

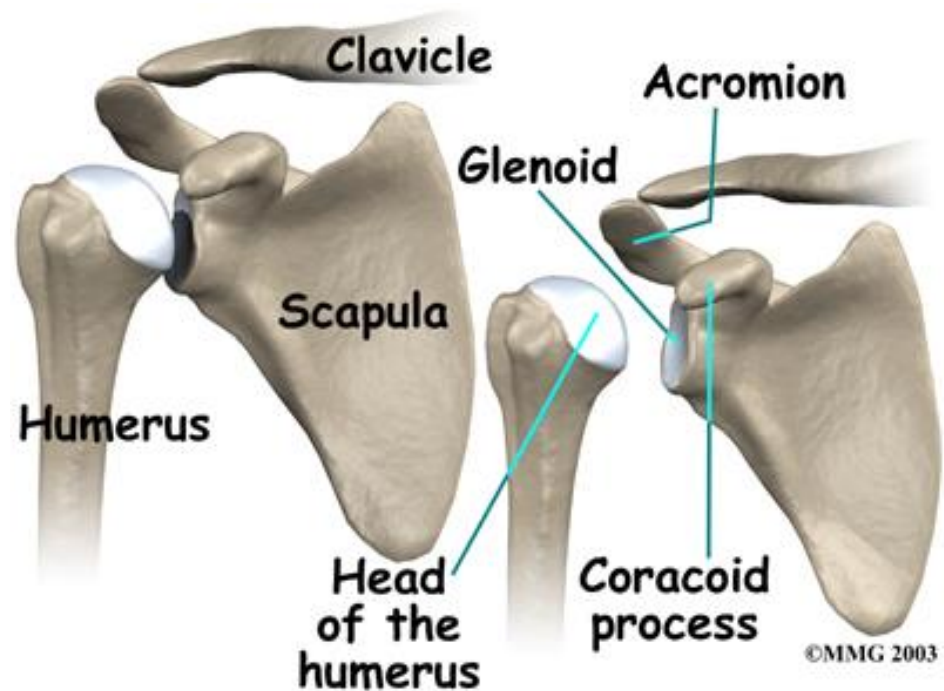
# UPPER EXTREMITY INJURIES

Recognizing common  
injuries to the upper  
extremity...



# ANATOMY

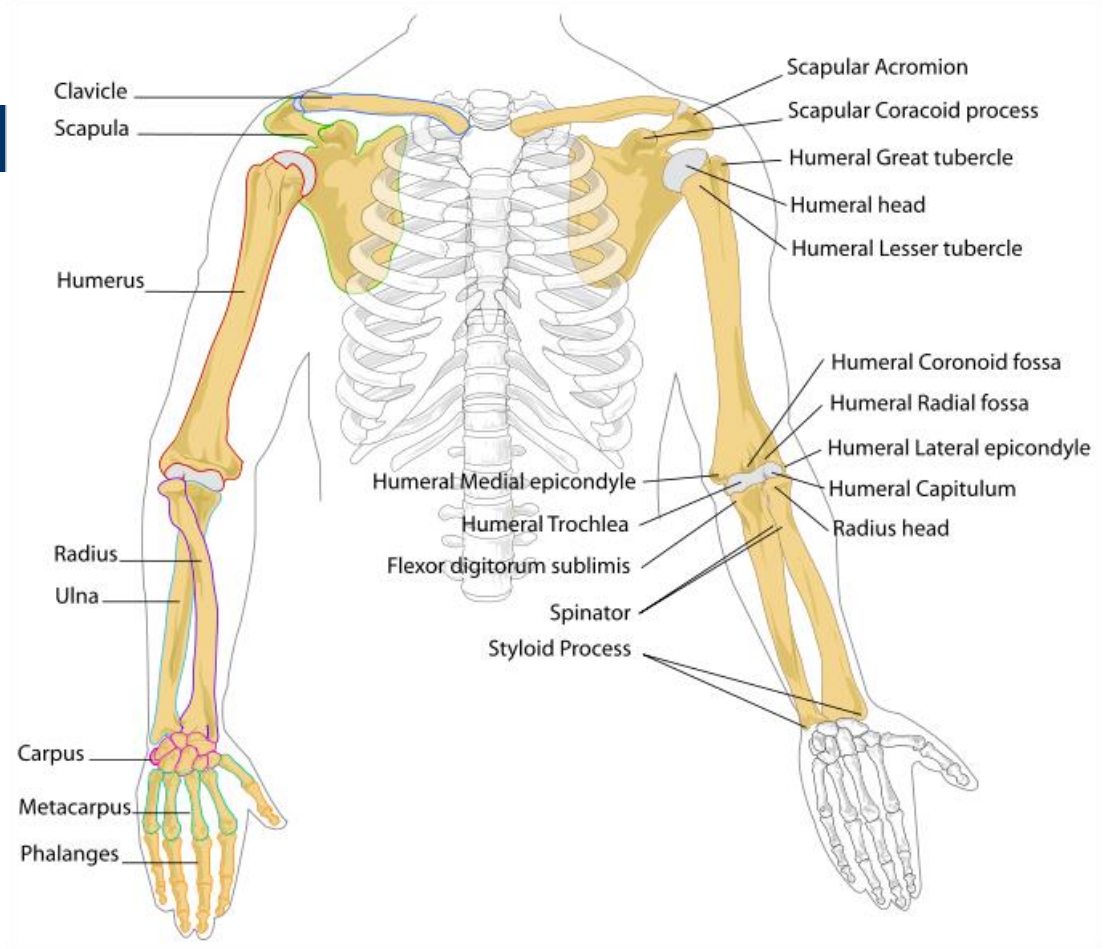
- BONES
  - Clavicle
  - Scapula
    - Spine of the scapula
    - Acromion process
    - Glenoid fossa/cavity
  - Humerus
    - Epicondyles



# ANATOMY

- BONES

- Ulna
- Radius
- Carpals
- Metacarpals
- Phalanges



# JOINTS OF THE SHOULDER GIRLDLE

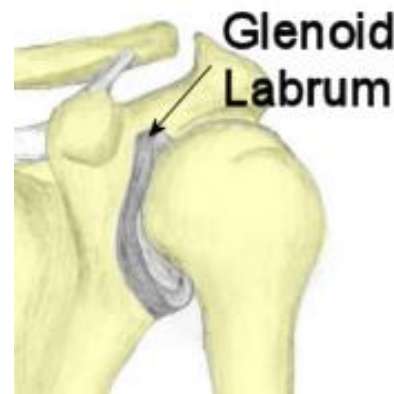
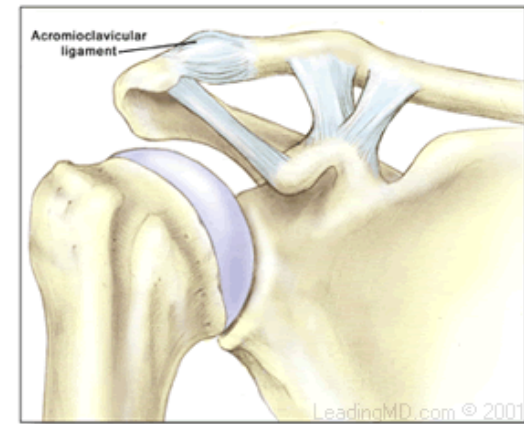
- Shoulder
  - Acromioclavicular
  - Glenohumeral
- Elbow
- Wrist
- Metacarpal Phalengeal (MCP)
- Interphalengeal (PIP & DIP)

# SOFT TISSUES

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

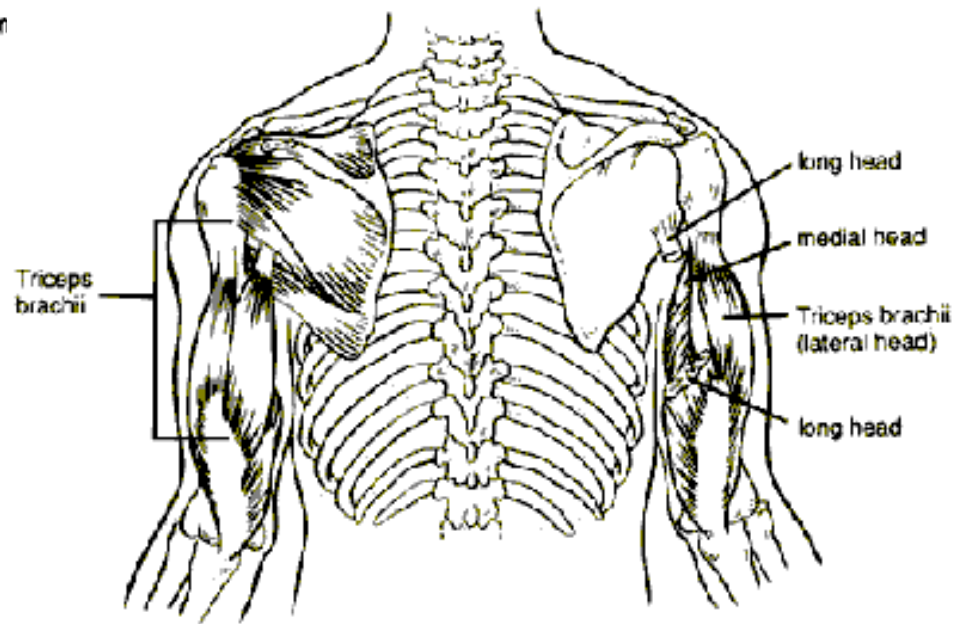
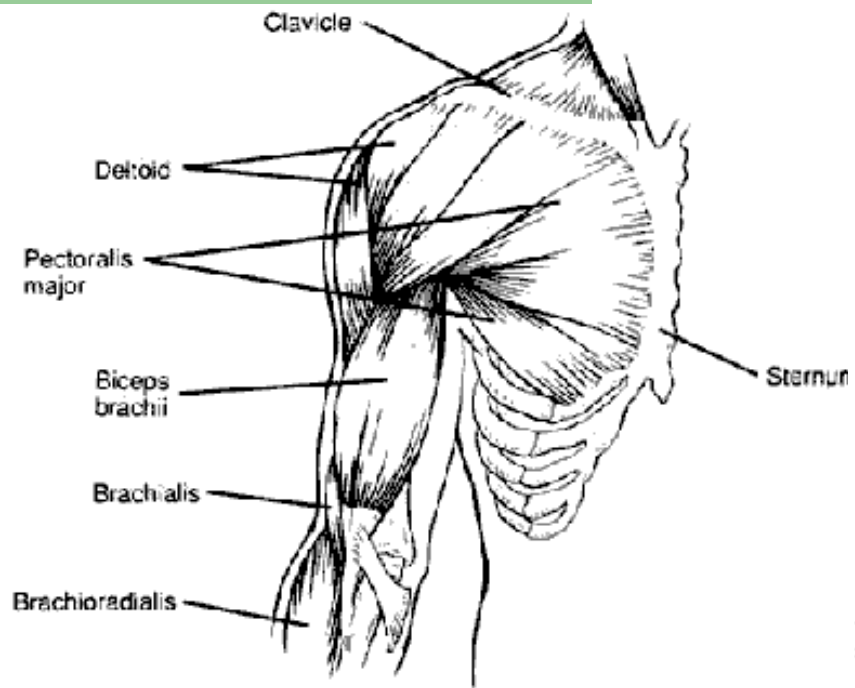


Normal Acromioclavicular joint



# 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
<ol style="list-style-type: none"><li>1. Fall on outstretched arm.</li><li>2. Fall on tip of shoulder.</li><li>3. Direct impact</li></ol>	Pain, deformity, swelling.	Immobilize shoulder. Refer to physician.	Don't fall.

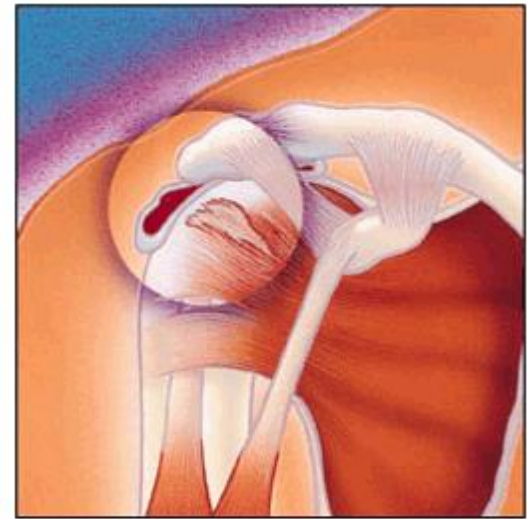






# Common Injuries

## 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



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

## 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 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

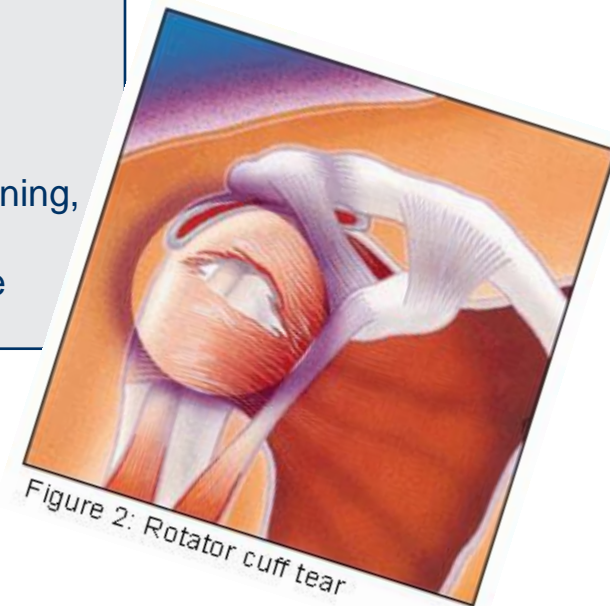
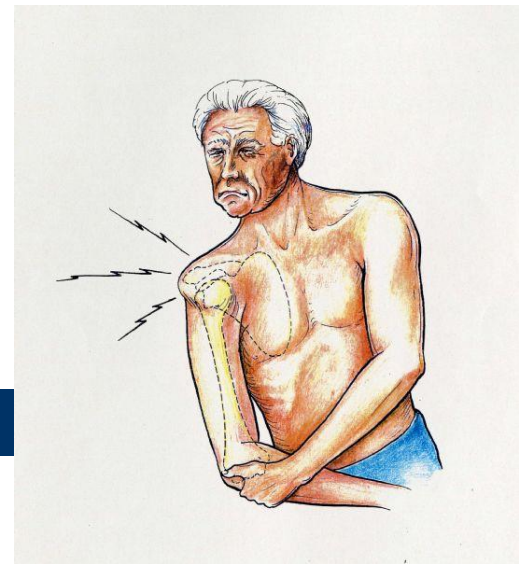


Figure 2: Rotator cuff tear

# 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.

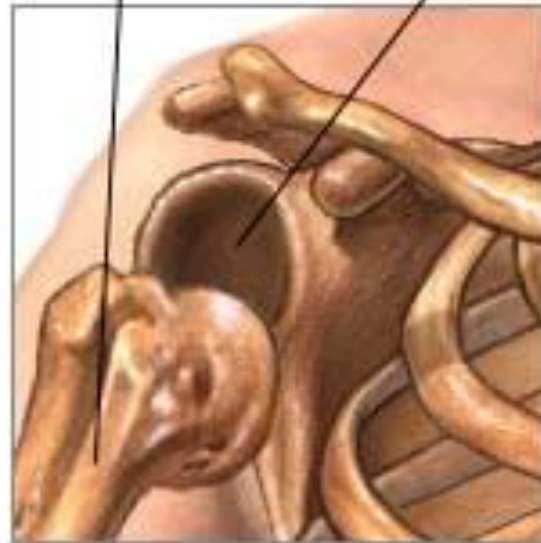


Acromion  
Clavicle  
Coracoid



Normal anatomy

Humerus  
Glenoid



Dislocated shoulder

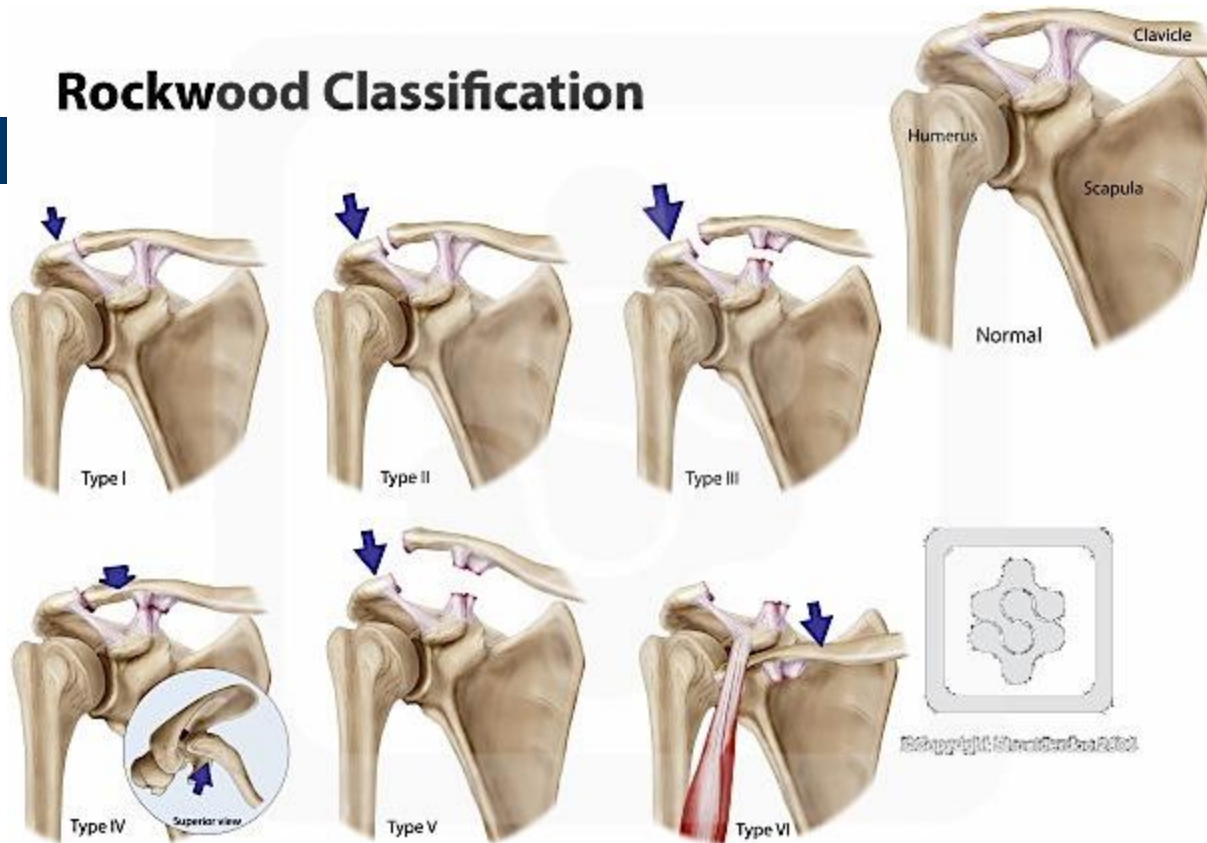
# Common Injuries



## AC joint separation

Mechanism of Injury	Signs and Symptoms	Treatment	Prevention Strategies
<ol style="list-style-type: none"><li>1. Falling on an outstretched arm.</li><li>2. Direct impact to the tip of the shoulder.</li></ol>	<p>Grade I: point tender, painful ROM, no deformity.</p> <p>Grade II: elevation of the end of the clavicle, decreased ROM.</p> <p>Grade III: dislocation of the clavicle, severe pain, loss of ROM.</p>	<p>Ice, immobilization of the shoulder, refer to physician.</p> <p>Return to play at return of full strength and ROM.</p>	<p>Proper fitting pads</p> <p>Strengthening of deltoid muscle.</p>

## Rockwood Classification



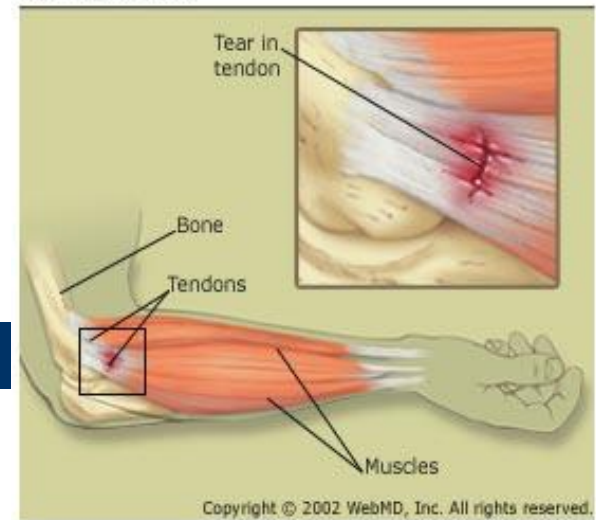
## AC Joint Separations



# Common Injuries

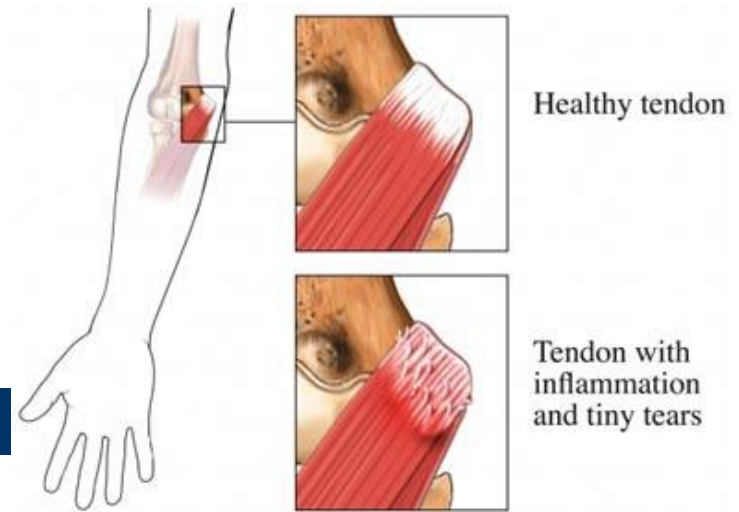
## Lateral epicondylitis – “Tennis Elbow”

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.