

UPPER EXTREMITY INJURIES

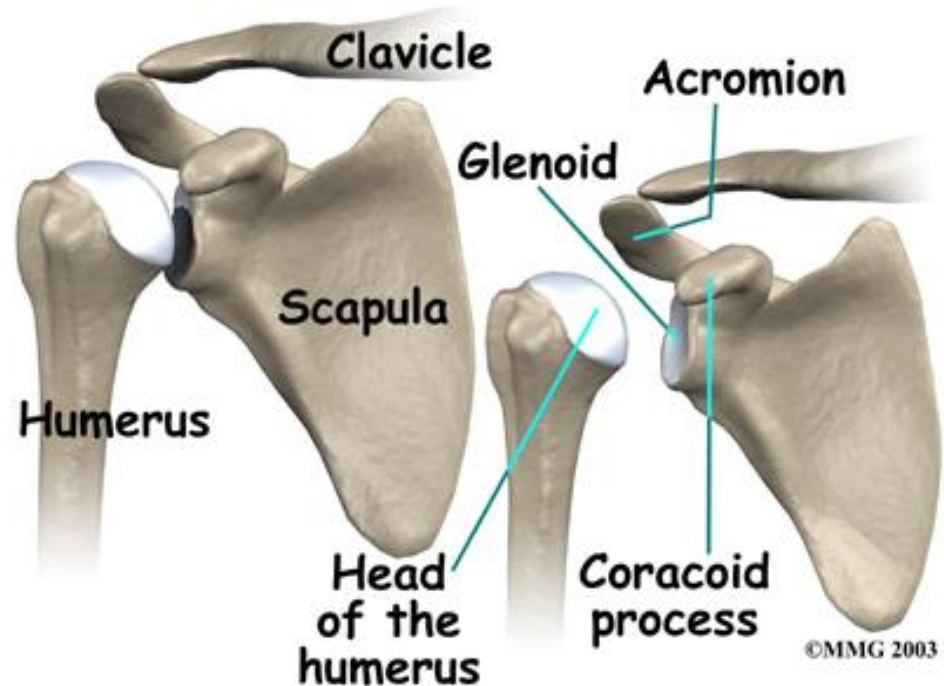
Recognizing common
injuries to the upper
extremity...



ANATOMY

- BONES

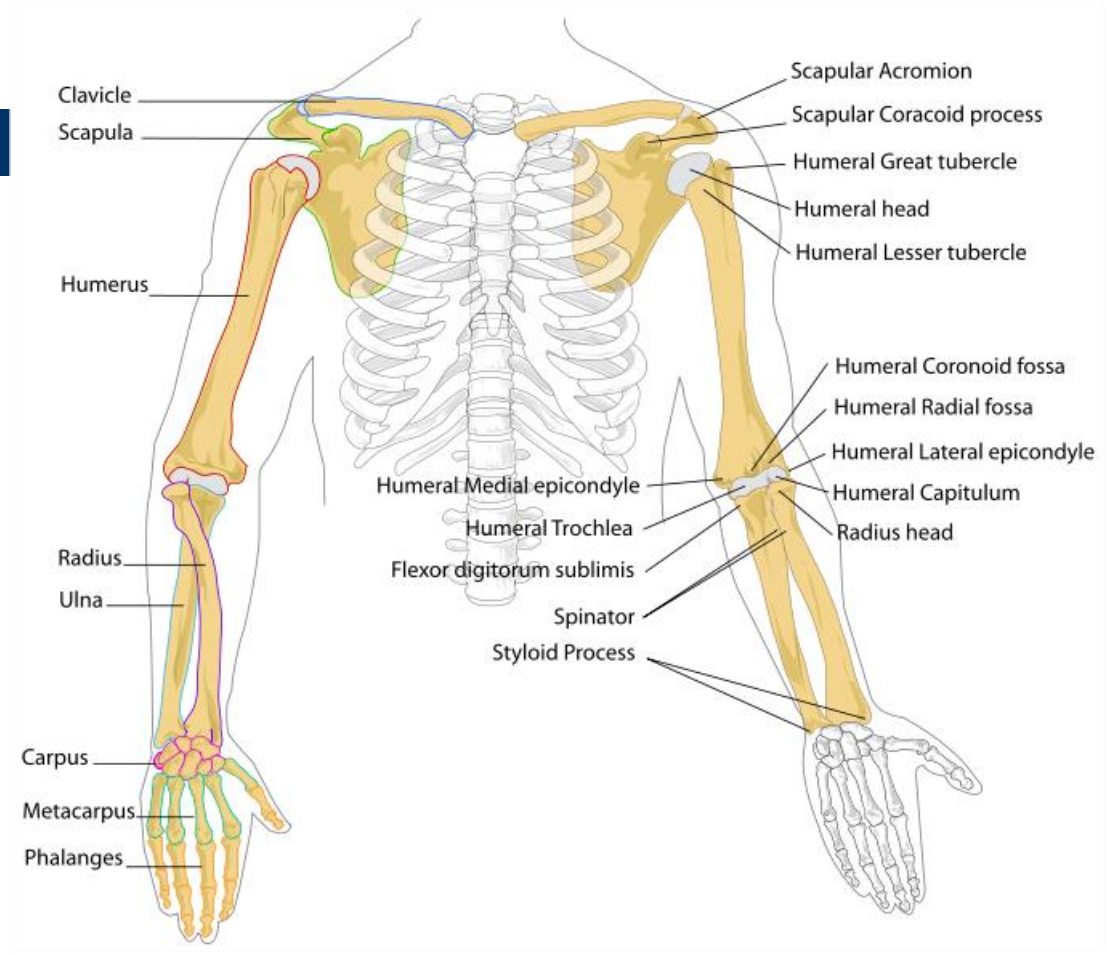
- Clavicle
- Scapula
 - Spine of the scapula
 - Acromion process
 - Glenoid fossa/cavity
- Humerus
 - Epicondyles



ANATOMY

- BONES

- Ulna
- Radius
- Carpals
- Metacarpals
- Phalanges

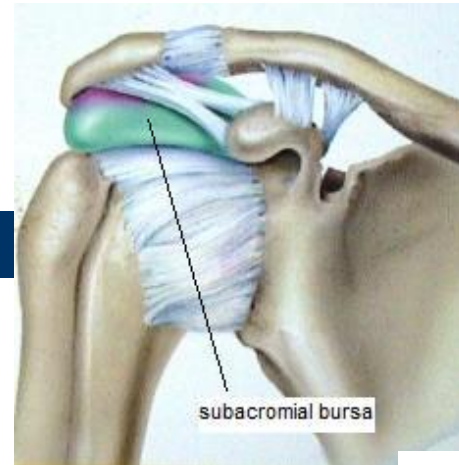


JOINTS OF THE SHOULDER GIRLDLE

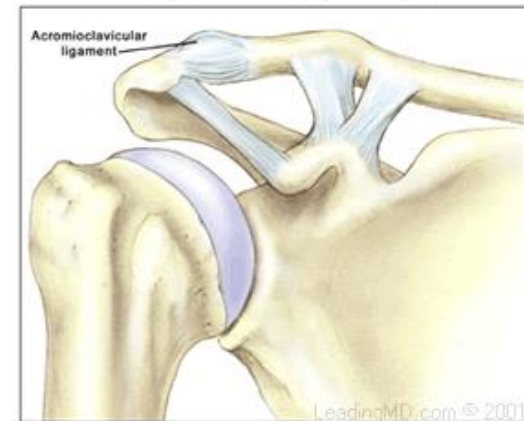
- Shoulder
 - Acromioclavicular
 - Glenohumeral
- Elbow
- Wrist
- Metacarpal Phalangeal (MCP)
- Interphalangeal (PIP & DIP)

SOFT TISSUES

- Subacromial bursa – below the acromion process
- Acromioclavicular (AC) Ligament – connects acromion and clavicle
- Glenoid Labrum- cartilage ring around socket of shoulder

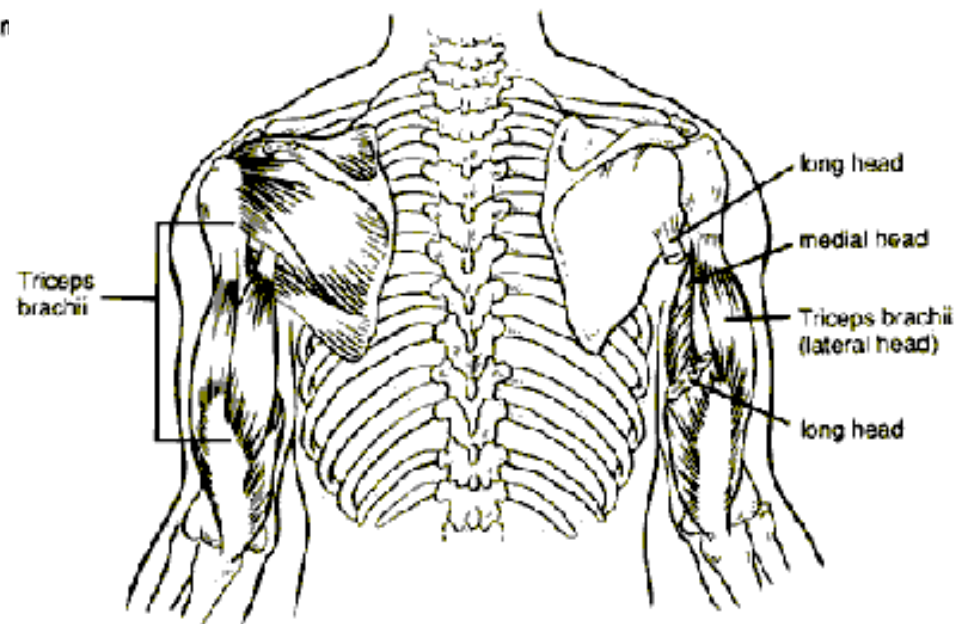
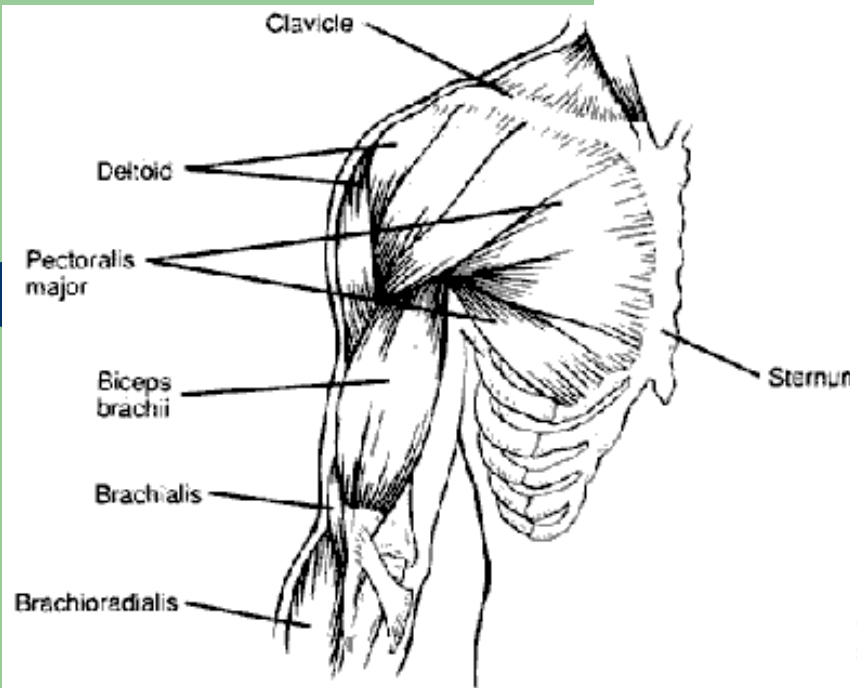


Normal Acromioclavicular joint



MUSCLES

Muscle	Location	Function
Deltoid	Covers the shoulder	Abducts the arm
Supraspinatus (rotator cuff muscle)	Posterior scapula	Abducts the arm, some external rotation of shoulder; stabilizes the head of the humerus.
Infraspinatus (rotator cuff muscle)	Posterior scapula	Externally rotates the shoulder; stabilizes the head of the humerus.
Teres minor (rotator cuff muscle)	Posterior scapula	Externally rotates the shoulder; stabilizes the head of the humerus.
Subscapularis (rotator cuff muscle)	Anterior scapula	Internally rotates the shoulder; stabilizes the head of the humerus.
Biceps Brachii	Anterior aspect of the upper arm	Flexes the elbow
Triceps Brachii	Posterior aspect of the upper arm	Extends the elbow



Common Injuries



Clavicle Fracture

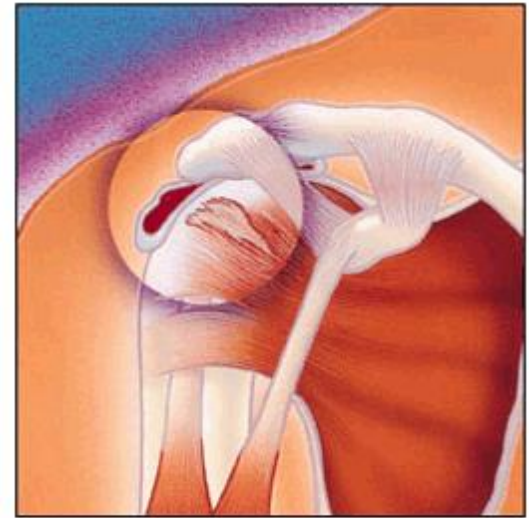
Mechanism of Injury	Signs and Symptoms	Treatment	Prevention Strategies
1. Fall on outstretched arm. 2. Fall on tip of shoulder. 3. Direct impact	Pain, deformity, swelling.	Immobilize shoulder. Refer to physician.	Don't fall.





Common Injuries

Impingement Syndrome



Impingement and Partial Rotator Cuff Tears

Figure 2: Impingement lesion.

Mechanism of Injury	Signs and Symptoms	Treatment	Prevention Strategies
Mechanical compression of the supraspinatus tendon, subacromial bursa, and long head of biceps tendon.	Pain around acromion with overhead arm position. Weak external rotators. Positive empty can and impingement tests.	Restore normal biomechanics. Strengthen shoulder complex muscles, stretch posterior joint capsule, modify activity until asymptomatic.	Decrease overhead activity, shoulder complex strengthening, improve technique

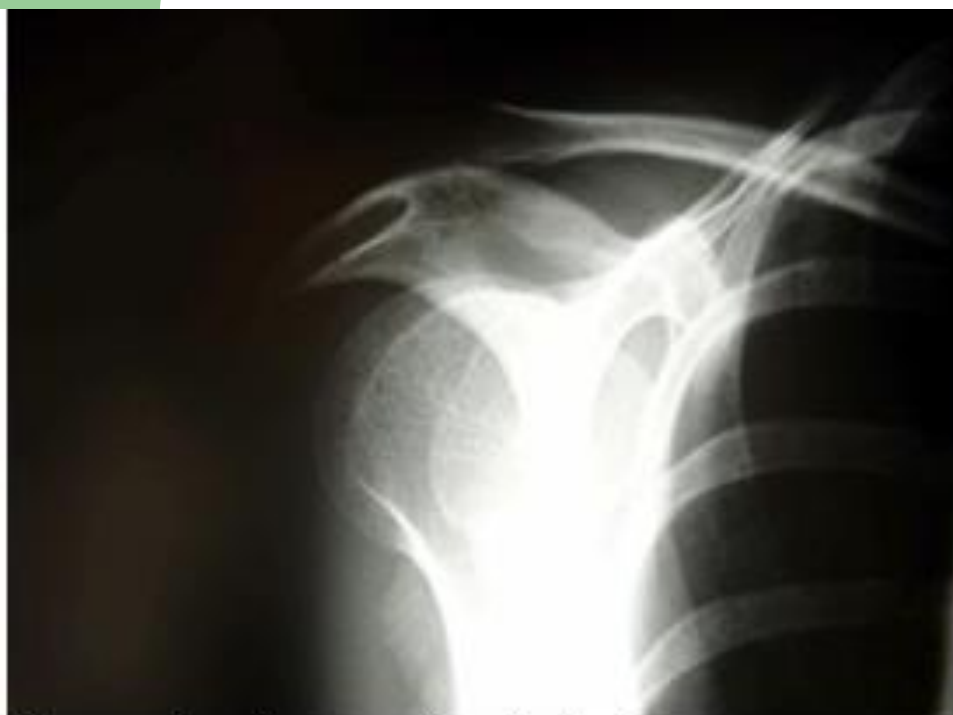


Figure 3a A normal outlet view x-ray



Figure 3b Abnormal outlet view showing a large anterior spur felt to cause impingement on the rotator cuff.

Common Injuries

Rotator Cuff Strain

Mechanism of Injury	Signs and Symptoms	Treatment	Prevention Strategies
Mechanical compression of the supraspinatus tendon, subacromial bursa, and long head of biceps tendon.	Pain around acromion with overhead arm position. Weak external rotators. Positive empty can tests and impingement tests.	Restore normal biomechanics. Strengthen shoulder complex muscles, stretch posterior joint capsule, modify activity until asymptomatic.	Decrease overhead activity, shoulder complex strengthening, improve technique



Figure 3: MRI shows a full thickness rotator cuff tear within the substance of the tendon

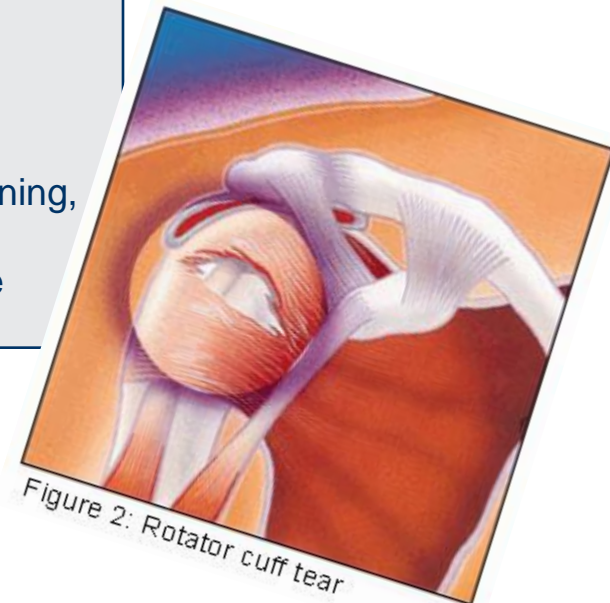
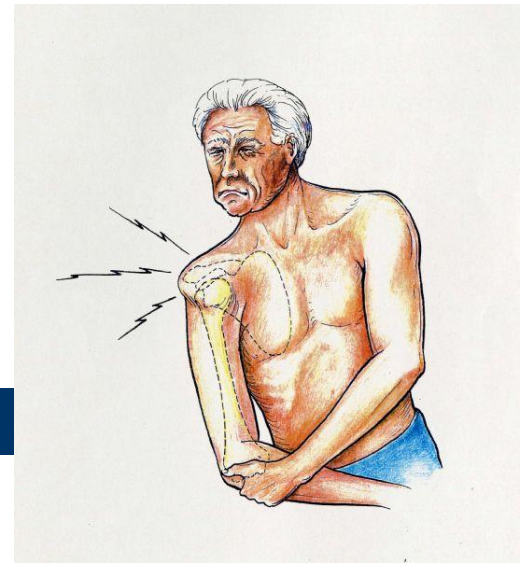


Figure 2: Rotator cuff tear

Common Injuries



Glenohumeral Dislocation

Mechanism of Injury	Signs and Symptoms	Treatment	Prevention Strategies
Forced abduction, external rotation of shoulder.	Flattened deltoid contour, pain, disability.	Splint in position found, immediate transport to physician.	Shoulder complex strengthening.

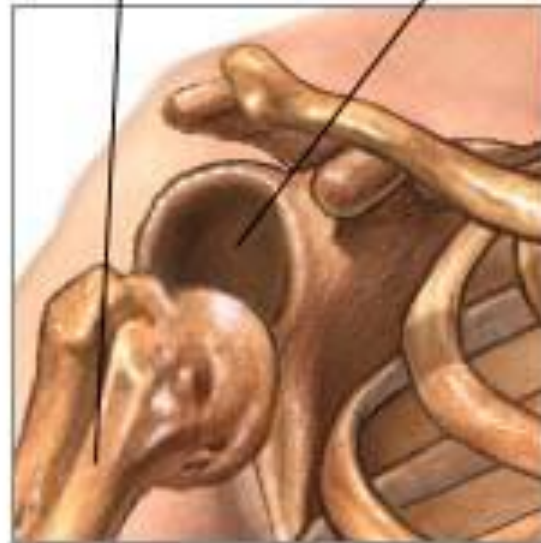


Acromion
Clavicle
Coracoid



Normal anatomy

Humerus
Glenoid



Dislocated shoulder

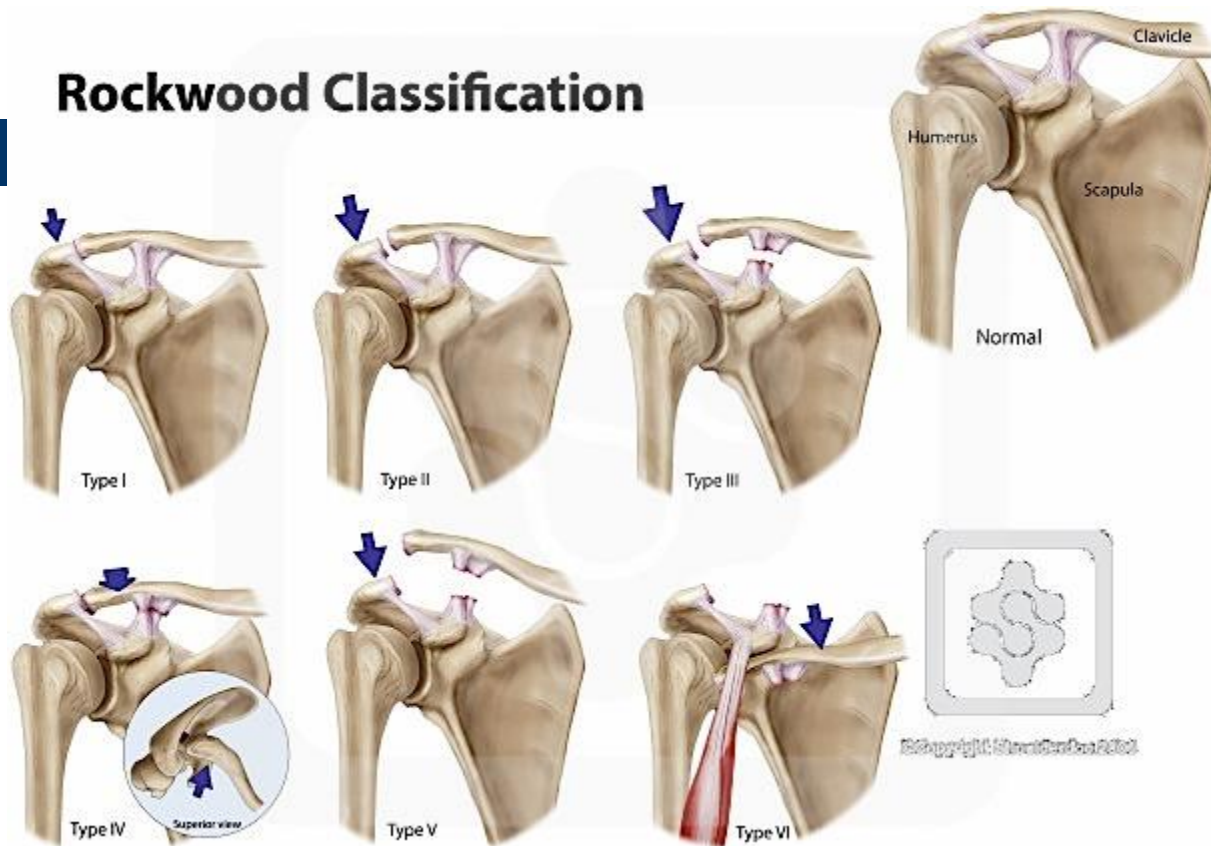
Common Injuries



AC joint separation

Mechanism of Injury	Signs and Symptoms	Treatment	Prevention Strategies
1. Falling on an outstretched arm. 2. Direct impact to the tip of the shoulder.	Grade I: point tender, painful ROM, no deformity. Grade II: elevation of the end of the clavicle, decreased ROM. Grade III: dislocation of the clavicle, severe pain, loss of ROM.	Ice, immobilization of the shoulder, refer to physician. Return to play at return of full strength and ROM.	Proper fitting pads Strengthening of deltoid muscle.

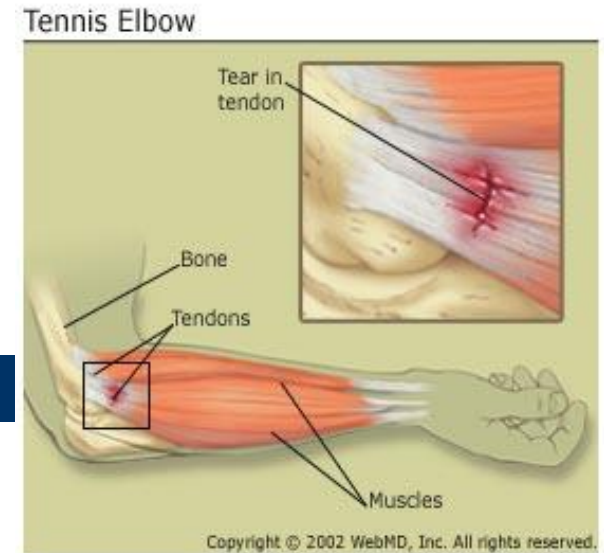
Rockwood Classification



AC Joint Separations

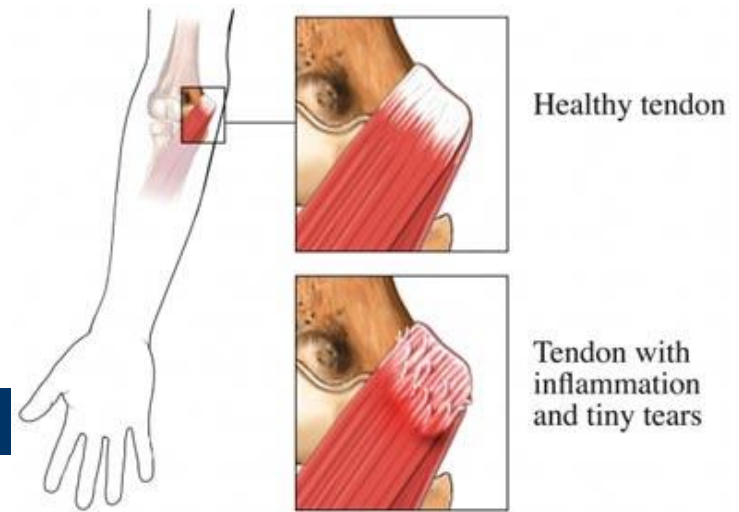
Common Injuries

Lateral epicondylitis – “Tennis Elbow”



Mechanism of Injury	Signs and Symptoms	Treatment	Prevention Strategies
Repetitive extension of the wrist.	Aching pain in lateral elbow during and after activity.	RICE, anti-inflammatory medications, strengthening exercises.	Proper technique, progressive increase in frequency/intensity of training.

Common Injuries



Medial epicondylitis – “Little Leaguer’s or Golfer’s Elbow”

Mechanism of Injury	Signs and Symptoms	Treatment	Prevention Strategies
Repetitive flexion of the wrist.	Pain in medial elbow, could radiate down arm; point tenderness, mild swelling.	RICE, anti-inflammatory medications, strengthening exercises	Proper technique, progressive increase in frequency/intensity of training.

Common Injuries

Interphalangeal Dislocation



Mechanism of Injury	Signs and Symptoms	Treatment
Blow to the tip of the finger.	Pain, deformity, no ROM.	Splint in position found, immediate referral to a physician.