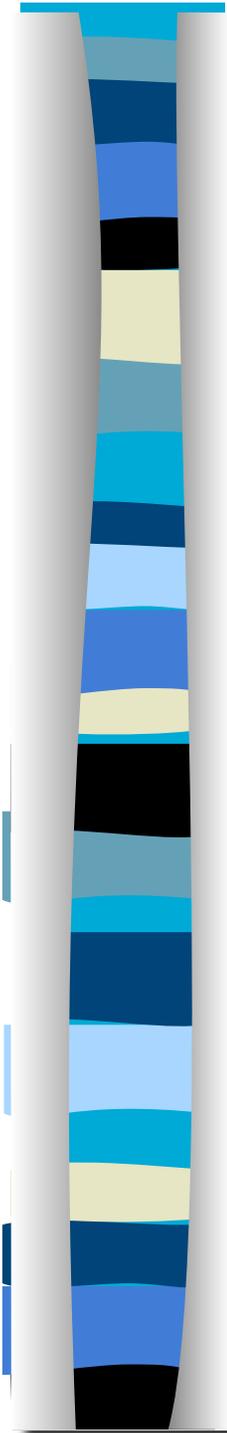
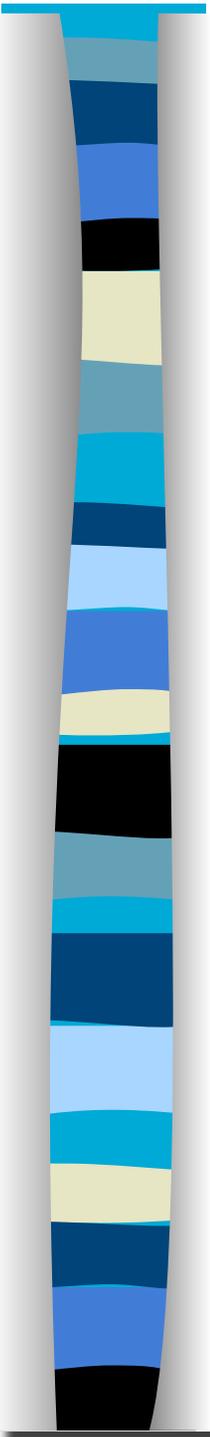


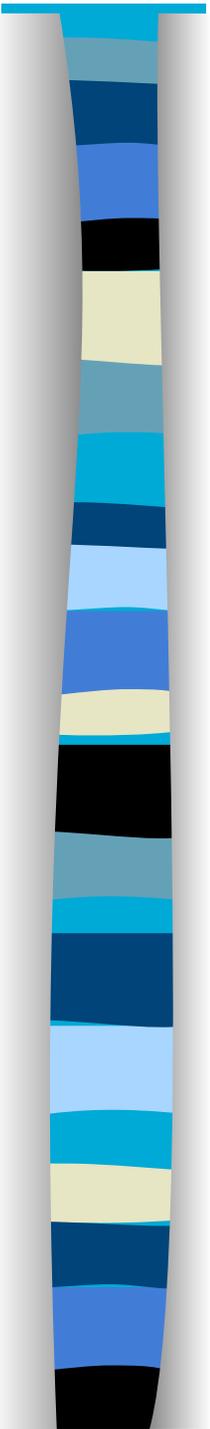
# 79a Orthopedic Massage: Introduction Rotator Cuff and Carpal Tunnel





# 79a Orthopedic Massage: Introduction Rotator Cuff and Carpal Tunnel Class Outline

|            |  |
|------------|--|
| 5 minutes  | Attendance, Breath of Arrival, and Reminders |
| 10 minutes | Lecture:                                     |
| 25 minutes | Lecture:                                     |
| 15 minutes | Active study skills:                         |
| 60 minutes | Total  |



# 79a Orthopedic Massage: Introduction

## Rotator Cuff and Carpal Tunnel

### Class Outline

#### **Quizzes:**

- 81a Kinesiology Quiz (supraspinatus, infraspinatus, teres minor, subscapularis, flexor digitorum superficialis, extensor digitorum, flexor pollicis longus, flexor digitorum profundus)
- 84a Kinesiology Quiz (pectoralis major, pectoralis minor, coracobrachialis, biceps brachii, sternocleidomastoid, and scalenes)

#### **Spot Checks:**

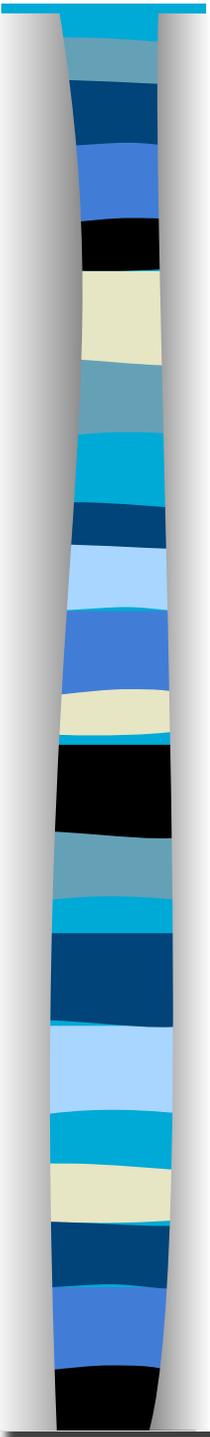
- 81b Orthopedic Massage: Spot Check – Rotator Cuff & Carpal Tunnel
- 84b Orthopedic Massage: Spot Check – Thoracic Outlet

#### **Assignments:**

- 85a Orthopedic Massage: Outside Massages (2 due at the start of class)

#### **Preparation for upcoming classes:**

- 80a Final Simulation MBLEx Exam Parts 4 and 5.
  - Bring 10 questions.
- 80b Orthopedic Massage: Technique Review and Practice - Rotator Cuff & Carpal Tunnel
  - Packet J: 95-96.



# Classroom Rules

**Punctuality** - everybody's time is precious

- Be ready to learn at the start of class; we'll have you out of here on time
- Tardiness: arriving late, returning late after breaks, leaving during class, leaving early

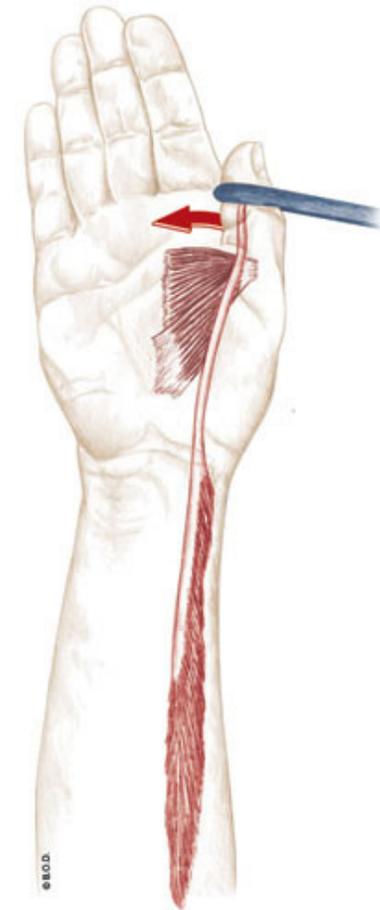
**The following are not allowed:**

- Bare feet
- Side talking
- Lying down
- Inappropriate clothing
- Food or drink except water
- Phones that are visible in the classroom, bathrooms, or internship

*You will receive one verbal warning, then you'll have to leave the room.*

# Flexor Pollicis Longus, Trail Guide Page 152

- A** Flex the thumb  
(interphalangeal joint)
- Flex the thumb  
(metacarpophalangeal and  
carpometacarpal joints)
- O** Anterior surface of the radius  
  
Interosseous membrane
- I** Base of the distal phalanx of the thumb



Anterior View

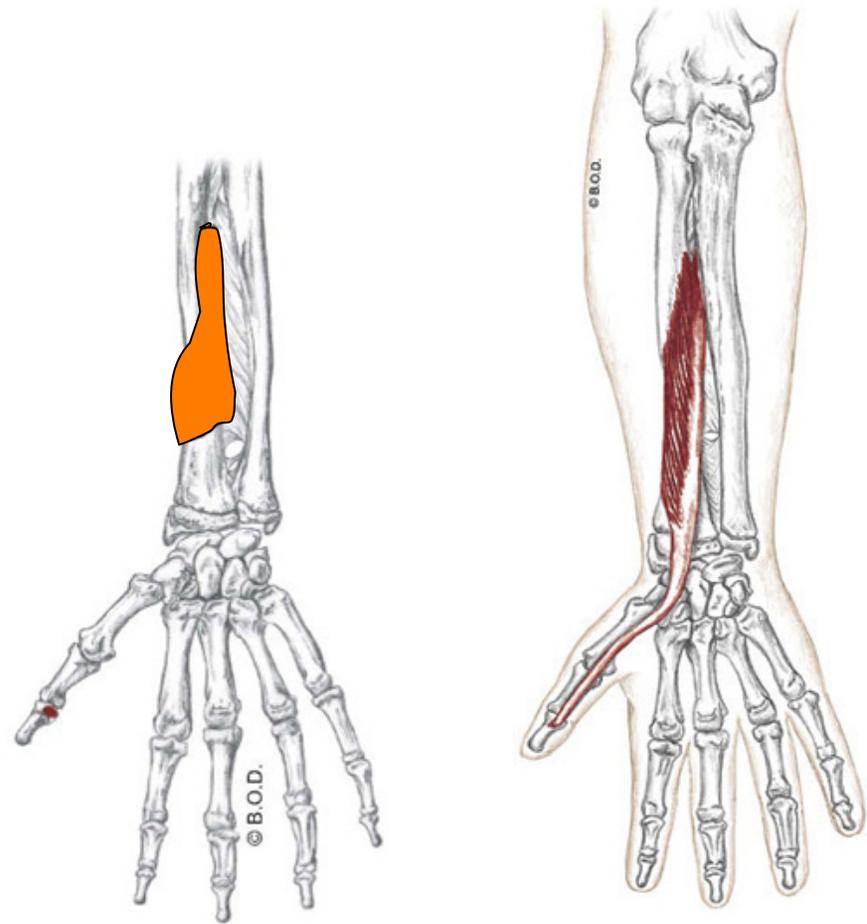
# Flexor Pollicis Longus, Trail Guide Page 152

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Anterior View

# Flexor Pollicis Longus, Trail Guide Page 152

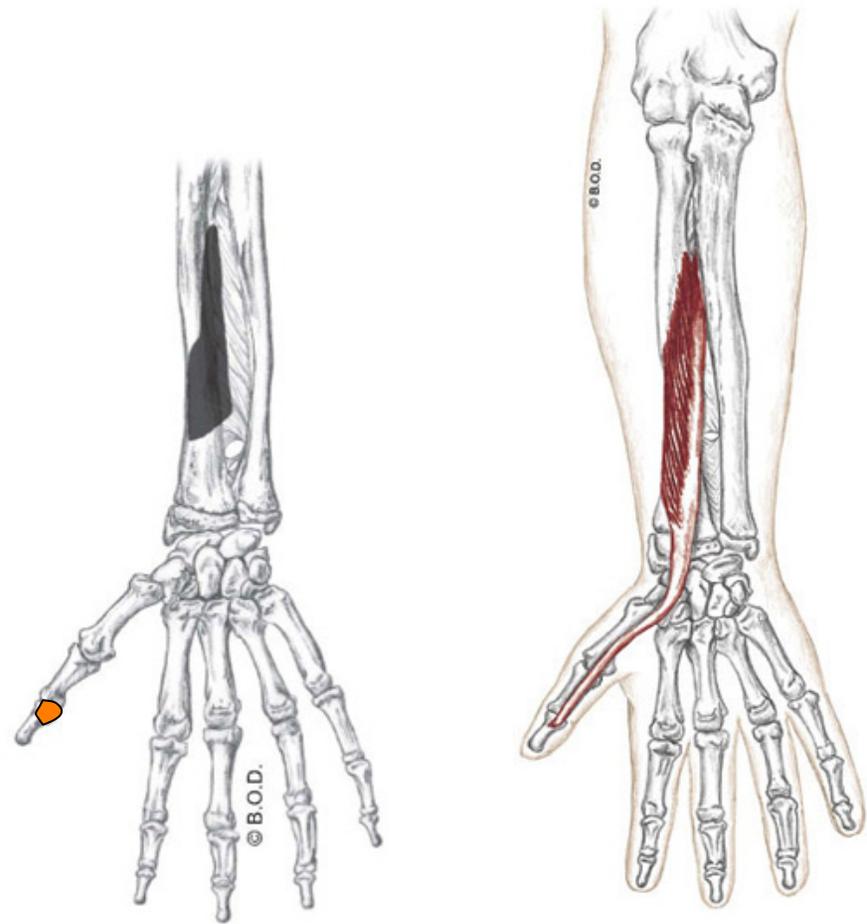
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Anterior View



# Flexor Digitorum Profundus, Trail Guide Page 142

**A** Flex the 2nd through 5th fingers  
(metacarpophalangeal and  
distal interphalangeal joints)

Assist to flex the wrist (radiocarpal joint)

**O** Anterior surface of the proximal 3/4 of the ulna

Medial surface of the proximal 3/4 of the ulna

**I** Base of the distal phalanges of 2nd through 5th fingers  
on the palmar surface



Anterior View

# Flexor Digitorum Profundus, Trail Guide Page 142

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Assist to flex the wrist (radiocarpal joint)

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Anterior View

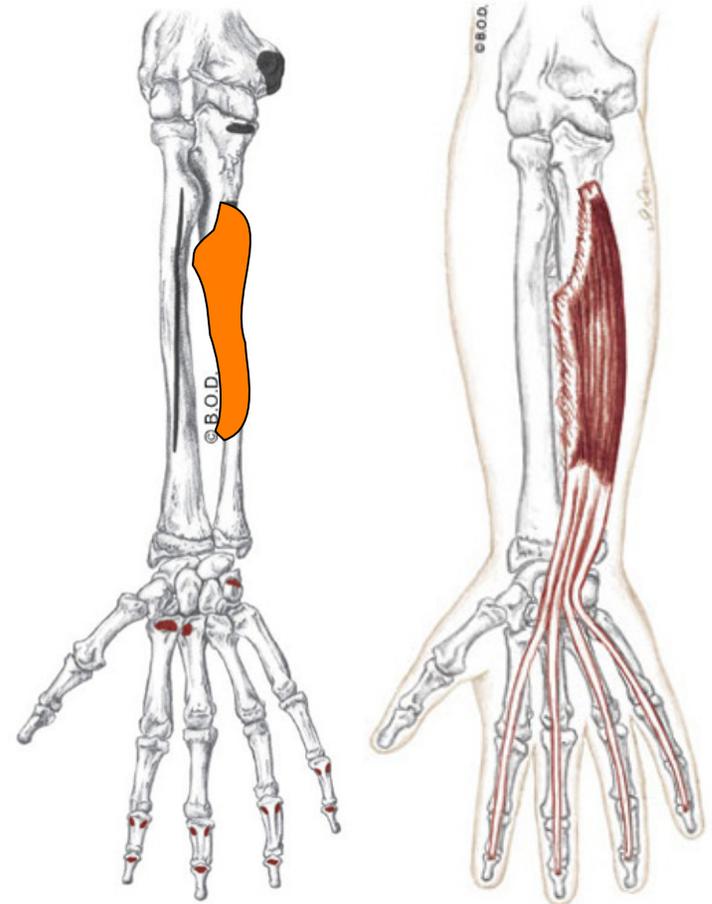
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Anterior View

# Flexor Digitorum Profundus, Trail Guide Page 142

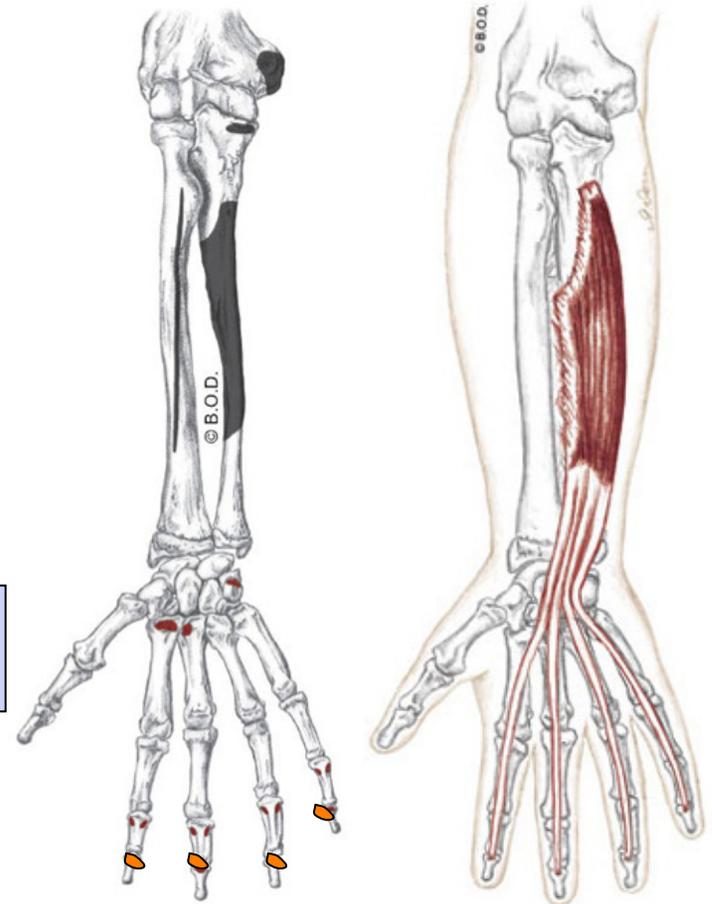
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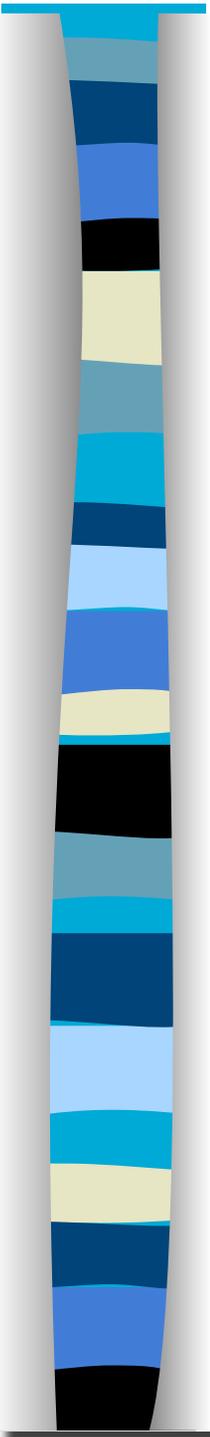
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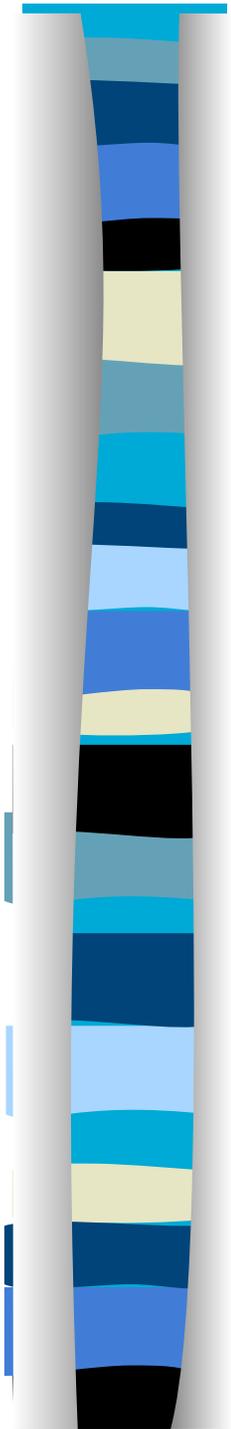


Anterior View



## 79a Orthopedic Massage: Introduction Rotator Cuff and Carpal Tunnel

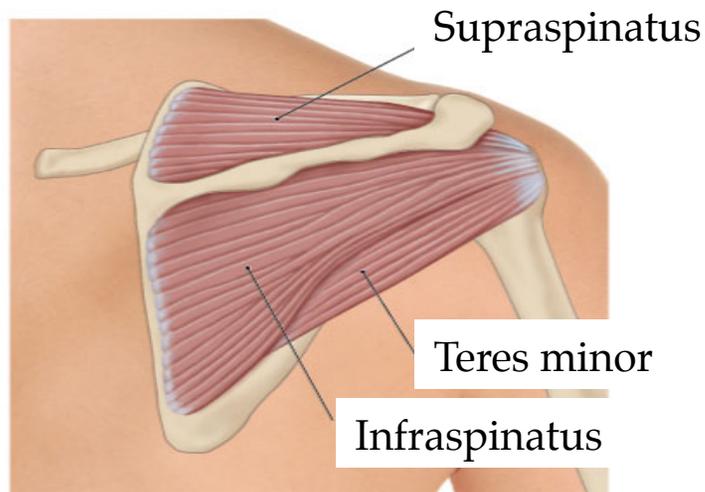
J - 79



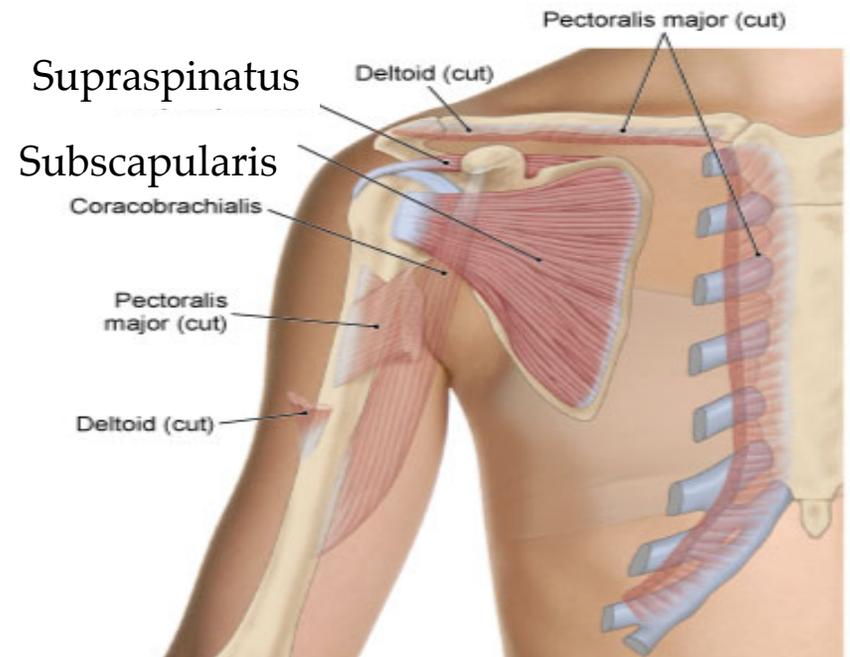
# Rotator Cuff Strain

## Rotator Cuff Strain

**Rotator cuff strain (AKA: RC strain)** Strain of one or more of the following muscles: supraspinatus, infraspinatus, teres minor, and subscapularis.



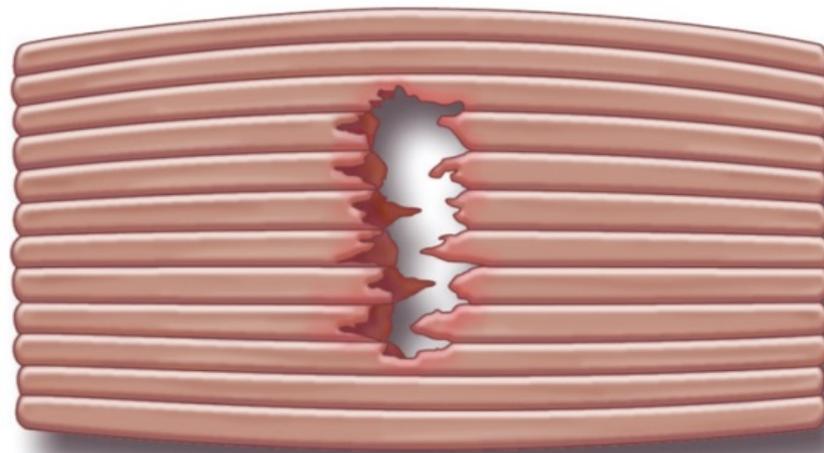
Posterior View

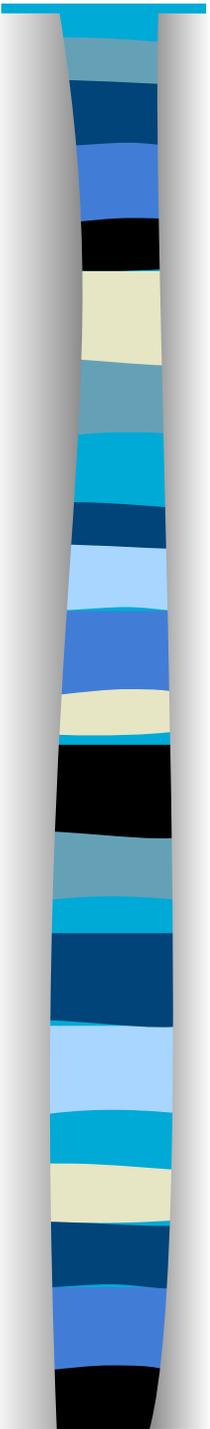


Anterior View

## Rotator Cuff Strain

- **Strain** Tearing of a muscle and/or tendon. Muscles that cross more than one joint are most susceptible to strain. Caused by excessive tensile stress usually during eccentric contraction.

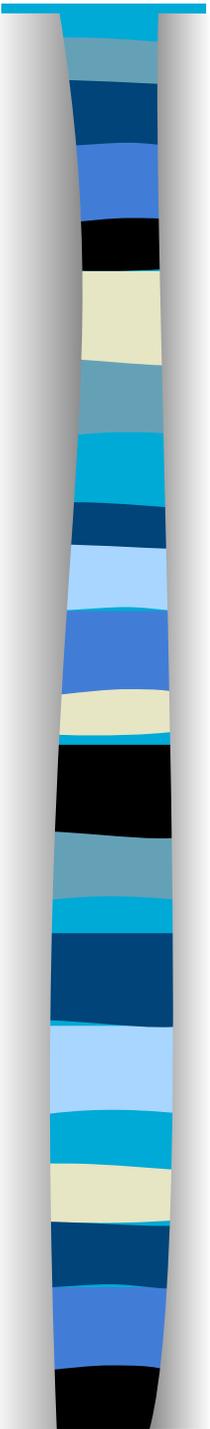




## Onset of Rotator Cuff Strain

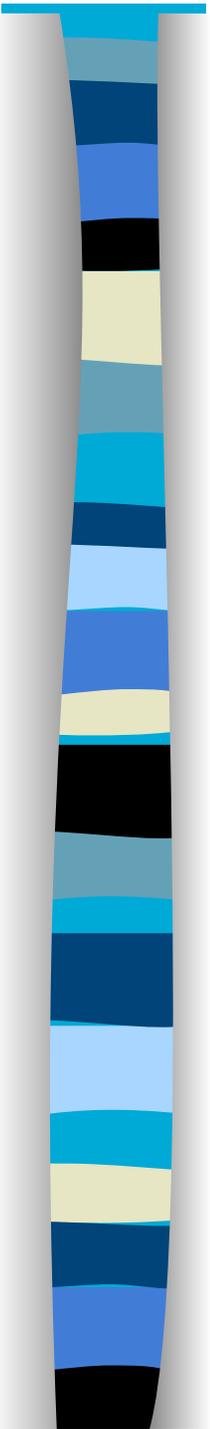
### Onset

- Chronic onset: progressive degeneration. Partial-thickness tears are more likely.
- Acute onset: high force loads. Full-thickness tears are more likely.



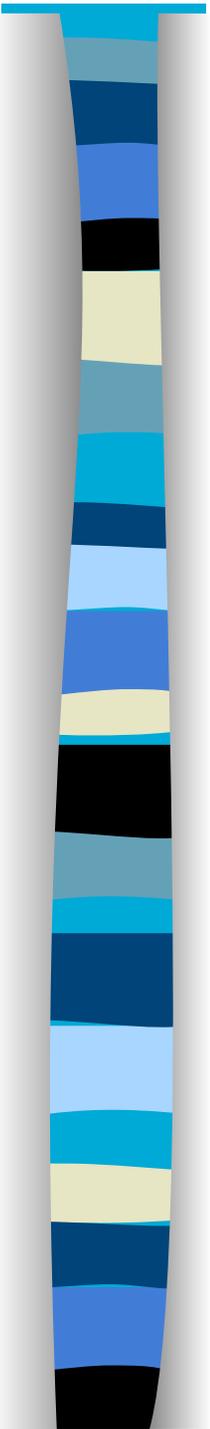
## How many muscles can be involved in a Rotator Cuff Strain?

- Usually just one or two
- Rarely are all four are involved
- Subscapularis is rarely involved because there are several larger muscles that perform the same actions and provide support



## Rotator Cuff Strain Assessment

- Supraspinatus: pain during resisted glenohumeral abduction
- Infraspinatus/teres minor: pain during resisted glenohumeral lateral rotation
- Subscapularis: pain during resisted glenohumeral medial rotation



## Rotator Cuff Strain Traditional Treatments

### **Physical therapy (stretching, strengthening, and ultrasound)**

- Variable effectiveness

### **Corticosteroid injection**

- Variable effectiveness

### **Surgery**

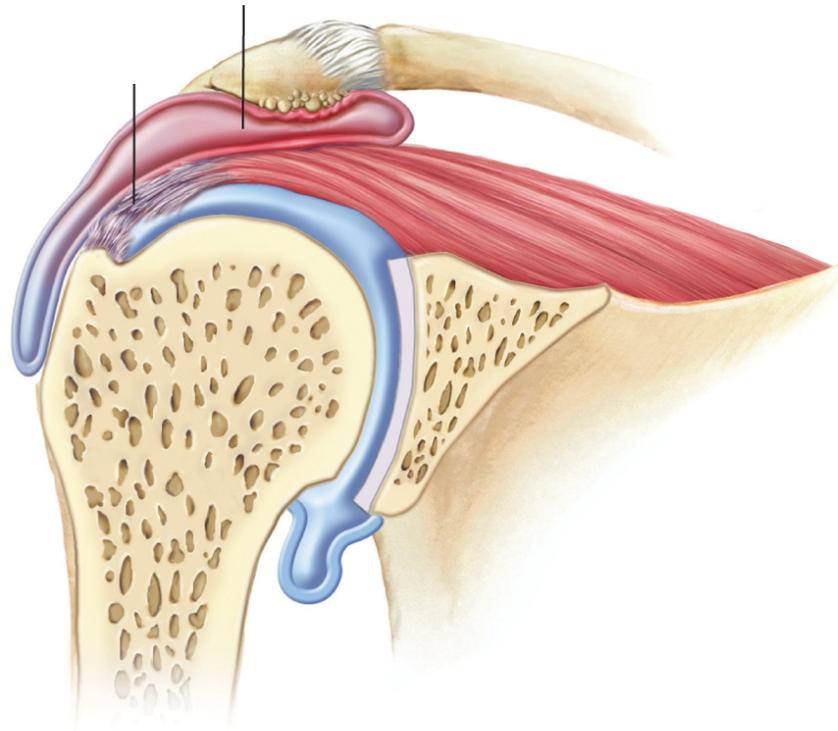
- Most common is subacromial decompression for supraspinatus

### **Cessation or rest from offending activities**

- Effective, especially combined with orthopedic massage

## Etiology: Supraspinatus Strain

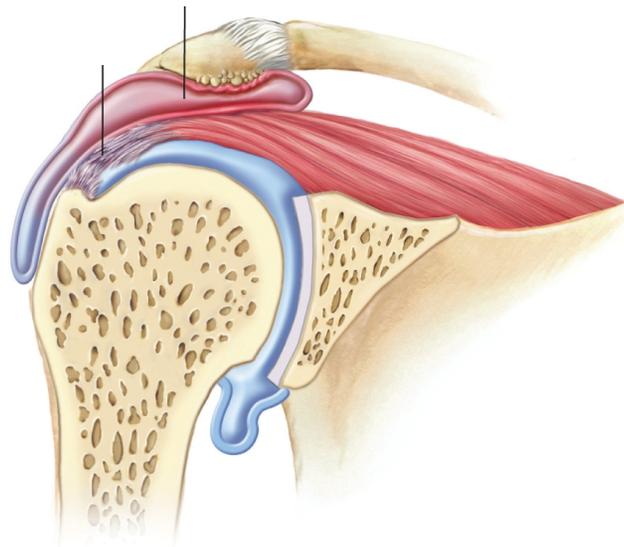
**Subacromial compression** Compression of the supraspinatus between the underside of the acromion process and the superior surface of the head of the humerus.



## Etiology: Supraspinatus Strain

### Consequences of a Supraspinatus Strain:

- Slower healing time
- **Tendinosis** Degeneration and break down of collagen in the tendon fibers. Results in chronic pain and significant loss of tensile strength in tendon.



## Etiology: Supraspinatus Strain

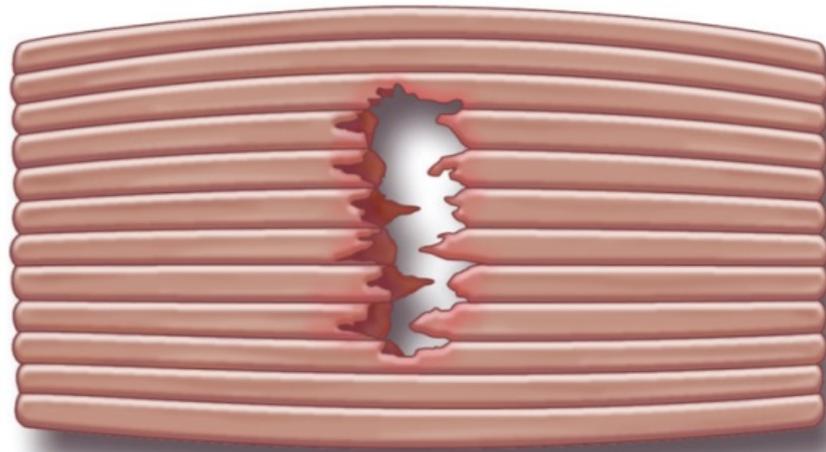
### Consequences of a Supraspinatus Strain:

- **Strain** Tearing of a muscle and/or tendon.
- **Calcific tendinitis** Calcium deposits in the tendon. Tendinosis may allow this to occur. Most common in supraspinatus.



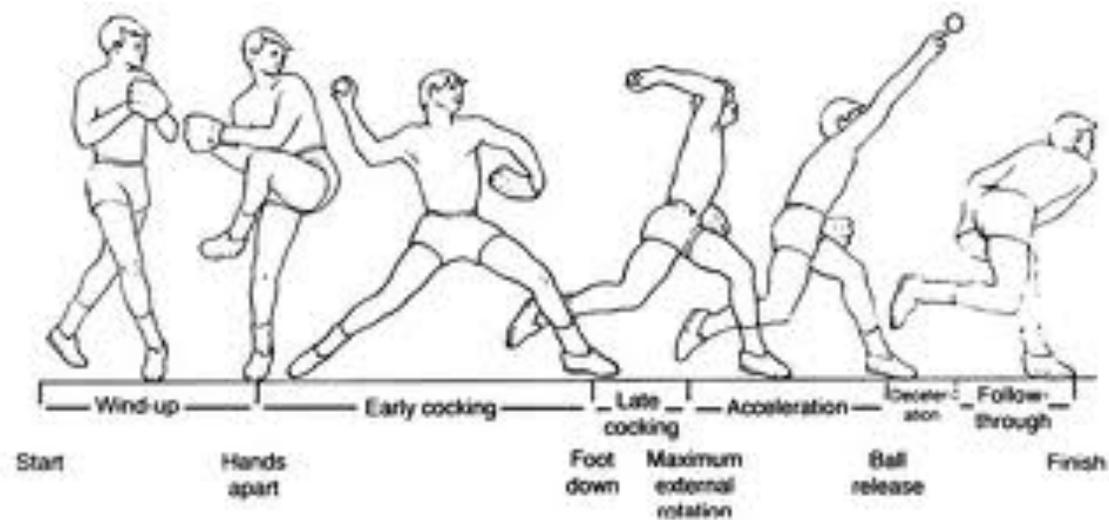
## Etiology: Infraspinatus and Teres Minor Strain

- Overuse and overloading
- **Strain** Tearing of a muscle and/or tendon.



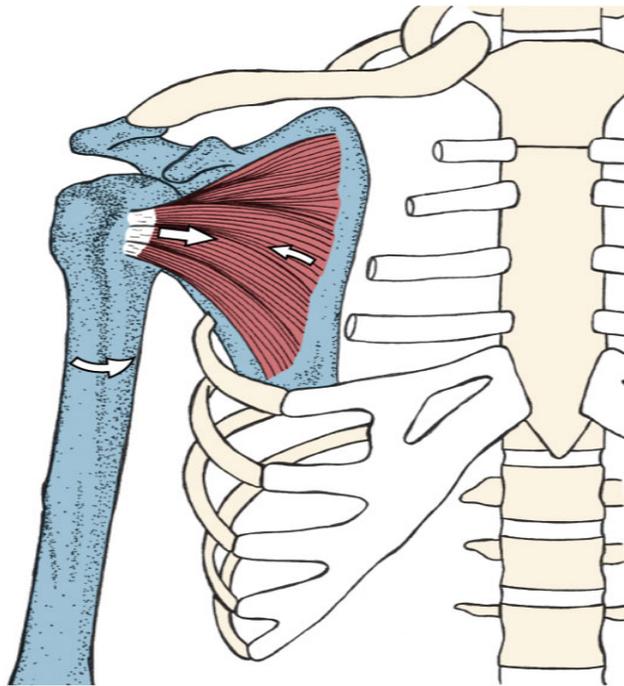
## Etiology: Infraspinatus and Teres Minor Strain

- During throwing motions involving medial rotation of the glenohumeral joint, the infraspinatus and teres minor eccentrically contract to decelerate the arm after release of the ball.

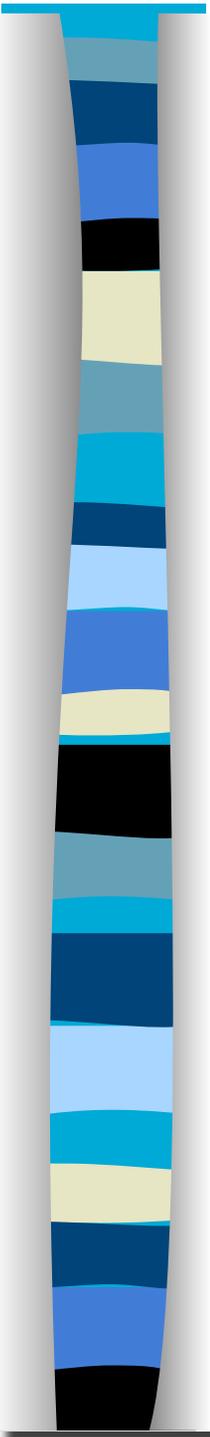


## Etiology: Subscapularis Strain

- Often accompanied by glenohumeral dislocation

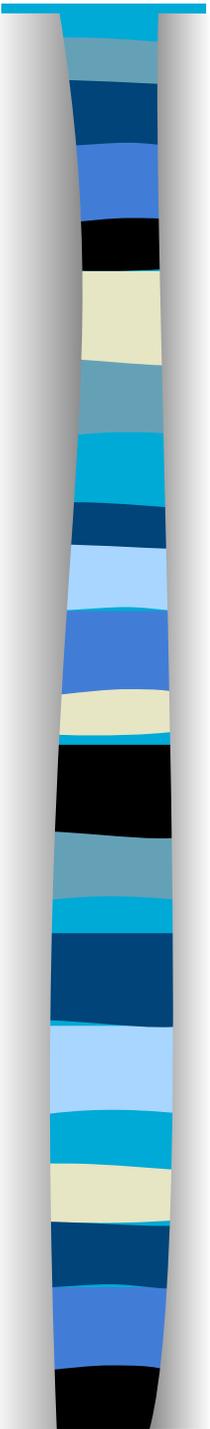


Anterior View



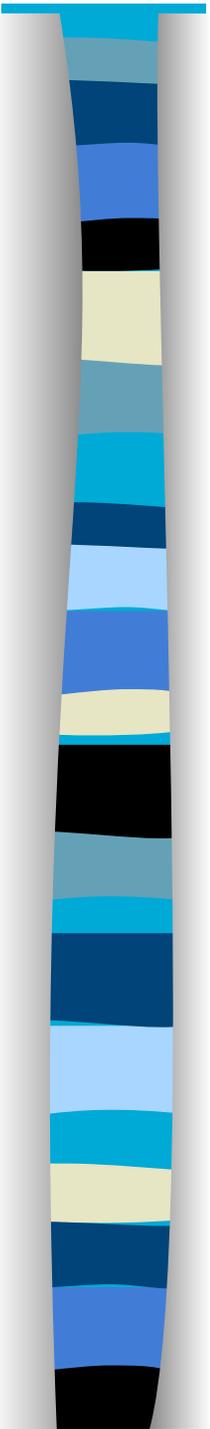
## Considerations and Cautions for Rotator Cuff Strain

- First assess which muscle or muscles are torn. Accurate assessment is essential to determine the severity. Avoid vigorous deep friction on a recent or severe injury.
- Advise the client to cease or rest from any offending activities.



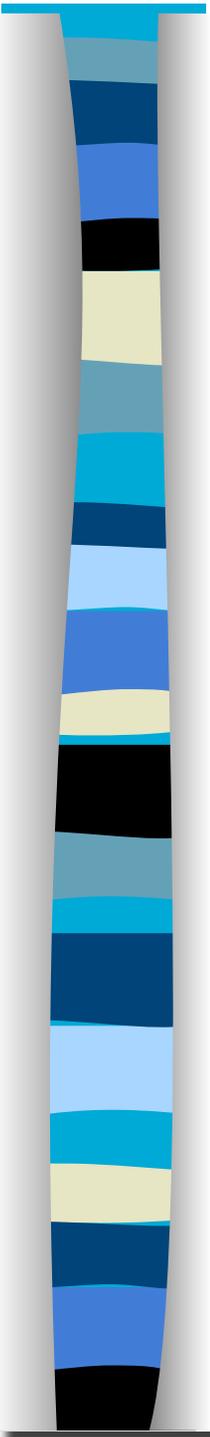
## Considerations and Cautions for Rotator Cuff Strain

- Treat all muscles of the shoulder area to regain biomechanical balance.
- Supraspinatus is more difficult to access, but can be addressed.
- Subscapularis is rarely strained and mostly inaccessible. The distal tendon is accessible and common site of strain.



## Considerations and Cautions for Rotator Cuff Strain

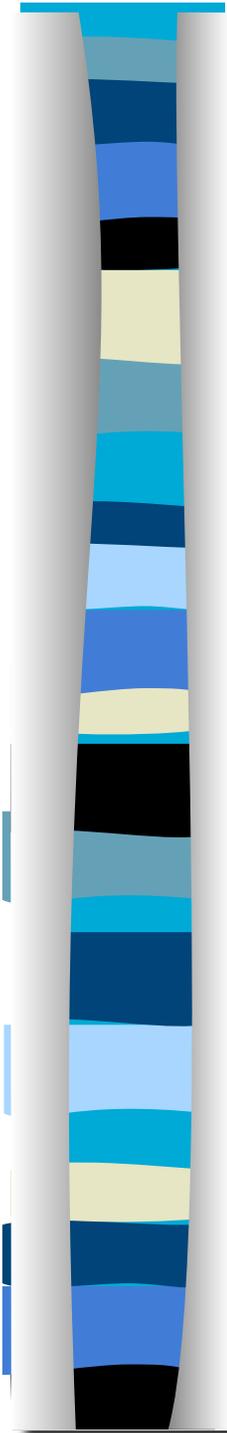
- Stretching, joint mobilization, and activity modifications can reduce stress on damaged tissues allowing the soft tissue techniques to succeed.



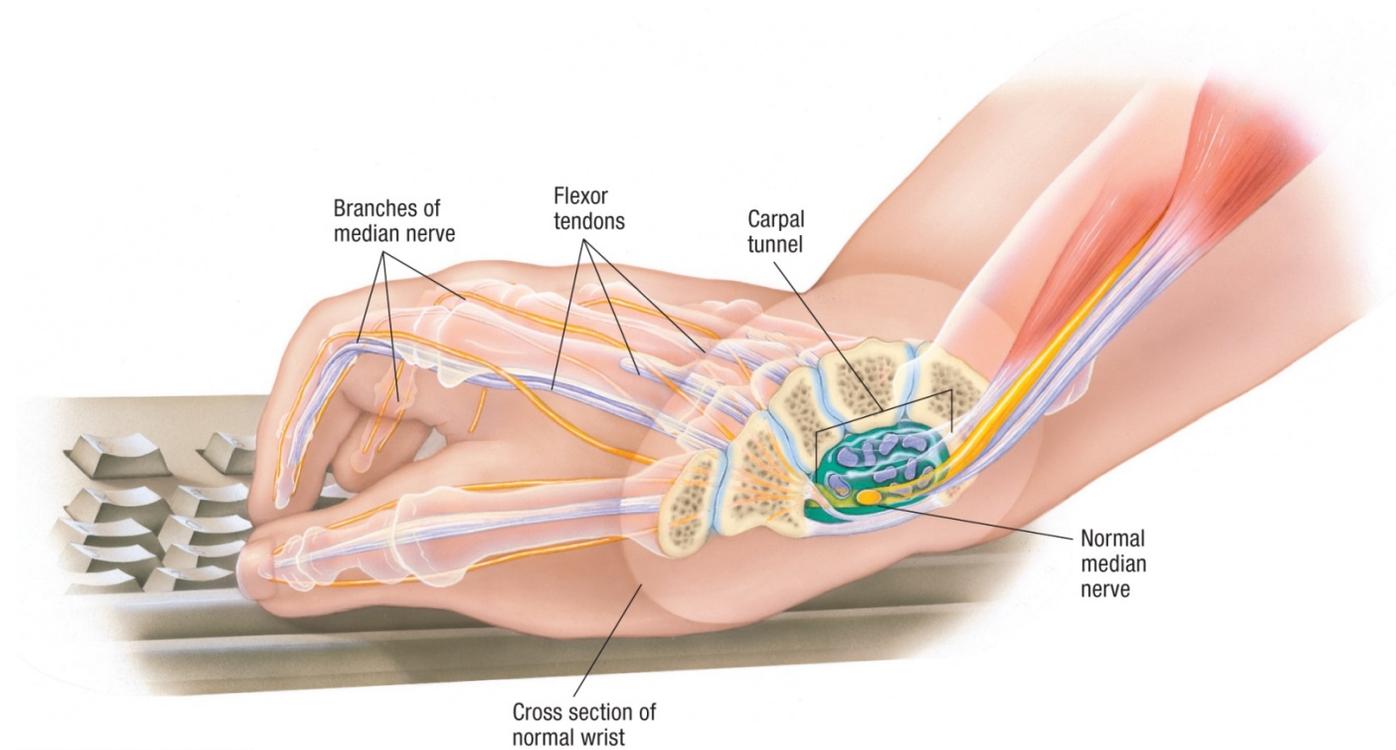
## Considerations and Cautions for Rotator Cuff Strain

- Topical thermotherapy is not effective for the deeper supraspinatus and subscapularis, but can be effective for infraspinatus and teres minor.
- If the client is receiving other treatment methods such as physical therapy, injections, or surgery, communicate with the other practitioners to ensure that the treatment plans are all compatible.

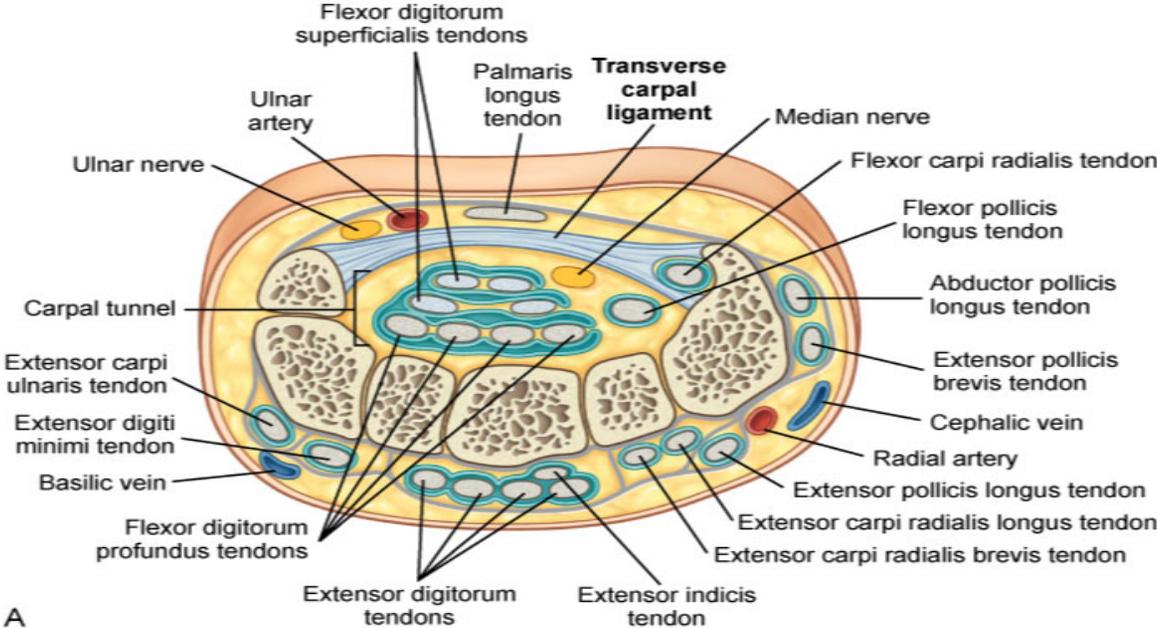
# Carpal Tunnel Syndrome



# Structures that form the Carpal Tunnel

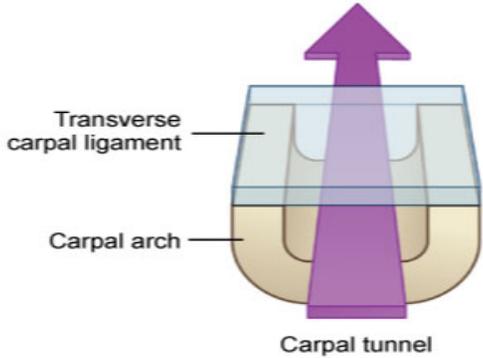


# Structures that form the Carpal Tunnel



A

Cross Section



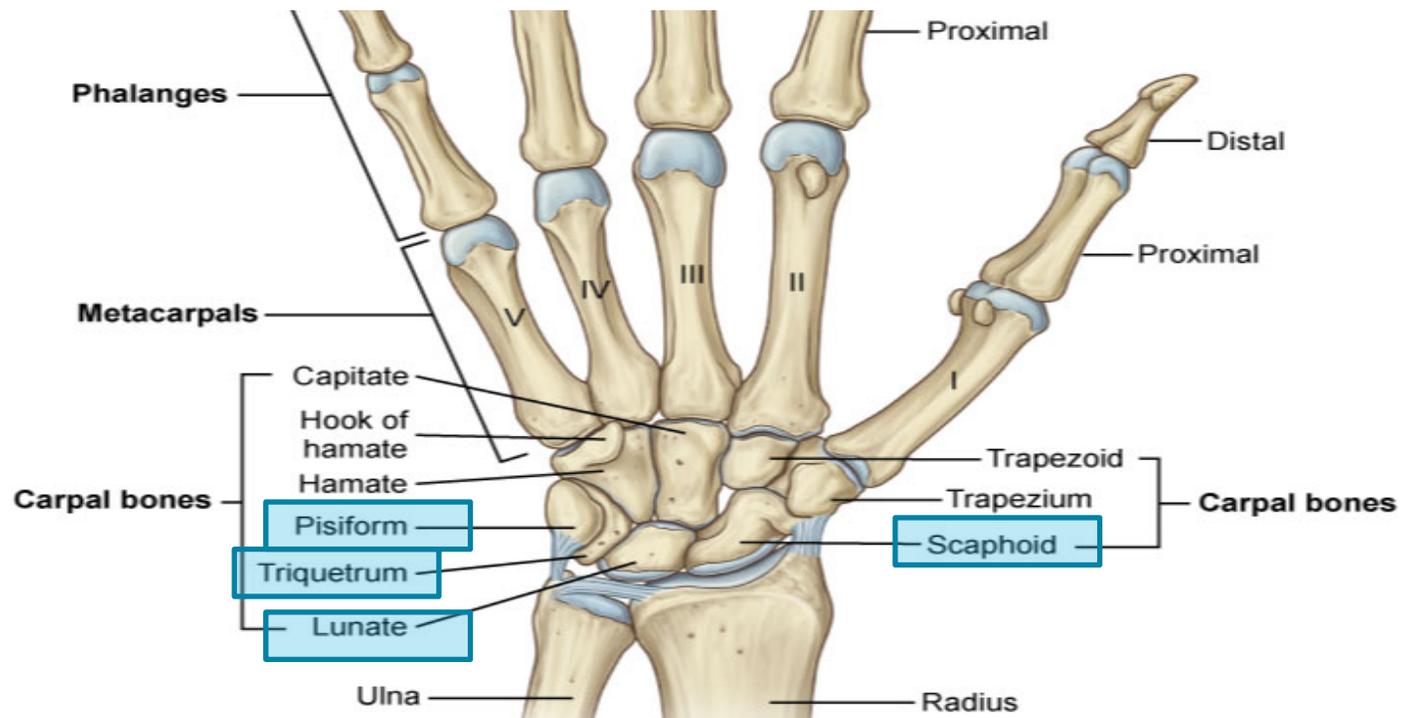
B

Carpal tunnel

# Structures that form the Carpal Tunnel

Proximal row of carpals from lateral to medial:

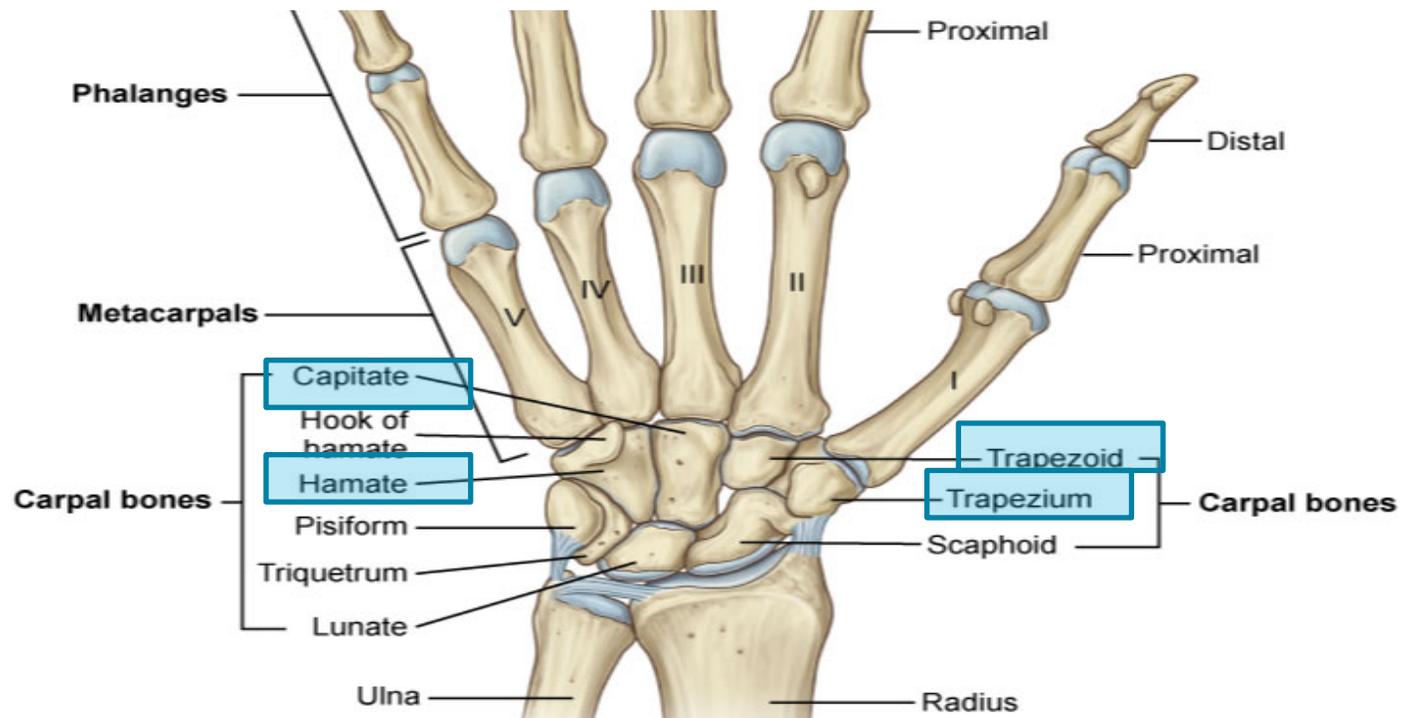
- Scaphoid, lunate, triquetrum, pisiform (“**Steve Left The Party**”)



# Structures that form the Carpal Tunnel

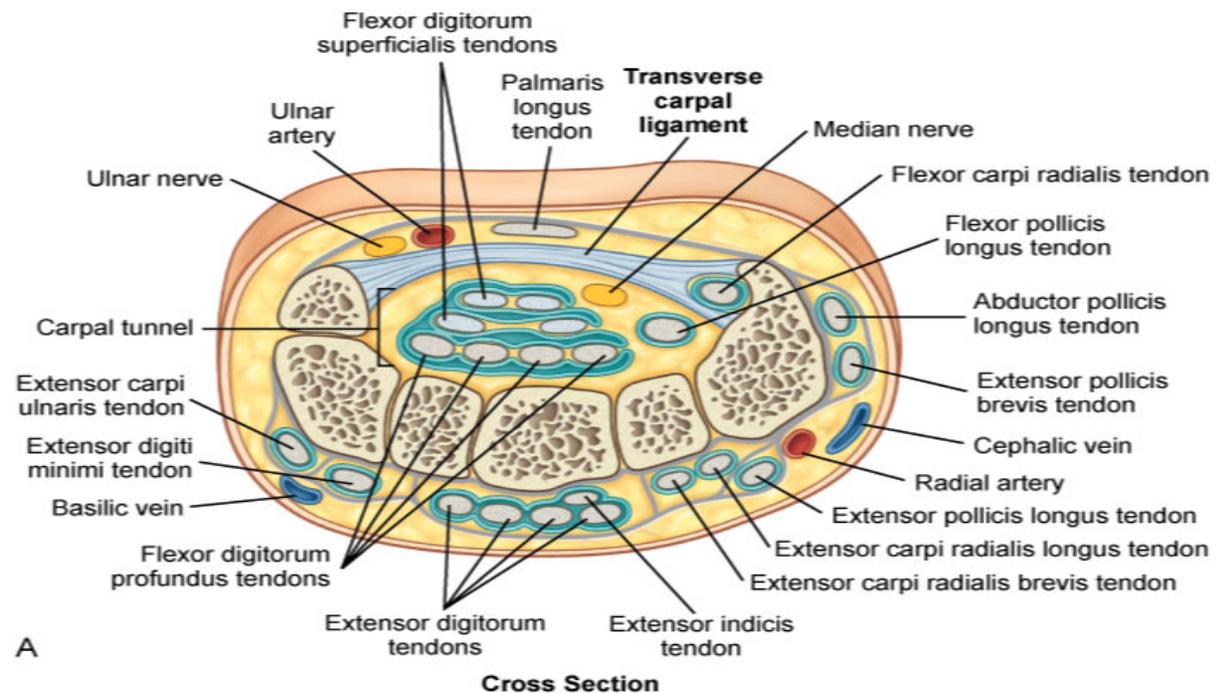
Distal row of carpals from lateral to medial:

- Trapezium, trapezoid, capitate, hamate (“To Take Cathy Home”)



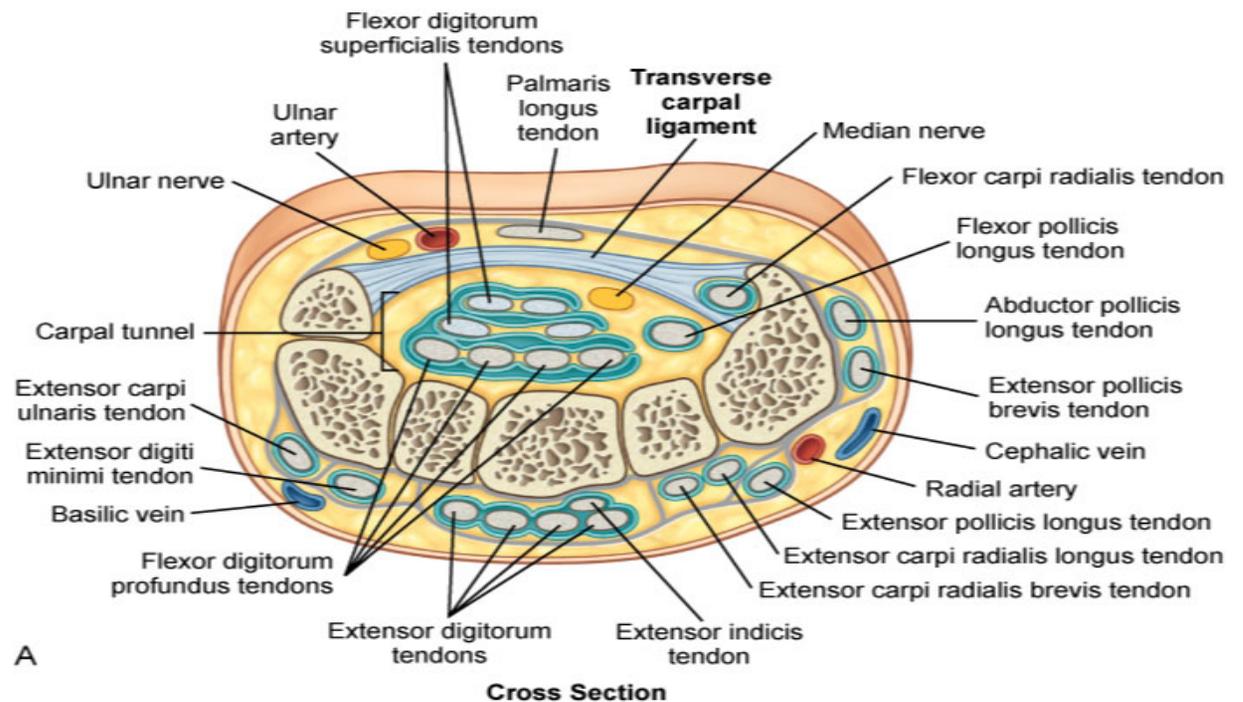
# Structures that form the Carpal Tunnel

Transverse carpal ligament (AKA: TCL, wrist flexor retinaculum)



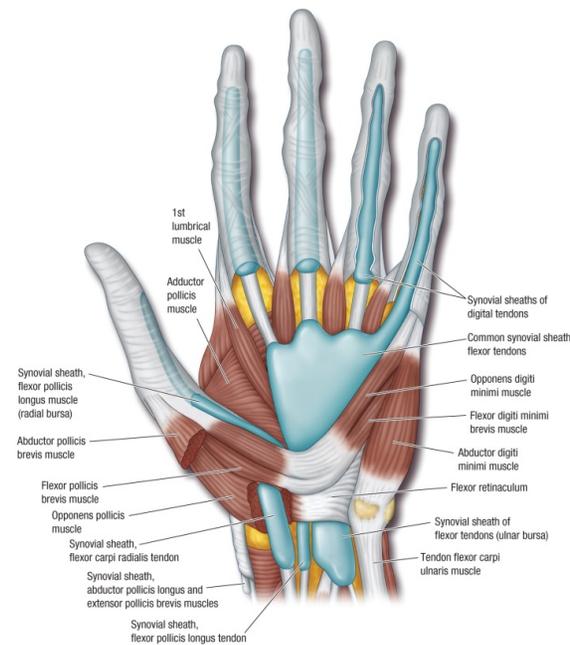
## Ten structures that pass through the Carpal Tunnel

- Flexor pollicis longus (1 tendon)
- Flexor digitorum superficialis (4 tendons)
- Flexor digitorum profundus (4 tendons)
- Median nerve



# Carpal Tunnel Syndrome Etiology

- Overuse of extrinsic finger and wrist flexors leading to tenosynovitis
- Adhesion or inflammation between a tendon and its synovial membrane increases the size of the tendon sheath causing compression of the median nerve



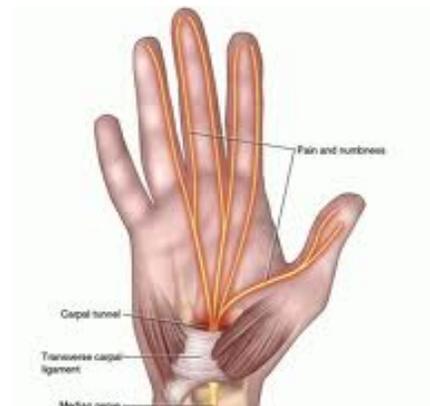
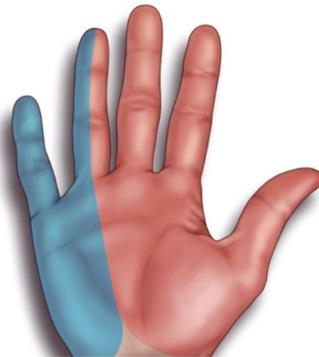
## Occupations at risk for Carpal Tunnel Syndrome

- Data entry
- Factory worker
- Packaging worker
- Janitorial and cleaning jobs



# Carpal Tunnel Syndrome Symptoms

- Numbness and pain in the skin of the first three and a half fingers
- **Paresthesia** Sensation of pins and needles.
- Clumsiness (when severe)
- Loss of dexterity (when severe)
- Weakening of grip strength (when severe)

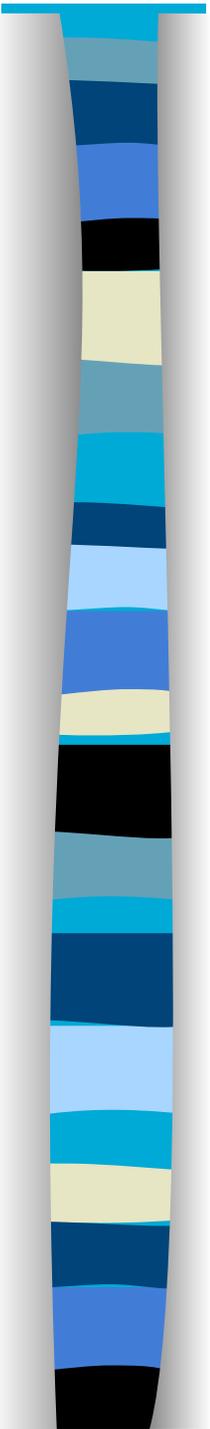


# Carpal Tunnel Syndrome

## Why are symptoms exacerbated at night?

- Wrist flexion while sleeping increases carpal tunnel compression





# Carpal Tunnel Syndrome Traditional Treatments

## **Ergonomic intervention**

- Effective: wrist braces and supports, altered work schedules, variety of work activities, and tool design

## **Reduction of offending activities**

- Effective

# Carpal Tunnel Syndrome

## Traditional Treatments

### Pharmaceuticals (corticosteroid injection, oral steroids, NSAIDs, diuretics)

- Variable effectiveness

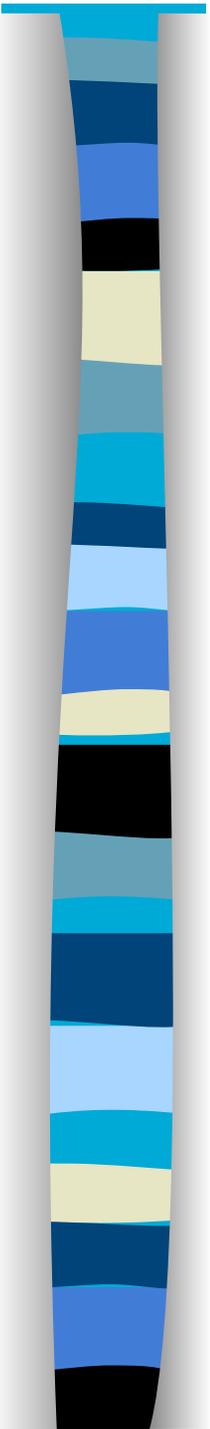
### Wrist splints at night

- Effective



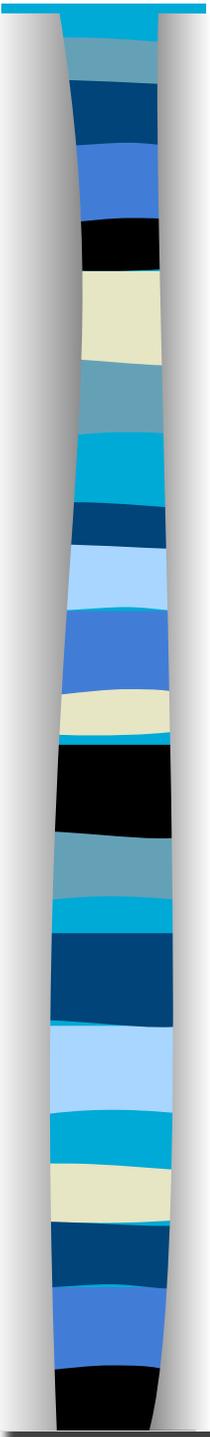
### Surgery

- Variable effectiveness: incision on the flexor retinaculum to relieve compression on the median nerve



## Considerations and Cautions for Carpal Tunnel Syndrome

- Treat the hypertonicity in wrist and hand flexors, and avoid any aggravating pressure to the median nerve.
- Stretch forearm flexor muscles to reduce hypertonicity and overuse irritation.
- Treat the entire upper extremity to reduce tension that may contribute to biomechanical dysfunction.



## Considerations and Cautions for Carpal Tunnel Syndrome

- Nerve damage is slow to heal. Immediate or rapid relief can occur, but complete resolution of the condition can be slow and gradual.
- If the condition is severe or symptoms are magnified, adjust the pressure, duration, and intensity of the treatment to avoid exacerbating the condition.
- Use caution with any technique that aggravates symptoms.

# 79a Orthopedic Massage: Introduction Rotator Cuff and Carpal Tunnel

