

Upper Extremity Counterstrain

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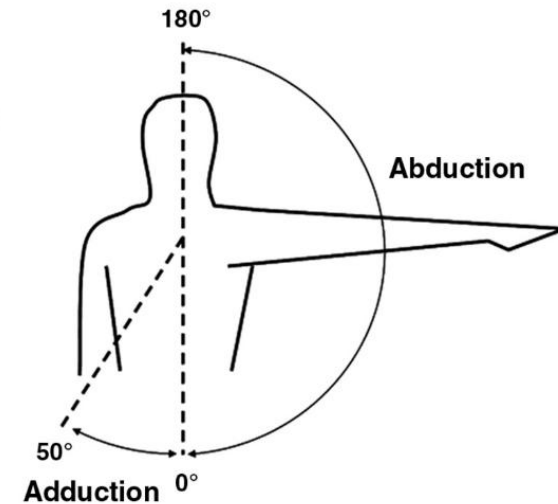
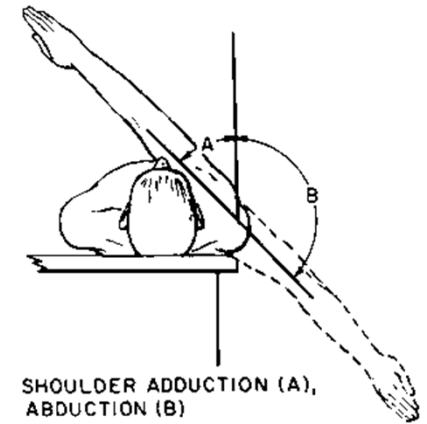
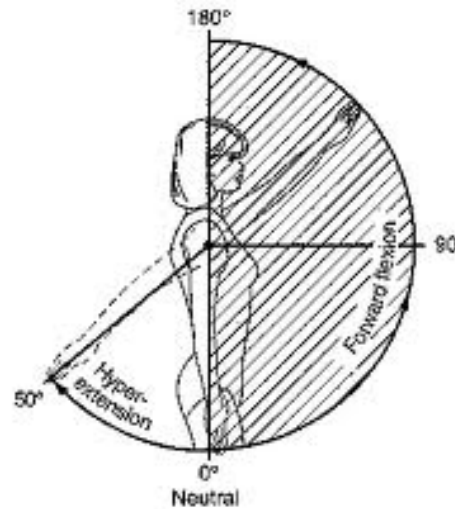
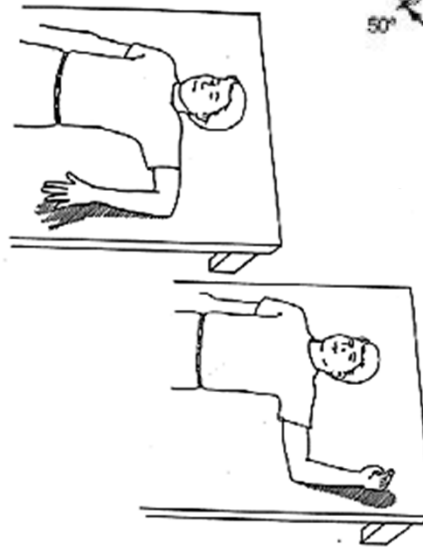
Objectives

- Identify, define and describe the names and locations of common counterstrain tender points for the upper extremities.
- Describe and demonstrate the proper initial setup position and treatment of common counterstrain tender points for the upper extremities.

Upper Extremity Motions

- **Shoulder**

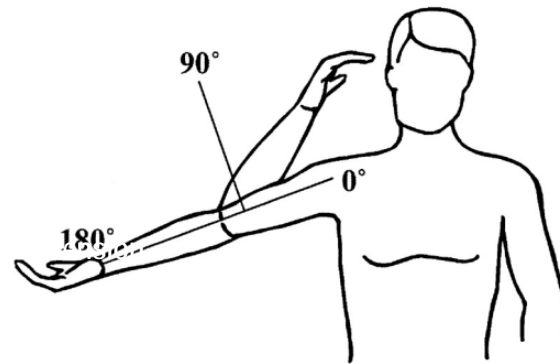
- Flexion
 - Forward flexion
- Extension
- Abduction
 - Horizontal extension
- Adduction
 - Horizontal flexion
- Internal rotation
 - Medial rotation
- External rotation
 - Lateral rotation



Upper Extremity Motions

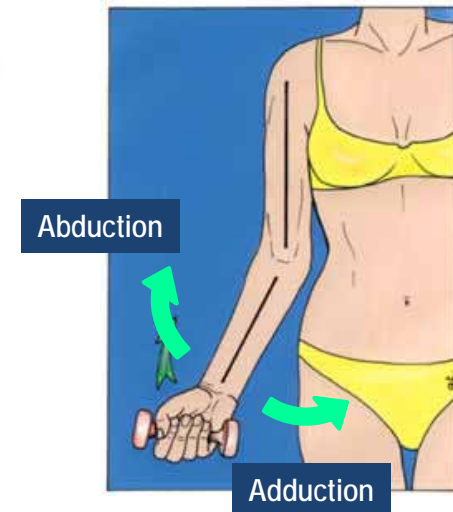
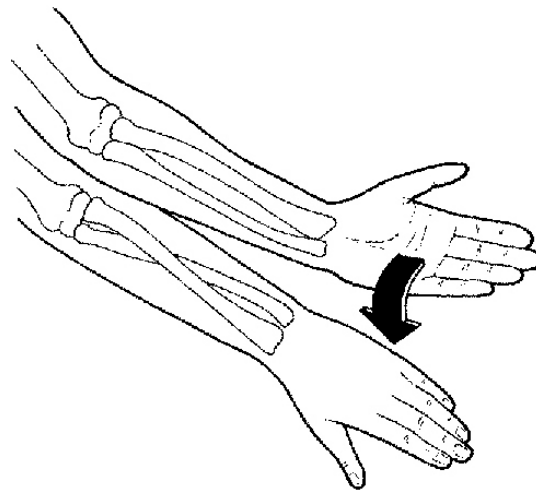
- **Elbow**

- Flexion
- Extension
- Abduction
- Adduction



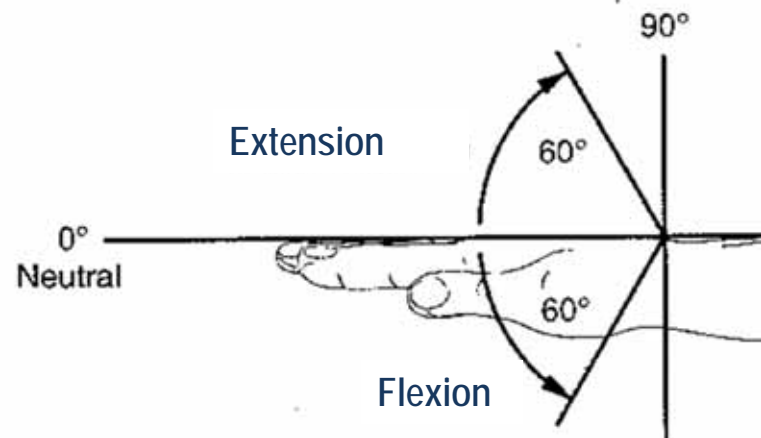
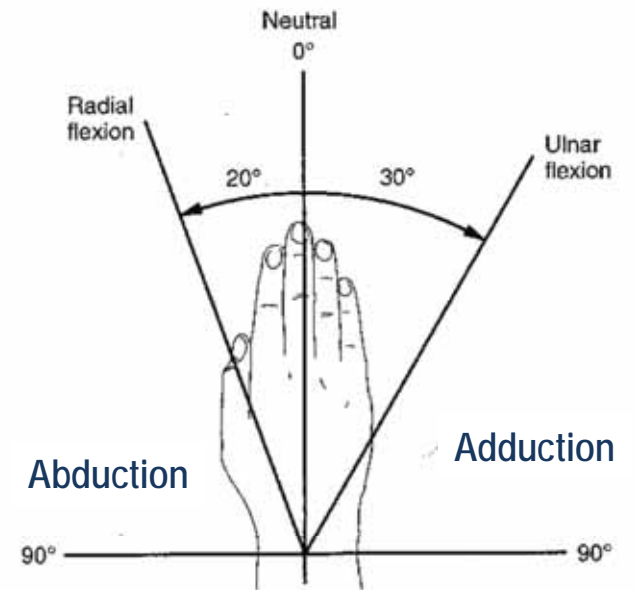
- **Forearm**

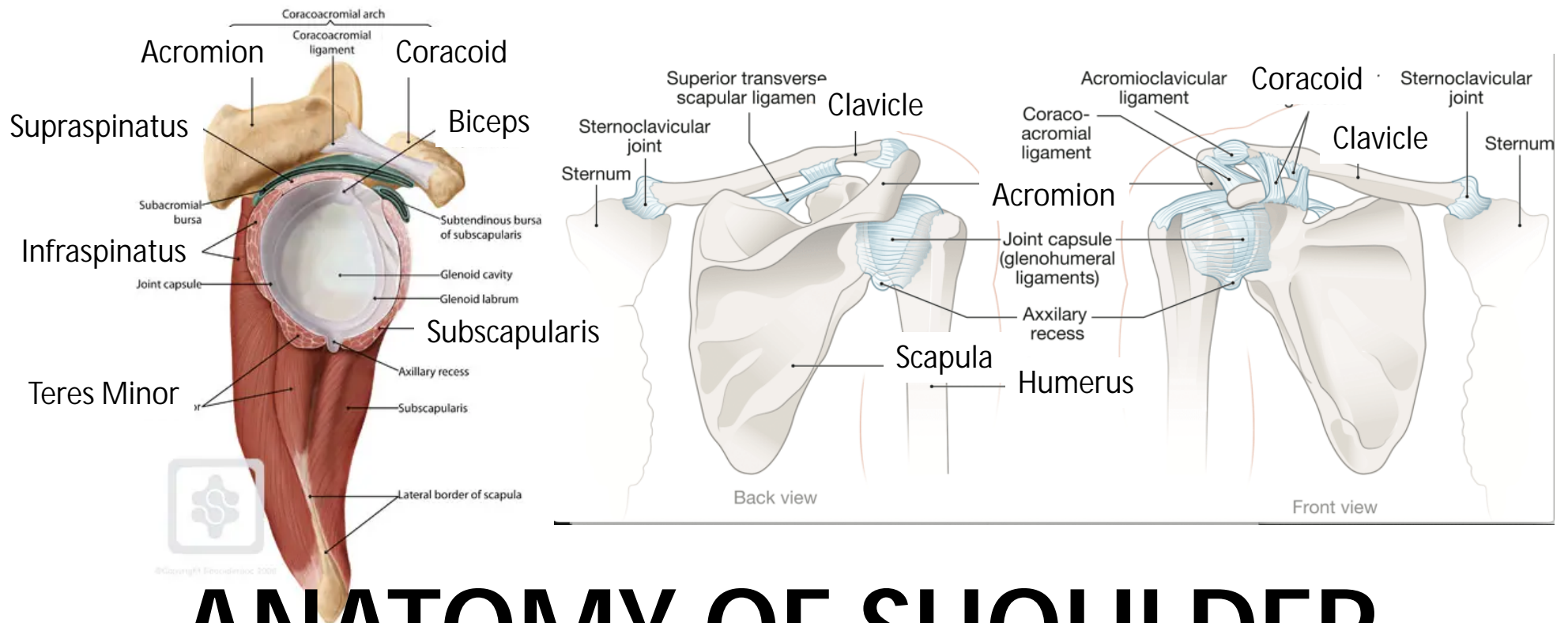
- Supination
- Pronation



Upper Extremity Motions

- **Wrist**
 - Flexion
 - Extension
 - Abduction
 - Radial flexion
 - Adduction
 - Ulnar flexion





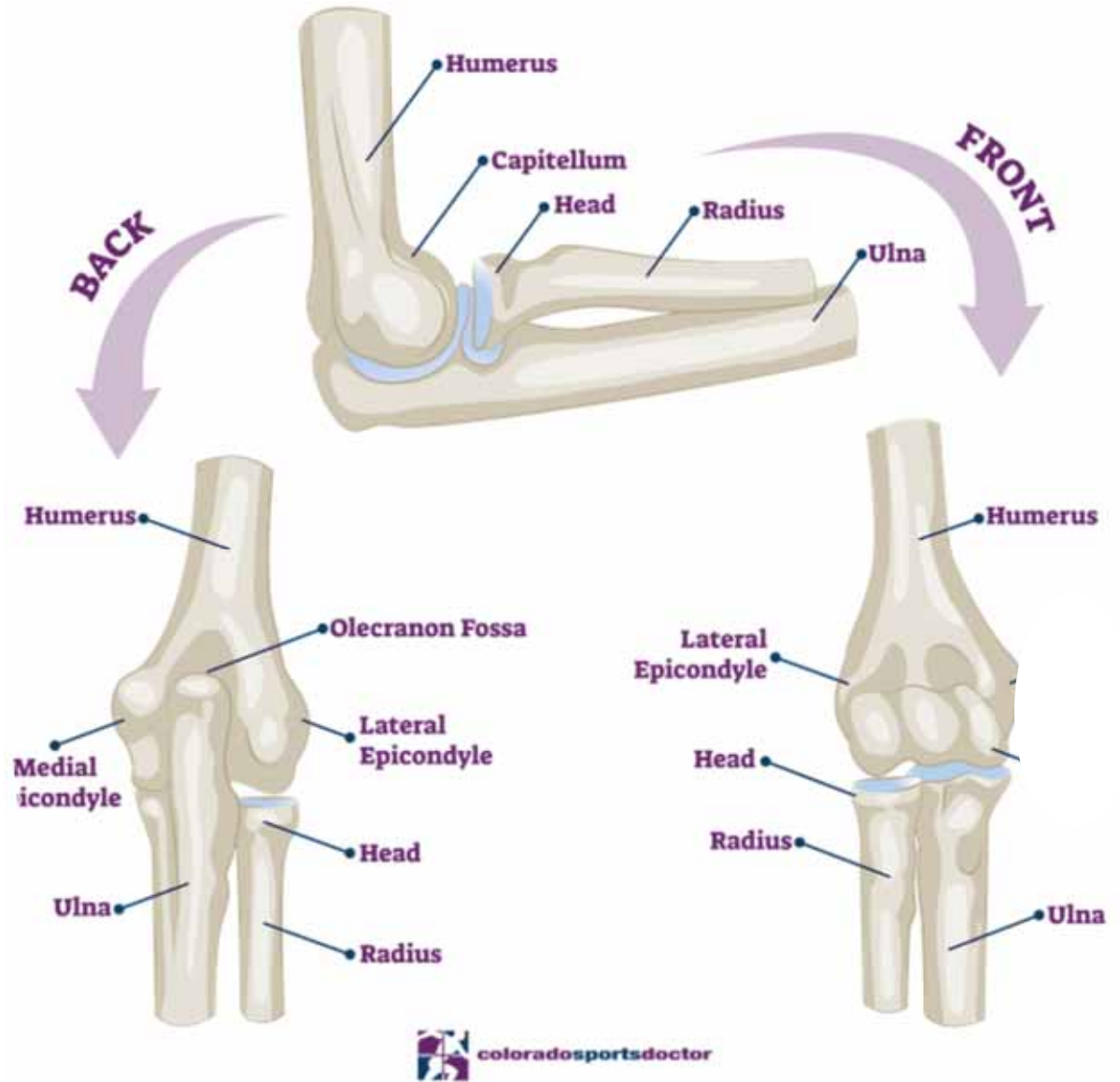
ANATOMY OF SHOULDER

BONES: Clavicle, Scapula, Humerus

ANATOMY OF ELBOW

BONES:

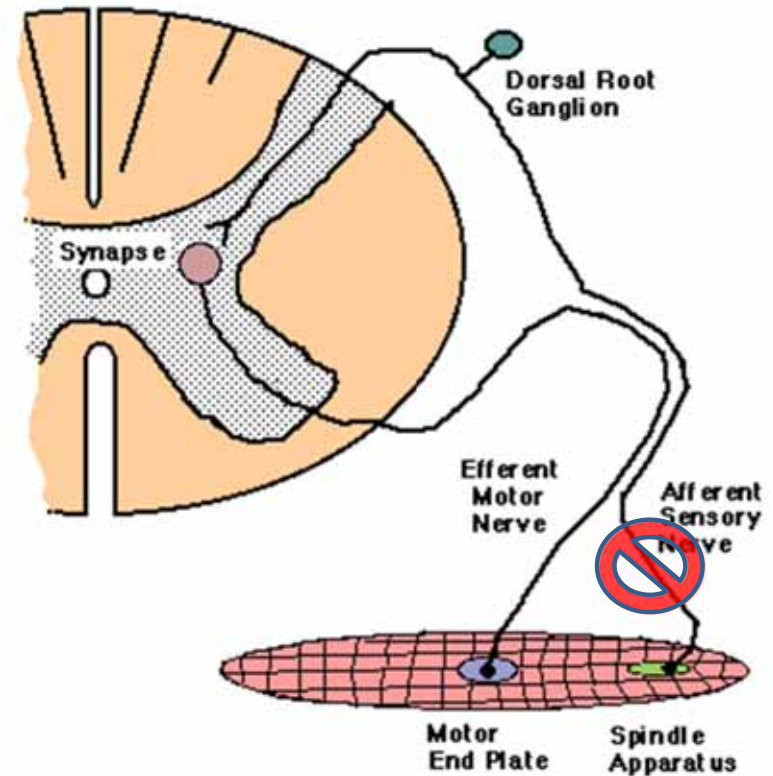
Humerus, Radius, Ulna



Counterstrain

- FOLD AND HOLD -

- Bring the origin and insertion of the affected muscle as close to each other as possible to relax the fibers, reduce nociception input to the brain and to stop reflex contraction.



Counterstrain Steps

- FOLD AND HOLD -

ONCE YOU ESTABLISH A TENDERPOINT, YOU DON'T LIFT YOUR FINGER

1. Find the tender point
2. Establish a pain scale -- *"This as a 10."*
3. Position in standard treatment position
4. Recheck TP --> Is the pain now less than 3?
5. Fine tune position for maximum effect and lighten pressure
6. Hold treatment position for **90** seconds
7. Slowly return to neutral
8. Recheck tenderpoint

Anterior Shoulder Tender Points

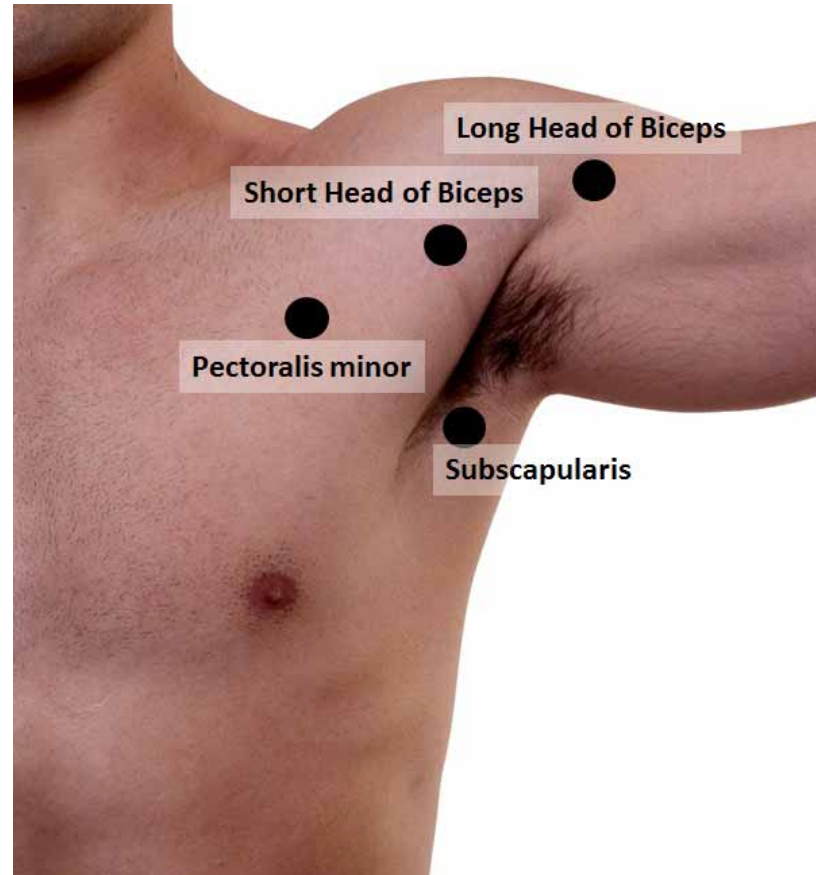
Anterior Shoulder

Biceps - Long Head

Biceps - Short Head

Pectoralis minor

Subscapularis



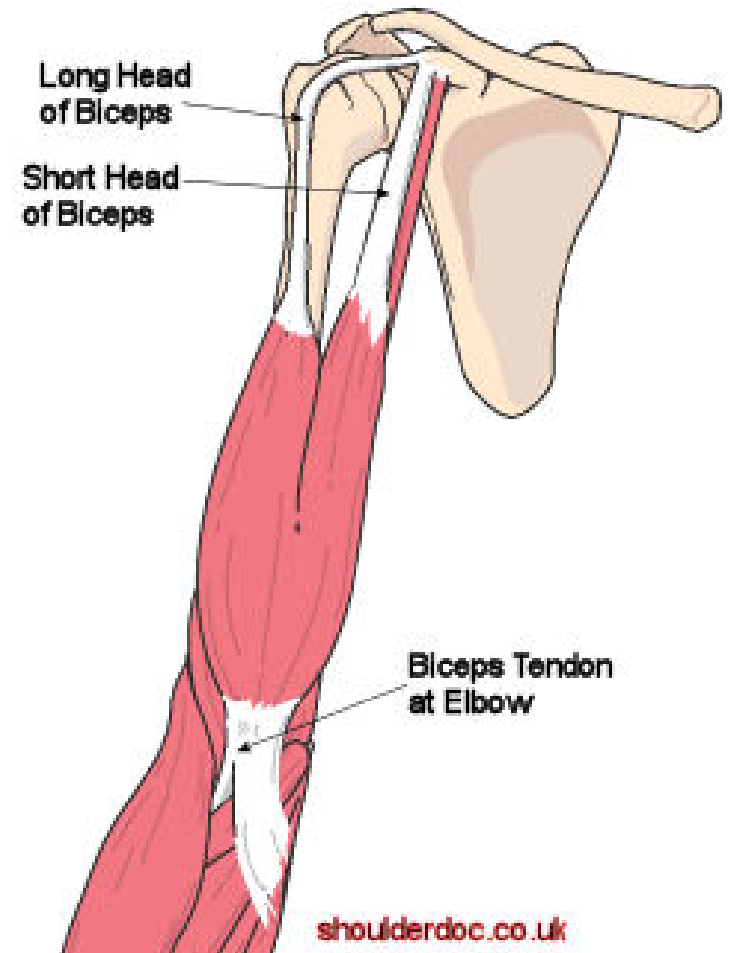
Biceps

Origin – 2 heads:

- Long head - supraglenoid tubercle
- Coracoid process

Insertion – radial tuberosity

Action – Elbow flexion and supination of the forearm



Biceps - Long Head (LHB) Location

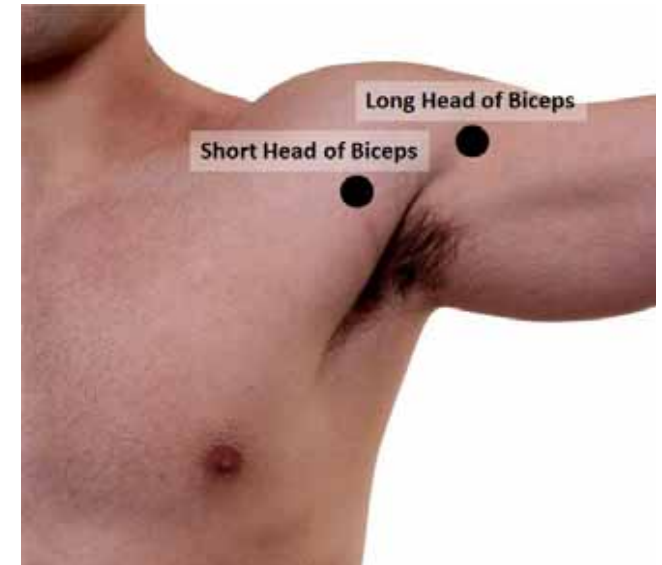
Found on superior tendon of long head of biceps in bicipital groove

Treatment

1. Supine
2. Elbow flexion and wrist supination with shoulder flexion (90°), internal rotation, and slight adduction/abduction as needed

FIR

Anatomical Considerations



Coracobrachialis

Origin – Tip of coracoid process of scapula

Insertion – Middle third of medial surface of humerus

Action – Shoulder flexion and adduction



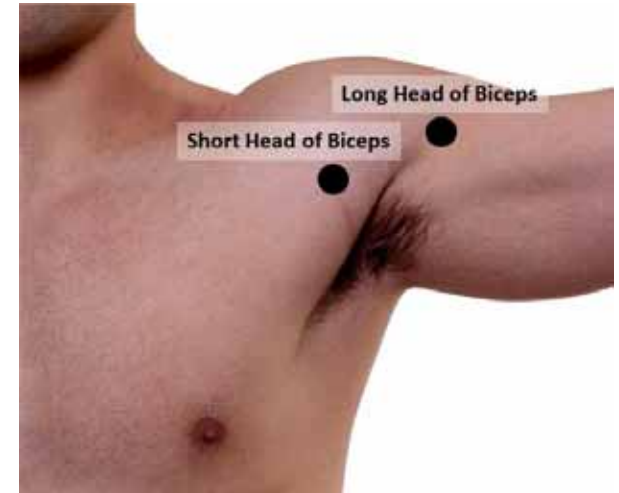
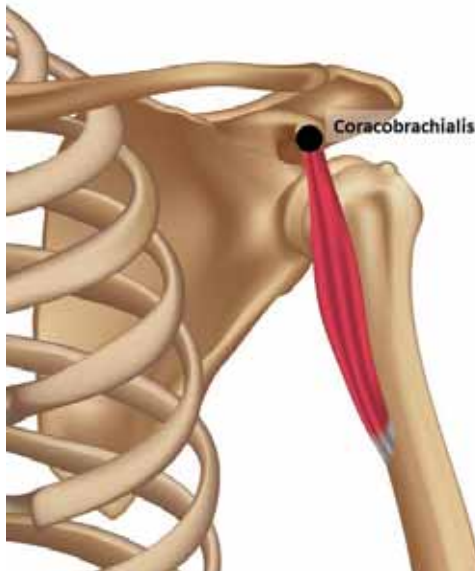
Coracobrachialis

Found at attachment of short head of biceps/coracobrachialis on coracoid process

Treatment

1. Supine
2. Elbow flexion and wrist supination with shoulder flexion (90°) and mild adduction and internal rotation

FIR Add



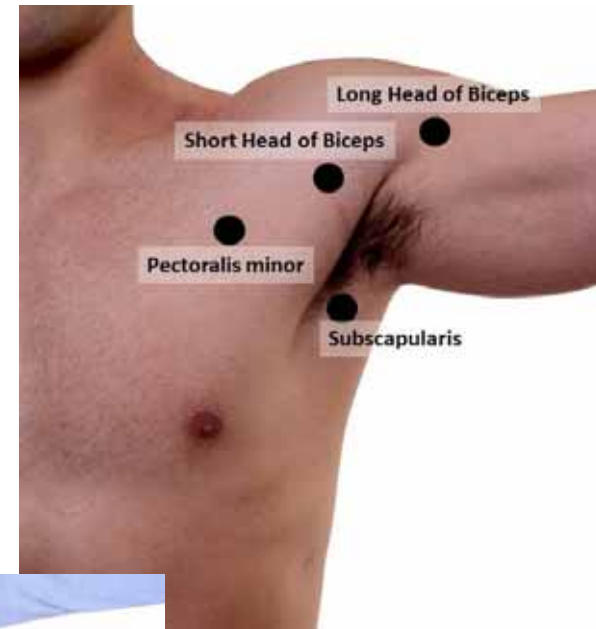
Lab Exercise 1

Biceps -long head

- At the superior myotendinous junction of the long head of the biceps tendon
- Elbow flexion and wrist supination with shoulder flexion (90°), internal rotation, and slight adduction/abduction as needed

Biceps -short head vs *Coracobrachialis*

- At the attachment of the coracobrachialis on the coracoid process
- Elbow flexion and wrist supination with shoulder flexion (90°) and mild adduction and internal rotation



Left Biceps –Long Head Tender Point Treatment



Left Biceps – Short Head Tender Point Treatment

4 minutes

Pectoralis minor

Origin – anterior ribs 3-5

Insertion – superior aspect of coracoid process

Action – draws scapula inferiorly and anteriorly against chest wall



Pectoralis Minor (PMI) Location

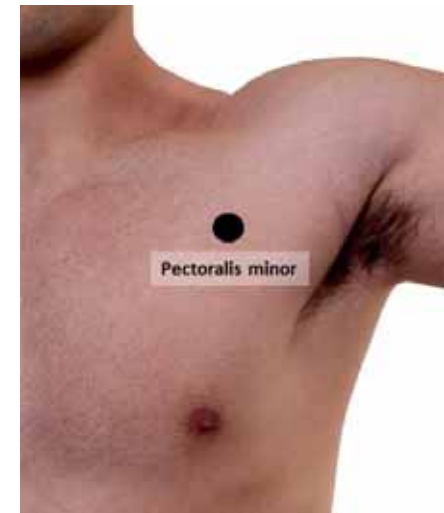
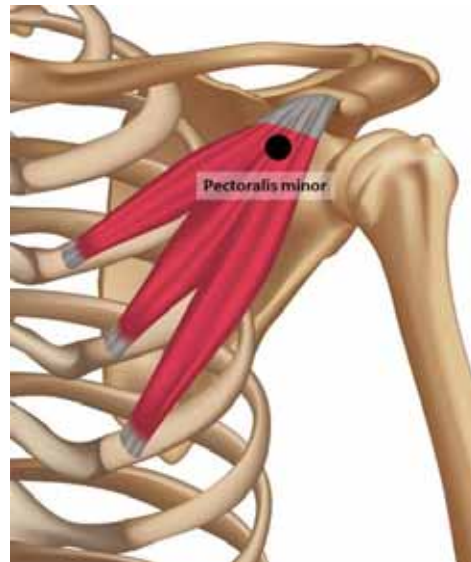
Found 3-4 cm inferior and 1-2 cm medial to coracoid process at myotendinous junction of pectoralis minor– *push anterior to posterior*

Treatment

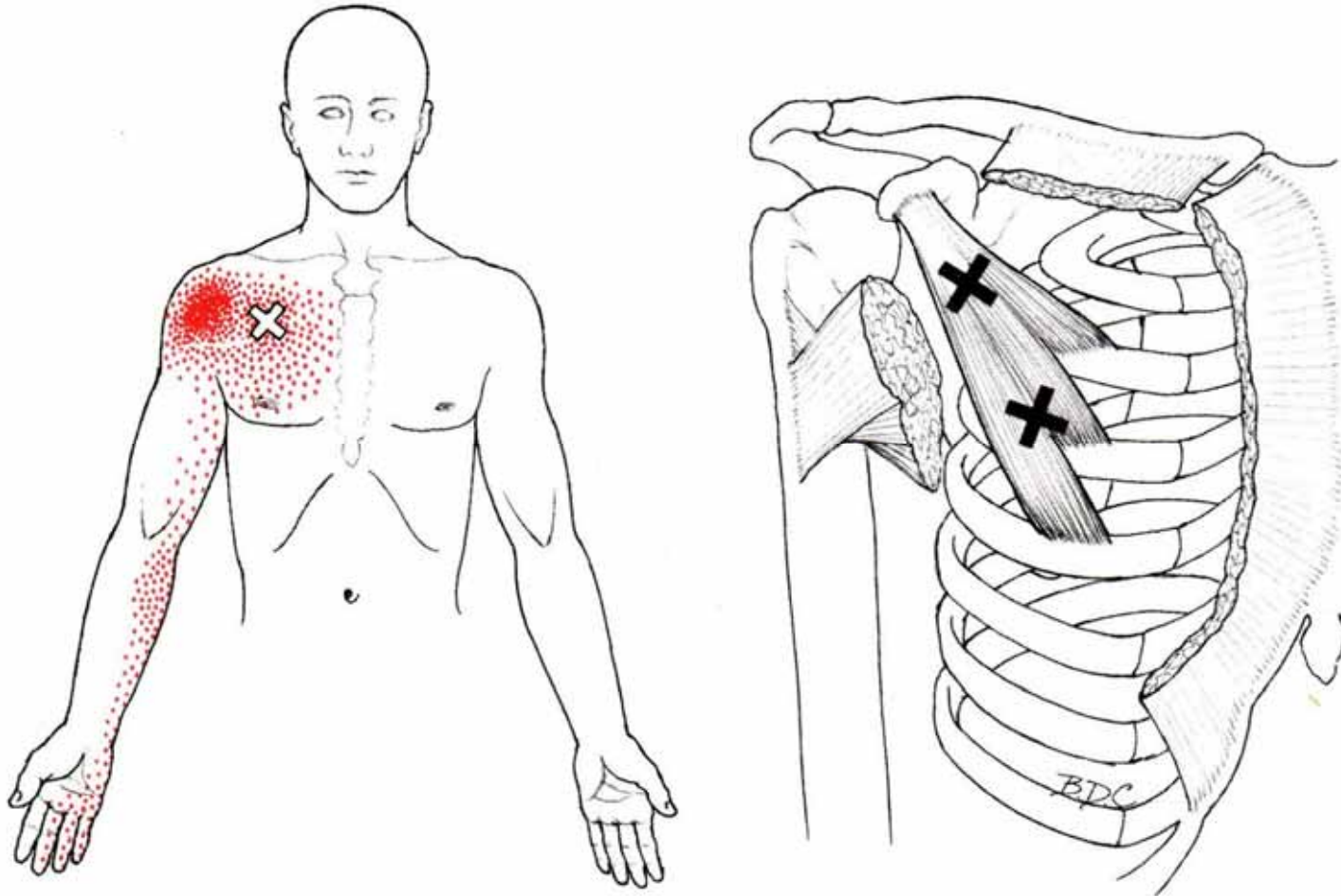
1. Supine
2. Shoulder flexion with marked adduction with inferomedial traction

F Add Traction

Anatomical Considerations



Pectoralis minor Trigger Point – pressing on the Pec Tenderpoint causes radiating pain down the arm.



Subscapularis

Action – Internal rotation (medial rotation) and adduction

Origin – Subscapular fossa of scapula

Insertion – Lesser tuberosity of humerus



Subscapularis (SUB) Location

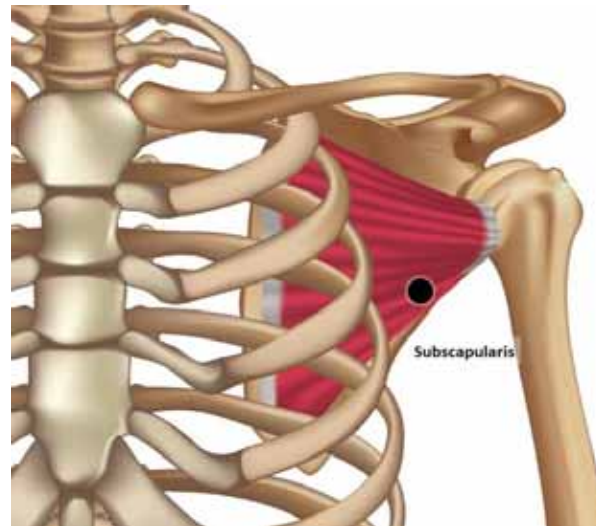
Found on anterolateral surface of scapula – *push anterolateral to posteromedial*

Treatment

1. Supine
2. Shoulder extension (30-80°) with internal rotation and slight adduction/abduction as needed

E IR

Anatomical Considerations



Lab Exercise 2

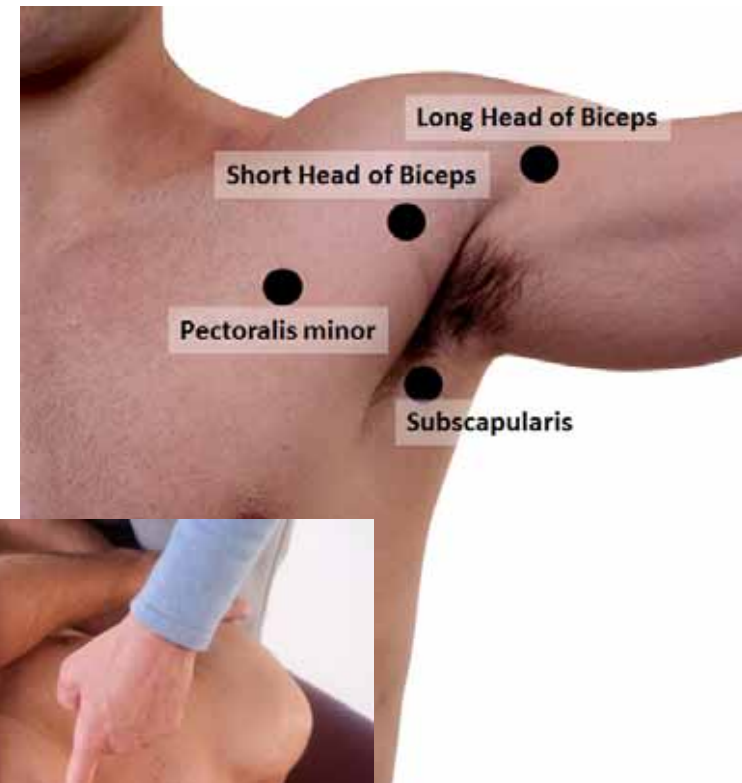
4 minutes

Subscapularis

- Anterior lateral surface of the scapula
- Shoulder extension (30-80°) with internal rotation and slight adduction/abduction as needed

Pectoralis Minor

- 3-4 cm inferior and 1-2 cm medial to coracoid process at myotendinous junction of pectoralis minor– *push anterior to posterior*
- Shoulder flexion with marked adduction with inferomedial traction



Left Subscapularis Tender Point Treatment



Left Pectoralis Minor Tender Point Treatment

How Do You Get Tender Points?

- Overuse
- Sudden strains
- Weekend Warrior
- Poor Posture



Power of Posture

Postural muscular imbalance

Tight suboccipital, upper trapezius, pectoralis major and minor, and levator scapula

Weak cervical flexors, rhomboid, and lower trapezius

Muscular imbalance affects the mechanical loading of the shoulder musculature



Posterior Shoulder Tender Points

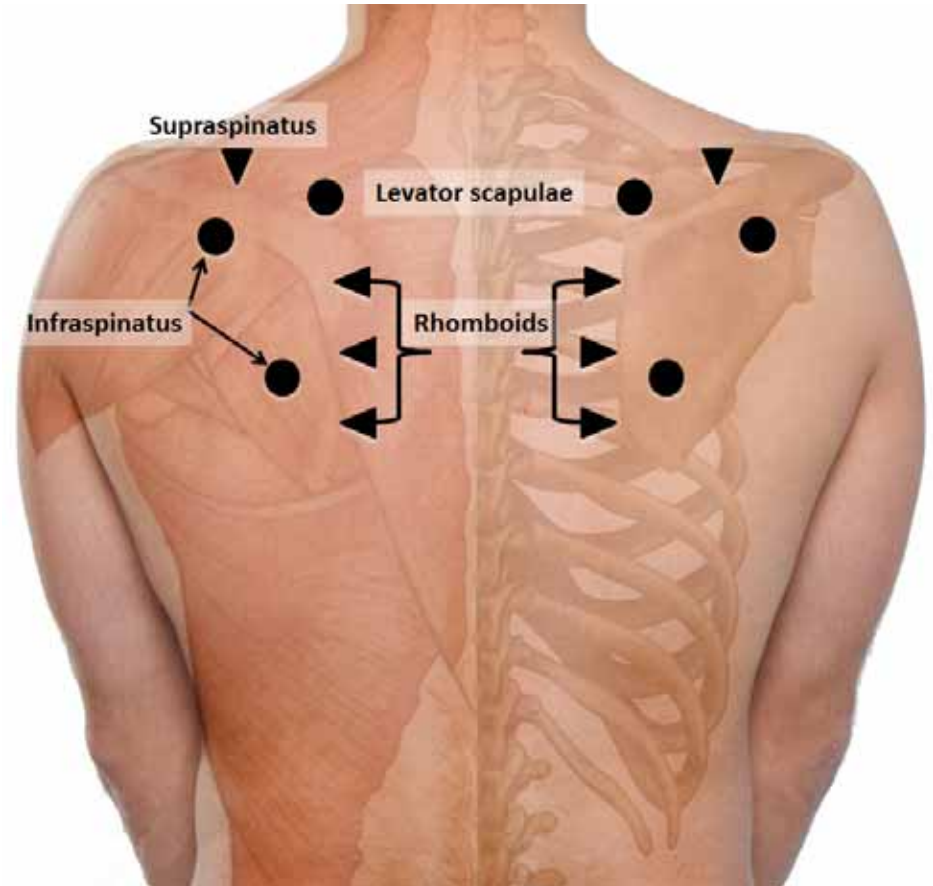
Posterior Shoulder

Supraspinatus

Infraspinatus

Levator scapulae

Rhomboids



Supraspinatus

Origin – Supraspinous fossa of scapula

Insertion – Superior facet on greater tuberosity of humerus

Action – Abduction



Supraspinatus (SUP) Location

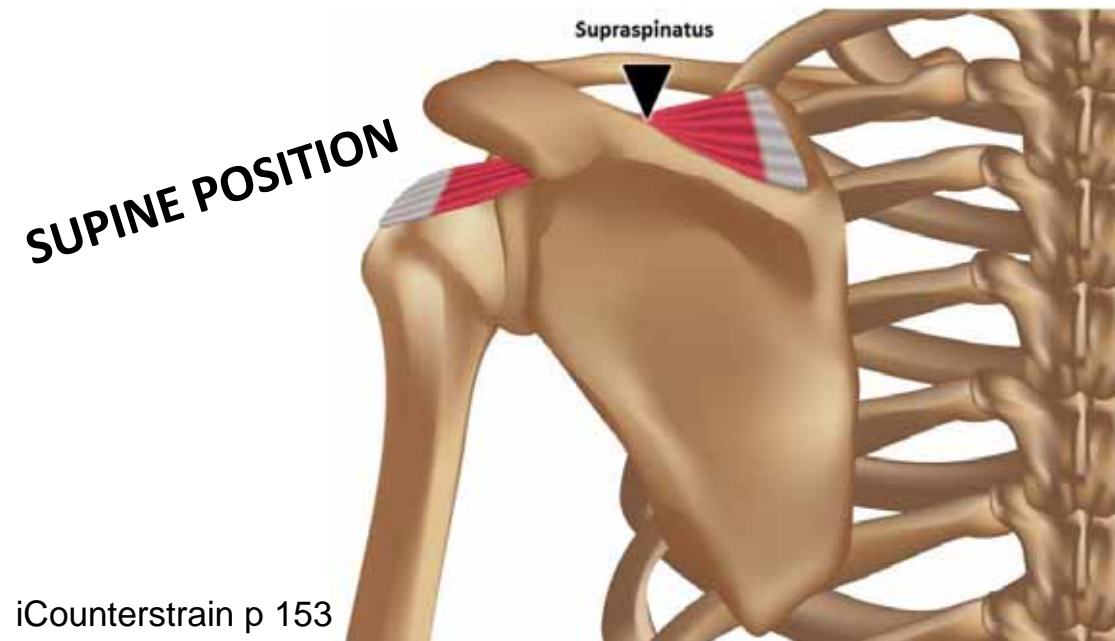
Found in belly of supraspinatus muscle – *push superior to inferior*

Modified Treatment

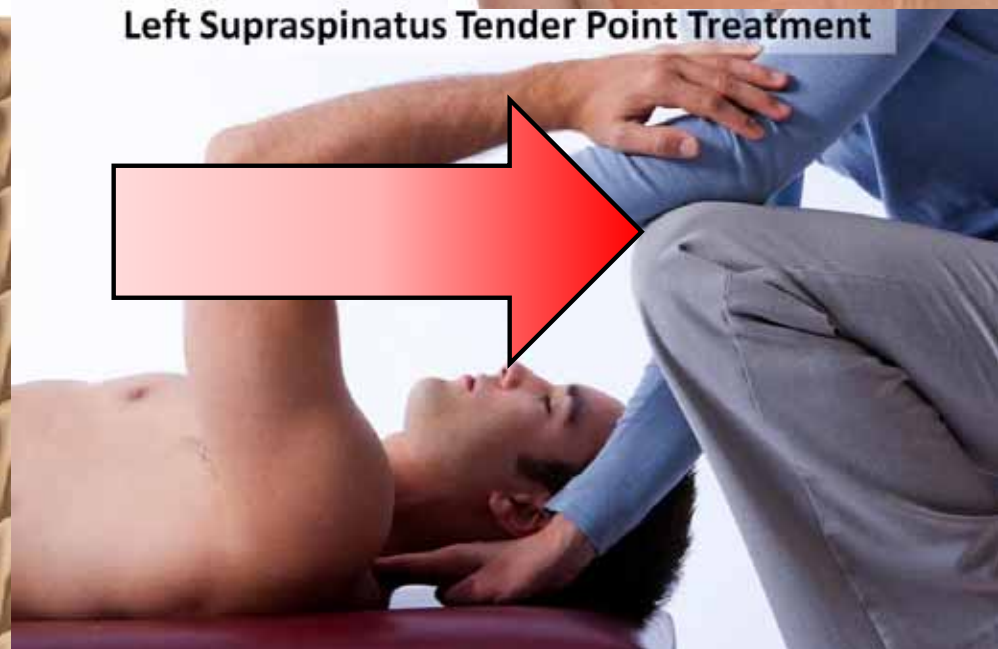
1. Supine
2. Shoulder flexion (45-90°) with abduction (45°) and marked external rotation

F Abd ER

Anatomical Considerations



Left Supraspinatus Tender Point Treatment



Supraspinatus (SUP) Location

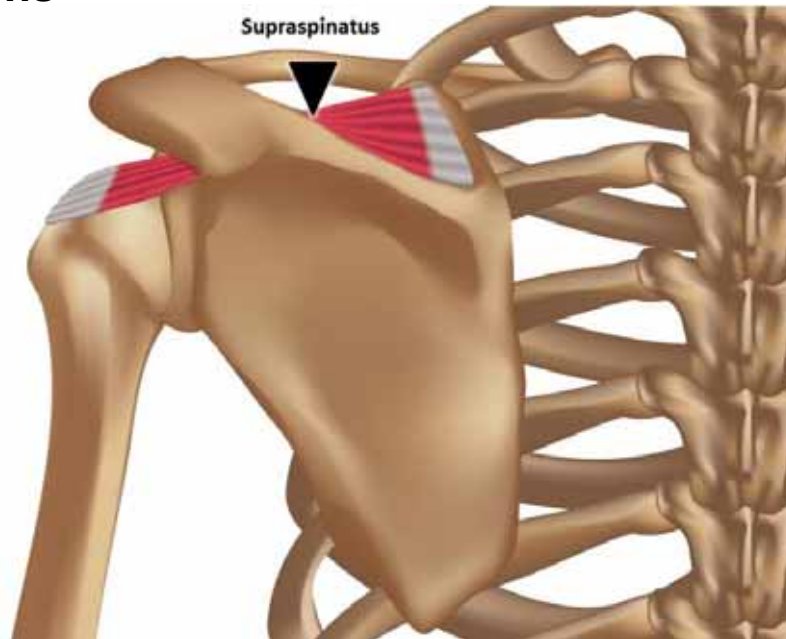
Found in belly of supraspinatus muscle – *push superior to inferior*

Alternate Treatment

1. Lateral recumbent
2. Shoulder flexion (45-90°) with abduction (45°) and marked external rotation

F Abd ER

Anatomical Considerations



LATERAL POSITION



Infraspinatus

Origin – infraspinatus fossa of scapula

Insertion – middle facet of greater tubercle of the humerus

Action – lateral rotation (external rotation) and extension



Infraspinatus (INF) Location

1. Lateral : Lateral end of the muscle about 2 cm below spine of scapula
2. Medial: 2-3 cm lateral to medial scapular border and 7-8 cm inferior to spine of scapula

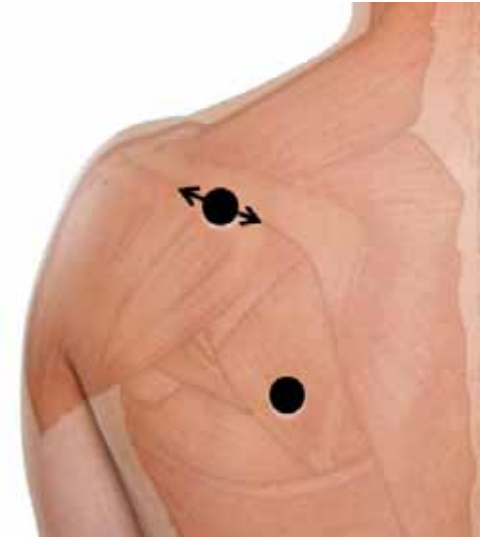
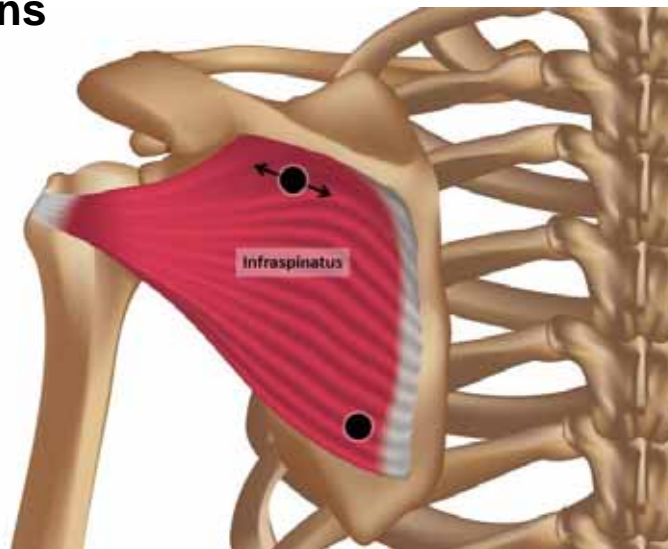
Treatment

1. Supine
2. Shoulder flexion (90 - 120°) with abduction and variable internal or external rotation

F Abd IR/ER

Anatomical Considerations

SUPINE POSITION



Left Infraspinatus Tender Point Treatment



Infraspinatus (INF) Location

1. Lateral : Lateral end of the muscle about 2 cm below spine of scapula
2. Medial: 2-3 cm lateral to medial scapular border and 7-8 cm inferior to spine of scapula

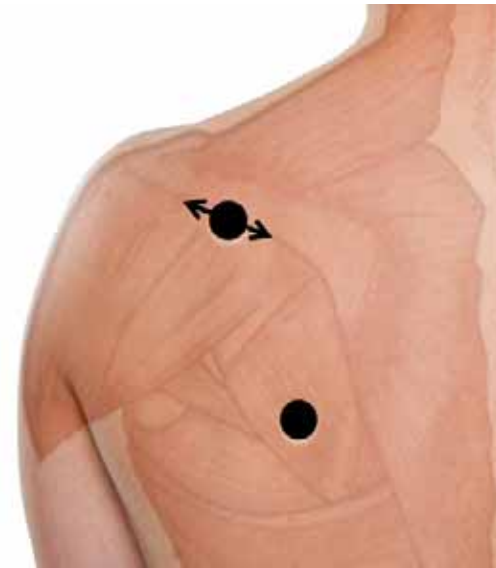
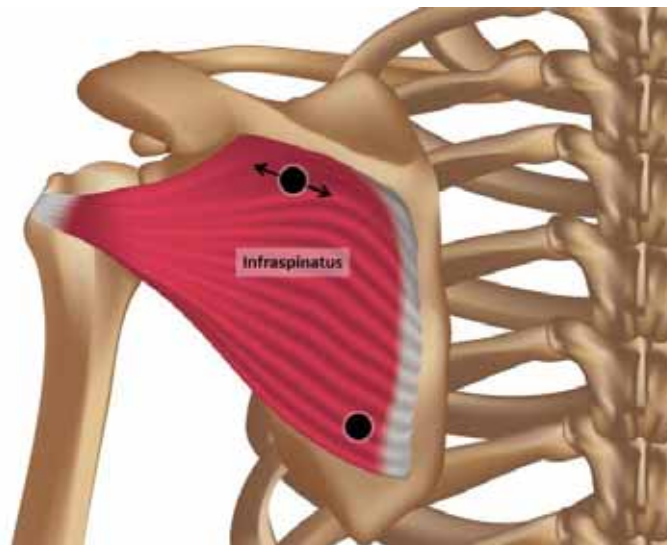
Alternate Treatment

1. Lateral recumbent
2. Shoulder flexion (90 - 120°) with abduction and variable internal or external rotation

F Abd IR/ER

Anatomical Considerations

LATERAL POSITION

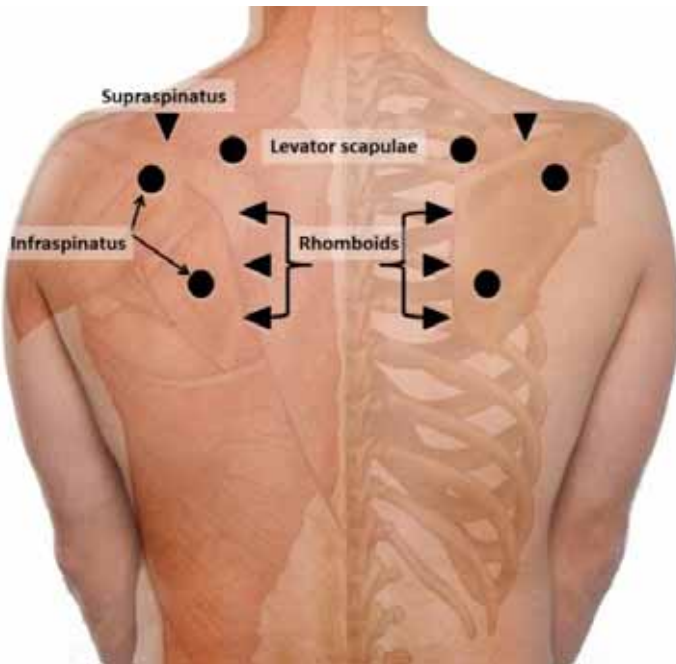


Lab Exercise 3

4 minutes

Supraspinatus

- Shoulder flexion (45-90°) with abduction (45°) and marked external rotation



Infraspinatus

- Shoulder flexion (90 – 120°) with abduction and variable internal or external rotation

Levator Scapulae

Origin - transverse processes of C1-4

Insertion – superior medial angle of scapula

Action – Elevates scapula and rotates the glenoid cavity inferiorly



Levator Scapulae (LEV) Location

Found at inferior attachment of levator scapulae on superior angle of scapula –
push superior to inferior

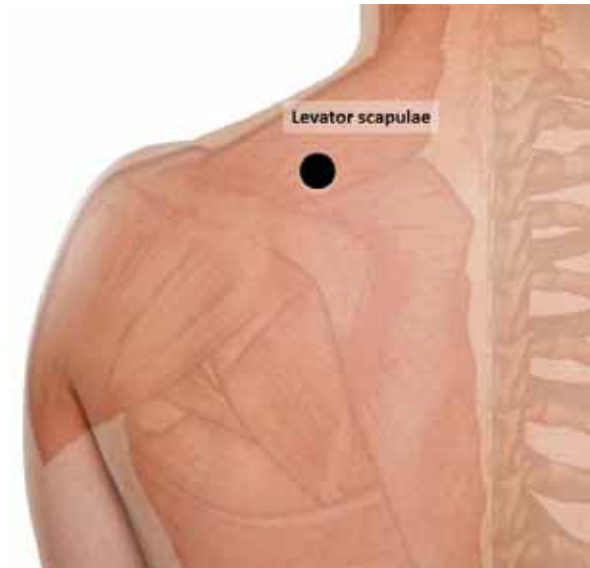
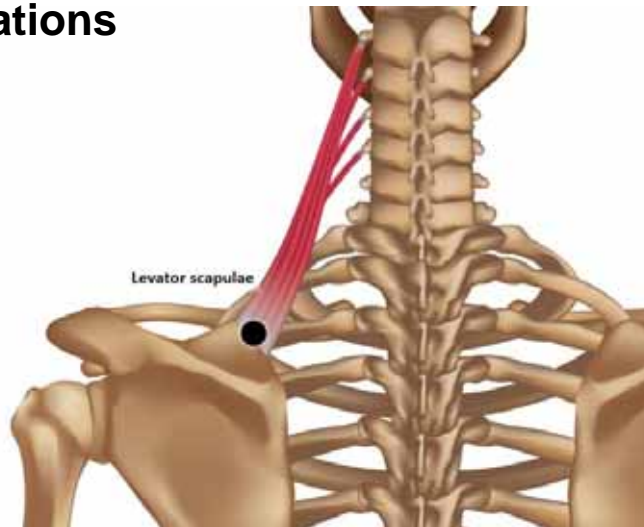
Treatment

1. Prone
2. Slight shoulder extension with marked internal rotation while apply traction on ipsilateral arm to rotate scapula superomedially. Sidebending neck towards point.

IR Traction

Anatomical Considerations

PRONE POSITION



Levator Scapulae (LEV) Location

Found at inferior attachment of levator scapulae on superior angle of scapula – *pusi superior to inferior*

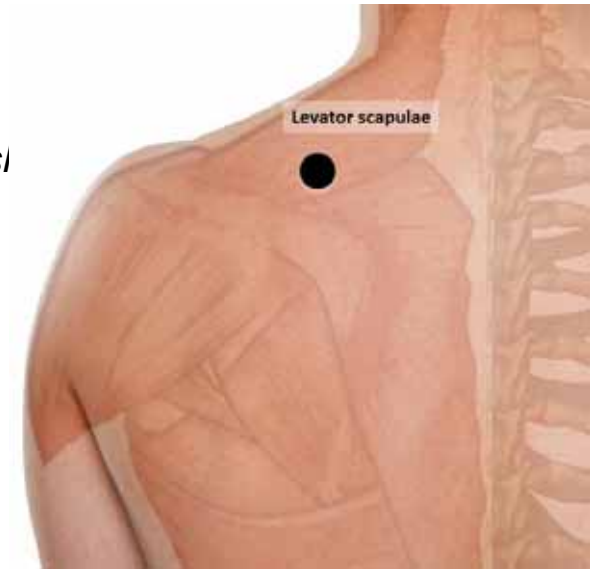
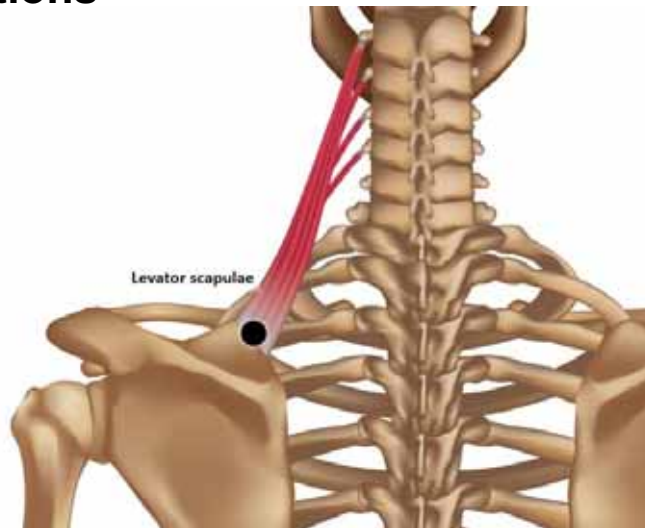
Alternate Treatment

1. Lateral recumbent
2. Slight shoulder extension with marked internal rotation while translating scapula superomedially and sidebending neck towards point.

IR

Anatomical Considerations

LATERAL POSITION



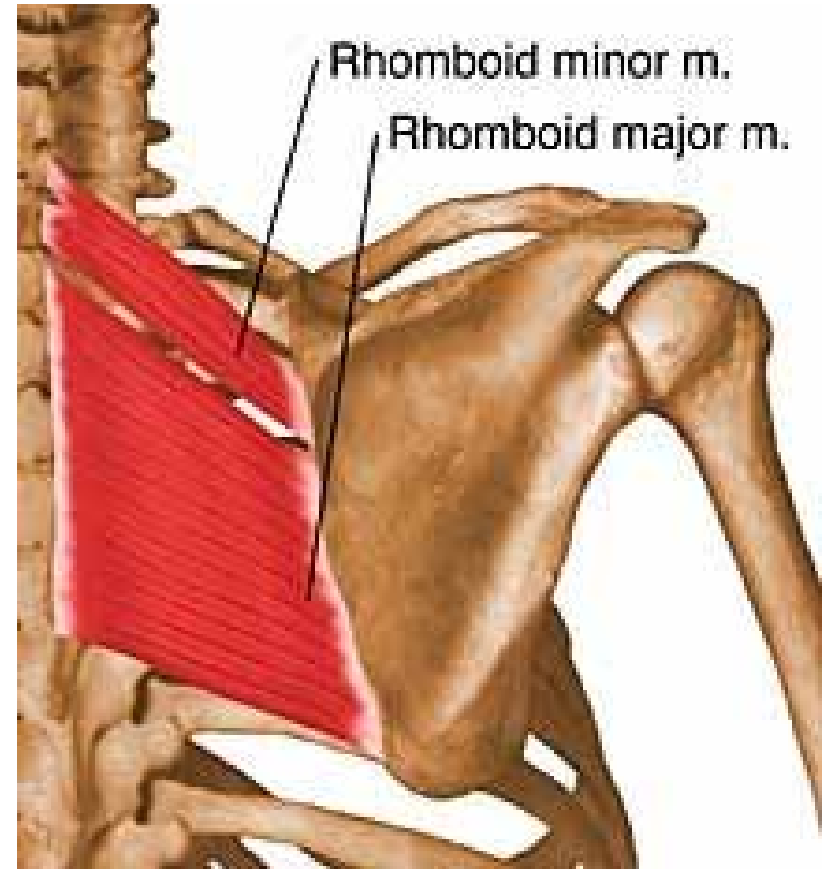
Rhomboid Major and Minor

Origin –

- Minor – nuchal ligament and spinous processes of C7-T1
- Major - spinous processes of T2-T5

Insertion – medial border of scapula

Action – Retracts scapula and depresses glenoid fossa



Rhomboid (ROM) Location

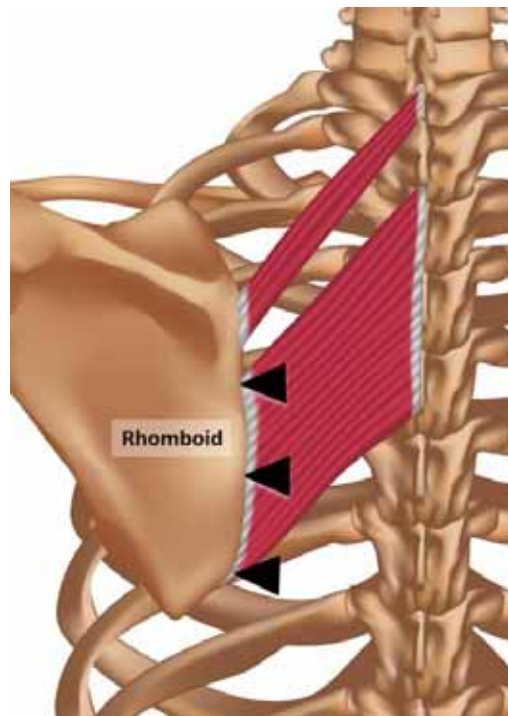
Found along medial border of scapula at attachment of rhomboid muscles— *push medial to lateral*

Treatment

1. Seated or prone
2. Shoulder extension with adduction (**scapular retraction**) by pulling arm posteromedially towards spine

E Add

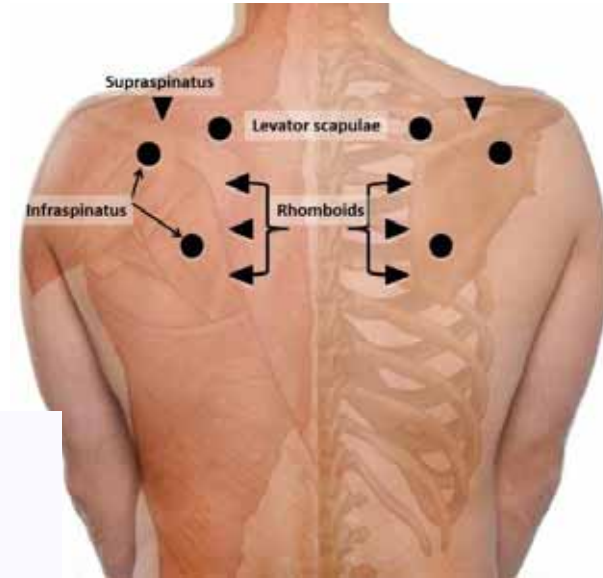
Anatomical Considerations



Lab Exercise 4

Levator Scapulae

- Slight shoulder extension with marked internal rotation while apply traction on ipsilateral arm or sliding scapula superiorly to rotate scapula superomedially. Sidebending neck towards point.



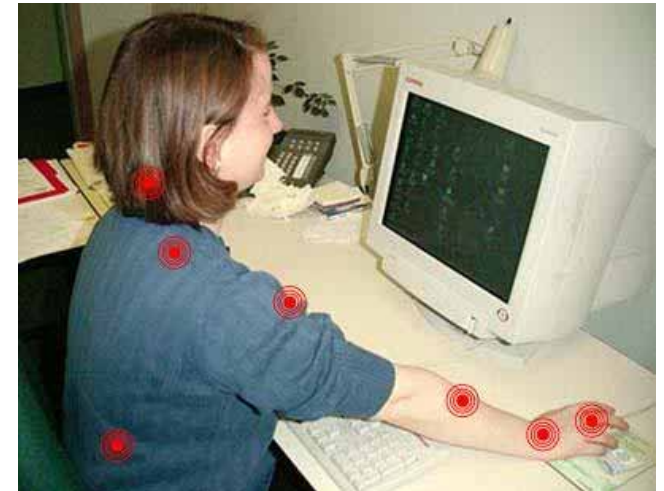
Rhomboids

- Shoulder extension with adduction (**scapular retraction**) by pulling arm posteromedially towards spine

4 minutes

How Do You Get Tender Points?

- Stress
- Sudden strains
- Overuse
- Weekend Warrior

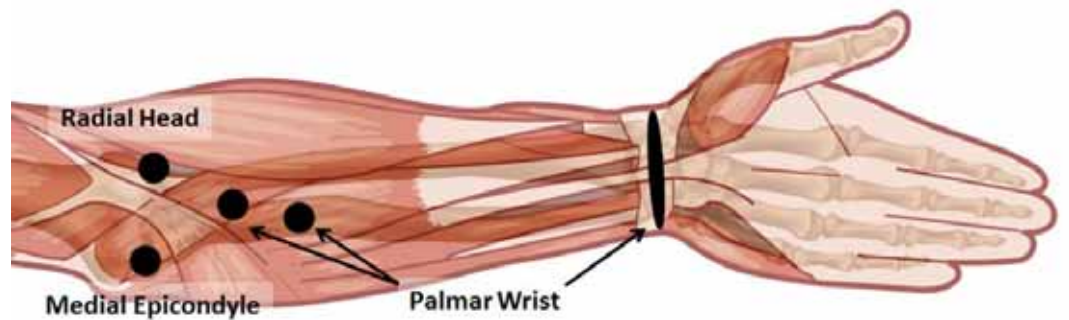


Anterior Forearm Tender Points

Radial Head

Medial Epicondyle

Palmar wrist



Supinator (Radial Head)

Origin – Lateral epicondyle of humerus and proximal ulna

Insertion - Lateral, posterior and anterior surfaces of proximal 1/3 of radius

Action -Supinates forearm



Radial Head (RAH) Location

(Supinator)

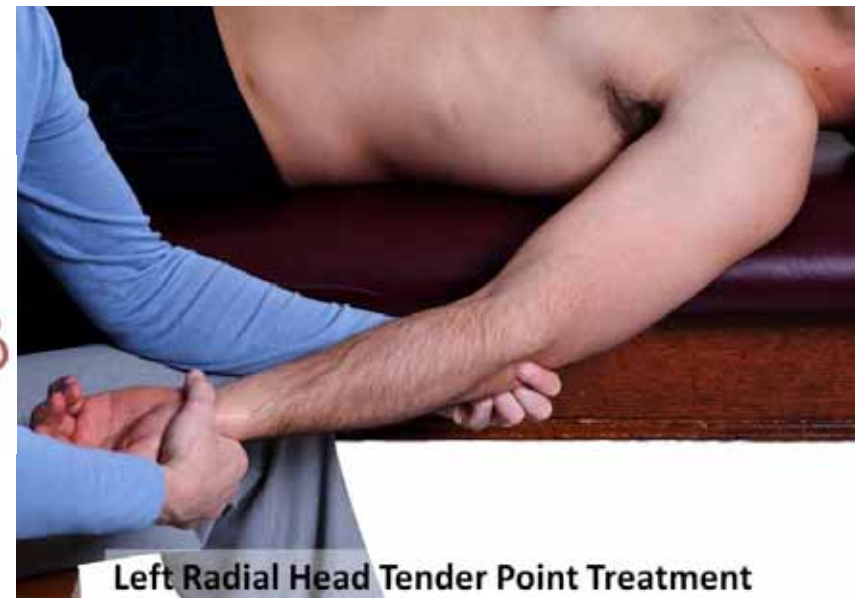
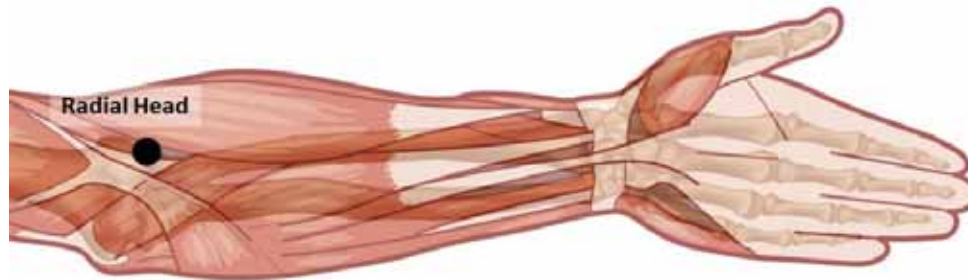
Found on lateral aspect of supinator muscle at proximal anterolateral radial head

Treatment

1. Seated or supine
2. Elbow extension with slight abduction and marked forearm supination. Apply a mild valgus force at elbow

E Sup Abd

Anatomical Considerations



Pronator Teres (Medial Epicondyle)

Origin – Medial epicondyle of humerus and coronoid process of ulna

Insertion – Middle of lateral surface of radius

Action – Pronates forearm and elbow flexion



Medial Epicondyle (MEP) Location

(Pronator)

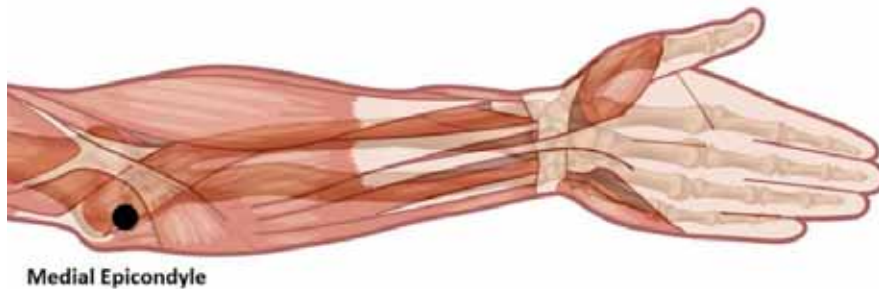
Found at origin of the pronator teres on medial epicondyle of humerus

Treatment

1. Seated or supine
2. Elbow flexion with slight adduction and marked forearm pronation with slight wrist flexion.

F Pro Add

Anatomical Considerations



Left Medial Epicondyle Tender Point Treatment



Lab Exercise 5

4 minutes

RAH – Lateral aspect of supinator muscle at proximal anterolateral radial head

Elbow extension with slight abduction and marked forearm supination. Apply a mild valgus force at elbow



MEP – At origin of the pronator teres on medial epicondyle of humerus

Elbow flexion with slight adduction and marked forearm pronation with slight wrist flexion



Flexor Carpi Radialis & Ulnaris

(Palmar wrist)

Flexor Carpi Radialis

Origin – Medial epicondyle of humerus

Insertion – Palmar aspect of 2nd metacarpal

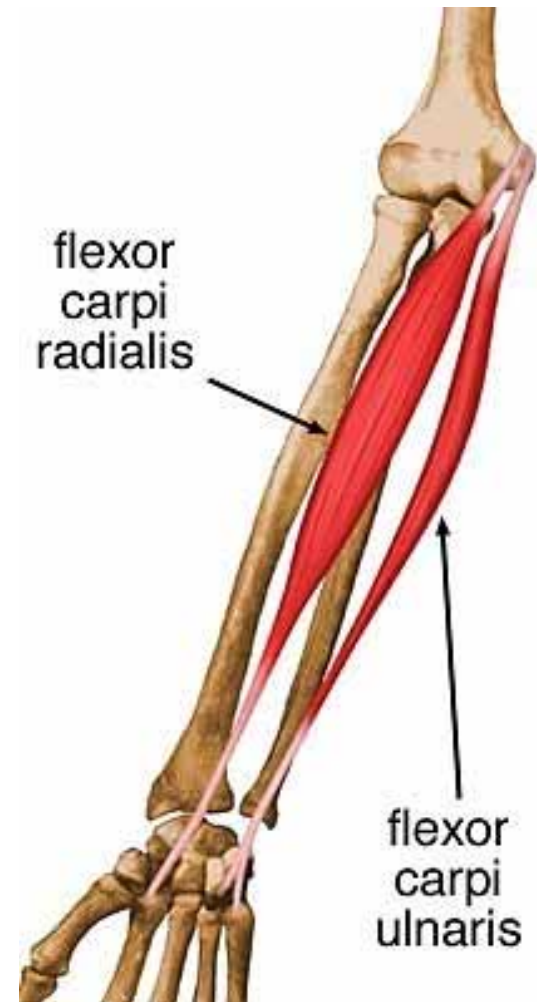
Action -Flexes and abducts wrist

Flexor Carpi Ulnaris

Origin – Medial epicondyle of humerus and proximal ulna

Insertion – pisiform, hook of the hamate, and palmar aspect of 5th metacarpal

Action - Flexes and adducts wrist



Palmar Wrist (PWR) Location

(Flexor carpi radialis and ulnaris)

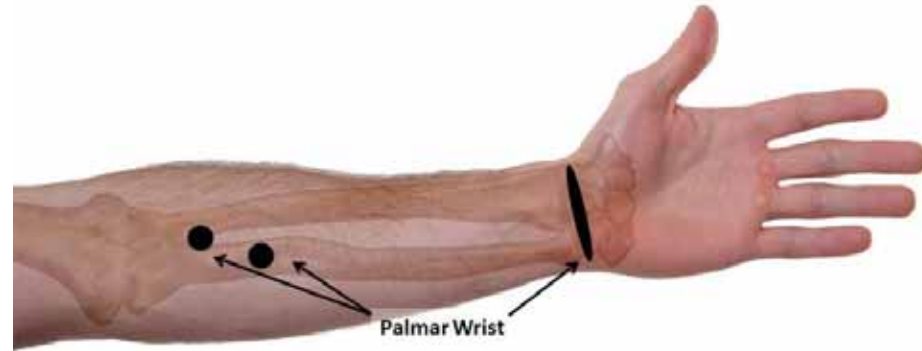
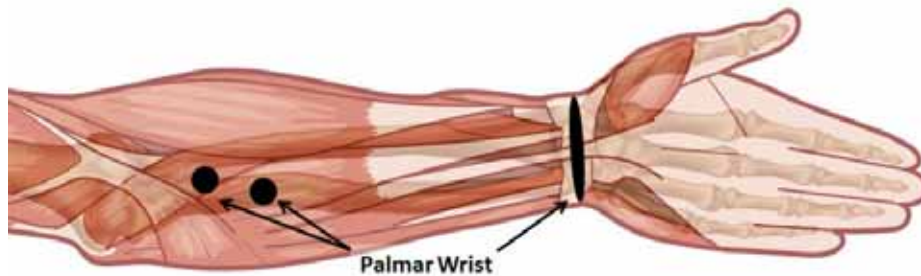
1. **Distal:** Along palmar crease
2. **Proximal:** In proximal muscle bellies of flexor carpi radialis and ulnaris in forearm

Treatment

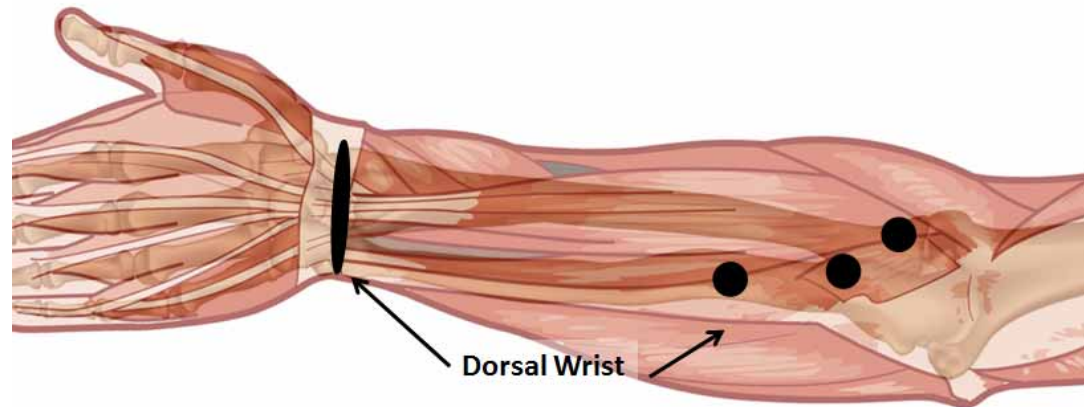
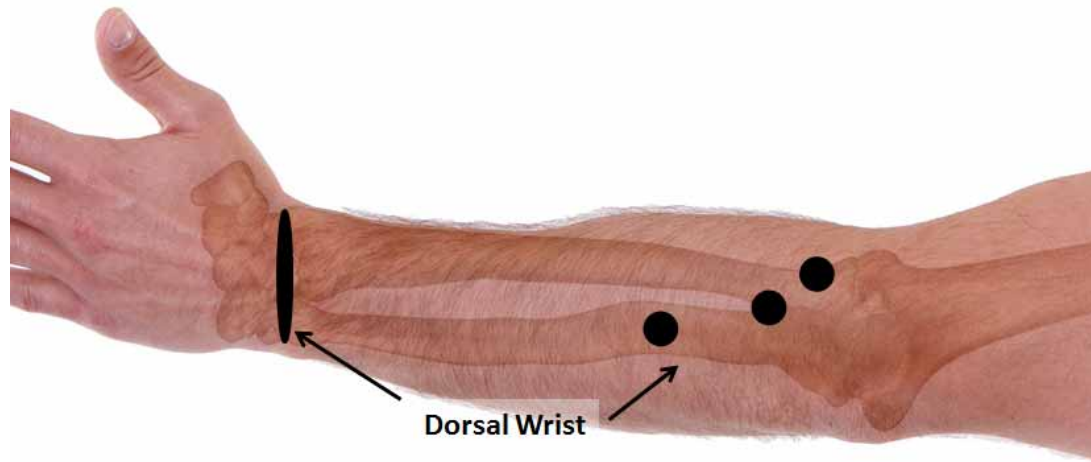
1. Seated or supine
2. Flexion of wrist and elbow with slight ulnar or radial deviation of wrist as needed

F UD/RD

Anatomical Considerations



Posterior Forearm Tender Points



Extensor Carpi Radialis & Ulnaris

(Dorsal wrist)

Extensor Carpi Radialis

Origin – lateral supracondyle and epicondyle of humerus

Insertion – Dorsal aspect of 2nd and 3rd metacarpals

Action -Extends and abducts wrist

Extensor Carpi Ulnaris

Origin – Lateral epicondyle of humerus and proximal ulna

Insertion – dorsal aspect of 5th metacarpal

Action - Extends and adducts wrist



Dorsal Wrist (DWR) Location

(*Extensor carpi radialis and ulnaris*)

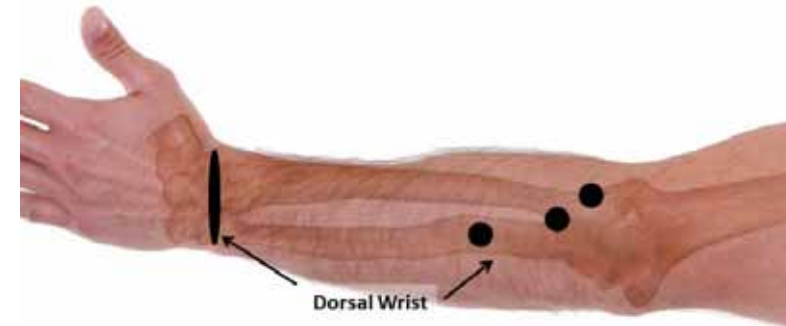
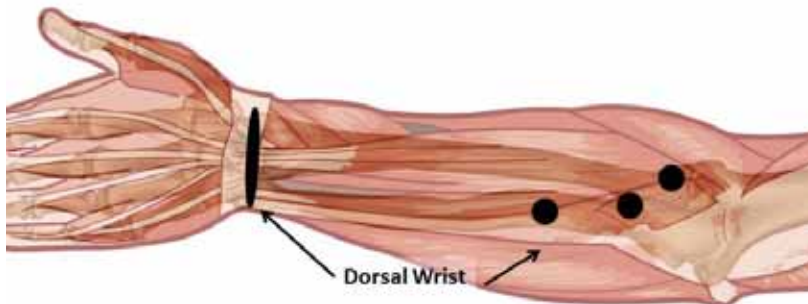
1. **Distal:** Along dorsal wrist crease
2. **Proximal:** In proximal muscle bellies of extensor carpi radialis and ulnaris in forearm

Treatment

1. Seated or supine
2. Extension of wrist with slight ulnar or radial deviation of wrist as needed

E UD/RD

Anatomical Considerations



Lab Exercise 6

4 minutes

Palmar Wrist

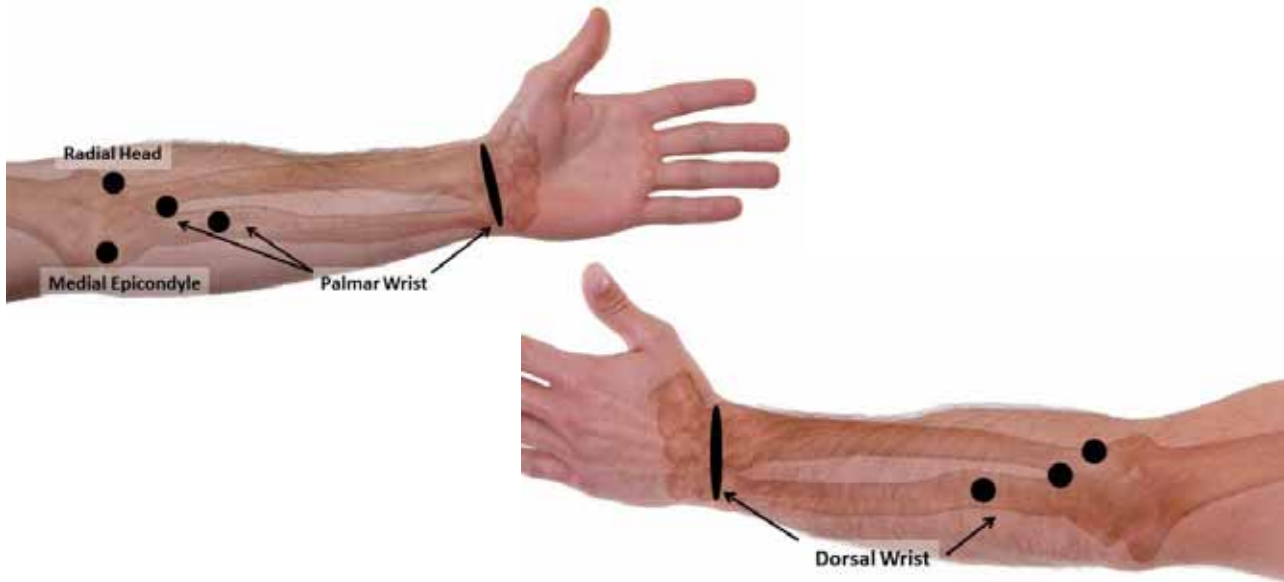
DX - Along palmar wrist crease and in proximal muscle bellies in forearm

TX - Flexion of wrist and elbow with slight ulnar or radial deviation of wrist to side of TP

Dorsal Wrist

DX - Along dorsal wrist crease or in proximal muscle bellies in forearm

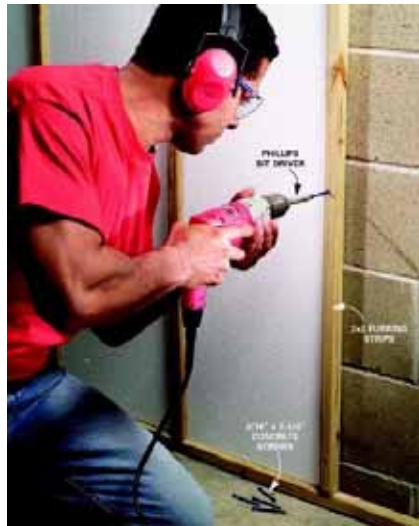
TX - Extension of wrist with slight ulnar or radial deviation of wrist to side of TP



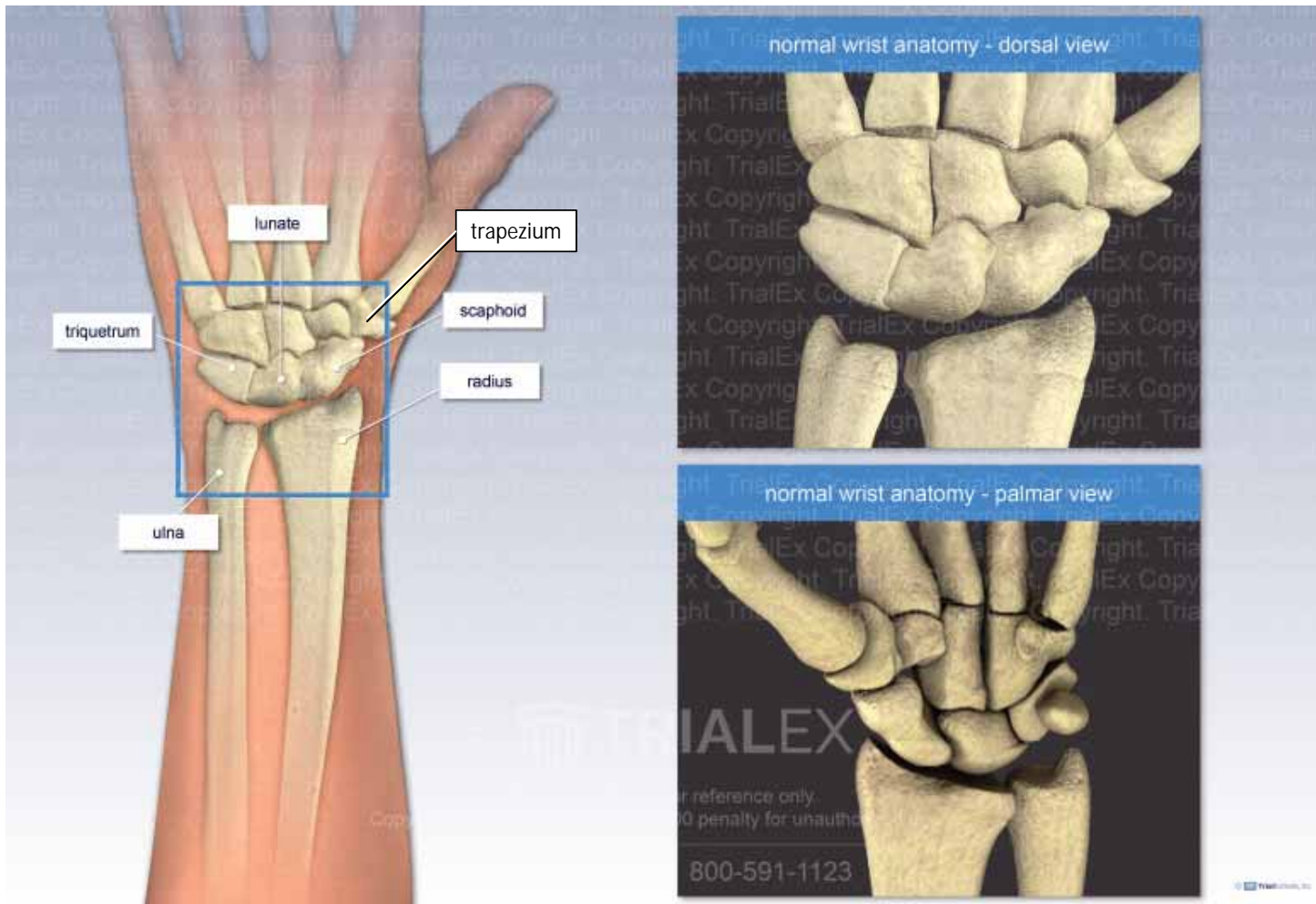
How Do You Get Tender Points?

Forearm and elbow

- Sudden strains
- Overuse
- Weekend Warrior

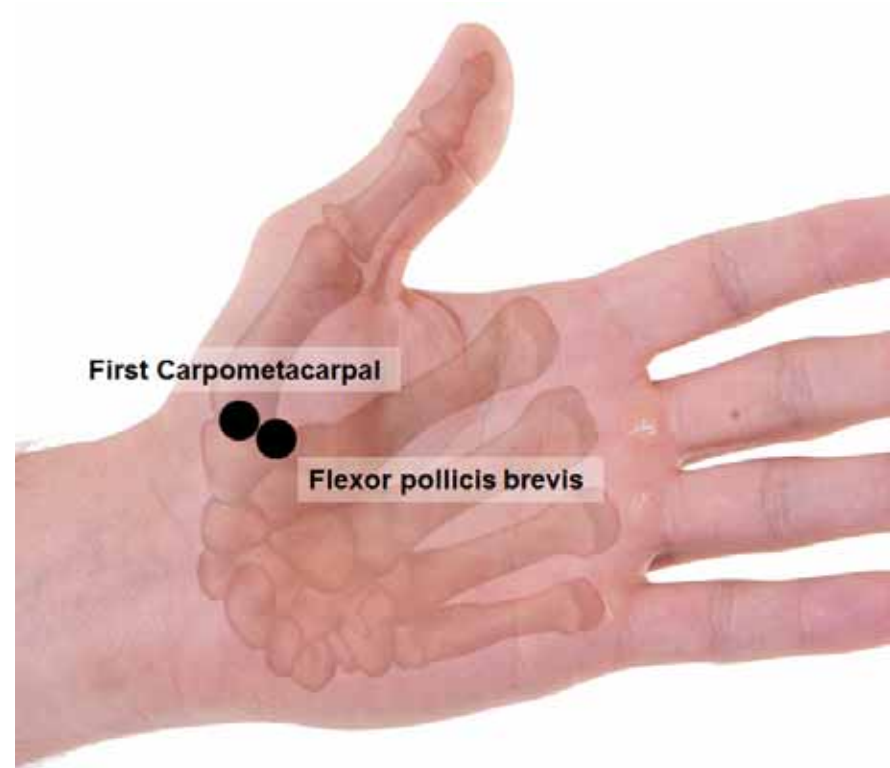
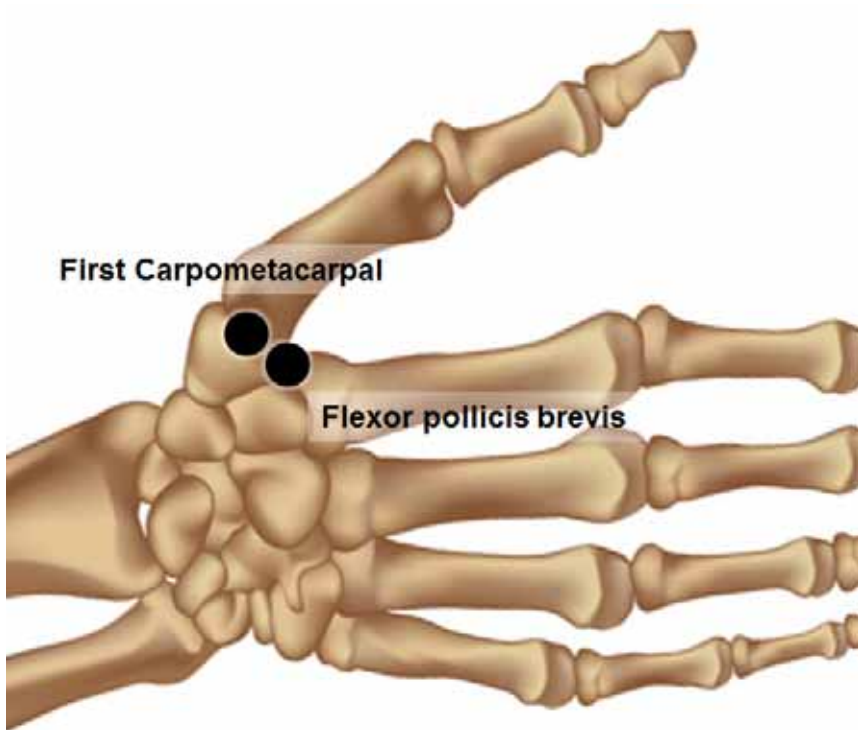


ANATOMY OF WRIST

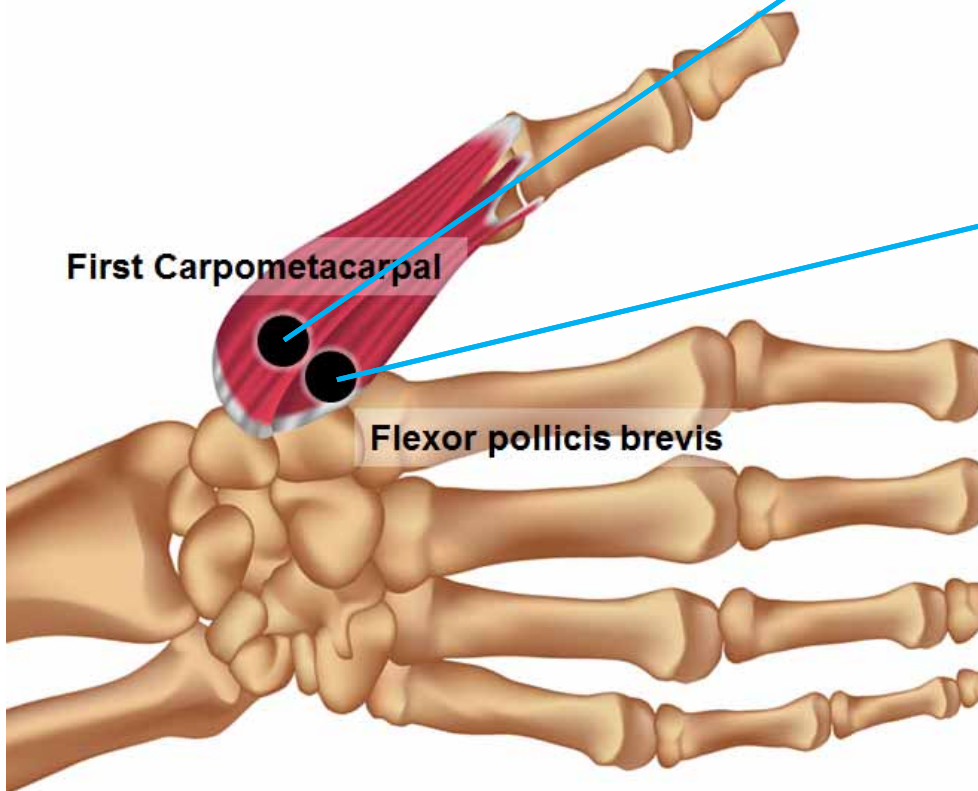


BONES:
Radius
Ulna
Carpals:
scaphoid
lunate
trapezium

Anterior Hand Tender Points



Hand Tender Points



Abductor pollicis brevis

Origin - Flexor retinaculum, scaphoid, and trapezium

Insertion – Distal proximal phalanx

Action -Abducts thumb

Flexor pollicis brevis

Origin – Flexor retinaculum, scaphoid, and trapezium

Insertion - Distal proximal phalanx

Action -Flexes thumb

First Carpometacarpal (CM1) Location (*Abductor Pollicis brevis*)

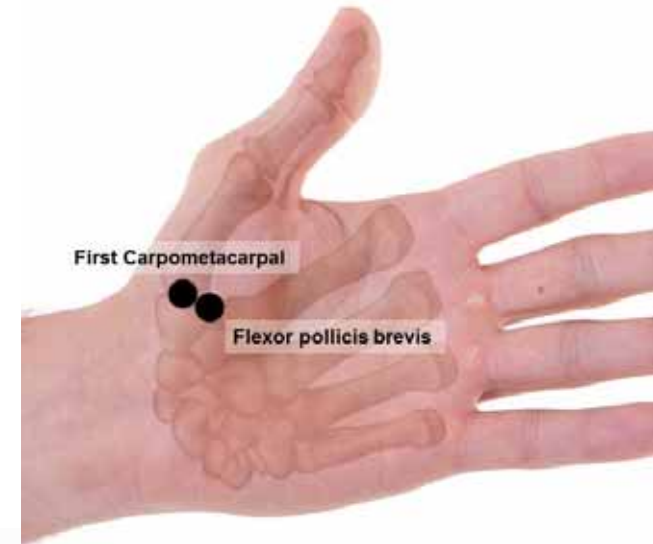
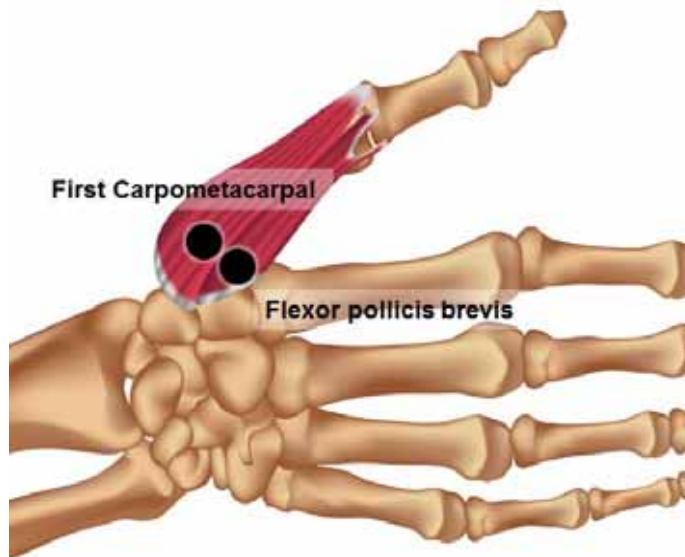
Found at anterior base of first metacarpal bone

Treatment

1. Seated or supine
2. Flexion of wrist and abduction of thumb

F Abd

Anatomical Considerations



Left First Carpometacarpal Tender Point Treatment

Flexor Pollicis Brevis (FPB) Location

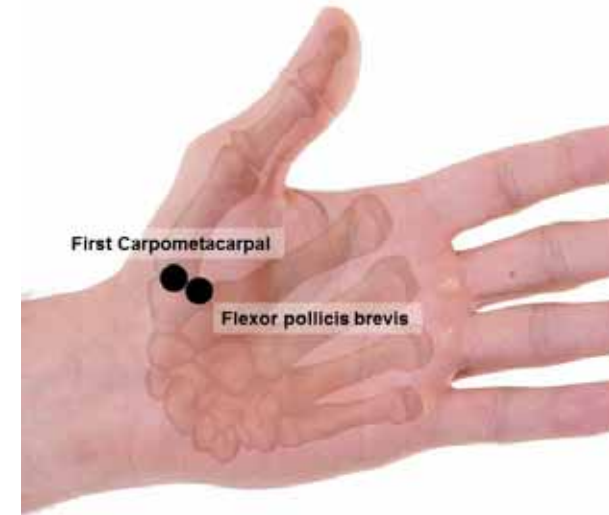
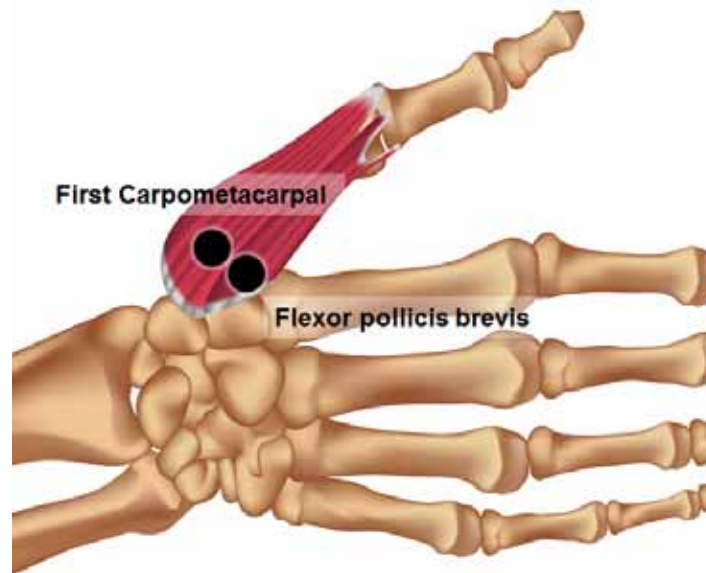
Found on medial aspect of first metacarpal bone

Treatment

1. Seated or supine
2. Flexion of wrist with flexion and adduction of thumb

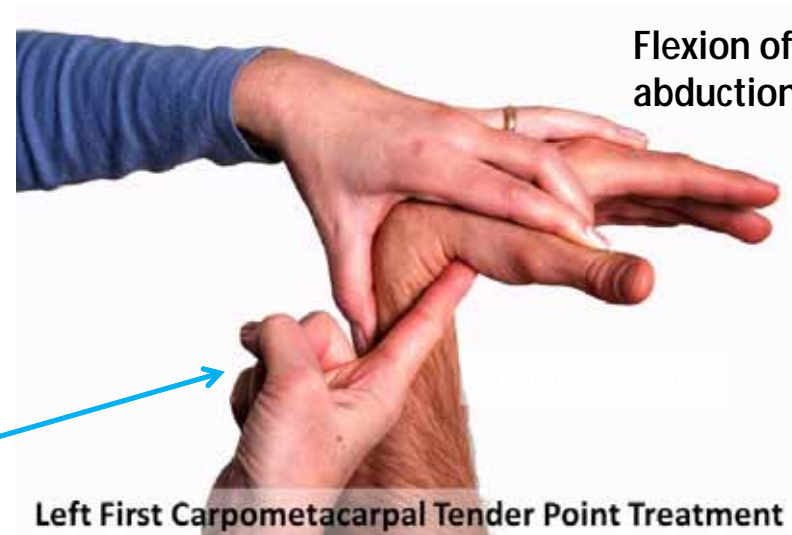
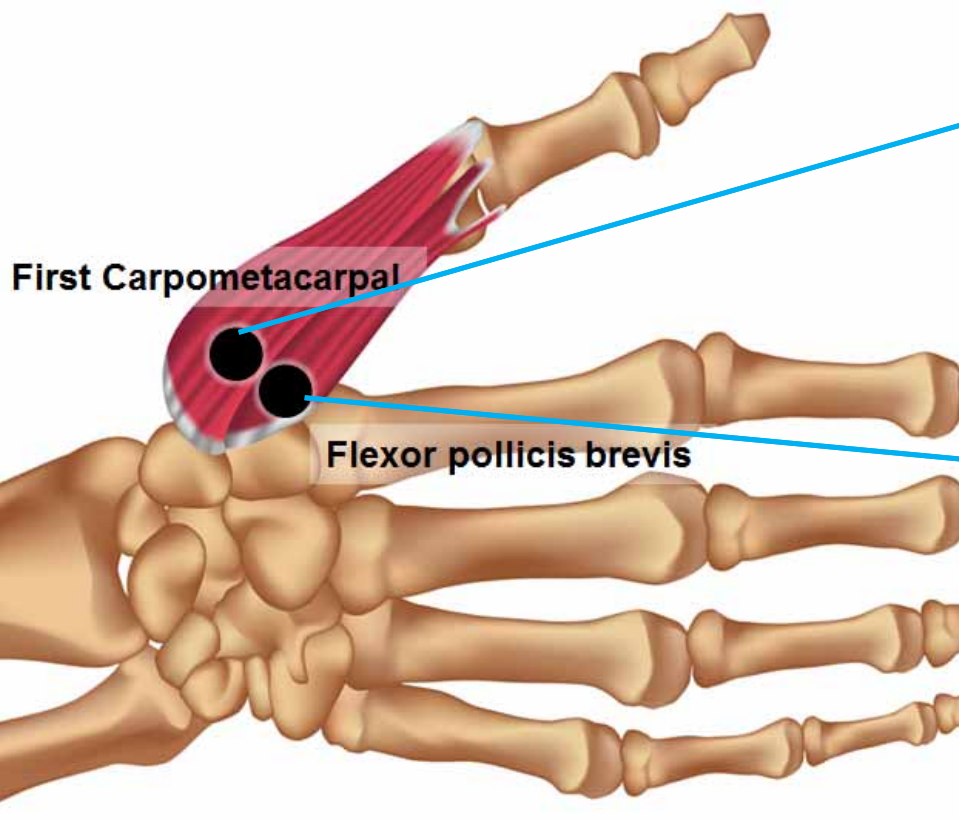
F Add

Anatomical Considerations



Lab Exercise 7

4 minutes



How Do You Get Tender Points?

- Sudden strains
- Overuse - Texting
- Weekend Warrior



Counterstrain Summary

- If in doubt
 - FOLD AND HOLD - Approximate the origin and insertion of the affected structure
 - The patient **MUST** relax
 - Treatment position must achieve at least 30% reduction of tenderness
 - Hold for 90 secs
 - Don't let go of the tender point
- If the tender point radiates
 - It is a trigger point
 - Counterstrain may not work
- Tenderpoints that recur require lifestyle modification

References

- Snider KT, Glover J. Atlas of Common Counterstrain Tender Points. Kirksville, MO: A.T. Still University; 2014.
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- Myers HL. Clinical Application of Counterstrain. Compendium Edition. Tucson, AZ: Osteopathic Press; 2012.
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