

Back to Sports: Common Injuries in the Young Athlete

H. Jake Whitener, DO
Department Chairman of Orthopaedic Surgery
Cherokee Nation Health Services
Tahlequah, OK

Disclosures

- No Disclosures

Introduction

- After participating in this presentation, the physician will be able to:
 - Identify and diagnose common sports injuries in the young athlete
 - Advise the first line of treatment for those injuries
 - Provide basic tips to preventing such injuries

Introduction

- Estimated ~5.2 million high school athlete injuries per year
- Average ~2.2 injuries per 1,000 athletic exposures
- Injury rates higher in competition compared to practice
- Overall decrease in injury rates compared to studies in early 2000s
- However, more injuries requiring surgery and greater time off from sport

Introduction

- Injury rates:
 - Football (~3.96/1000)
 - Girls soccer (~2.65/1000)
 - Boys wrestling (~2.36)
- Overall higher injury rate in boys sports (2.52/1000) vs girls sports (1.56/1000)

Introduction

- Most injured body sites:
 - Head and face (24.2%)
 - Ankle (17.6%)
 - Knee (14.1%)
- Fractures represent ~3.5% of all injuries

Concussion

- ~1.2 million sports related concussions per year
- Increasing in youth sports
- Occur in competition more often than practice
- DO NOT HAVE TO LOSE CONSCIOUSNESS TO EXPERIENCE CONCUSSION
- Many risk factors

Concussion

- Symptoms:
 - Somatic symptoms
 - Cognitive symptoms
 - Emotional symptoms
 - Sleep disturbance
- Many signs of concussion
- LOC occurs only in ~10% of cases



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Concussion

- IMMEDIATE removal from play
- Same day return to play is NOT indicated
- Cognitive and physical rest 24-48 hours
- Graduated return to play:
 - Symptom limited activity
 - Light aerobic exercise
 - Sports specific exercise
 - Non-contact drills
 - Full contact practice
 - Return to play

Heat Injury

- Heat cramps
- Heat syncope
- Heat exhaustion
- Heat stroke



- One of the most preventable illnesses we deal with

Heat Injury

- Symptoms:
 - Chills
 - Dark colored urine
 - Dizziness
 - Dry mouth
 - Headaches
 - Weakness
 - Thirst!!!



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Heat Injury

- Simple treatments:
 - Rapid cooling
 - Stretching
 - Fluid replacement
 - Lying supine with leg elevation
 - Ice immersion
- Heat sensitivity can last up to a year after heat stroke

Cardiac



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- Most common cause of sudden death in young athletes
 - Hypertrophic cardiomyopathy
 - Commotio cordis

Cardiac

- Chest pain
- Palpitations
- Syncope
- Murmur
- Family history
- Dyspnea on exertion



**BRONNY
JAMES SUFFERS
CARDIAC
ARREST**

THE OLDEST SON OF NBA STAR
LEBRON JAMES, BRONNY JAMES,
SUFFERED A CARDIAC ARREST.
THE LATEST ON HIS CONDITION
AND THE IMPORTANCE OF CPR
AND AEDS.

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Cardiac

- EKG
- Echocardiogram
- Treatments:
 - HCM: considered absolute contraindication to vigorous exercise and sports
 - CC: Cardiac defibrillation

AC joint

- Traumatic injury to the acromioclavicular joint with disruption of the AC joint ligaments and/or coracoclavicular ligaments
- Direct blow to shoulder
- Greater than 95,000 AC joint injuries per year

Ligament stretched



Partial rupture
A.C. ligaments



Complete rupture
A.C. and C.C. ligaments



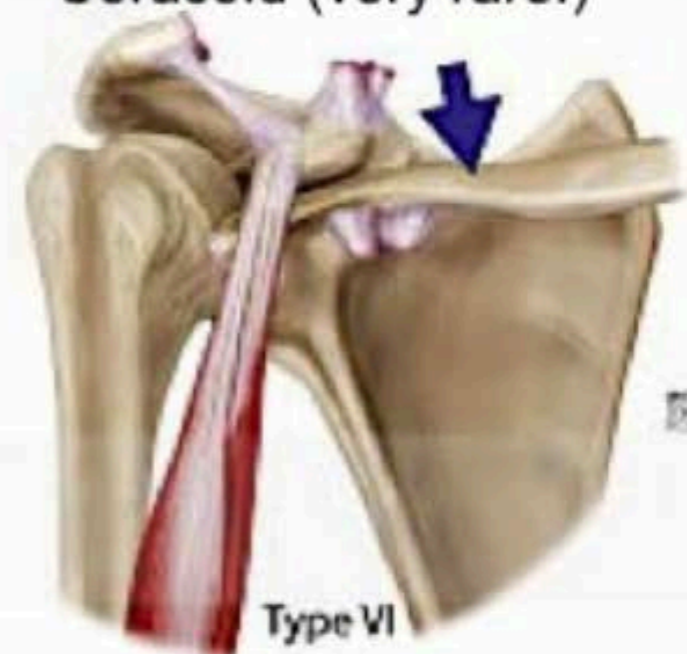
Clavicle displaced posterior
Over acromion



Clavicle underneath
Coracoid (very rare!)



Clavicle displaced
Just under skin



AC joint

- 6 types of injury pattern
 - Grade I -II = non operative
 - Grade 4 -6 = operative
 - Grade III = ???????
- Non operative
 - sling, rest, ice, PT

Instability/dislocation

- 70,000 plus shoulder dislocations per year
- Usually occurs as a sudden traumatic injury
- Shoulder is vulnerable to repeated dislocations after the initial dislocation
- Can develop laxity that leads to chronic instability

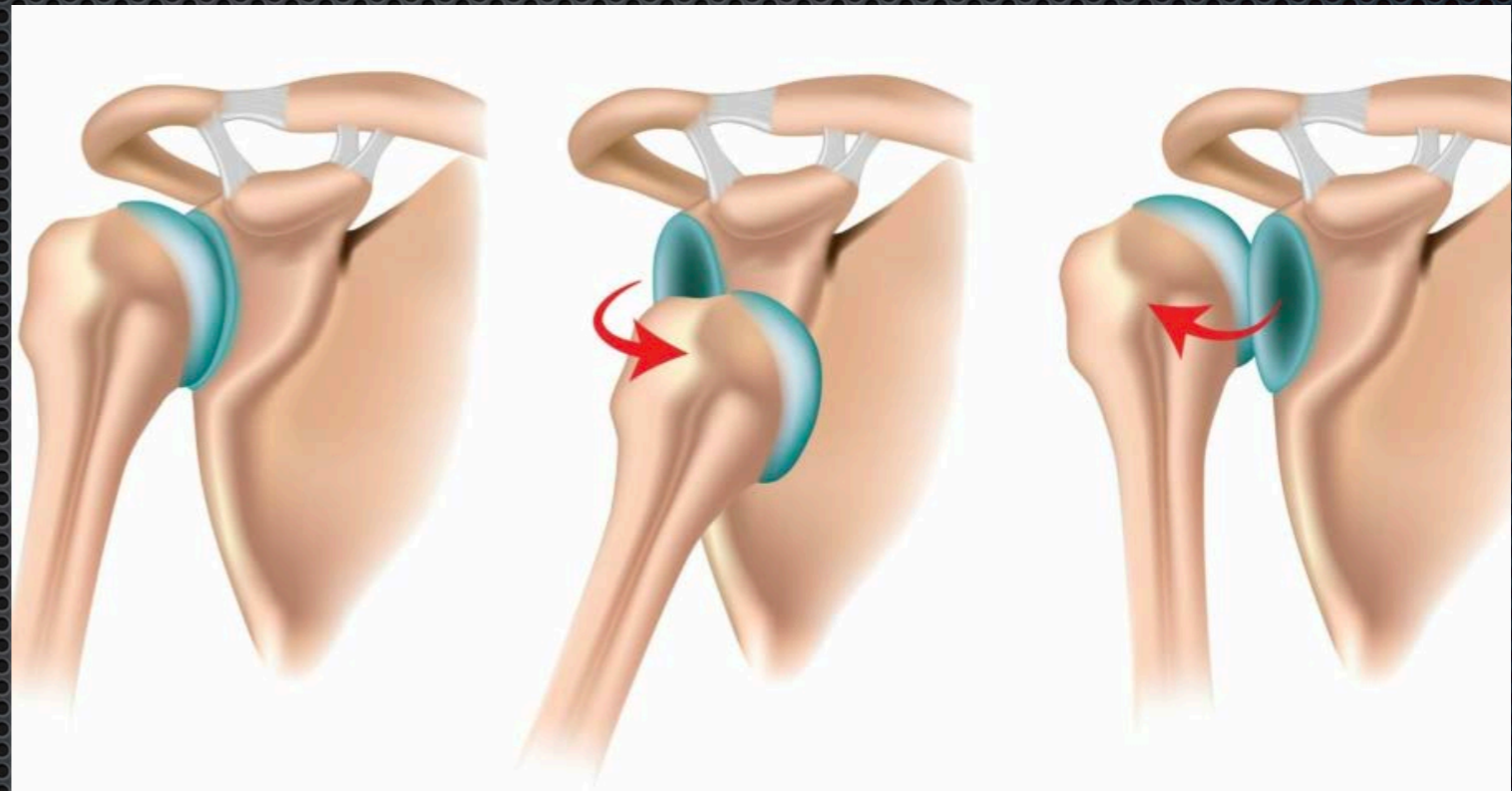
Instability/dislocation

- Symptoms:

- Pain from the initial injury
- Repeated dislocations or feelings of subluxation

- Signs:

- Obvious deformity
- X-ray- NEED AXILLARY VIEW
- CT???



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Instability/dislocation

- Immobilization
- Activity modification
- NSAIDs
- PT



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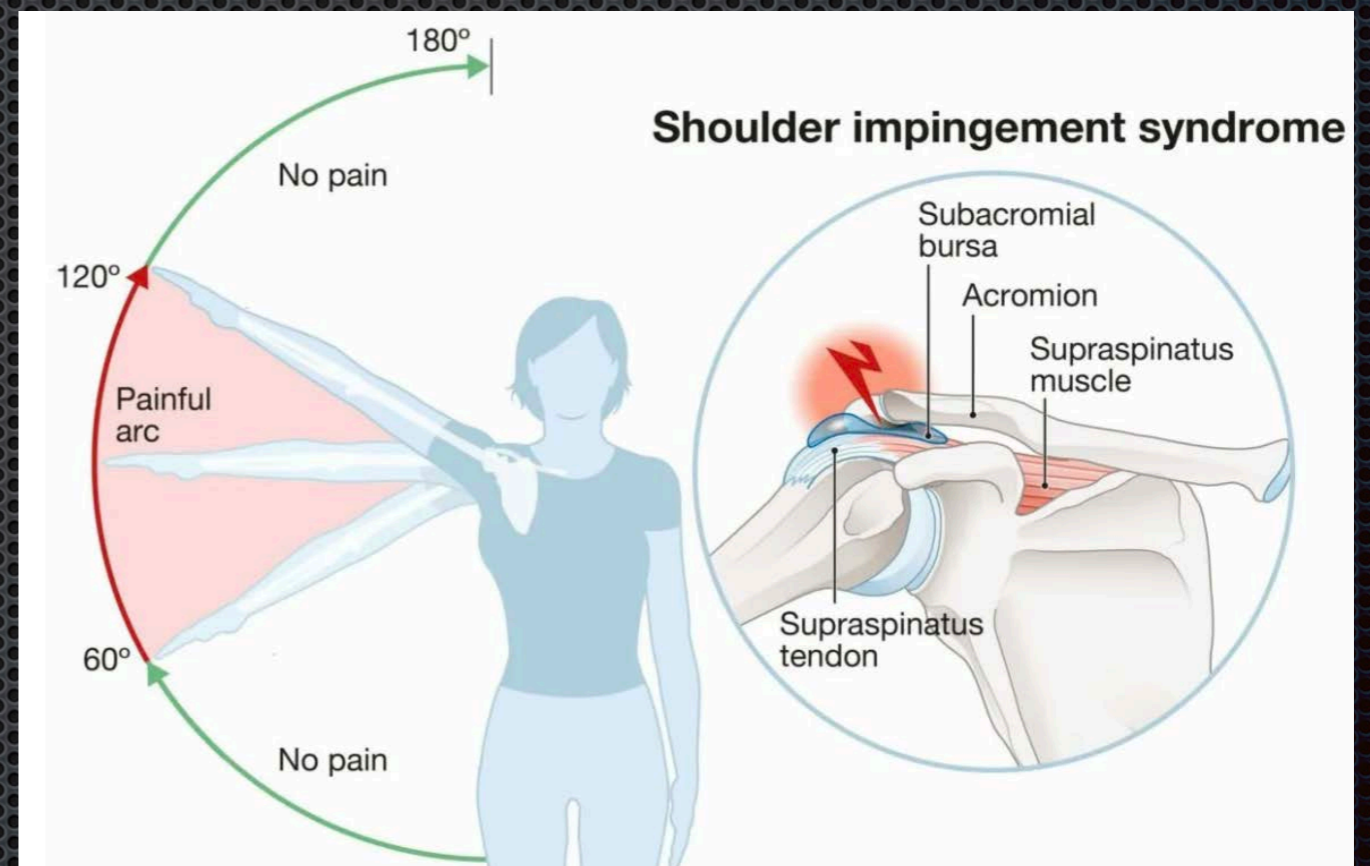
- Failed non -op = surgical intervention

Impingement

- Mechanical impingement and/or wear and tear of rotator cuff tendons
- Any process that effects the normal gliding process of the rotator cuff may lead to impingement
- Overuse activities

Impingement

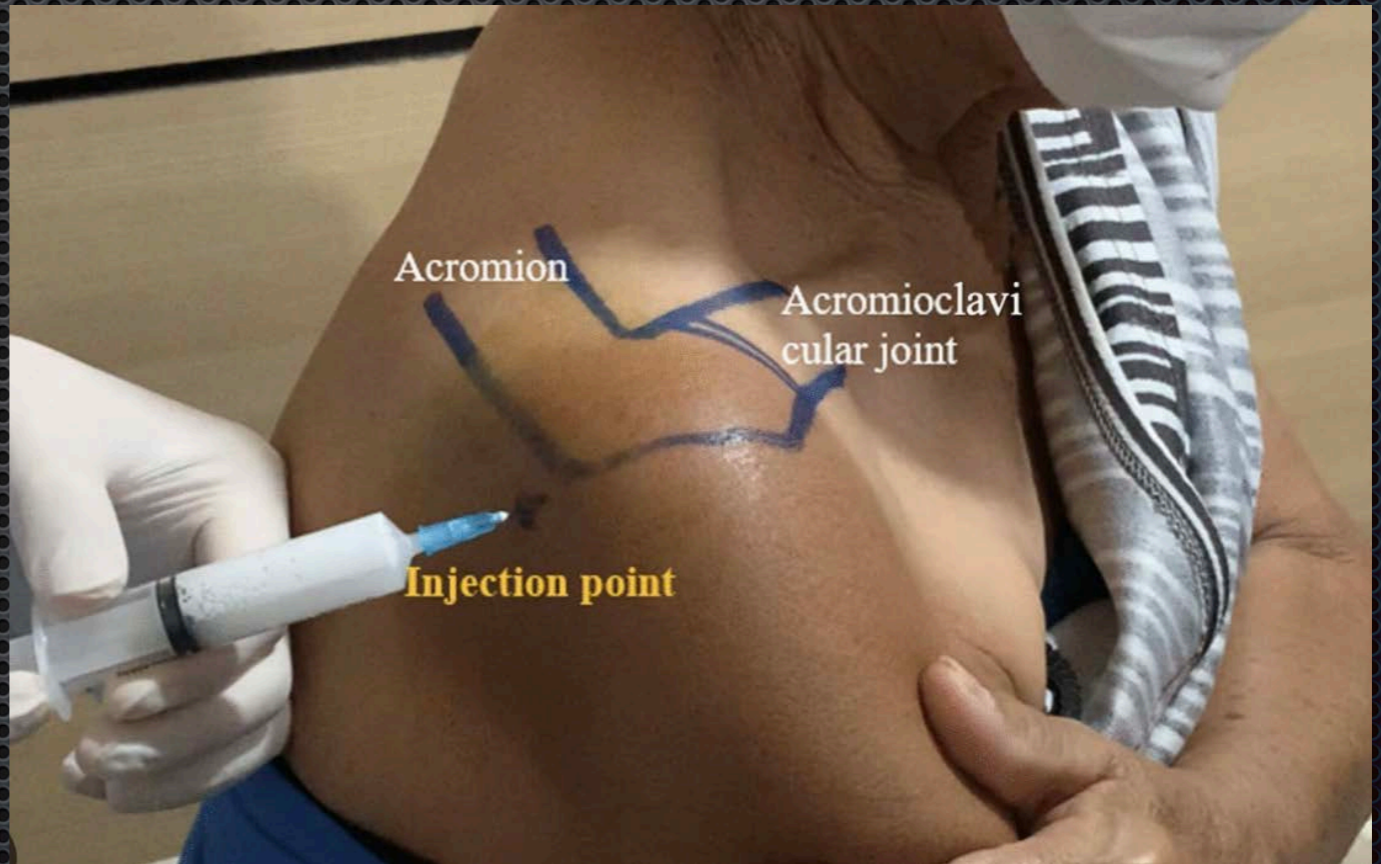
- Diagnosis can be made with history and physical exam
- Symptoms:
 - Pain with overhead movement
 - Pain that causes awakening at night



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Impingement

- Treatment involves removing any identifiable cause or contributing factors
- NSAIDs
- PT
- Steroid injection???
- Rarely requires surgery



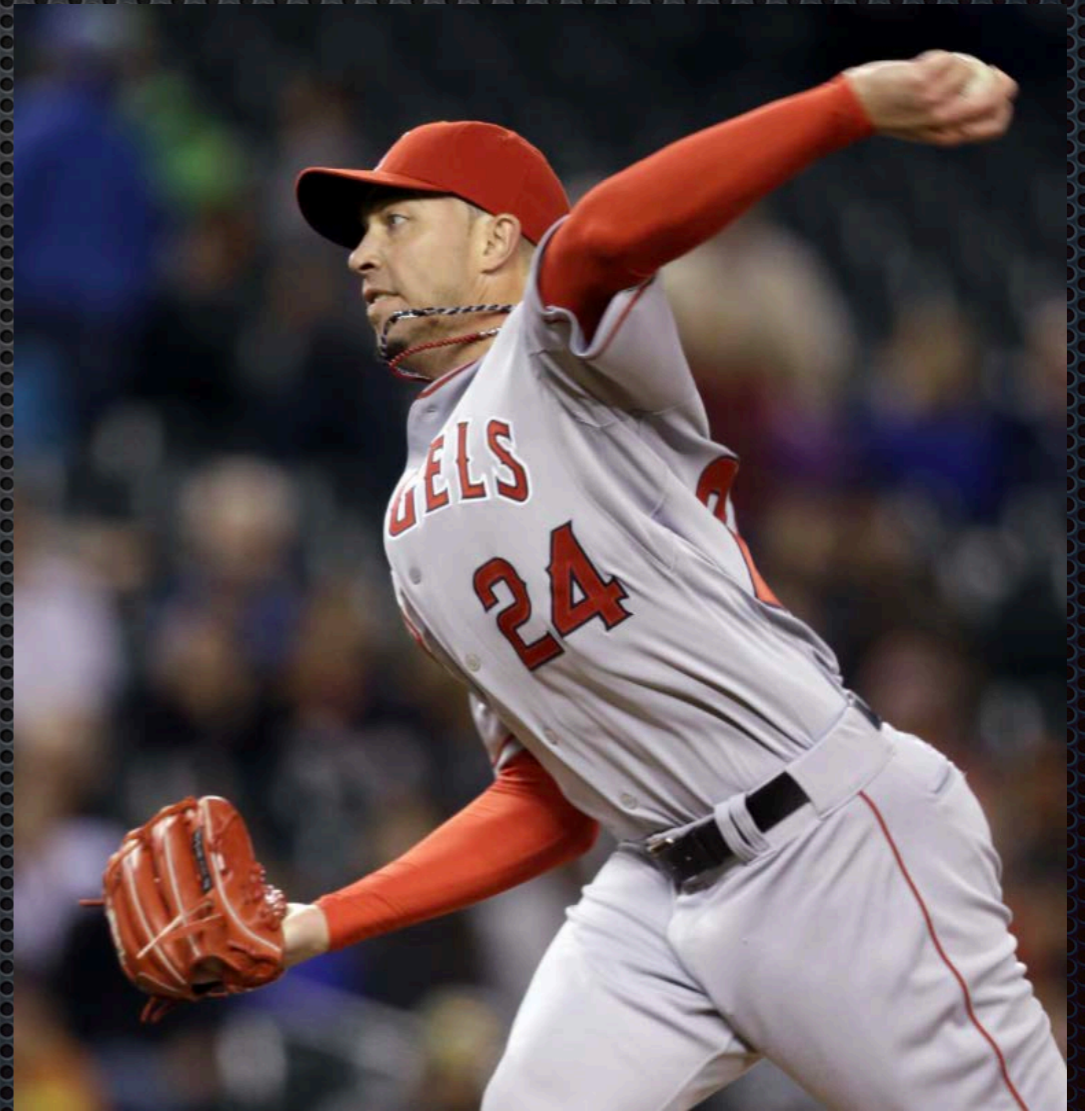
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Elbow Instability

- Attenuation or rupture of the ulnar collateral ligament of the elbow leads to valgus instability in overhead throwing athletes
- Becoming more common in high school baseball players
- Relatively uncommon in the skeletally immature patient
 - Little leaguers elbow

Elbow instability

- Pain
- Loss of velocity
- Loss of control and accuracy
- Ulnar nerve symptoms
- Loss of full extension



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Elbow instability

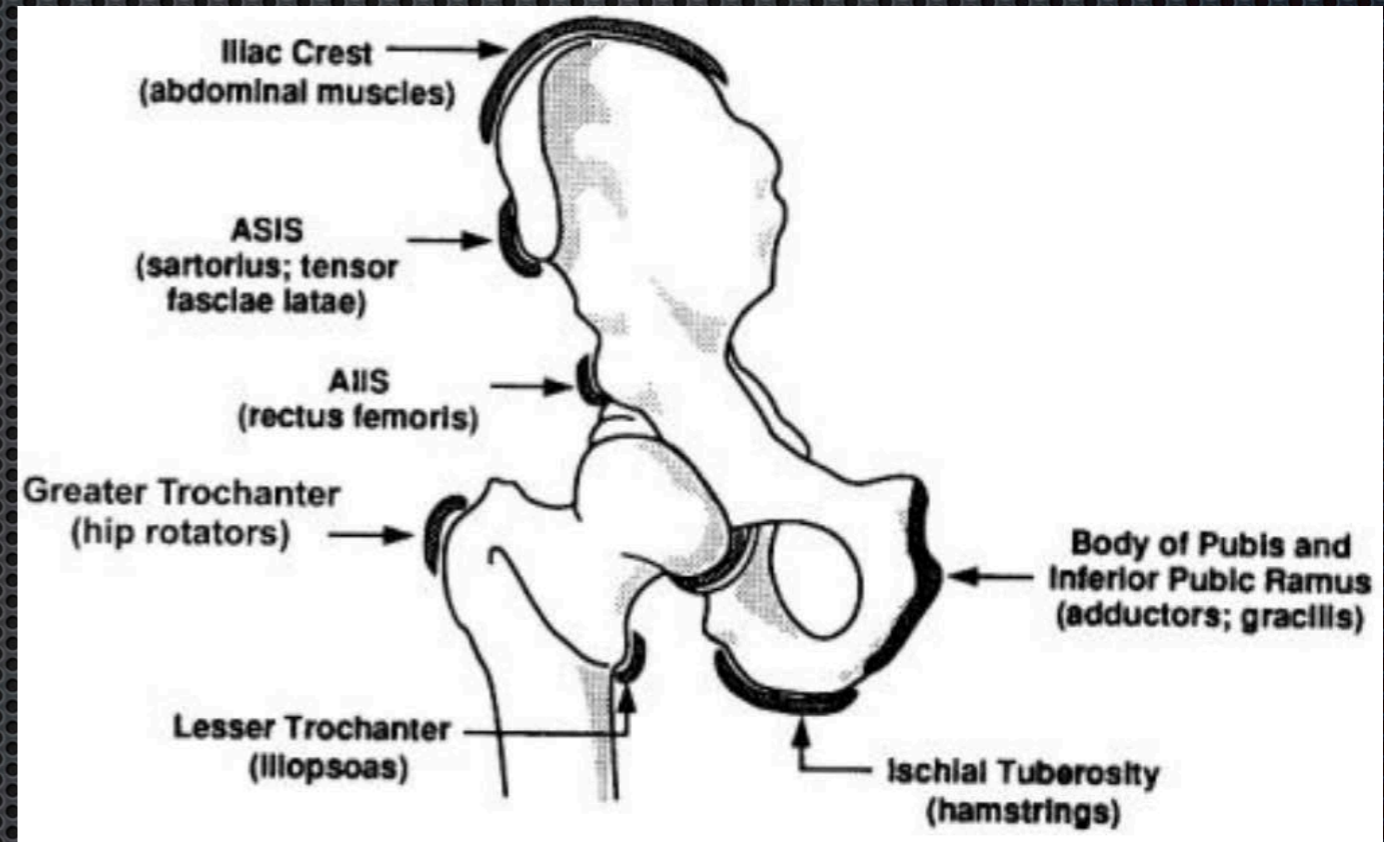
- Rest - minimum 6 weeks
- PT (after 6 weeks/pain resolves)
- Progressive return to throwing program
- UCL reconstruction (Tommy John) reserved for failed non-op treatment and high level athletes

Pelvis avulsion

- Anterior superior iliac spine avulsion is caused by sudden and forceful contraction of the tensor fascia latae and sartorius
 - Occurs during hip extension
- Anterior inferior iliac spine avulsion caused by eccentric contraction of the rectus femoris
 - Occurs most often in sports involving kicking

Pelvis Avulsion

- Sudden "pop"
- Hip pain and weakness
- Pain with hip flexion and knee extension
- X-ray
- CT



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Pelvis Avulsion

- Non-operative treatment for most cases
 - Rest
 - Protected weight bearing
 - Early ROM
 - Stretching
- Avulsions with >3 cm of displacement require surgical intervention

Hamstring Injuries

- Most commonly occur at the myotendinous junction in running athletes
- If skeletally immature athlete, then can be avulsion of the ischial tuberosity
- Commonly seen in rapid acceleration sports

Hamstring Injuries

- Pain in posterior thigh during activity
- “pop” in posterior thigh
- Pain with sitting
- Palpable mass along posterior thigh
- Ecchymosis



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Hamstring Injuries

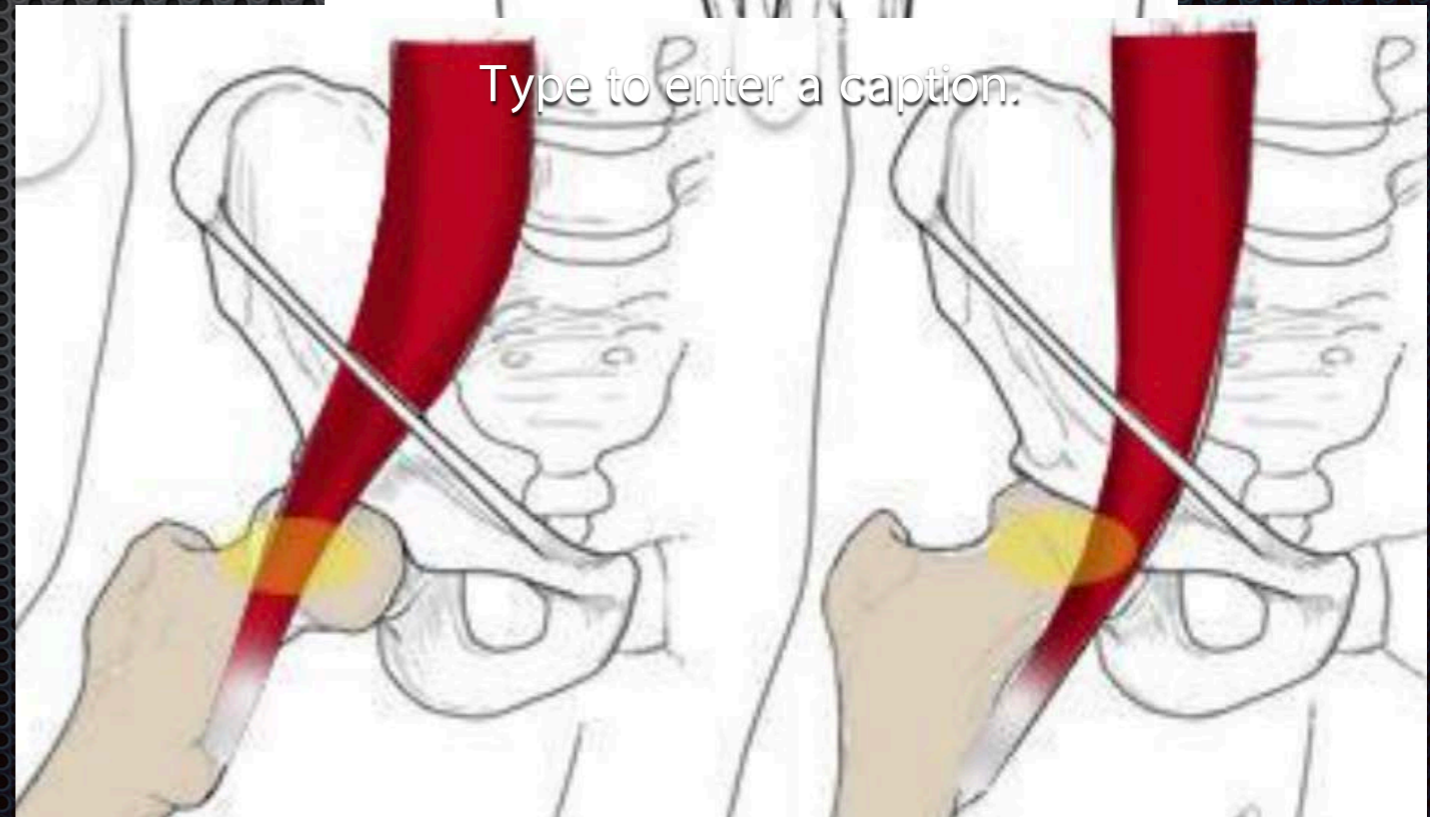
- Rest and ice
- Protected weight bearing x4 weeks
- PT
- May require tendon repair or ORIF
- High incidence of recurrence

Snapping Hip

- Characterized by snapping sensation in the hip
 - External snapping hip
 - Internal snapping hip
 - Intra-articular snapping hip
- Common in dancers

Snapping Hip

- May be painful or painless
- Patient often able to reproduce snapping
- Aggravated by activity



Snapping Hip

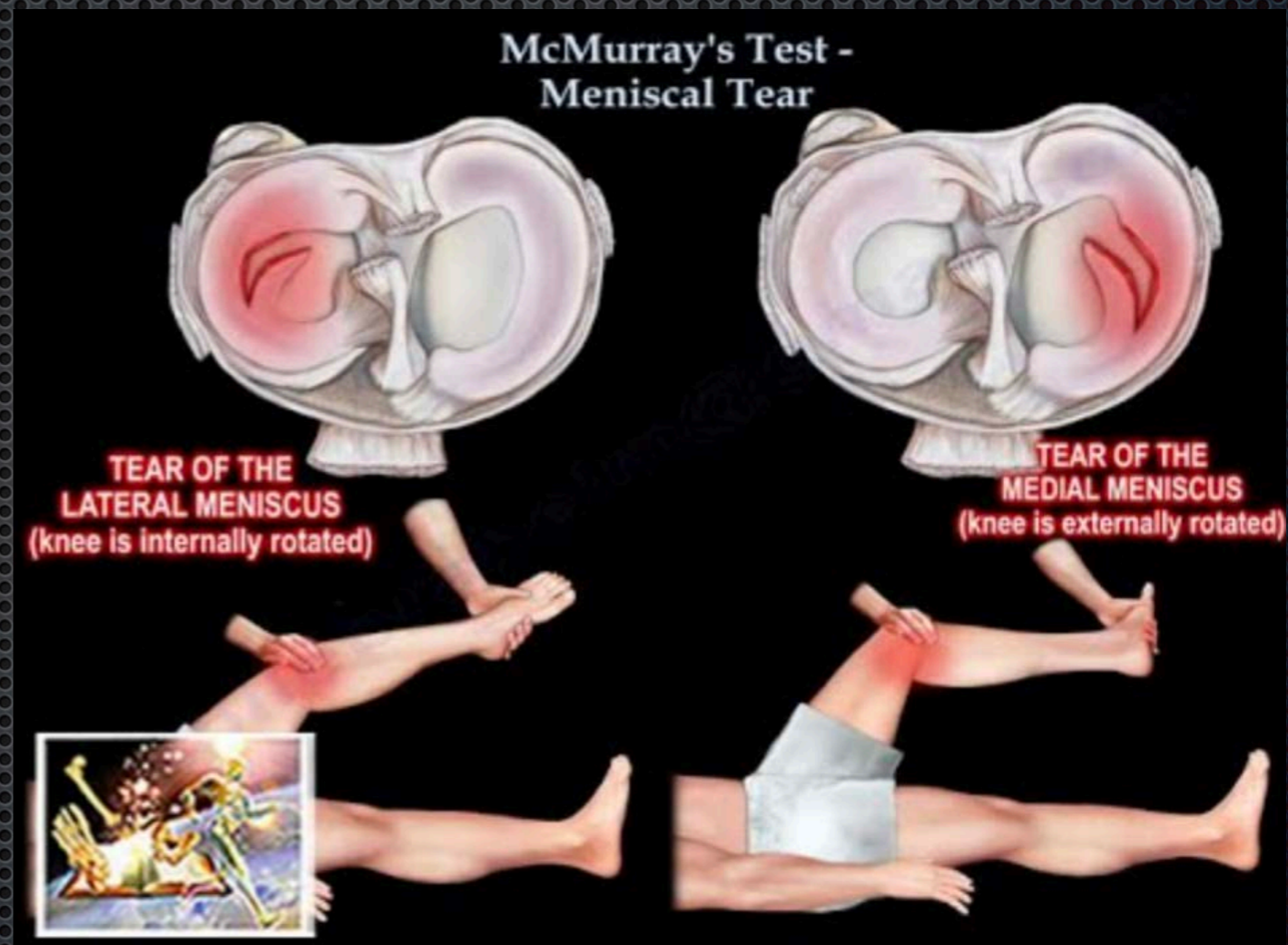
- Activity modification
- NSAIDs
- PT
- Steroid injection
- Surgical treatment reserved only for those who have failed all conservative treatment

Knee meniscus

- Very common sport related injury in young athletes
- Medial meniscus tear more commonly seen
- Reports pain with twisting motions or deep squatting
- May report catching and locking symptoms

Knee meniscus

- Joint line tenderness
- Intermittent swelling
- Positive McMurray's test
- MRI



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Knee meniscus

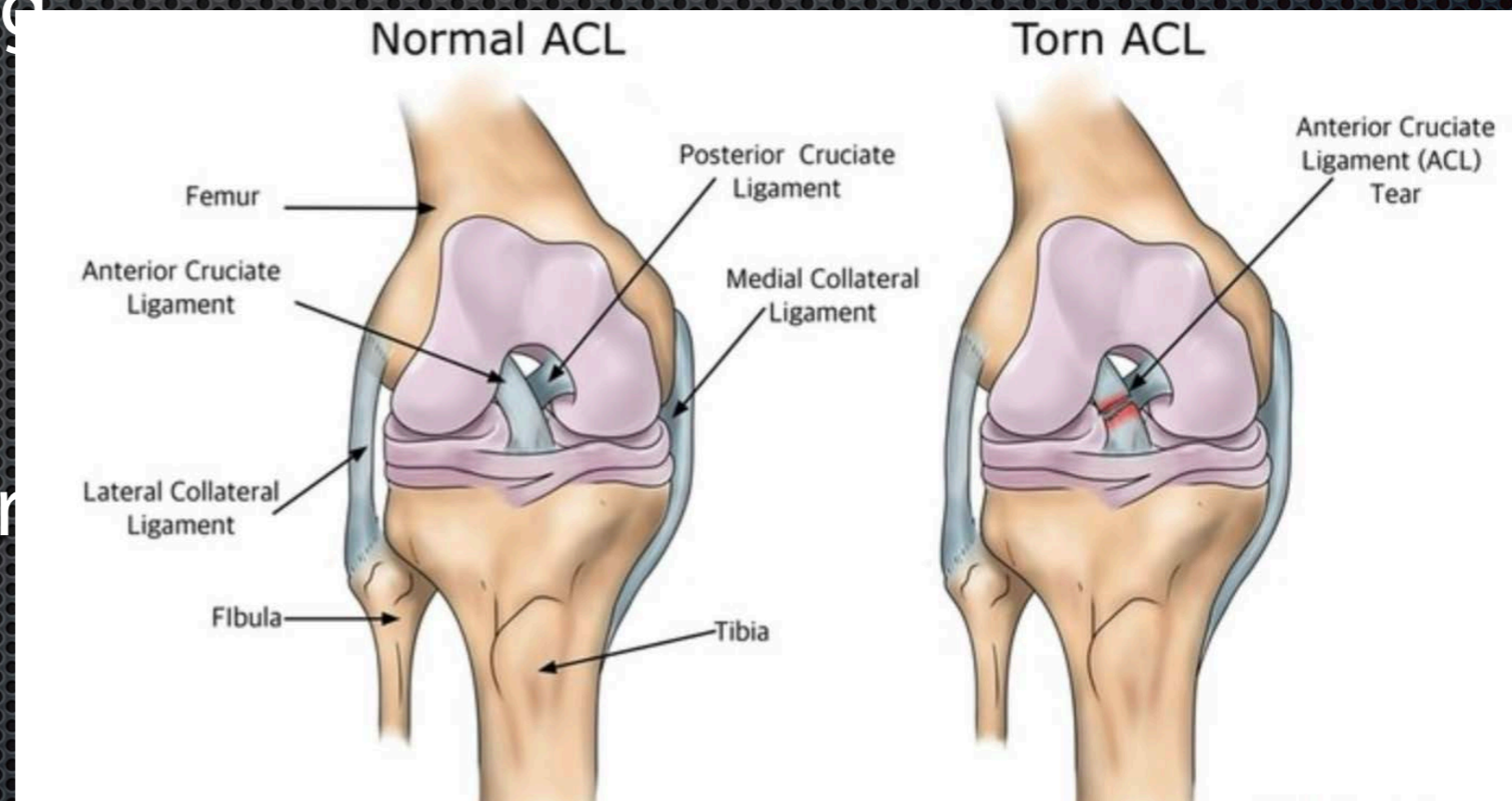
- Rest
- NSAIDs
- PT
- Repair vs partial meniscectomy

Anterior Cruciate Ligament

- One of the most commonly injured ligaments in the knee
- ~400,000 ACL reconstructions per year
- More common among female athletes
- Female athlete- soccer
- Male athlete - basketball

Anterior Cruciate Ligament

- Feel "pop" in the knee
- Immediate swelling
- Feeling instability
- Positive Lachman/anterior drawer
- MRI



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Anterior Cruciate Ligament

- ACL does not heal itself
- Mainstay of treatment is surgery (reconstruction)
- Minimum of 7 months before return to play after surgery, but can be up to a year
- Physiological role plays huge part in return to play and should not be over looked

Osgood Schlatters

- Osteochondrosis or traction apophysitis at the tibial tubercle
- Commonly presents as anterior knee pain worsened with activity
- More common in males
- More commonly seen in jumpers and sprinters

Osgood Schlatters

- Anterior knee pain
- Pain with kneeling
- Enlarged tibial tubercle
- Tenderness over tibial tubercle
- Pain with resisted knee extension



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Osgood Schlatters

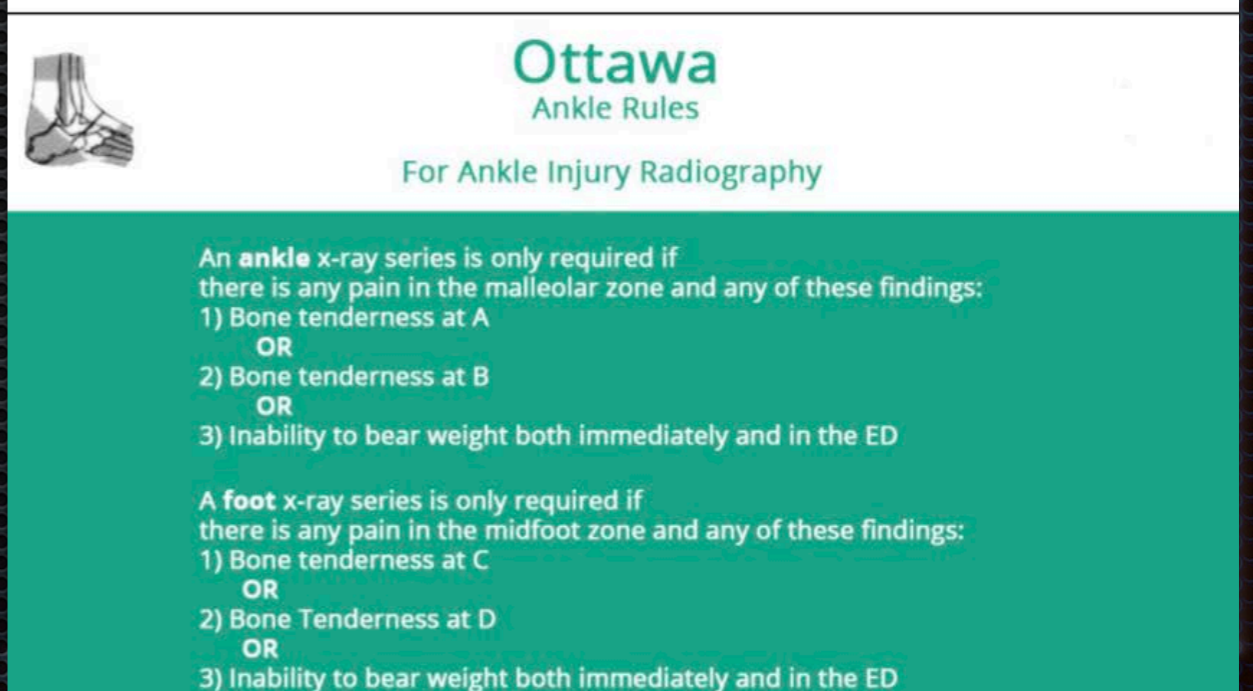
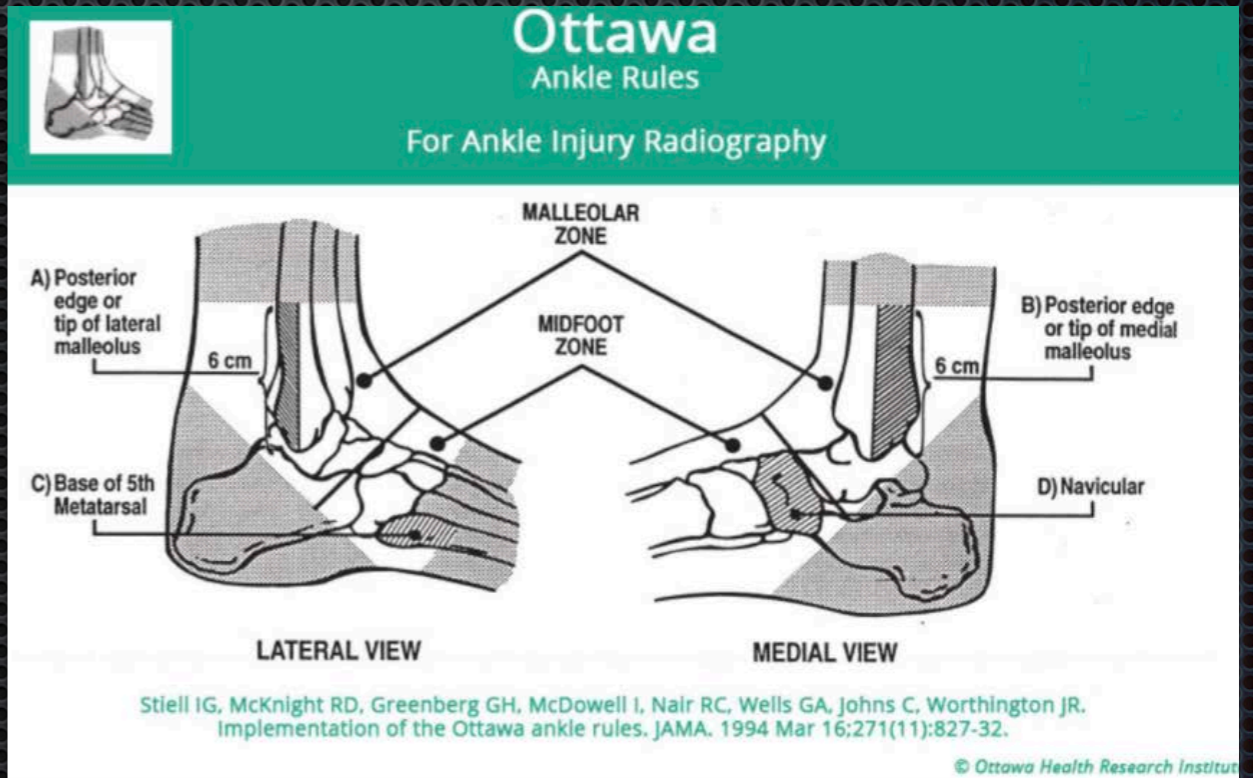
- Rest and ice
- PT
- Quadriceps stretching
- Brace
- Cast x6 weeks???
- Self limiting condition but does not resolve until growth has halted

Ankle sprain

- Most common reason for missed athletic participation
- Twisting injury to the ankle causing stretch injury to the ligaments
- Repeated ankle sprains can lead to chronic instability
- >25,000 ankle sprains occur daily

Ankle sprain

- Pain and swelling
- Ecchymosis
- Non-tender over bony prominences
- catching/popping sensation



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Ankle sprain

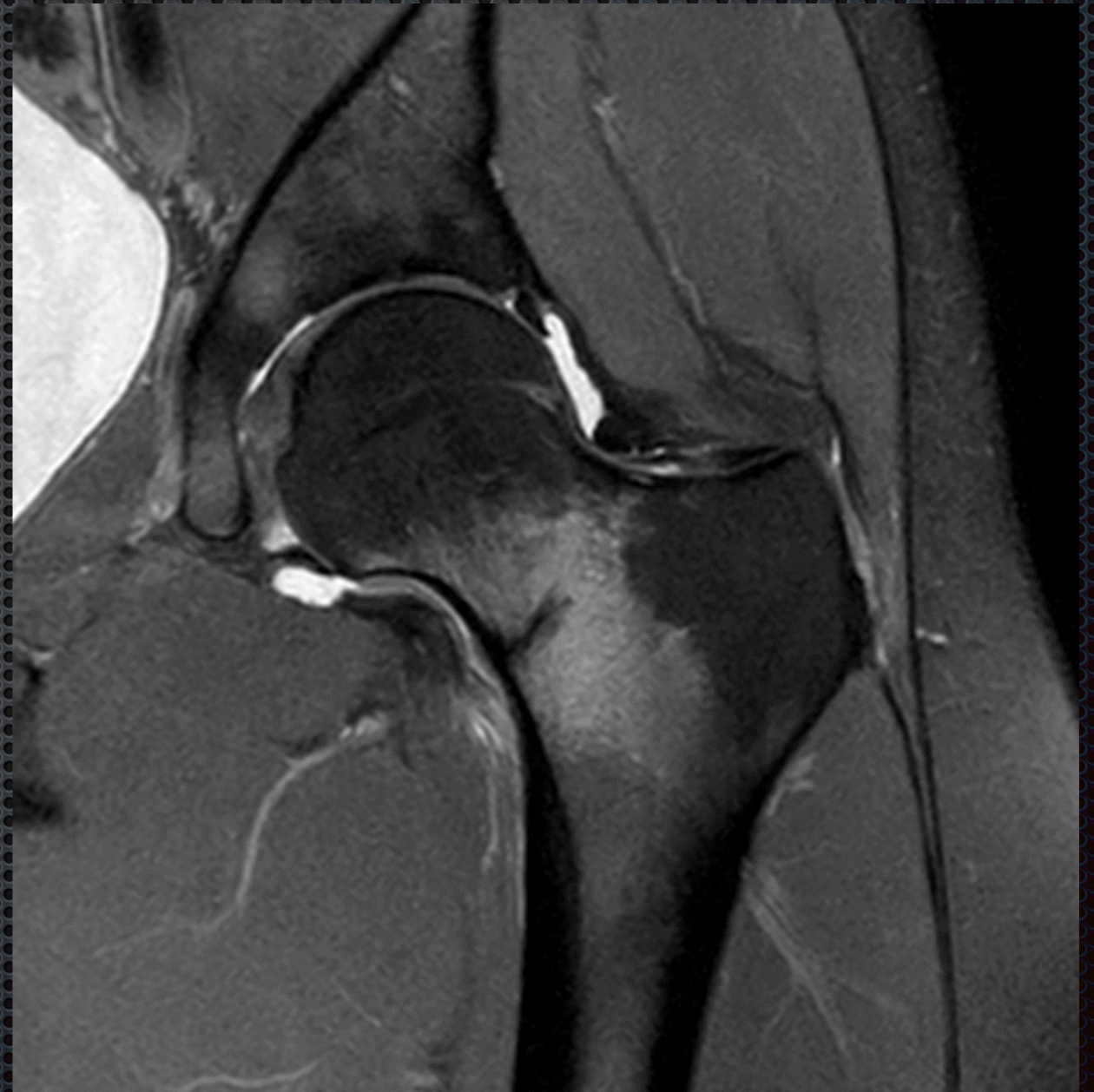
- RICE
- Bracing
- PT
- Early mobilization has shown quicker return to play
- Supervised PT shows benefit in early follow up but no long term advantage

Female Athlete Triad

- Amenorrhea
 - Incidence in runners is nearly 50%
- Insufficient energy availability
 - Can be associated with eating disorder or not
- Decreased bone mass
 - Leads to stress fractures

Female Athlete Triad

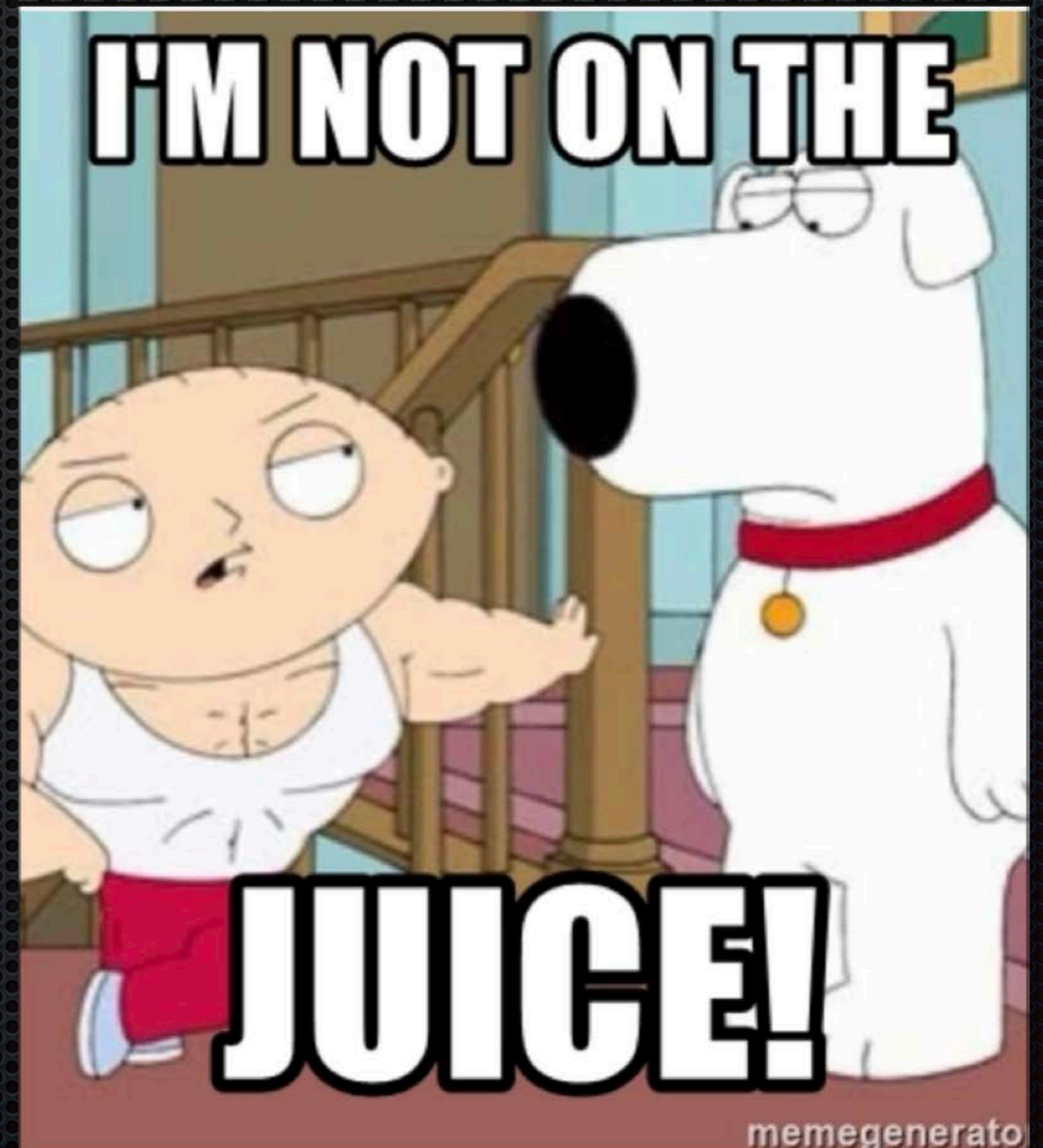
- Treatment involves a multidisciplinary approach
- Physiological counseling
- Dietary management
- Reduced training intensity



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Steroids

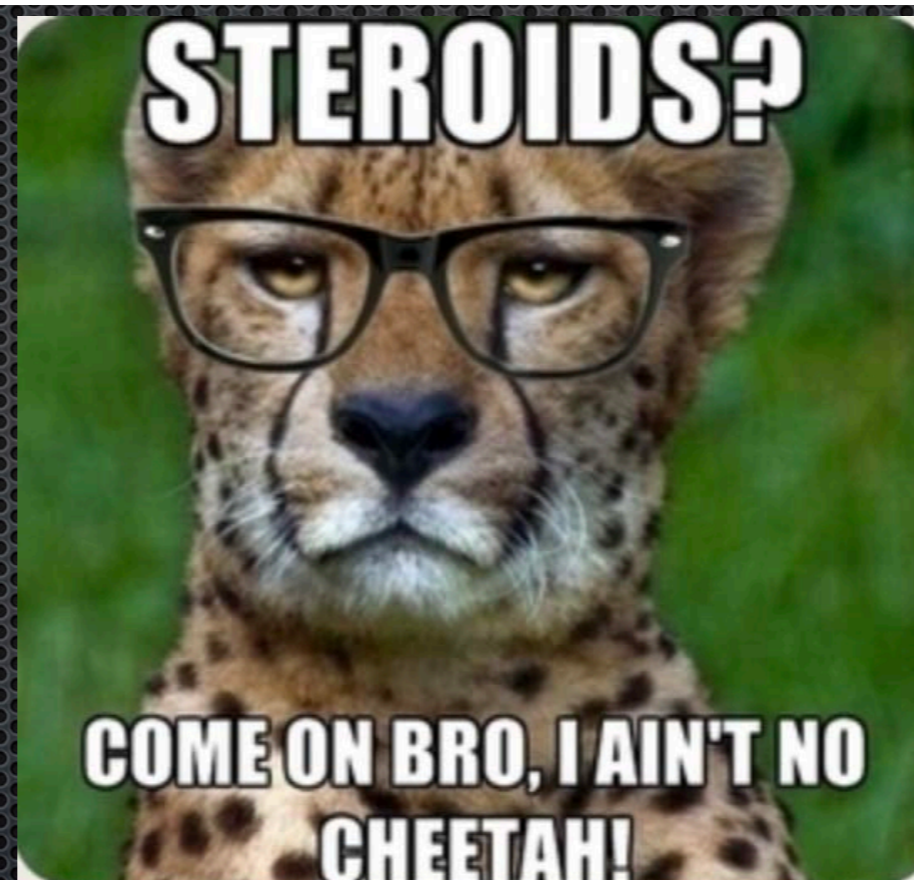
- Estimates indicate as many as 3 million AS users in the US and that 2.7% to 2.9% of young American adults have taken an AS at least once
- Medical and non -medical use of AS sales in the US are rising 20% to 30% each year



Position Statement

Performance Enhancing Drugs

The AAOS believes that Performance Enhancing Drugs (PEDs), such as anabolic steroids and their precursors, should not be used to enhance performance or appearance, and should be banned from use in all sports programs. We recommend that sports-governing bodies continue implementing aggressive drug testing programs to deter and to detect drug use. Relevant sports medicine bodies should continue to implement aggressive drug testing programs to detect their use and impose harsh penalties for those athletes who use them and those individuals or institutions that facilitate their use.



Why do we care???

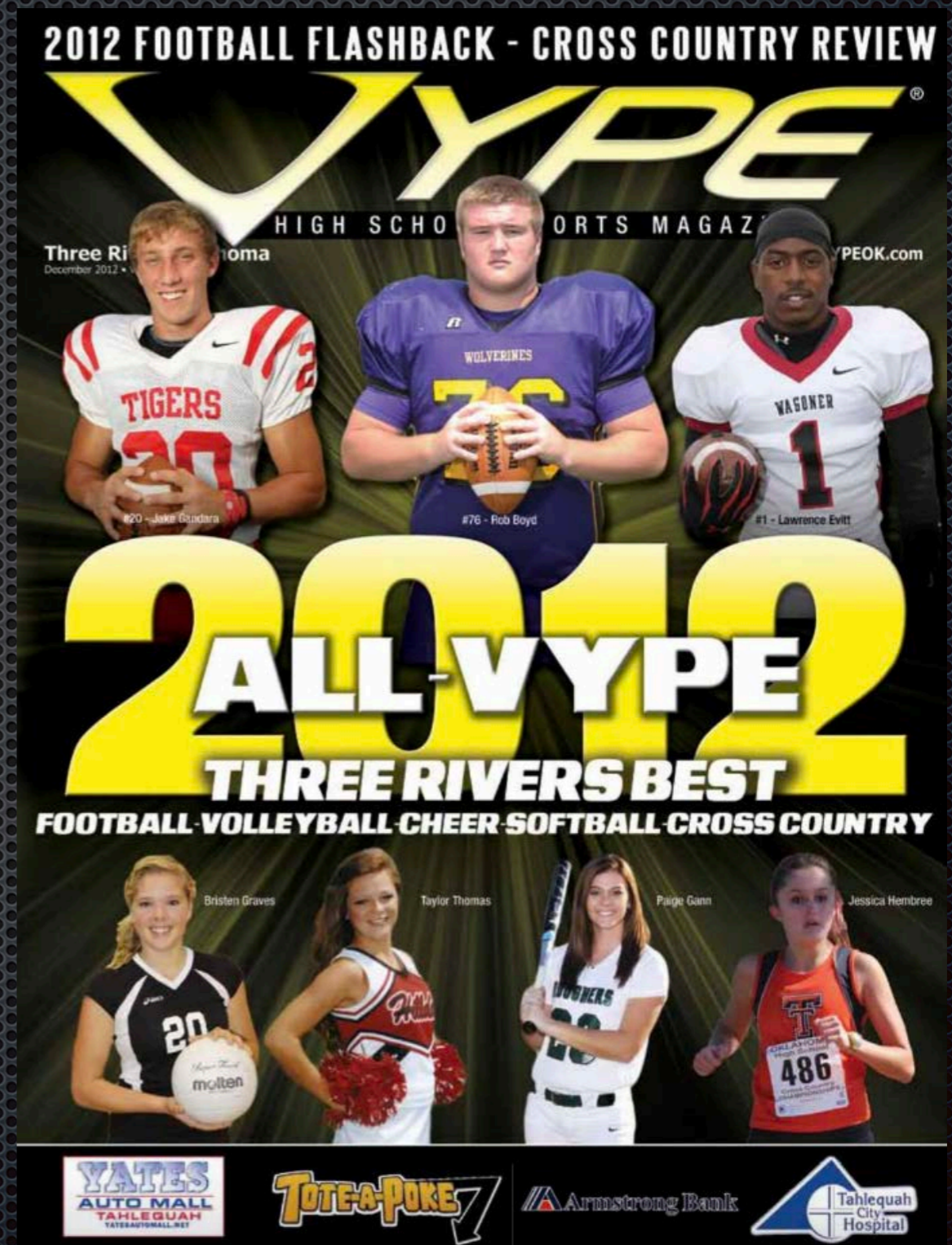


Prevention

- Use of proper safety equipment during activity
- Importance proper off season/pre sport conditioning/training
- Allowing for adequate time off after injury

Prevention

- Encourage youth to play multiple positions
- Encourage youth to play multiple sports
- Limit the number of teams youth play on during one season



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Conclusion

- Sports offer more than just a physical benefit
- Injuries are going to happen
- Physicians can serve as a vital role in education that can help decrease the number of injuries
- The number one goal of sports: HAVE FUN!!!



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Thank You!

Resources

- 1. American Orthopaedic Society for Sports Medicine. Sports Medicine Media Guide: An Illustrated Resource on the Most Common Injuries and treatments in Sports. Published 2011. Accessed July 30, 2023.
- 2. DeLee. DeLee and Drez's Orthopaedic Sports Medicine, 3rd ed. 2009 Saunders
- 3. www.orthobullets.com
- 4. Pizzarro JN, Chiang BJL, MonreRjvera CA, Mehran N, Tabaie S: Poster No. P0439. Epidemiology of Sports Injuries Among High School Athletes in the United States. AAOS 2023 Annual Meeting Proceedings. Las Vegas, Nev.