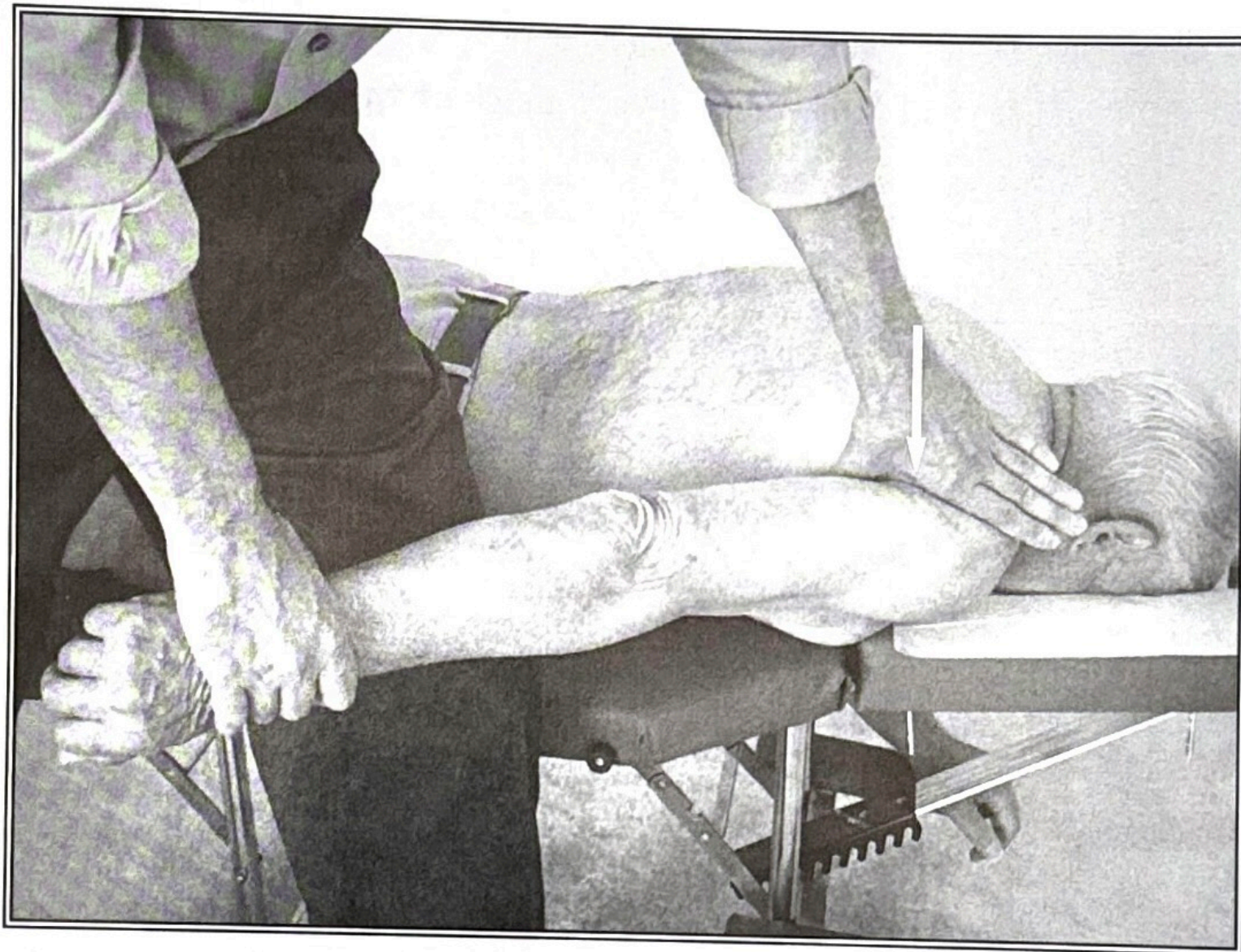




## POSTERIOR GLENOHUMERAL ADJUSTMENT

In a small percentage of cases, the humeral head will subluxate in a posterior direction. It is common to have point tenderness along the posterior glenohumeral joint since soft tissue is compressed. Also common is a case history showing recent trauma, such as a weightlifter using too much weight on the bench press or pulling the cord on a lawnmower.

The adjustment is performed with the patient prone and the thumbweb of doctor's inside hand contacting the posterior aspect of the axilla. Doctor's outside hand abducts patient's arm. THRUST is via the thumbweb in a quick posterior to anterior manner.

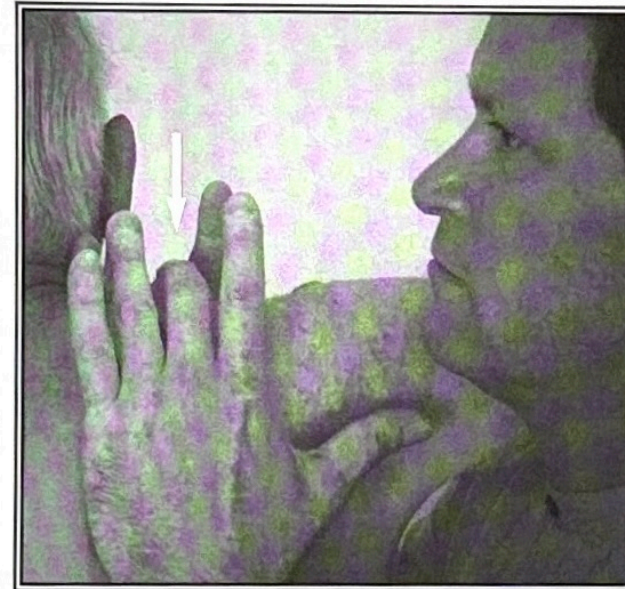




## ACROMIOCLAVICULAR JOINT:

### Distal Clavical: Superior Subluxation/Fixation

This is what is commonly referred to as a shoulder separation. The most common direction of subluxation/ fixation of this joint is for the distal clavicle to misalign in a superior direction giving way to a potential "HORIZON SIGN". It is quite typical for the horizon sign to persist after an adjustment.



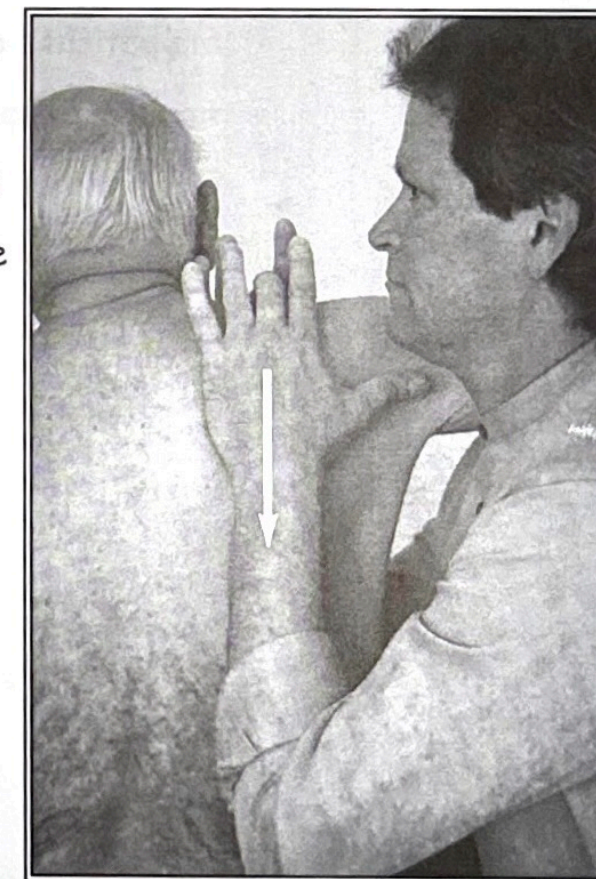
#### INDICATOR:

With doctor seated on side of affected shoulder, seated patient abducts arm and rests forearm on doctor's shoulder as pictured. Doctor overlaps chiropractic index fingers over distal clavicle of patient. With chiropractic index fingers only, the doctor presses in a superior to inferior direction.

#### ADJUSTMENT:

If motion is felt, an adjustment is indicated. THRUST is via the chiropractic index fingers in a quick (but not very forceful) pull in a superior to inferior direction. The doctor should take great care in getting his/her elbows directly inferior to the hands. If the thrust has a medial to lateral component, it is very unlikely that the clavicle will move.

It should also be mentioned that the thrust on this adjustment should be relatively gentle since the chiropractor has a huge mechanical advantage and can injure the patient with an overly forceful thrust.





## POSTERIOR GLENOHUMERAL ADJUSTMENT

### STERNOCLAVICULAR JOINT:

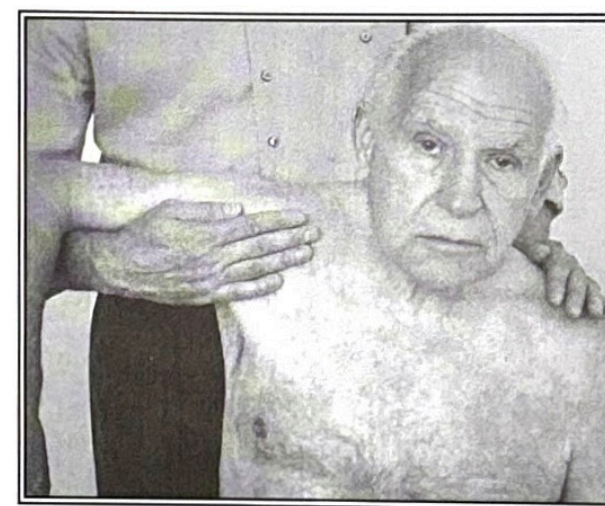
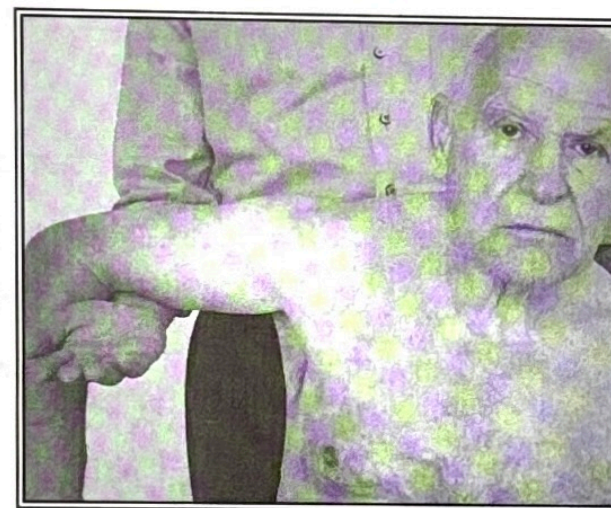
#### Anterior and Medial Subluxation/Fixation

Though this joint may only be mildly tender to digital pressure, it may be very involved in the symptomatology of the shoulder complex. It appears that the most common pattern of subluxation/fixation of this joint is in an anterior and medial direction. There can also be a superior or inferior component to this pattern.

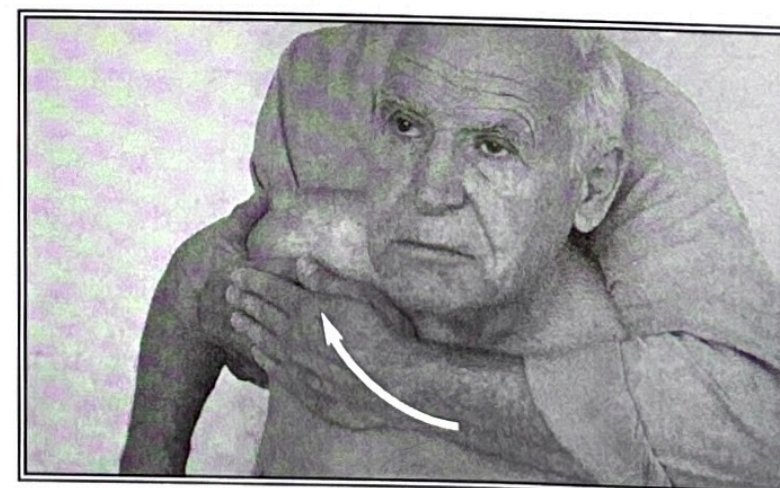
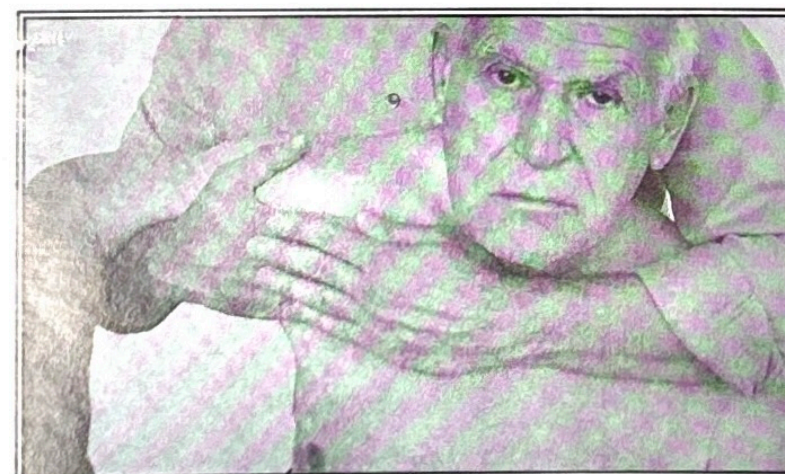
#### INDICATOR:

Standing behind patient, doctor palpates sternoclavicular joints bilaterally with fingerpads. An adjustment is indicated when palpable anteriority is present and/or mild swelling or tenderness is noted.

#### SETUP AND ADJUSTMENT:

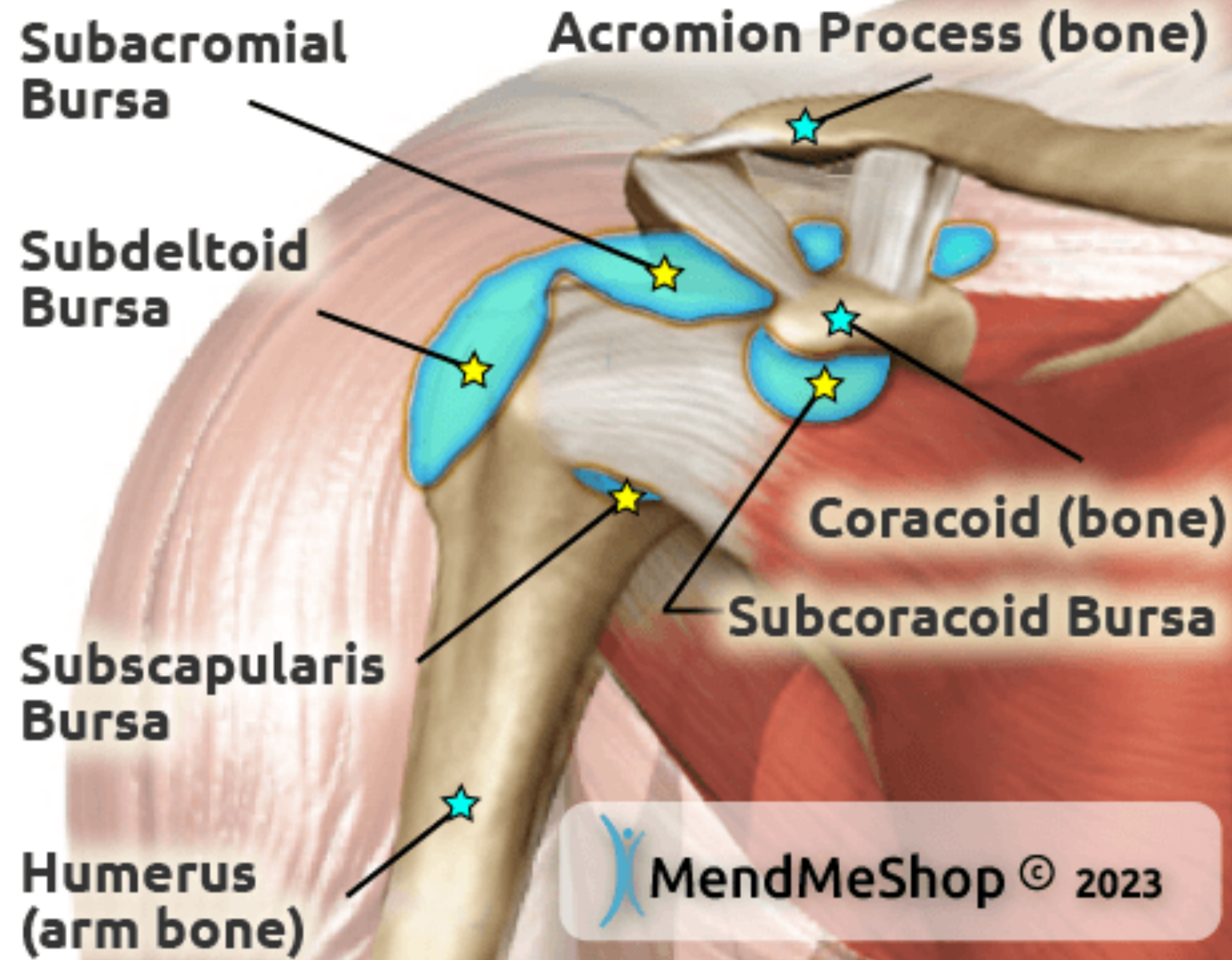


With patient seated and doctor standing behind patient, doctor rests patient's bicep on forearm and doctor's flat palm contacts patient's anterior deltoid area as shown. The pisiform area of the doctor's opposite hand contacts the medial aspect of the proximal clavicle. The adjustment is a "pull-push" gliding motion. This is not a dynamic thrust. The "outside" arm and hand of the doctor pulls in a lateral and posterior direction as the "inside" hand pisiform area pushes in a lateral and posterior direction. Both motions occur simultaneously in a gentle manner.





# Major Bursae of the Shoulder



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**VIEW: FRONT RIGHT SHOULDER**





# Hour 6

Rotator Cuff Balancing/AK Tests





Chapter 8

**Supraspinatus**

**Origin:** medial two-thirds of supraspinatus fossa of scapula.

**Insertion:** superior facet of greater tuberosity of humerus and capsule of shoulder joint.

**Action:** abducts arm with deltoid. Holds head of humerus in glenoid cavity.

**Test:** The seated or standing patient abducts his arm approximately 15°, with the antecubital fossa facing anteriorly. The examiner contacts the wrist and directs force toward adduction of the arm with slight extension. The deltoid is synergistic in this test, and must be correlated to make final determination of the supraspinatus muscle function.

**Nerve supply:** suprascapular, C5, 6.

**Neurolymphatic:**

**Anterior:** below coracoid process.

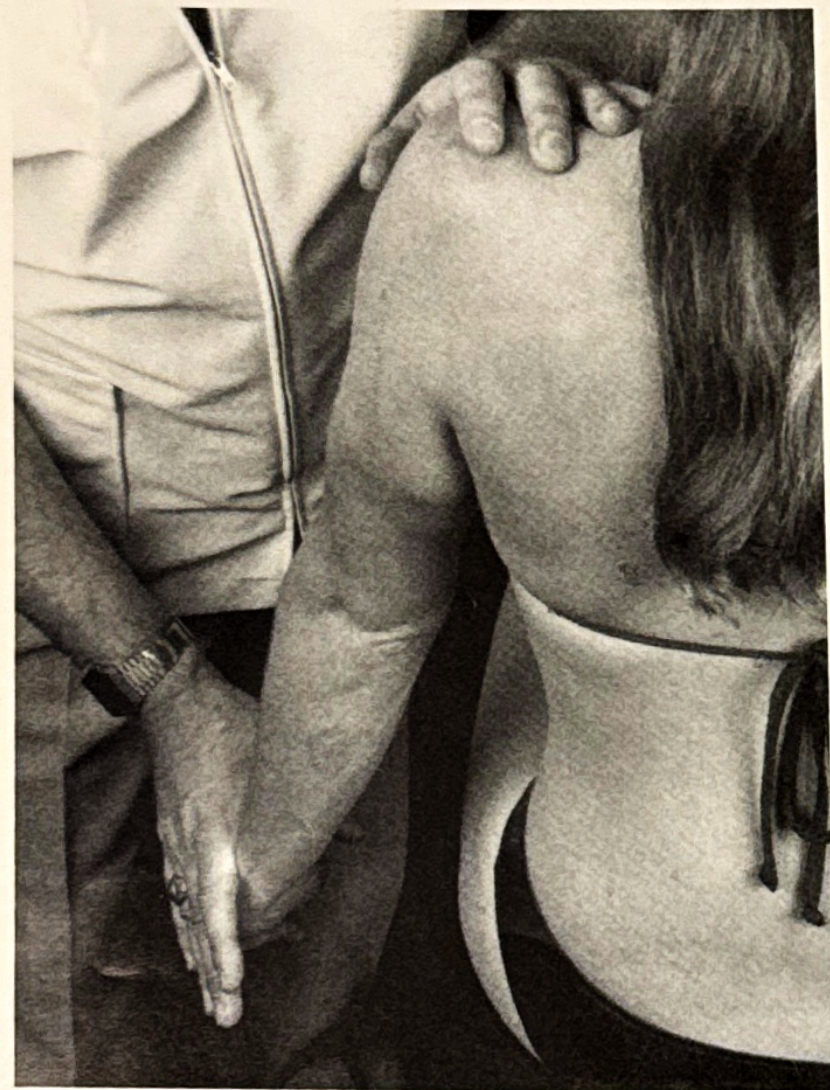
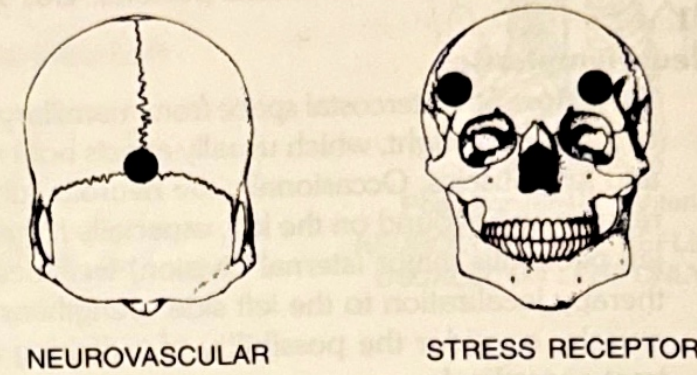
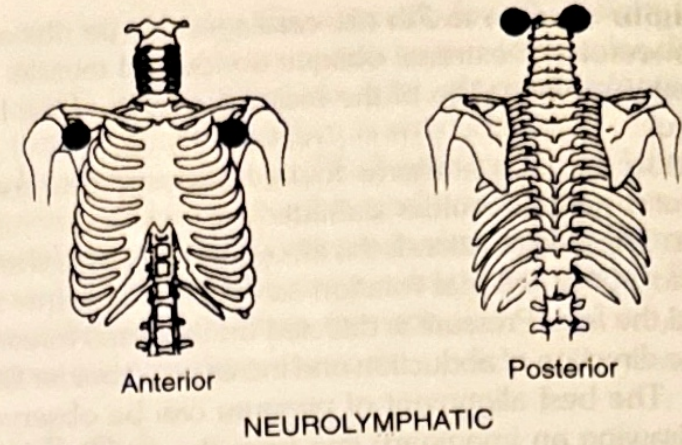
**Posterior:** posterior to transverse process of atlas.

**Neurovascular:** bregma.

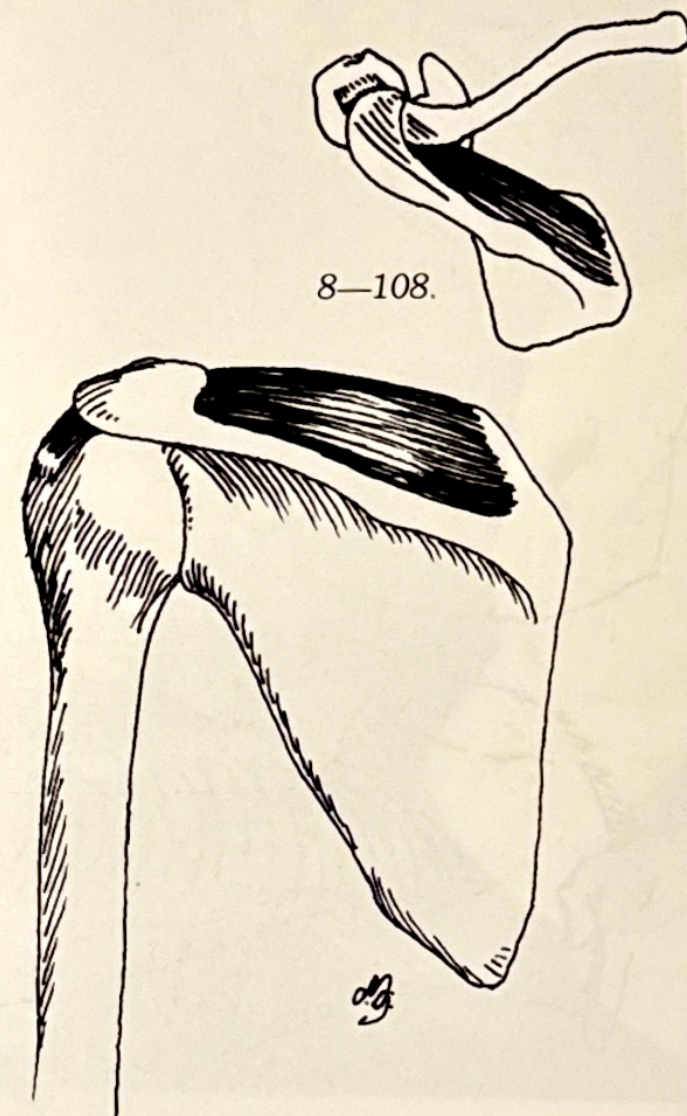
**Nutrition:** RNA, brain concentrate or nucleoprotein extract.

**Meridian association:** conception vessel.

**Organ association:** brain.



8-107.



8-109.



**Latissimus Dorsi**

**Origin:** a broad aponeurosis by which it originates from the lower six thoracic vertebrae, spinous processes, lumbar spinous processes, posterior crest of the ilium, lower three or four ribs, and an attachment to the tip of the scapula.

**Insertion:** twists upon itself to insert into the floor of the intertubercular groove of the humerus.

**Action:** extends, adducts, and rotates the humerus internally; draws the inferior angle of the scapula inferiorly and medially.

**Test:** The standing or seated patient holds his arm in adduction, with internal rotation, so the antecubital fossa faces medially. The examiner directs pressure to the patient's wrist in a direction to abduct and slightly flex the shoulder. Care should be taken that the pressure against the wrist does not cause pain to the patient. The examiner must avoid touching the meridian pulse points of the wrist, which are located along the radial artery, accidentally causing therapy localization.

**Nerve supply:** thoracodorsal from brachial plexus, C6, 7, 8.

**Neurolymphatic:**

**Anterior:** 7th intercostal space on left at rib cartilage junction.

**Posterior:** between T7, 8 at lamina on left.

**(Note:** Generally both latissimus dorsi muscles will be affected by the left neurolymphatic reflexes. Occasionally the neurolymphatic reflex may be on the

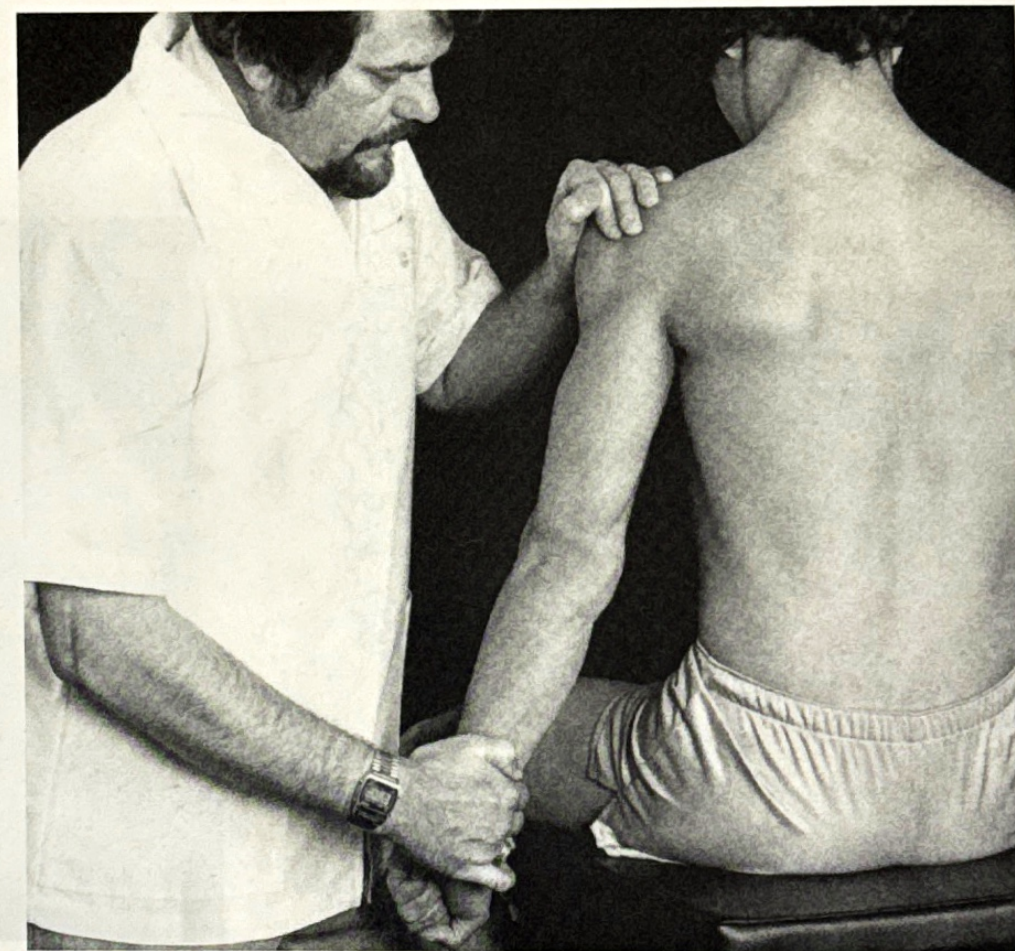
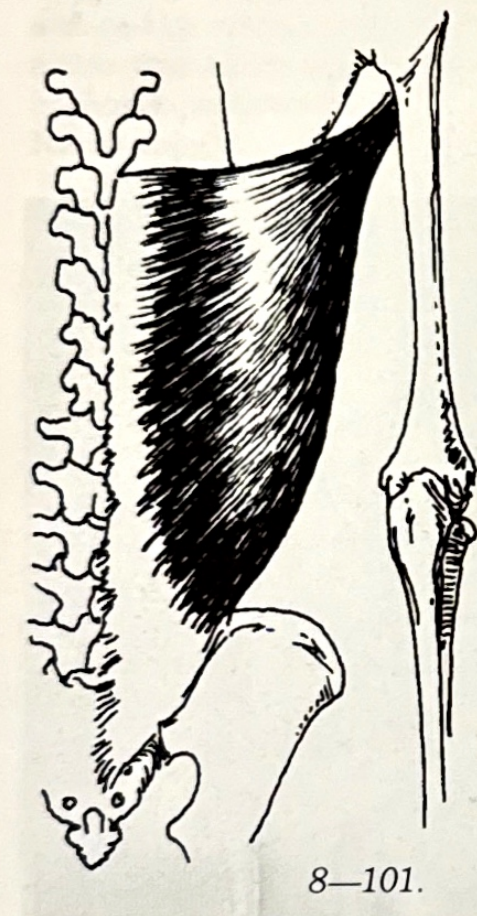
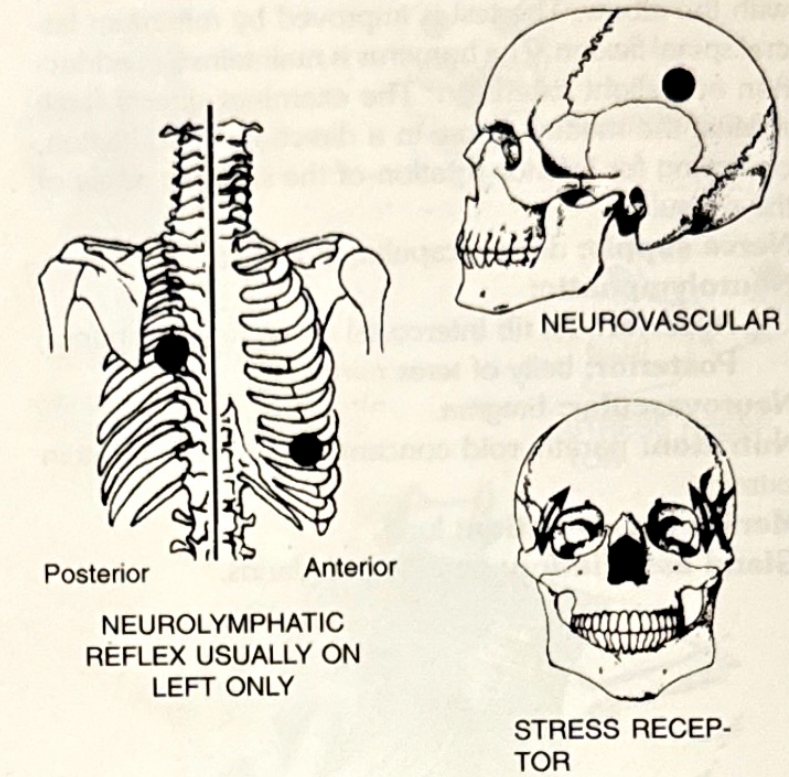
right, influencing the right muscle; if so, evaluate the patient for switching, which may or may not be present.)

**Neurovascular:** superior to temporal bone on a line slightly posterior to the external auditory meatus.

**Nutrition:** vitamins A, F (unsaturated fatty acids) and betaine; pancreas concentrate or nucleoprotein extract.

**Meridian association:** spleen.

**Gland association:** pancreas.



8-102. Patient's elbow must remain in extension during test.





### Deltoid — Middle Division

**Origin:** upper surface of acromion process.

**Insertion:** deltoid tuberosity of humerus.

**Action:** abduction of the humerus.

**Test:** The seated or standing patient flexes the elbow and abducts the shoulder to 90°. The horizontal forearm indicates neutral humerus rotation. Pressure is applied against the distal end of the humerus in straight adduction.

**Nerve supply:** axillary, C5, 6.

**Neurolymphatic:**

**Anterior:** 3rd intercostal space near sternum.

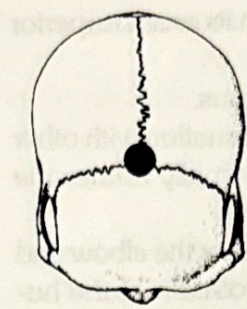
**Posterior:** between T3, 4 near laminae.

**Neurovascular:** bregma.

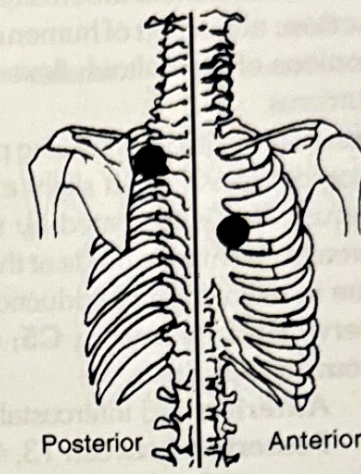
**Nutrition:** lung concentrate or nucleoprotein extract, vitamin C, RNA.

**Meridian association:** lung.

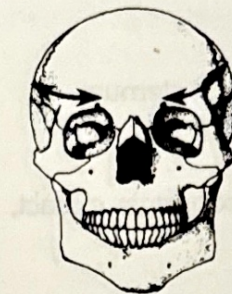
**Organ association:** lung.



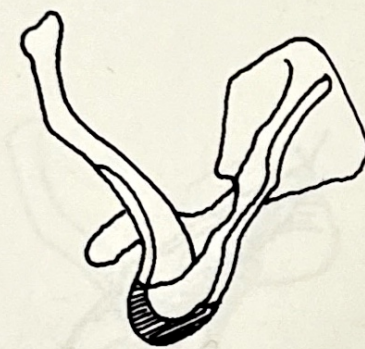
NEUROVASCULAR



NEUROLYMPHATIC  
BILATERAL



STRESS RECEPTOR



8-110.



8-111. Pressure is directed toward straight adduction.





Chapter 8

**Deltoid — Anterior Division**

**Origin:** lateral one-third of clavicle on its anterosuperior border.

**Insertion:** deltoid tuberosity of humerus.

**Action:** abduction of humerus in combination with other portions of the deltoid; flexes and internally rotates the humerus.

**Test:** The seated or standing patient flexes the elbow and shoulder to 90°, with slight external rotation of the humerus. This is indicated by the elevation of the distal forearm. Contact is made at the distal humerus with pressure in a direction of adduction and slight extension.

**Nerve supply:** axillary, C5, 6.

**Neurolymphatic:**

**Anterior:** 3rd intercostal space near sternum.

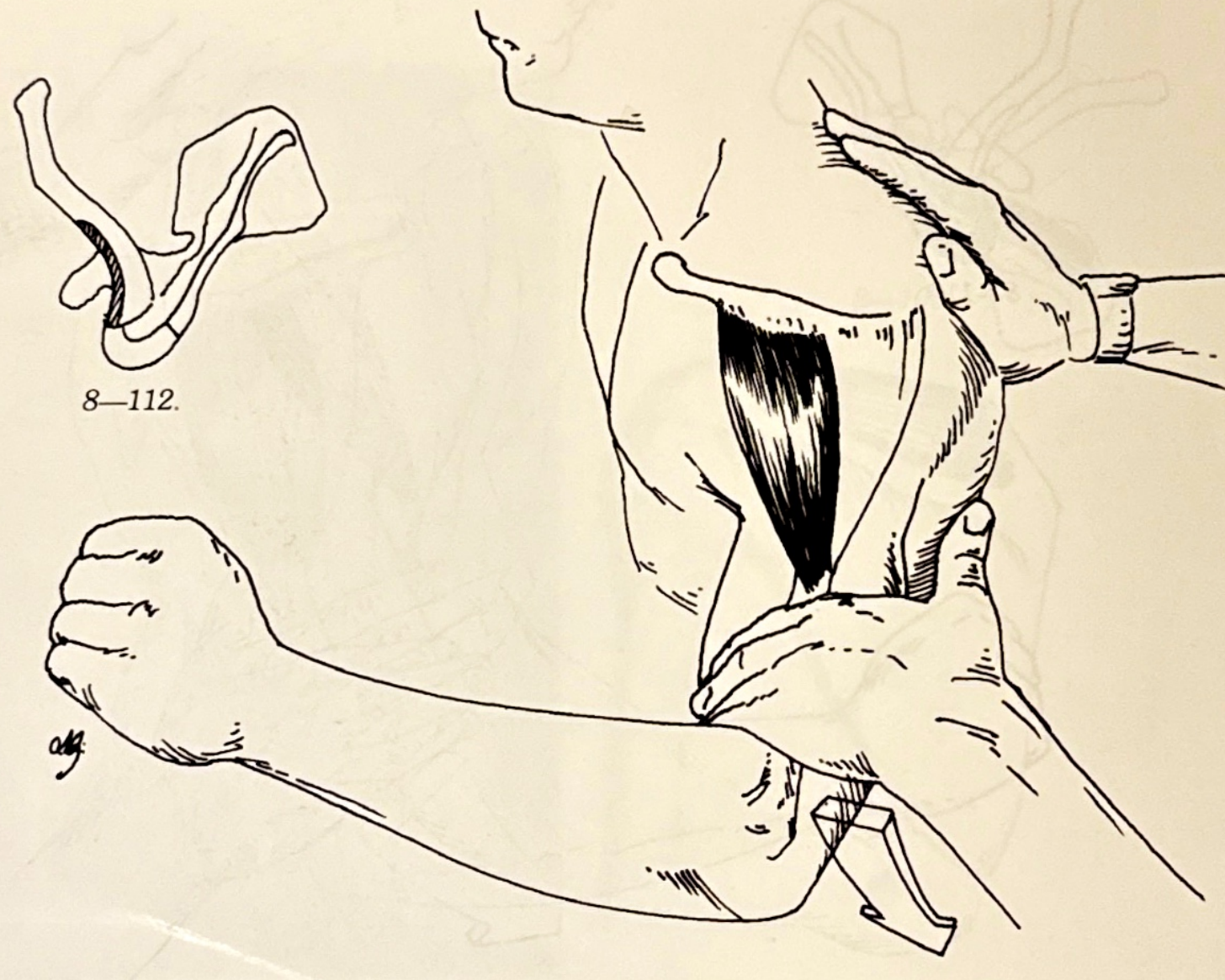
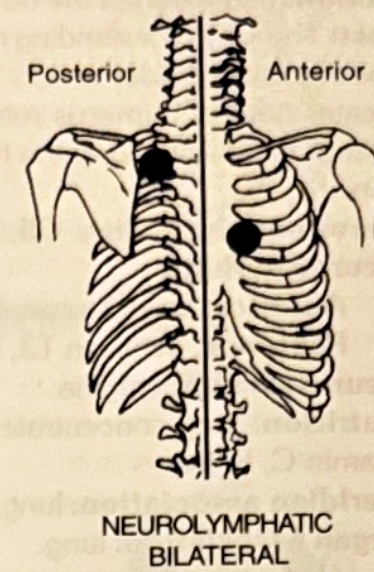
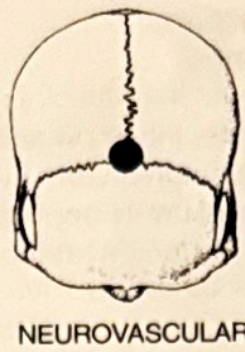
**Posterior:** between T3, 4 near laminae.

**Neurovascular:** bregma.

**Nutrition:** lung concentrate or nucleoprotein extract, vitamin C, RNA.

**Meridian association:** lung.

**Organ association:** lung.





Chapter 8

**Deltoid — Anterior Division**

**Origin:** lateral one-third of clavicle on its anterosuperior border.

**Insertion:** deltoid tuberosity of humerus.

**Action:** abduction of humerus in combination with other portions of the deltoid; flexes and internally rotates the humerus.

**Test:** The seated or standing patient flexes the elbow and shoulder to 90°, with slight external rotation of the humerus. This is indicated by the elevation of the distal forearm. Contact is made at the distal humerus with pressure in a direction of adduction and slight extension.

**Nerve supply:** axillary, C5, 6.

**Neurolymphatic:**

**Anterior:** 3rd intercostal space near sternum.

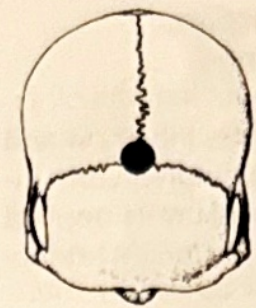
**Posterior:** between T3, 4 near laminae.

**Neurovascular:** bregma.

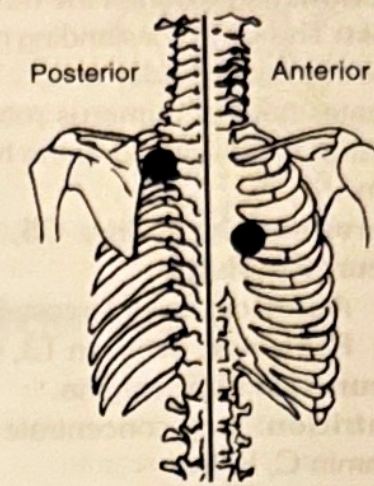
**Nutrition:** lung concentrate or nucleoprotein extract, vitamin C, RNA.

**Meridian association:** lung.

**Organ association:** lung.



NEUROVASCULAR



NEUROLYMPHATIC  
BILATERAL



STRESS RECEPTOR



8-112.

8-113. Pressure is directed toward adduction and slight extension.





### Deltoid — Posterior Division

**Origin:** inferior lip of spine of scapula.

**Insertion:** deltoid tuberosity of humerus.

**Action:** abduction of humerus when working with other sections of deltoid. When working by itself, the action is abduction, slight extension, and lateral rotation.

**Test:** The seated or standing patient flexes the elbow and humerus to 90°, with slight internal rotation. This is observed by the inferior position of the distal forearm. Pressure is directed against the distal end of the humerus in a direction of adduction and slight flexion.

**Nerve supply:** axillary, C5, 6.

**Neurolymphatic:**

**Anterior:** 3rd intercostal space near sternum.

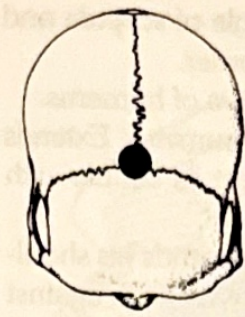
**Posterior:** between T3, 4 near laminae.

**Neurovascular:** bregma.

**Nutrition:** lung concentrate or nucleoprotein extract, vitamin C, RNA.

**Meridian association:** lung.

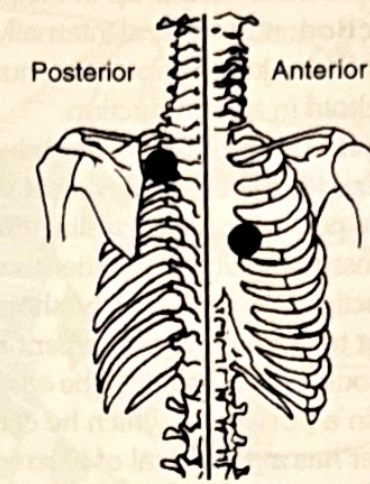
**Organ association:** lung.



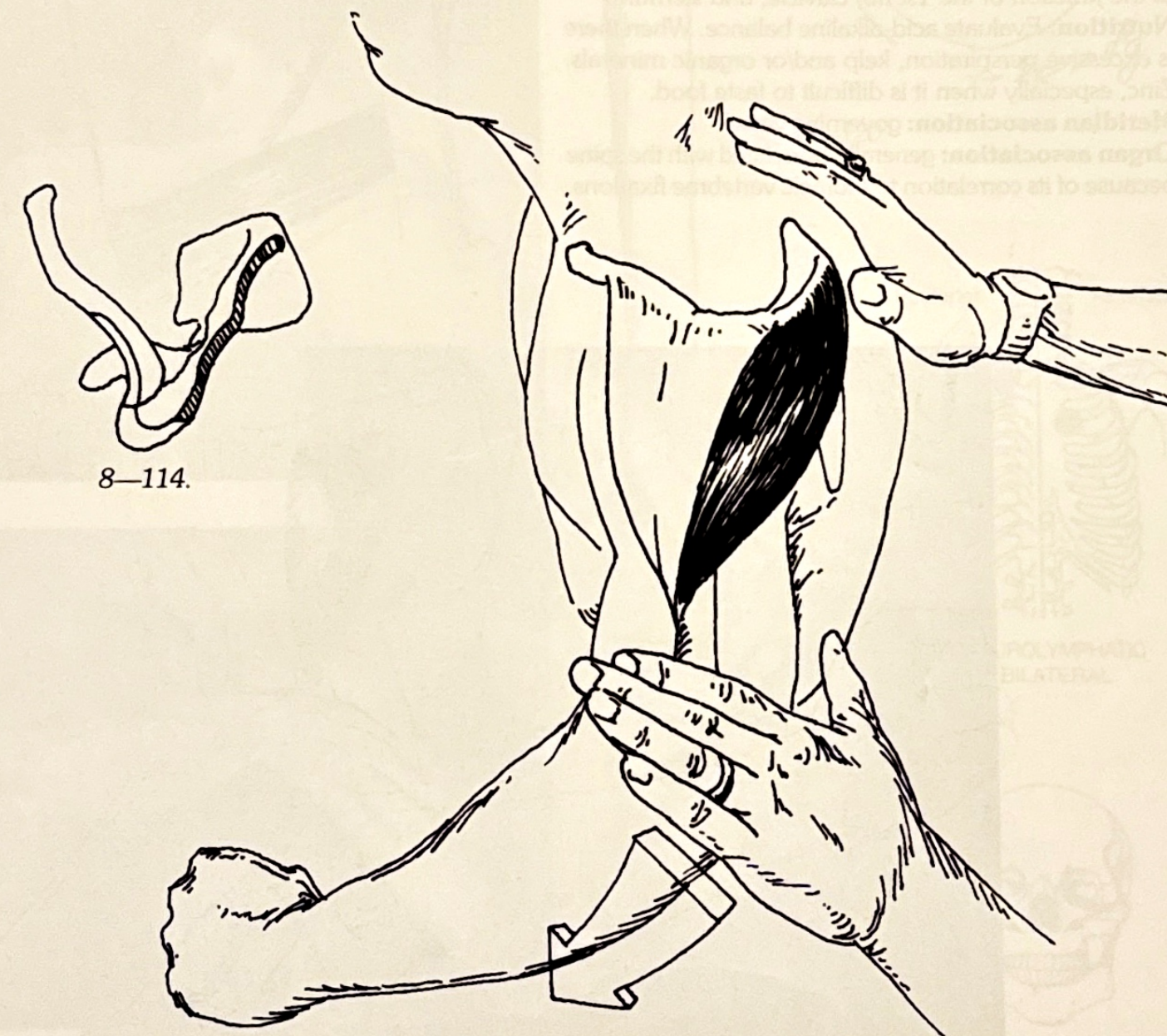
NEUROVASCULAR



STRESS RECEPTOR



NEUROLYMPHATIC  
BILATERAL



8-114.

8-115. Pressure is directed toward adduction and slight flexion.





### Subscapularis

**Origin:** subscapular fossa.

**Insertion:** lesser tuberosity of humerus and capsule of shoulder joint.

**Action:** internally rotates humerus. Draws head of humerus forward and down when arm is raised, acting as part of the force couple of shoulder abduction.

**Test:** The seated or prone patient abducts the shoulder to 90°, with the elbow flexed to 90°. The humerus is placed in slight internal rotation. The examiner directs pressure against the patient's wrist to externally rotate the humerus, using the forearm for leverage.

**Nerve supply:** upper and lower subscapular, C5, 6.

**Neurolymphatic:**

**Anterior:** 2nd intercostal space near sternum.

**Posterior:** T2, 3 between transverse processes.

**Neurovascular:** bregma.

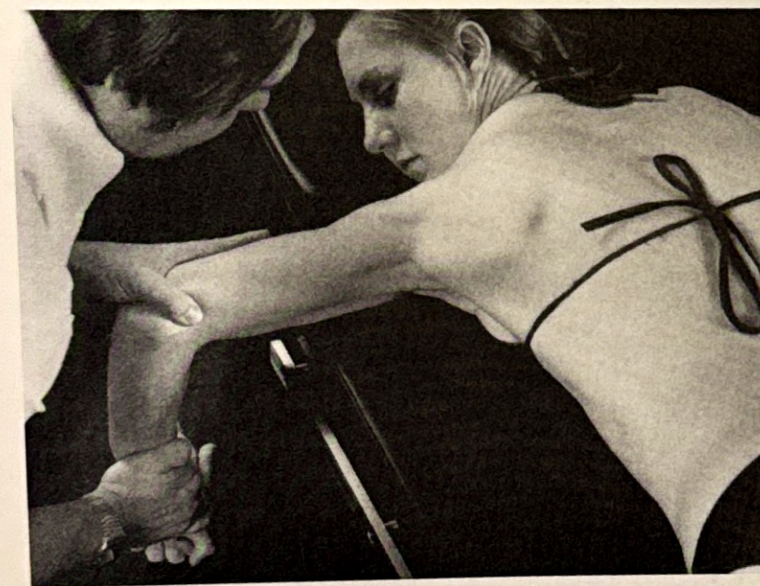
**Nutrition:** heart concentrate or nucleoprotein extract, vitamin E, B complex, C.

**Meridian association:** heart.

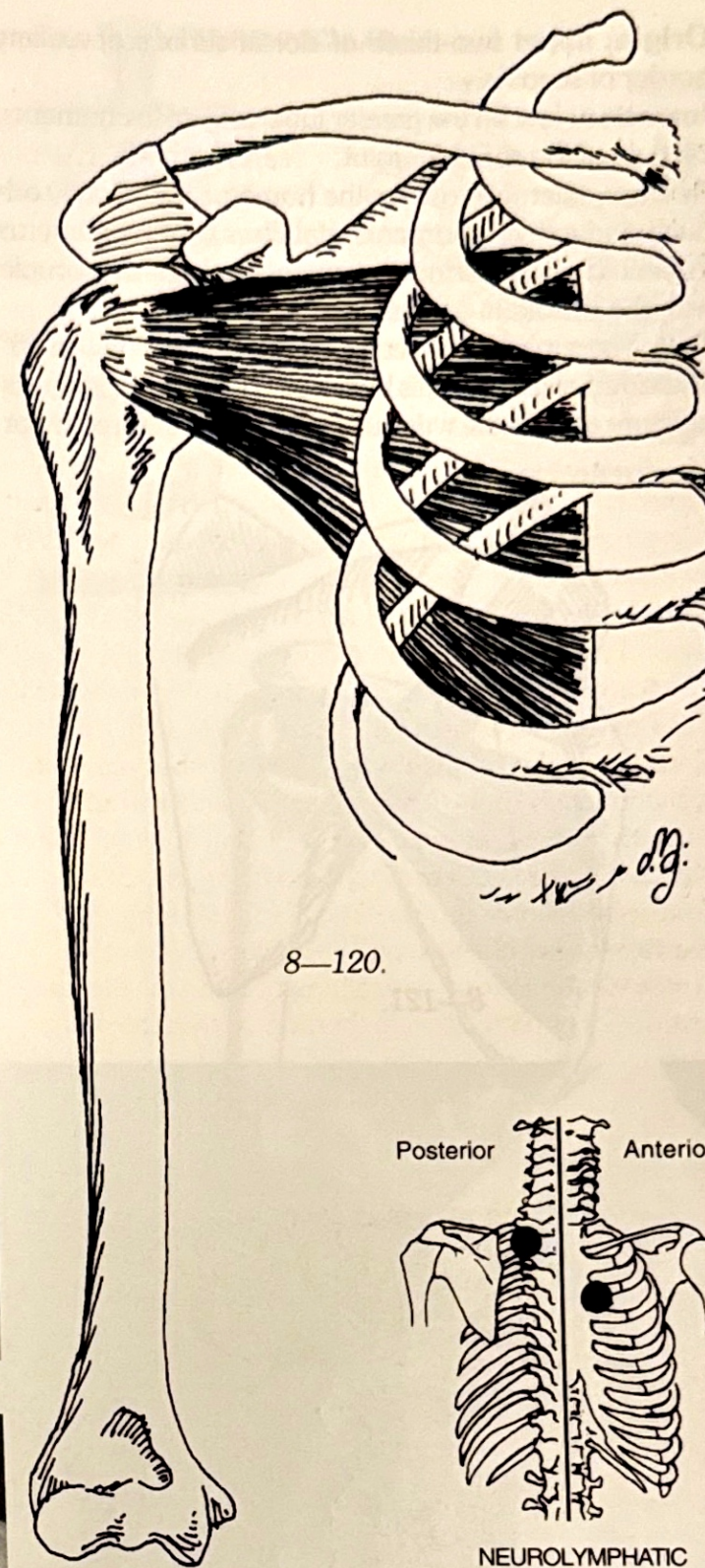
**Organ association:** heart.



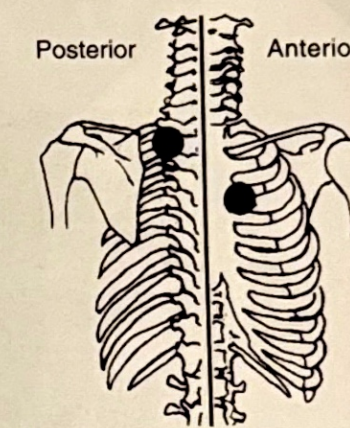
8-118.



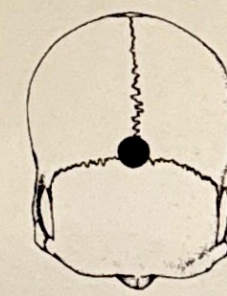
8-119. Failure of scapula to be stabilized by rhomboids and middle trapezius.



8-120.



NEUROLYMPHATIC  
BILATERAL



NEUROVASCULAR



STRESS RECEPTOR





Chapter 8

**Teres Minor**

**Origin:** upper two-thirds of dorsal surface of axillary border of scapula.

**Insertion:** low on the greater tuberosity of the humerus; capsule of the shoulder joint.

**Action:** externally rotates the humerus and slightly adducts and extends humerus; stabilizes head of humerus in glenoid cavity during movement, and acts as a couple with the deltoid in arm abduction.

**Test:** The supine or seated patient flexes his elbow to 90° and externally rotates his humerus. The examiner directs pressure against the wrist, using the patient's forearm for

leverage to internally rotate the humerus.

**Nerve supply:** axillary, C4, 5, 6.

**Neurolymphatic:**

**Anterior:** 2nd intercostal space near sternum.

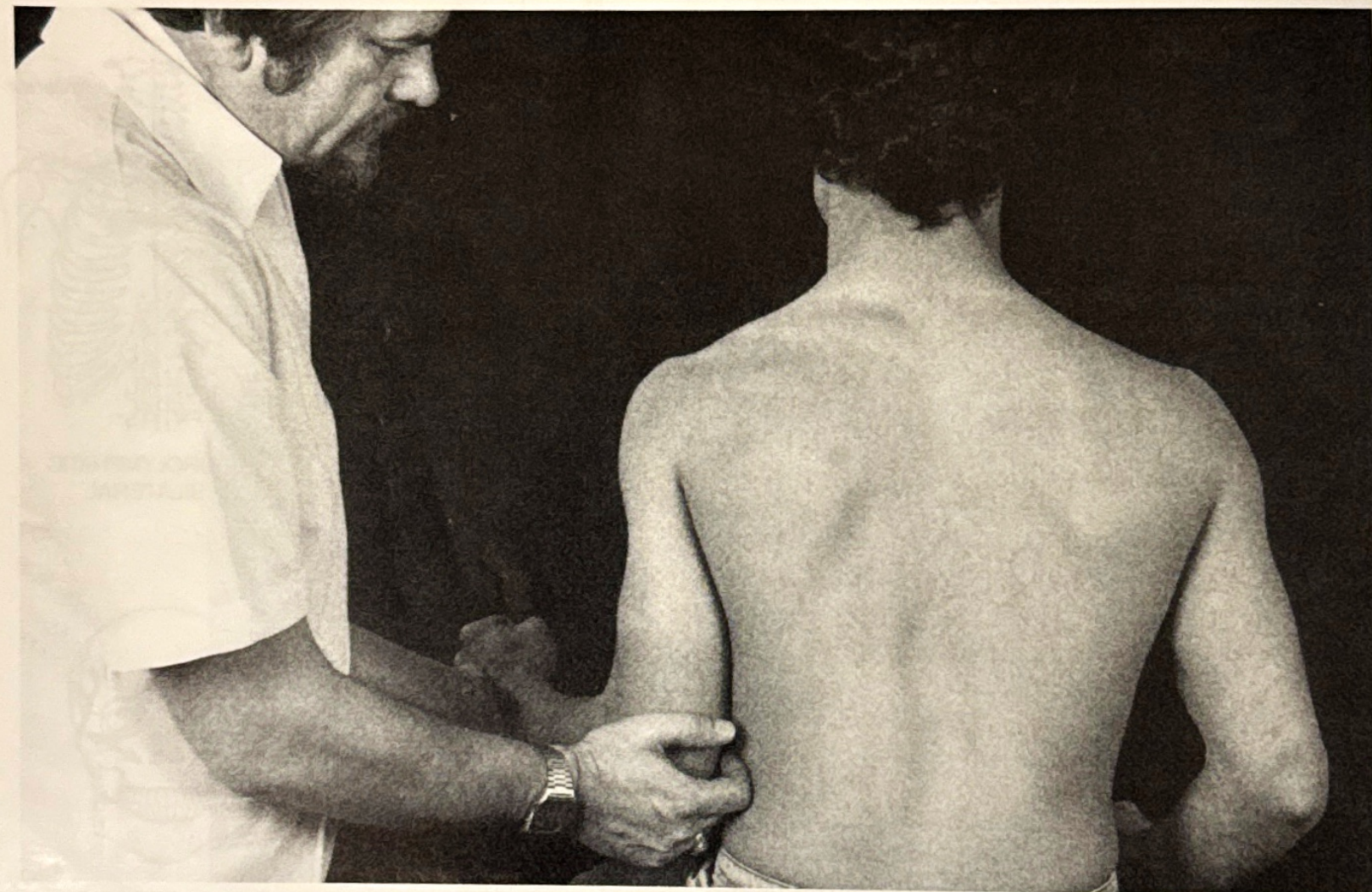
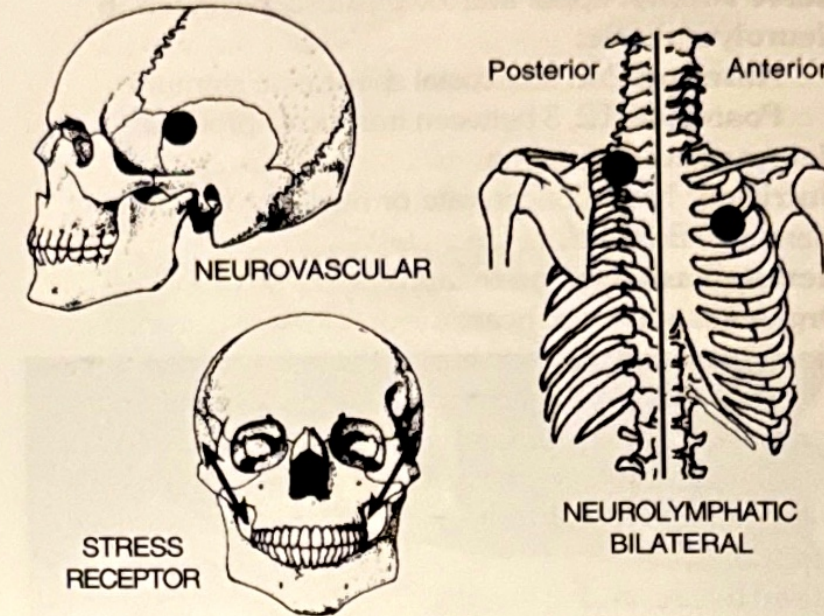
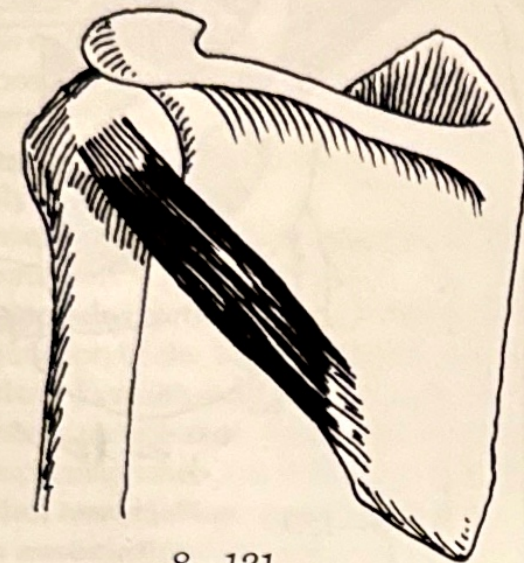
**Posterior:** T3 laminae.

**Neurovascular:** 1" below the pterion and at the junction of the 1st rib, clavicle, and sternum.

**Nutrition:** thyroid concentrate or nucleoprotein extract, organic iodine.

**Meridian association:** triple heater.

**Gland association:** thyroid.









## Rhomboids — Major and Minor

### Rhomboid Major

**Origin:** spinous processes of 2nd-5th thoracic vertebrae.  
**Insertion:** medial border of scapula from spine to inferior angle.  
**Action:** adducts scapula and slightly elevates medial border. The lower fibers of the rhomboid major aid in rotating the glenoid cavity inferiorly. In abduction of the arm, the rhomboids relax to allow scapular abduction, and then contract to stabilize the scapula during scapular rotation with continued abduction.

### Rhomboid Minor

**Origin:** ligamentum nuchae, spinous processes of C7 and T1.  
**Insertion:** medial border of scapula at root of spine of scapula.  
**Action:** adducts and slightly elevates scapula.  
**Test (both):** With the patient seated with his elbow flexed to 90° and the upper arm held in adduction, the examiner contacts the medial elbow and directs force to abduct it from the body. Observation is made for abduction of the scapula from the spine, which indicates rhomboid weakness.

**Alternate testing methods:** The test can be done with the patient prone or standing in a manner similar to the seated test. A test designed by Goodheart<sup>17</sup> is said to avoid recruitment of the opposite rhomboids. The supine patient rolls onto the scapula on the side opposite the rhomboids being tested. This position seems to immobilize the opposite rhomboids and scapula. The test is done in a manner similar to the sitting test. The examiner must watch carefully for scapular abduction and inferior displacement.

### Nerve supply:

**Rhomboid major:** dorsal scapular, C4, 5.  
**Rhomboid minor:** dorsal scapular, C4, 5.

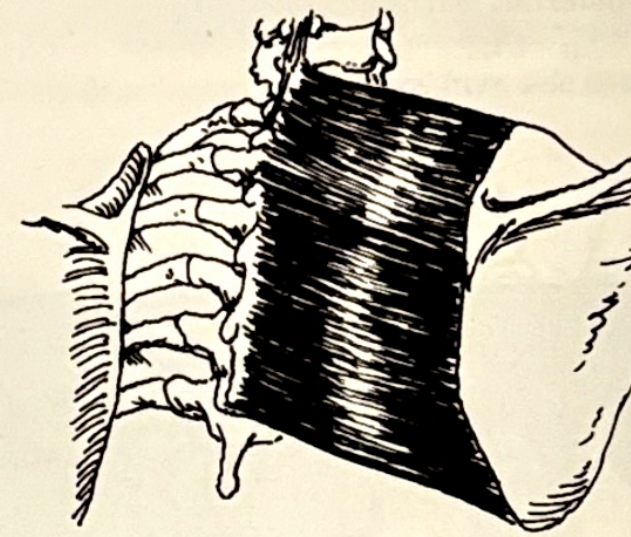
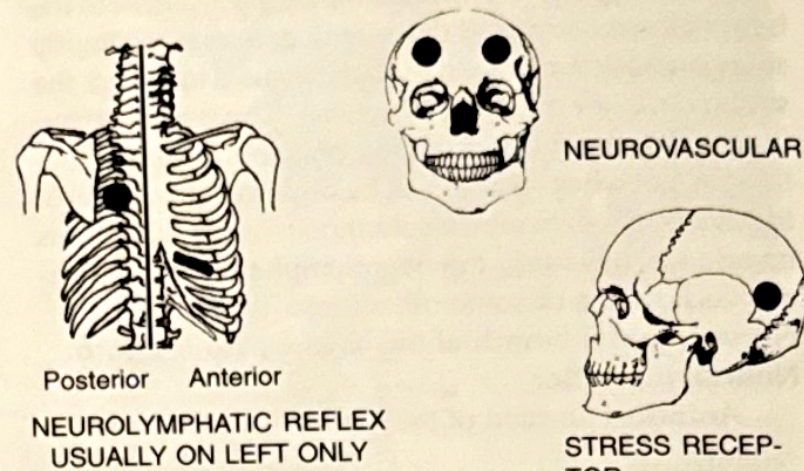


8-96. Rhomboid test starting position.



8-98. Observe for scapular abduction.

**Neurolymphatic:**  
**Anterior:** 6th intercostal space from mamillary line to sternum on left.  
**Posterior:** between T6, 7 by lamina on left.  
**Neurovascular:** bilateral frontal bone eminences.  
**Nutrition:** vitamin A.  
**Meridian association:** liver.  
**Organ association:** liver.



8-97. Rhomboid major and minor.



# Hour 7

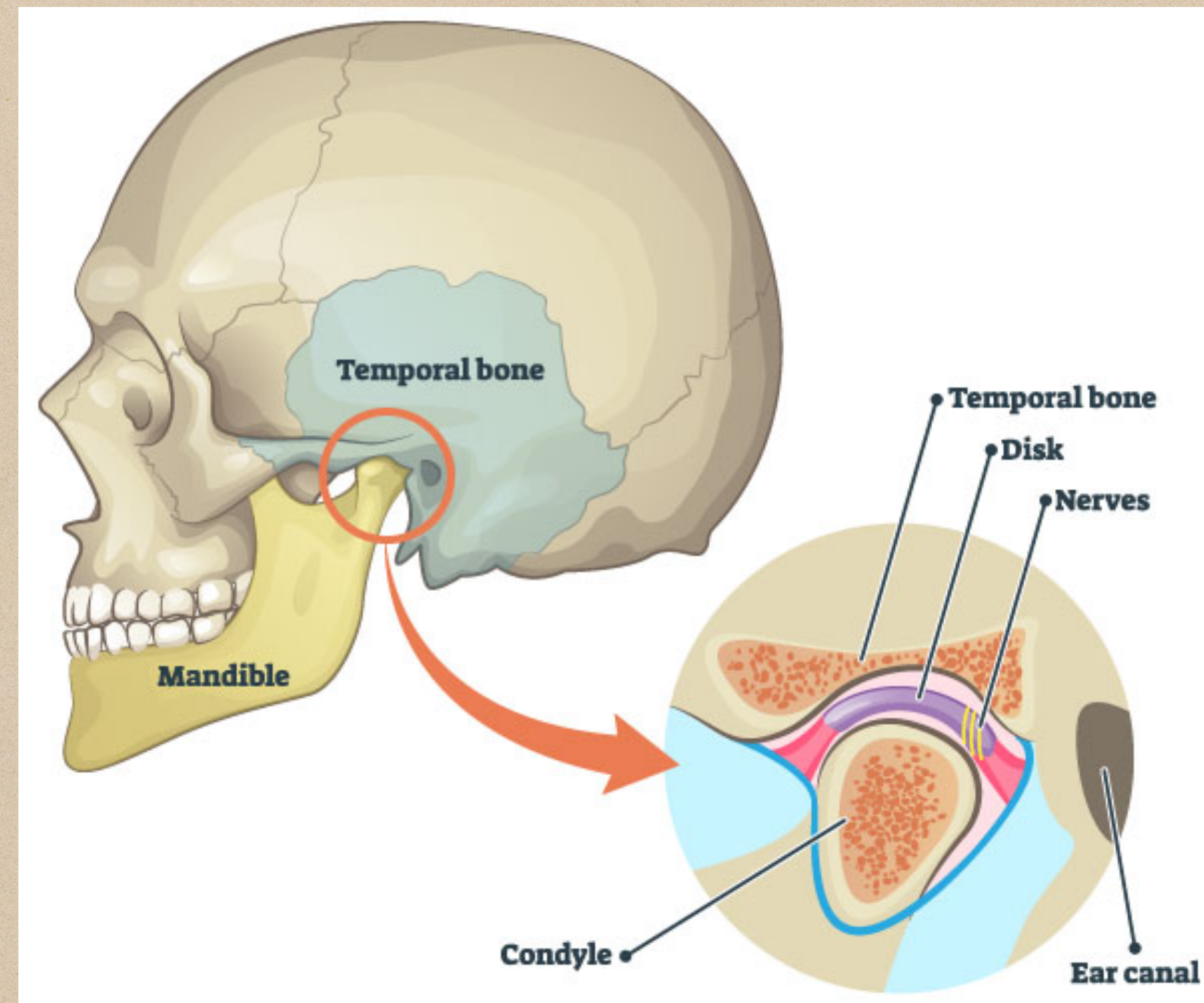
TMJ and Rib adjusting





# Address Trigger Points in the following muscles:

- ◆ Subclavius
- ◆ Mid-scapula
- ◆ Teres attachments
- ◆ Levator scapula
- ◆ Lateral Deltoid
- ◆ Ant/med humeral head
- ◆ Post/med humeral head
- ◆ Subscapularis





# TMJ and Rib Adjusting

Stabilize lower extremity and pelvis prior to treating the TMJ. Stretch:

- ◆ Posterior Cervical Muscles from Superior to Inferior Bilaterally
- ◆ SCM Muscles Bilaterally
- ◆ Platysma Muscles Bilaterally

Neutralize Trigger-Points:

- ◆ Temporalis
- ◆ Masseter
- ◆ Buccinator





Stretch Occipito-mastoid Suture and TMJ Bilaterally. Stretch Lateral Pterygoid using a Finger Cot or glove.

- ◆ Roll Right and Left Lateral Pterygoid Counterclockwise 3 Times Set the Jaw:
- ◆ Apply Finger Cots to Both Thumbs
- ◆ Assistant Stabilizes Patient's Head and Doctor Checks for Side of Laterality
- ◆ Pull Inferior – Anterior-and Opposite Side of Laterality, Then Perform Figure 8 Motions.
- ◆ Patient Holds Bottom Teeth in Front of Top Teeth and Doctor Strokes TMJ Superior to Inferior- Then Patient Relaxes Jaw





# Rehab Exercise

- ◆ Roll Right and Left Lateral Pterygoid
- ◆ Counterclockwise 3 Times Set the Jaw:
- ◆ Apply Finger Cots to Both Thumbs
- ◆ Assistant Stabilizes Patient's Head and Doctor
- ◆ Checks for Side of Laterality





- ◆ Pull Inferior - Anterior-and Opposite Side of Laterality, Then Perform Figure 8 Motions.
- ◆ Patient Holds Bottom Teeth in Front of Top Teeth and Doctor Strokes TMJ Superior to Inferior- Then
- ◆ Patient Relaxes Jaw
- ◆ Patient Translates Lower Jaw Anterior Against
- ◆ Resistance of Thumb.





## Rehab Exercise:

- ◆ Patient Translates Lower Jaw Anterior Against Resistance of Thumb.

## The Ribs:

- ◆ Rib Head Subluxates Anterior From TVP
- ◆ Palpate For Anteriority.

## Tissue Pull:

- ◆ From Medial to Lateral so Thenar is Over TVP.

## Thrust:

- ◆ A-P Toward Thenar.

Another Rib Subluxation: Subluxation is an Overlap of Rib/ Cartilage.

- ◆ Pull Rib/Cartilage Apart Several Times on Inhalation.





# Hour 8

Slipped Bicipital Tendon adjusting technique  
Elevated Rib Cage Protocol and Adjusting Technique  
Diaphragm Inhibition Protocol and Adjusting Technique  
Functional Spondylolisthesis protocol





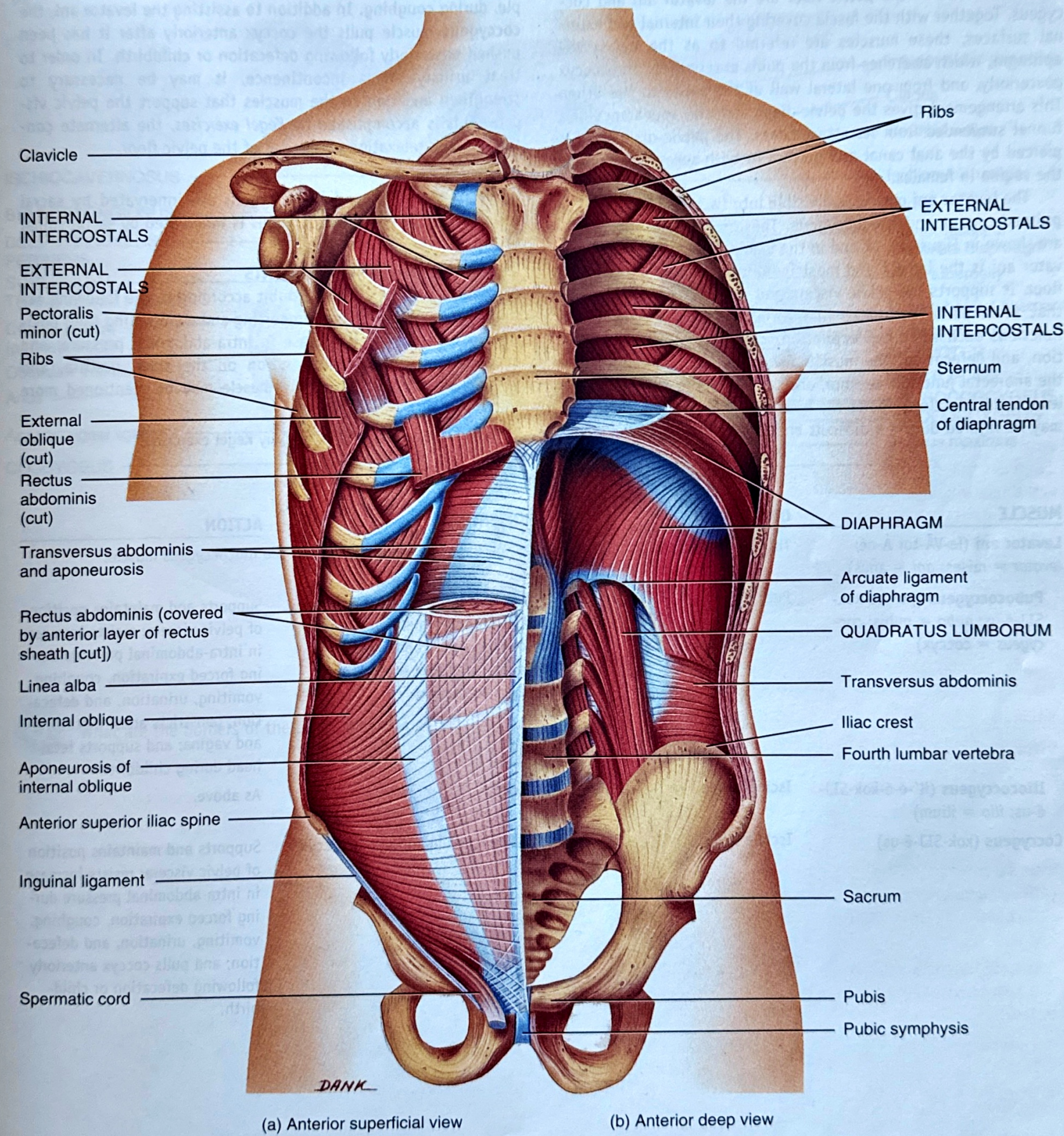




**Exhibit 11.8** (continued)

**Figure 11.11** Muscles used in breathing, as seen in a male.

Openings in the diaphragm permit the passage of the aorta, esophagus, and inferior vena cava.



**Q** Which muscle associated with breathing is innervated by the phrenic nerve?



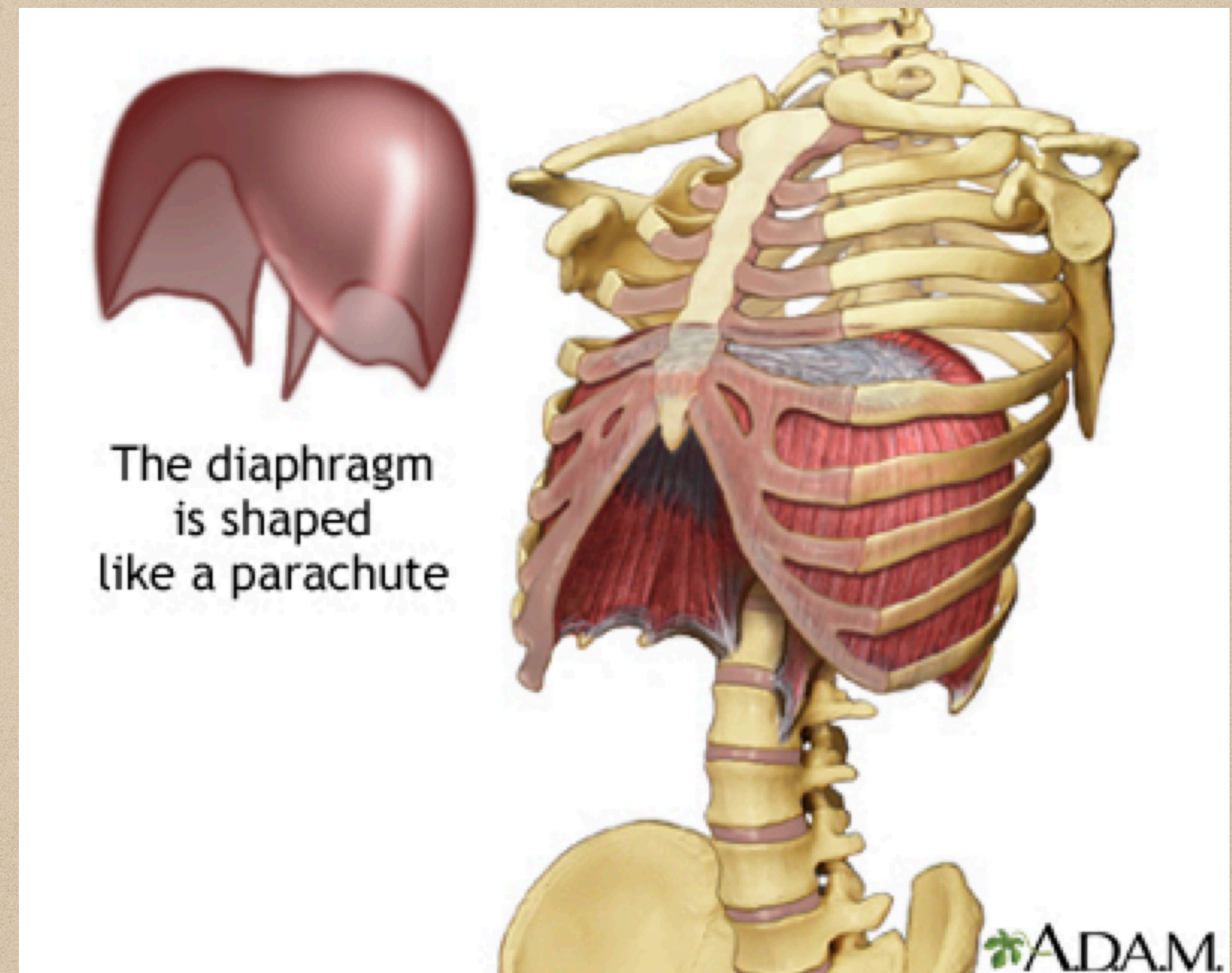


# Diaphragm inhibition: How to diagnose and adjust

Reflex point is the entire anterior sternum

Neurolymphatic reflex

Chapman's reflex









11/20/2023

## Diaphragm Stretching May Aid In LBP Treatment

Journal of Back and Musculoskeletal Rehabilitation:

"The diaphragm stretching technique improved the diaphragm contraction rate and trunk muscle activity was lower due to the improved trunk stabilization function of the diaphragm." Inyoung K. The effect of the diaphragm stretching technique in the diaphragm contraction rate and trunk muscle activity in back pain patients. Journal of Back and Musculoskeletal Rehabilitation. 2023 Sep 9 (Preprint):1-7. [Link](#)



# Rotated or Elevated Rib Cage

Diagnosis:

Pain at the medial scapular border/80%  
contralateral/20% ipsilateral

Pain around the heart from torqing of the  
pericardium

Upper thorax pain anterior or posterior

There will be a point of extreme tenderness  
normally located ipsilateral to the inhibition  
around T2-3 intercostal space









# Adjustment

- ◆ The elevated side is the side adjusted
- ◆ Female patient places hand over breast
- ◆ Superior hand contacts just inferior to clavicle
- ◆ Inferior hand under the rib cage
- ◆ Thrust is a scissors motion with superior hand thrusting inferior and the hand underneath thrusting headward.





# **Functional Spondylolisthesis**

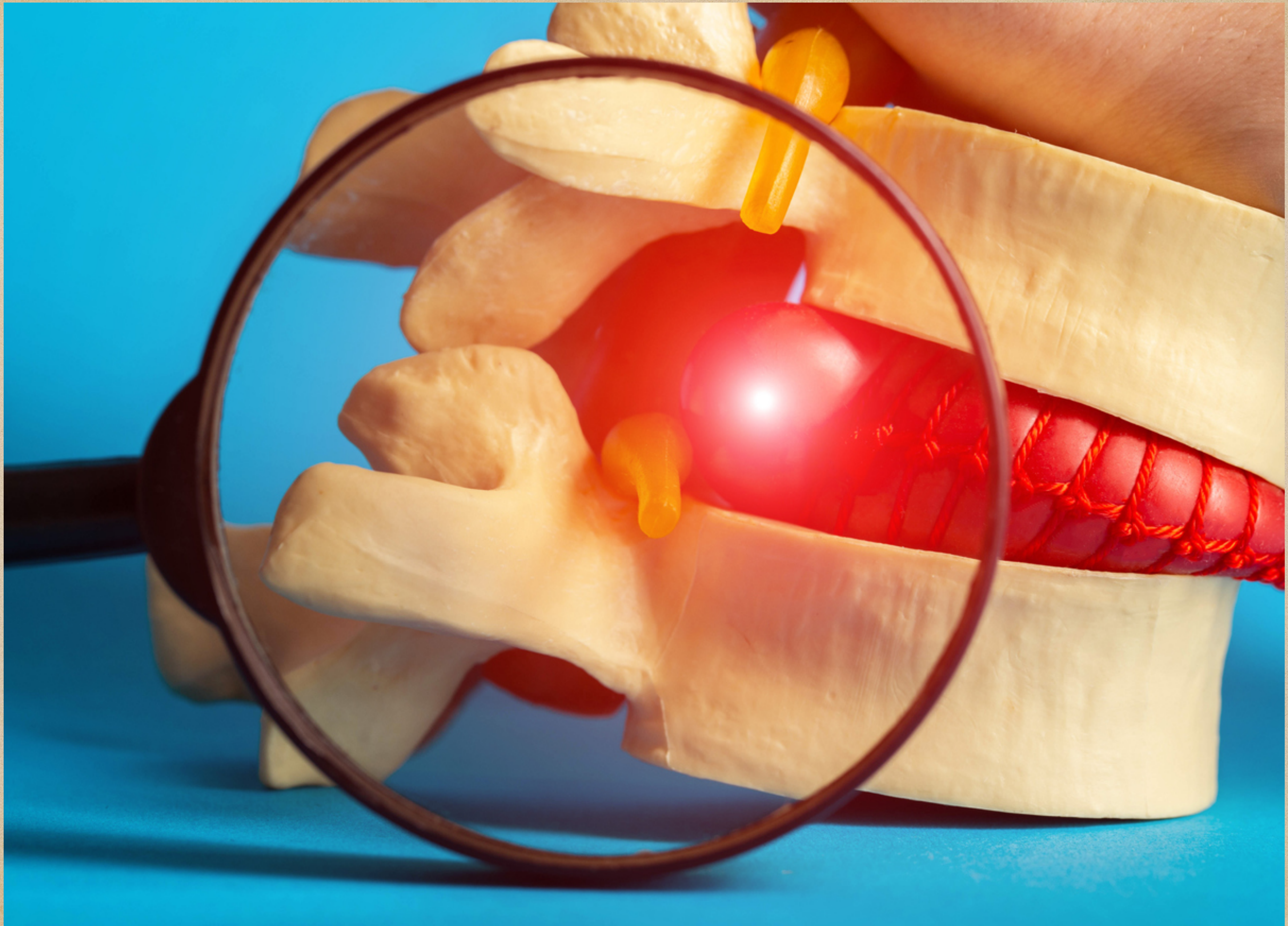
## **How to find and adjust**



# Various ways to analyse a Spondylolisthesis

- ◆ Test a strong hamstring group while lying prone. Then have the patient place both hands on the lumbar region. If the muscle inhibits, that is a positive sign.
- ◆ Test a strong hamstring group while lying prone. Then press P to A on the spinous process of L5 or other segment. If the muscle inhibits, that is a positive sign.
- ◆ Sometimes you find bilateral hamstring inhibition with a spondy. In this case use the leg check method.
- ◆ Check leg lengths. Then have the patient place both hands on the lumbar region. If one leg draws up in this position, that is a positive sign.
- ◆ Check leg lengths. Then press P to A in the spinous process of L5 or other lumbar segment. If one leg draws up in this position, that is a positive sign.
- ◆ Mimic a correction by distracting the lumbar fascia above and below L5. If the leg lengthens back to its original position, or gets even longer than before, this is also a positive sign.











## Targeted Rehab: Exercises for extremity joints

- ◆ Crossover effect - there is approximately 20% of neurological crossover facilitation from one side of the cord to the other when the uninvolved side is exercised

Moore, J. Arch Phys & rehab 5 volume 56: 115-120 1975

- ◆ Crossover- Treat extremities bilaterally.
- ◆ Overflow- Type I & II motor fibers inhibit nociception
- ◆ Facilitation - Repeated impulses enhance neural activity and reinforce the response.
- ◆ Scar tissue and muscle atrophy begin almost immediately

### Mirror Image Corrective Exercises:

Donald D Harrison

Kim D. Christensen

All exercises should be pain free exercises. (20 reps, twice daily for 2 months)





# Meralgia Paresthetica

- ◆ Tingling, numbness and burning pain in the outer part of the thigh
- ◆ Caused by compression of the lateral femoral cutaneous nerve
- ◆ LFCN supplies feeling to the superior/lateral thigh
- ◆ No motor function, therefore no weakness
- ◆ Weight gain, tight clothing or belt, prolonged standing, diabetes
- ◆ Can be injured with total hip replacement
- ◆ Hip extension aggravates the symptoms





What conditions could meralgia paresthetica be mistaken for?

- ◆ Lumbar radiculopathy
- ◆ Trochanteric bursitis
- ◆ L2-L3 nerve root lesion or other neuropathies
- ◆ Chronic appendicitis
- ◆ Uterine fibroids





- ◆ The lateral femoral cutaneous nerve is a branch of the lumbar plexus, exiting the spinal cord between the L2 and L3 vertebrae
- ◆ It emerges at the lateral edge of the psoas muscle group below the ilioinguinal nerve
- ◆ then passes beneath the iliac fascia and the inguinal ligament





- ◆ Check the motion of the hip joint and the IT band and adjust as needed
- ◆ IT band syndrome can aggravate
- ◆ Evaluate L2-3



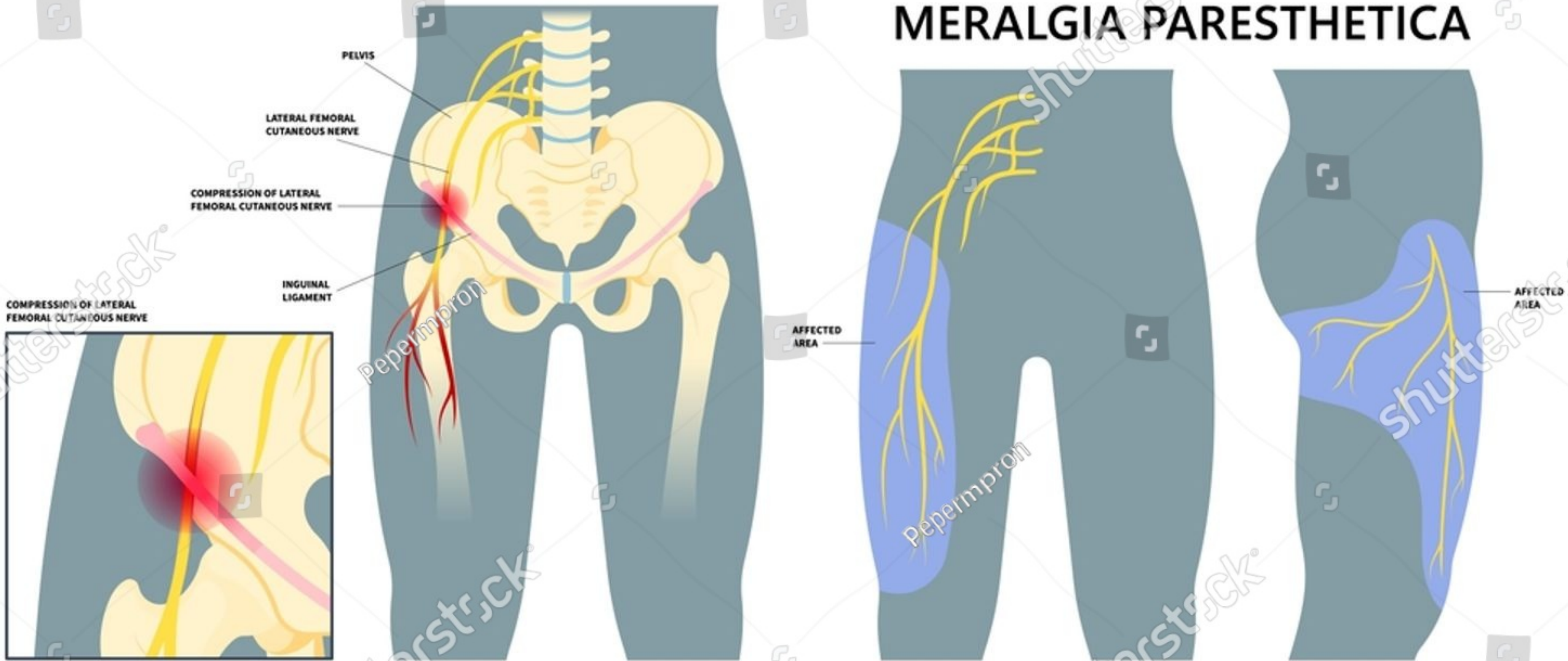


- ◆ Locate the ASIS, then follow the inguinal ligament down slightly medial and inferior
- ◆ Check for a nodule with palpable tenderness
- ◆ Muscle-test as you traction the tissue over this area in different directions medial to lateral and lateral to medial. Then Superior/Inferior
- ◆ The direction that strengthens the muscle is the direction to stretch and traction this tissue
- ◆ Usually inferior and medial traction relieves pressure on this tissue





# MERALGIA PARESTHETICA





## The Wrist:

- ◆ Subluxates with wrist in extension making the carpal bones move posterior.
- ◆ Corrective exercises- Support carpals while spreading fingers apart against resistance.
- ◆ Wrist extension - resistive exercises.

## The Elbow:

- ◆ Corrective exercise- Pronation against resistance with radio-ulnar joint stabilized.

## The Shoulder:

- ◆ Corrective exercise- approximate medial aspects of scapula "scapular squeeze" against resistance. Patient may cramp.

## Cervical Spine:

- ◆ To correct forward head posture the neck should be moved into posterior translation by contracting the deep neck flexors. Do not extend the head, instead give a "double chin".





Leonardo  
da Vinci



Practice all adjustments with coaching

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