

# The Overhead Athlete

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# Disclosures

- None
- This will be a whirlwind tour of pathology!



# Learning Objectives

- The learner will be able to:
  - Recognize key history indicators for shoulder and elbow injuries
  - Perform a brief physical exam
  - Identify common shoulder and elbow injuries in the youth athlete

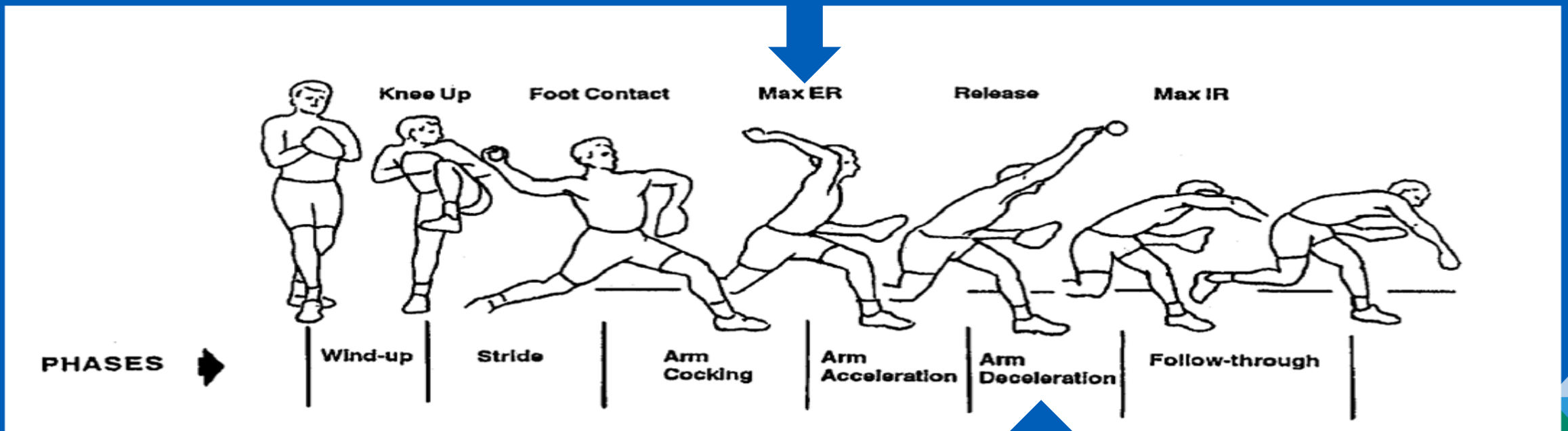


# The History

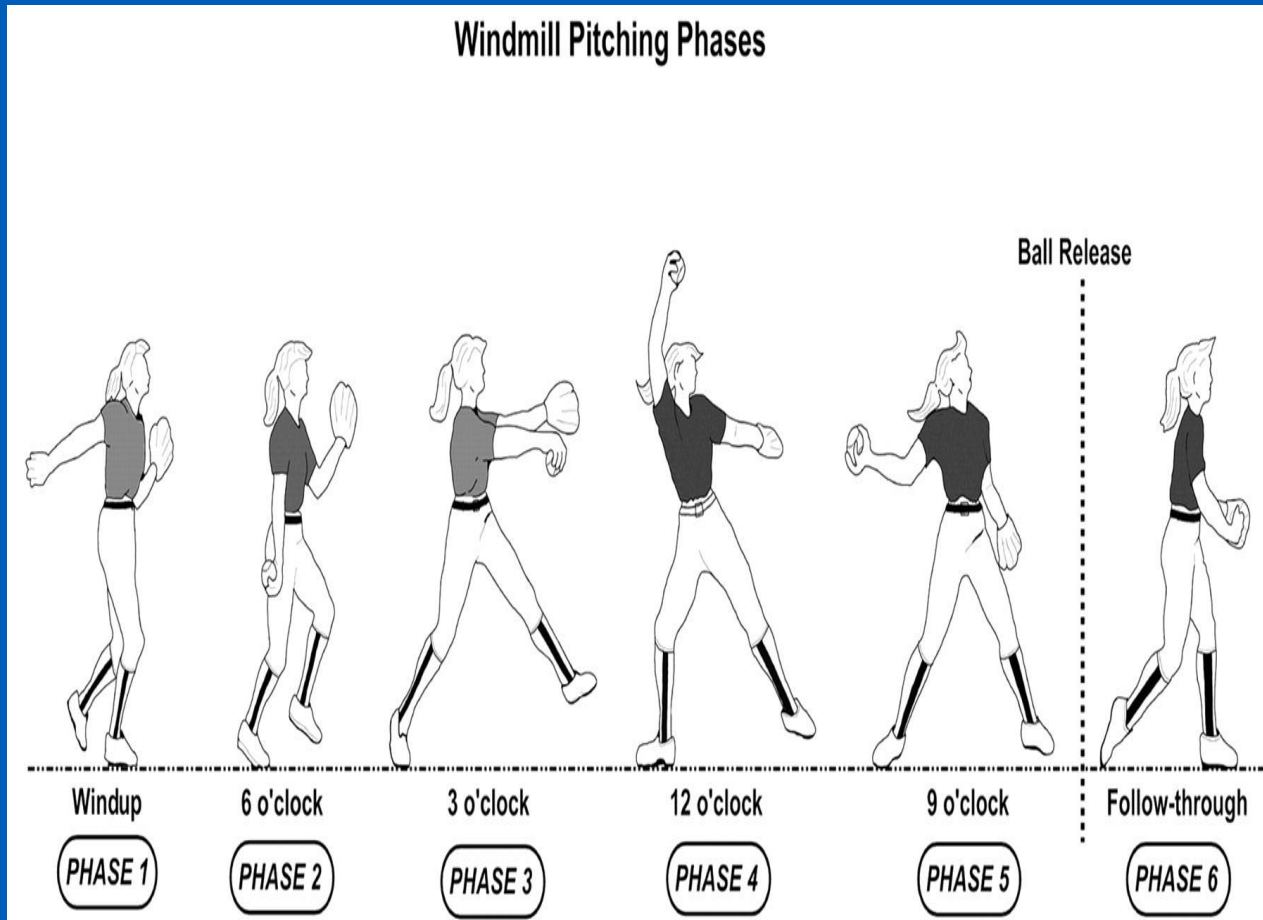
- Mechanism
  - One throw
  - Build up over time
- Quality of pain
  - Sharp Dull Throbbing
  - Numbness/Tingling
- Bruising/Swelling
- Mechanical Symptoms
  - Pop/Click
  - True Locking
- Pain only with throwing or at rest too
- What part of the throwing cycle do you have pain?
- What positions/pitches do you throw/how many teams/how many months of the year

# The Throwing Biomechanics

- Complicated process that requires a coordinated effort of the entire kinetic chain
- 6 phases of throwing



# Fast-Pitch Softball



Unique differences throwing underhand from a flat mound  
Less stressful to shoulder and elbow but significant biceps stress on follow through



# Tennis







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# The Kinetic Chain

- Look at the scapula
- Should throw from the ground up
  - Look at the lower half
  - Poor flexibility of the contralateral hip
  - Weakness in the hip abductors or trunk flexors
  - Increases lumbar lordosis in the acceleration phase of the throwing cycle
    - Arm gets stuck behind the body, increasing forces across the elbow
    - Increases posterior compression loads on the labrum leading to labral tears



# The Physical Exam

- Inspection
- Palpation
- Range of Motion
- Strength Testing
- Special Tests – know a couple but they are not great!



# Initial Management

- Shut them down?
- When do you bring in parents/coaches?
- Evaluate by a physician?
- Imaging?



# Pathology

- Shoulder

- Little League Shoulder
- GIRD
- Impingement
- Bicep Tendinopathy

- Elbow

- Little League Elbow
- Medial Epicondyle Avulsion Fracture
- Osteochondritis Dissecans
- Valgus Extension Overload
- Cubital Tunnel Syndrome
- UCL tear





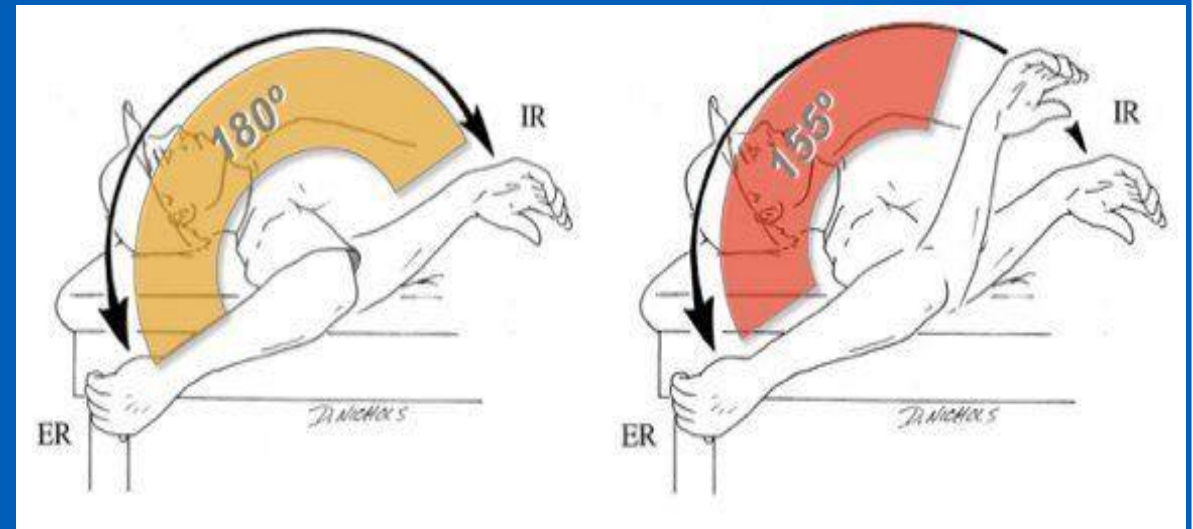
# Little League Shoulder - Proximal Humeral Epiphysiolysis

- Acute or Chronic
- Proximal Humerus Pain
- May be pain free with ADLs
- Treatment
  - No throwing 4-6 weeks
  - PT/HEP
  - Slow return to throw



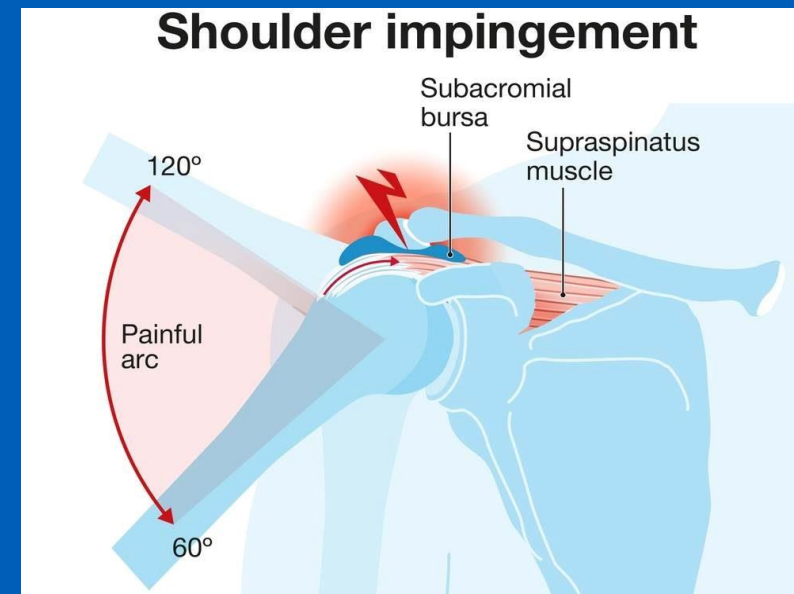
# Glenohumeral Internal Rotation Deficiency

- Posterior shoulder pain
  - Tightness
  - Need for prolonged warm up
  - Loss of velocity
  - Pain in late cocking
- Internal rotation difference between the dominant and non-dominant arm
  - Dominant arm decreased IR 15-20 degrees of the Non-dominant arm total arc which is external rotation + internal rotation (measured in office)
  - Total ROM and shoulder flexion difference of 5 degrees
    - Look for Lat tightness as well
  - Dominant arm SHOULD have 5 deg increase in ER
  - Dominant shoulder should have 5 degree increase in ER
- Treatment: PT to stretch capsule and scapular mechanics



# Shoulder Impingement

- Internal
  - Repetitive microtrauma to the rotator cuff, most commonly in the overhead athlete
    - Pain and microtrauma leads to glenohumeral instability causing increased stress on the dynamic stabilizers of the shoulder including the rotator cuff, mainly supra/infraspinatus on the articular side
  - Cocking phase of throwing
  - Neer's/Hawkins on Physical exam
  - Changes the normal relationship of the shoulder joint
- External
  - Subacromial Space
  - Inflammation
  - Degradation of the anatomic structures



Treatment: Rest, NSAIDs, PT/HEP, +/- Steroid, Return throw 3-6 months

# Little League Elbow (medial Epicondylitis)

- Typically, 8-15 y/o
- Chronic with slow build up
- Pain over flexor origin and medial epicondyle
- Widening of medial epicondyle apophysis
- Treatment
  - No throwing 4-6 weeks
  - Physical Therapy
  - Return to throw program





# Medial Epicondyle Avulsion Fracture

- 12-18 yo
- Acute event
- Pain over medial epicondyle
- Swelling, Decreased ROM
- Surgical vs Nonsurgical
  - 5 mm displacement
  - Reliability on fracture displacement is poor
  - Return to throwing 4-10 months



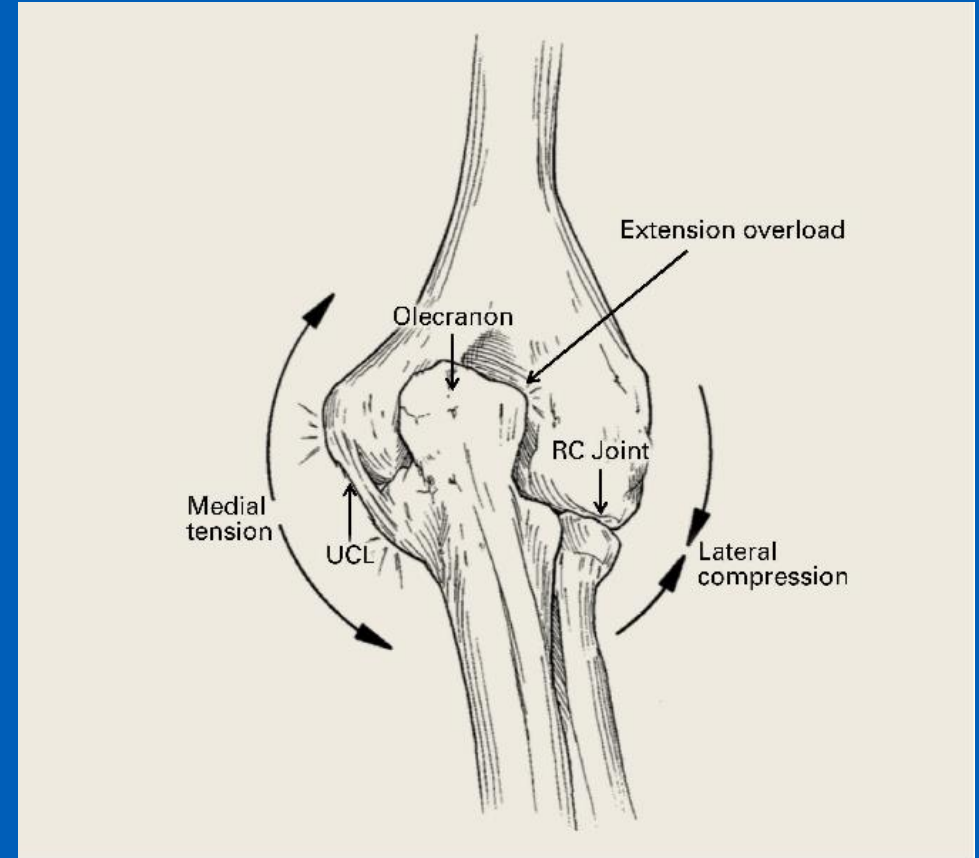
# Osteochondritis

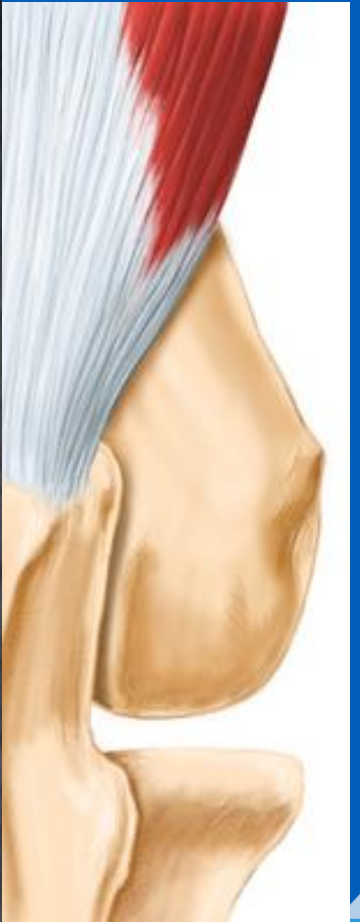
- 10-20 year old
- Mechanical symptoms, chronic pain
- XR, MR for stability
- Conservative Tx
  - Stable lesion
  - No throwing/UE 8-12 weeks
- Surgical Tx
  - Unstable
  - Poor response to conservative



# Valgus Extension Overload – "Triceps Strain"

- The dreaded triceps strain
- Posterior elbow pain in the "follow through" phase of the throwing cycle
- Pain with forceful extension of the elbow
- Discomfort over the olecranon
- Treatment: Rest, PT/HEP, Mechanics







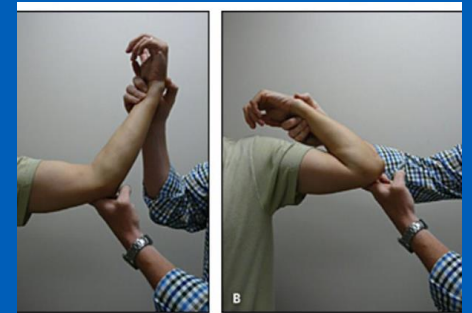
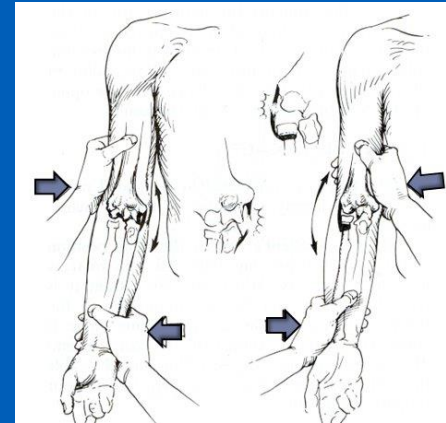
# UCL Tear

Acute, one throw/pitch

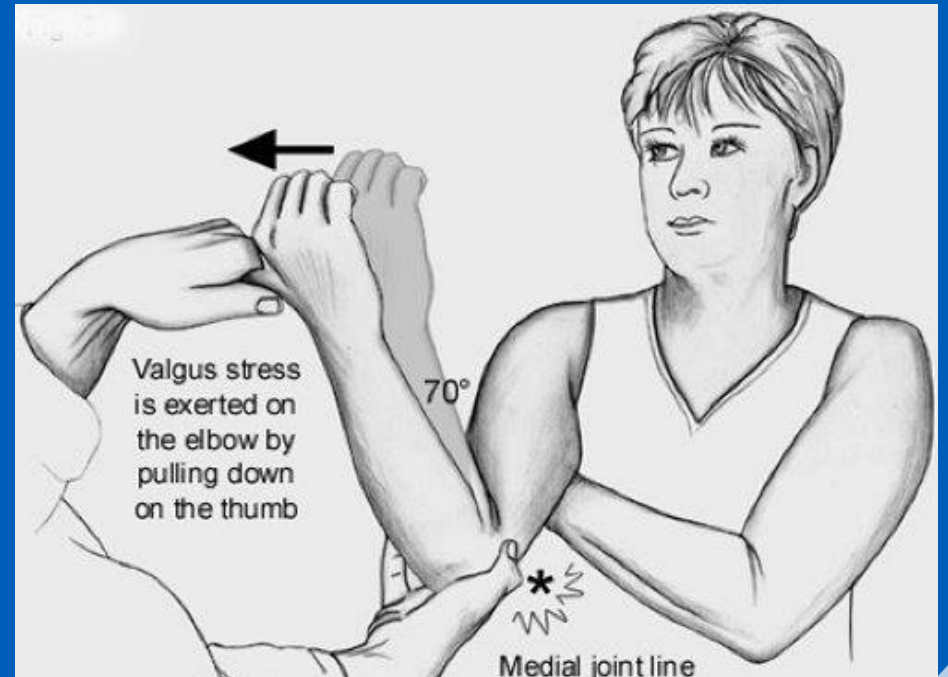
Pop

+/- Swelling

Valgus stress, Milking Maneuver



ng valgus stress test is performed with (A) the shoulder in 90 de  
B) While constant valgus torque on the elbow is maintained, the  
A positive result is defined as pain between 70 and 120 degree



# UCL Tear

- Grades (MRI)
  - 1 – intact ligament with or without edema
  - 2a- ligament fiber disruption
  - 2b- Chronic healed ligament
  - 3- Complete disruption
  - Partial (less than 50% disruption) vs High grade (greater than 50% disruption)<sup>2</sup>
- Anterior bundle
  - Proximal- 81% successful non-op management
  - Distal- 82% failure non-op management



# Treatment

- Non-Surgical

- Partial Tears
  - Proximal does better
- Non-weight bearing
- No throwing
- PT/HEP
- Slow return to throw

- Surgical

- Full thickness tears
  - Distal/Anterior Bundle partial tears?
- Pitchers/Catchers?
- Grappling sports?
  - Signs of Instability with weight bearing



# Questions?





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