

The Limping Child Athlete

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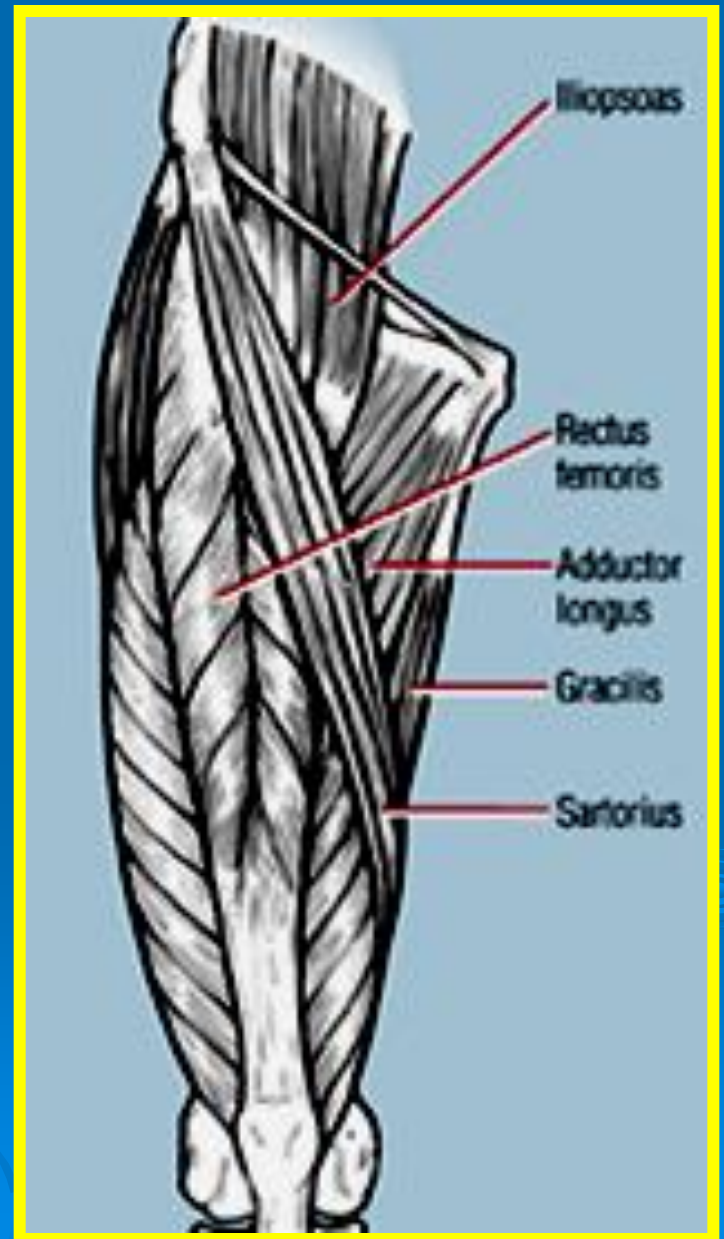
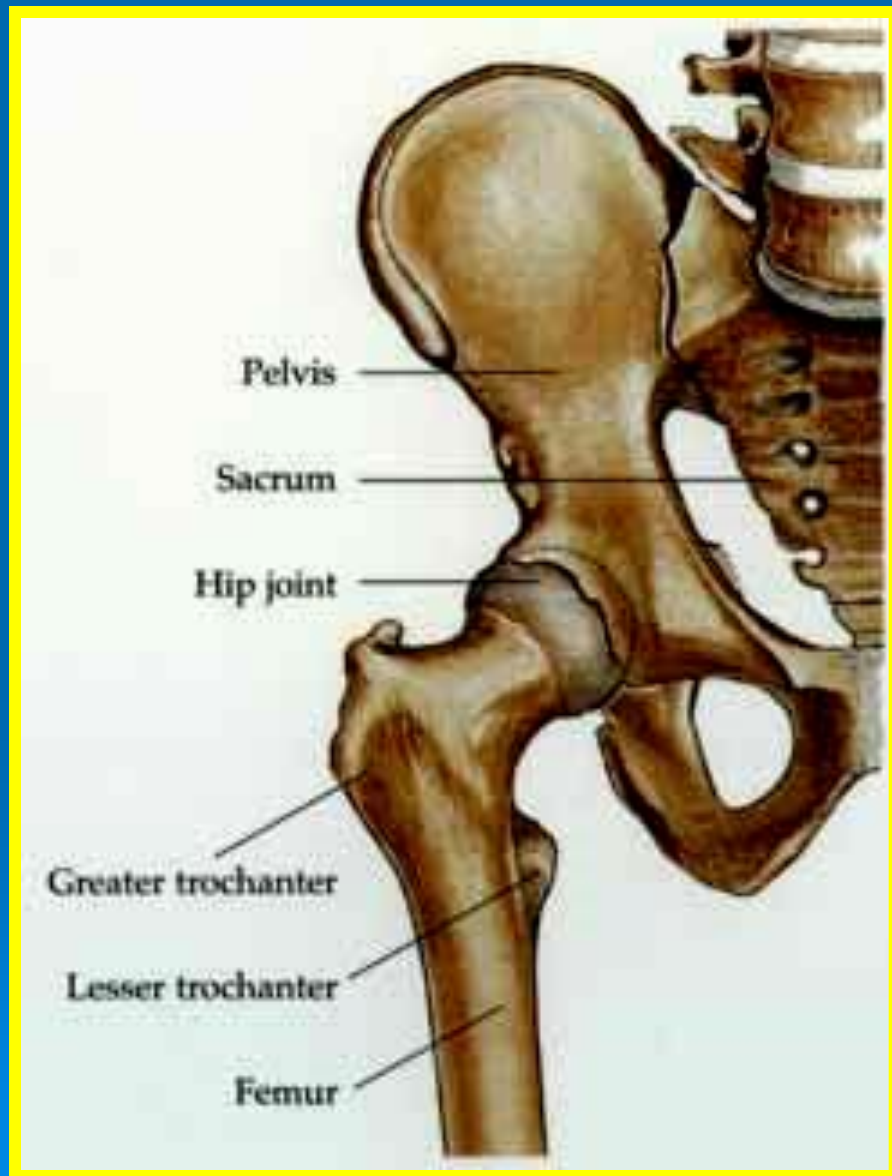


Limping Child

- Hip
- Knee
- Foot
- Infection
- Tumor



Hip



7 y/o soccer player

- L groin + thigh pain x 9mo
- Limp after activity
- Pain increasing over last month

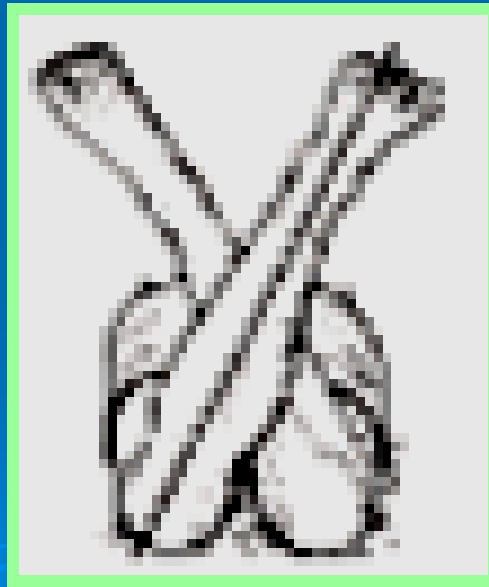
Exam

➤ Exam

- Pain ROM
 - IR > ER
- Limited ROM
 - IR, EXT, ABD



IR: 40°



ER: 45°

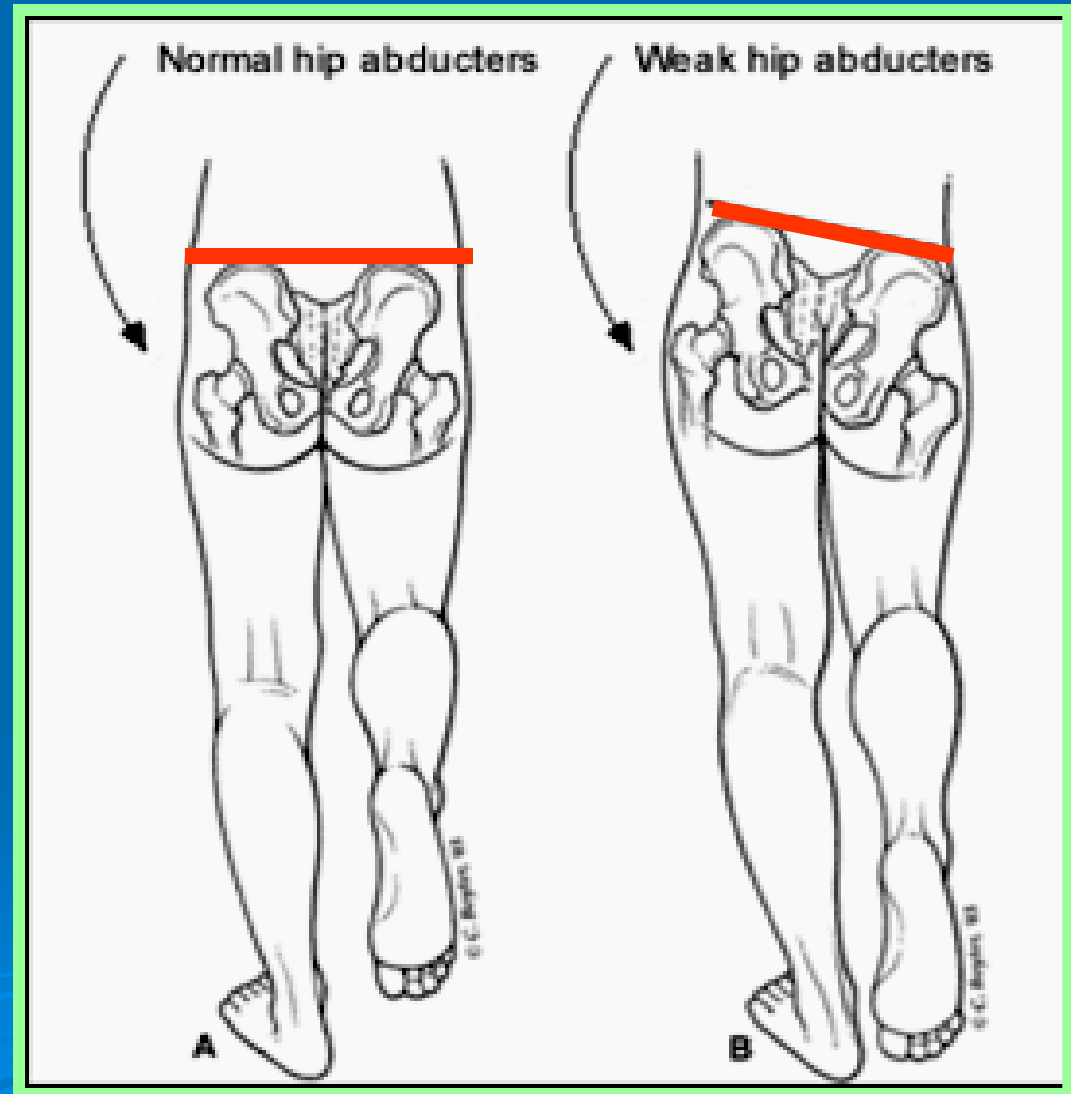
Hip ROM

Flexion + Extension



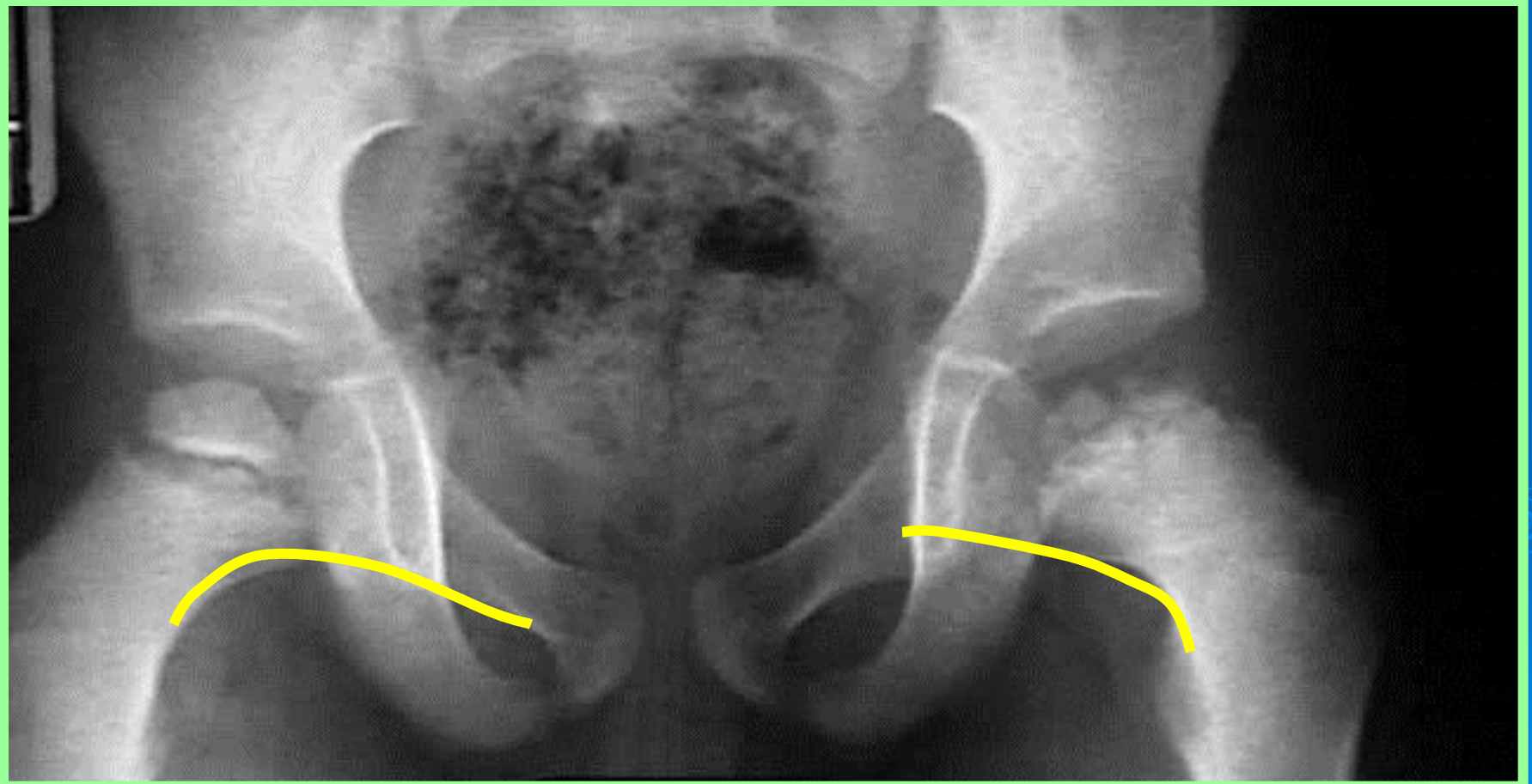
Physical Exam

- Muscle atrophy
- + trendelenberg test
 - Gluteus medius weakness
 - Downward tipping of unsupported leg



Diagnosis: X-ray

- Always order: AP pelvis + bilateral frog lat hip



Legg-Calve-Perthes

- Age 4-10
- Male:Female 4:1
- Bilateral: 20%
- Sx
 - Early: Painless limp
 - Groin, ant thigh, knee pain
 - Pain worse with activity

Treatment

➤ Goals:

- Keep femoral head centered in acetabulum
- Pain relief

➤ Rest

- Pain-free activities only

➤ NSAID

➤ Ortho referral

- Surgical procedures may be needed
 - Shelf arthroplasty
 - Osteotomy
 - Adductor release

More Hip Disorders



Slipped Capital Femoral Epiphysis

- 10-15 yo
- Often obese
- Bilateral 20-50%
- Sx
 - Limp
 - Aching: Groin, ant thigh, **knee pain**
 - Hip may be held in flexion
 - Lurching gait

SCFE: Classification

➤ Stable

- Able to weight-bear
- Usually prolonged sx

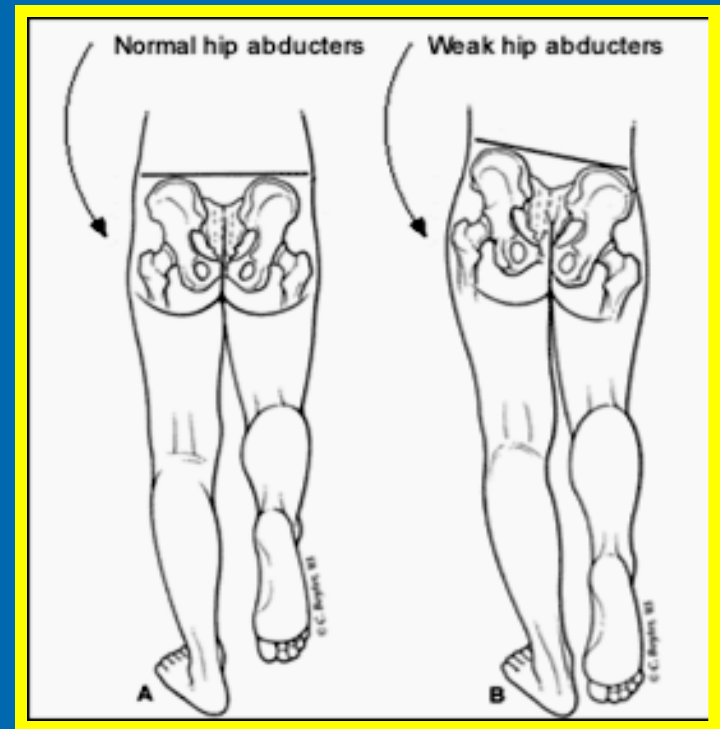
➤ Unstable

- Unable to weight-bear due to pain
- Can progress from stable to unstable

SCFE

➤ Exam

- Pain with ROM
- Limited ROM
 - IR, FLEX
 - As hip is flexed, rides into ER
- + trendelenberg test



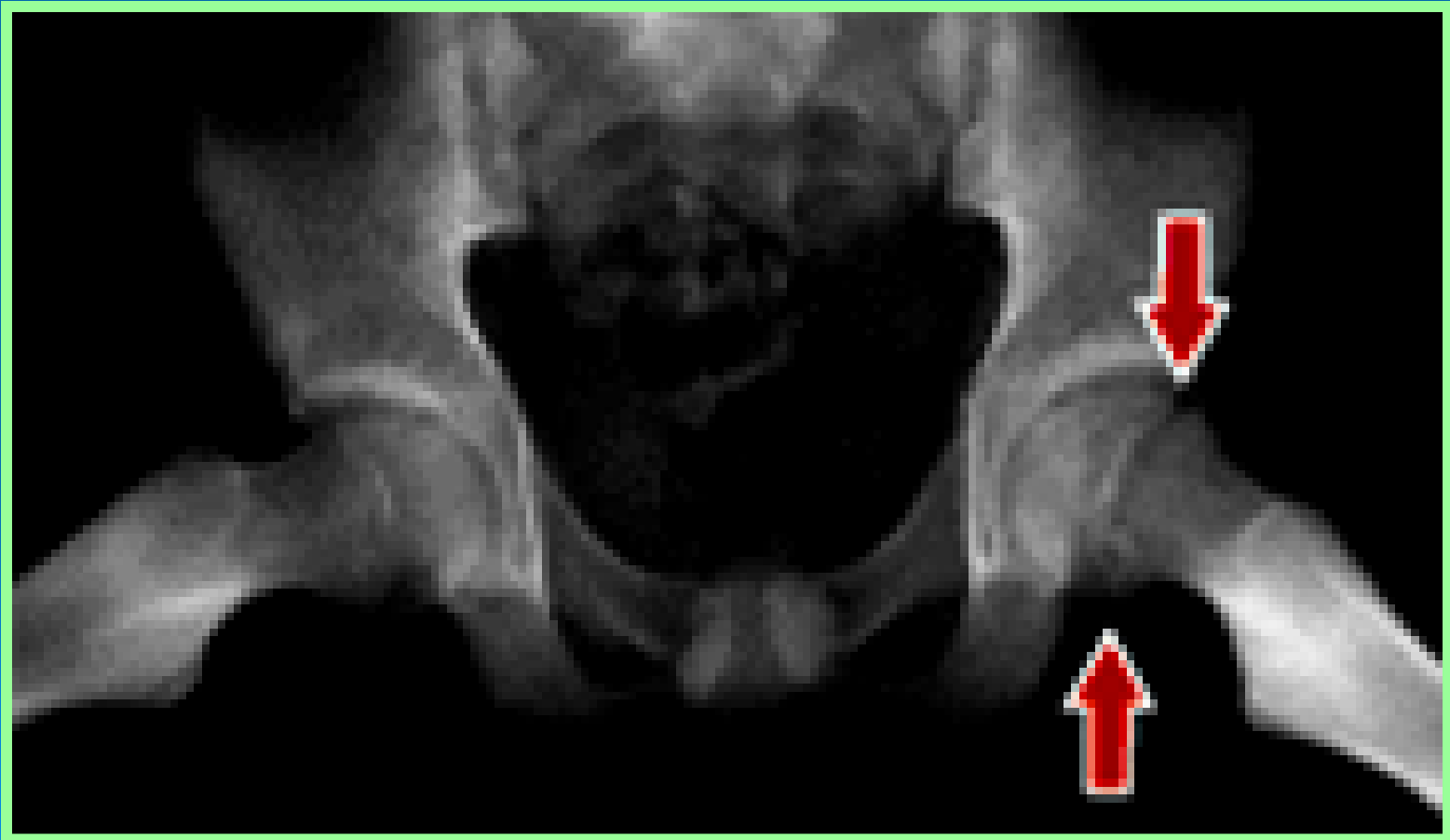
SCFE Diagnosis: X-ray

- AP + bilat frog lateral hip



SCFE: subtle

- Frog lateral shows subtle widening of epiphysis



Treatment

➤ Surgical referral

- Immediate
 - Unstable slips may need to be admitted
- Will pin opposite side if any pain at all



Avulsion Fractures

➤ Adolescent

- Soccer, sprinters, football, martial arts

➤ Feel a pop or snap when:

- Kicking
- Coming out of starting blocks
- change of direction with running
- Doing splits or hurdling

➤ Immediate swelling and pain

Avulsion Fractures (apophysitis)

➤ ASIS

- Sartorius

➤ AIIS

- Rectus

➤ Iliac Crest

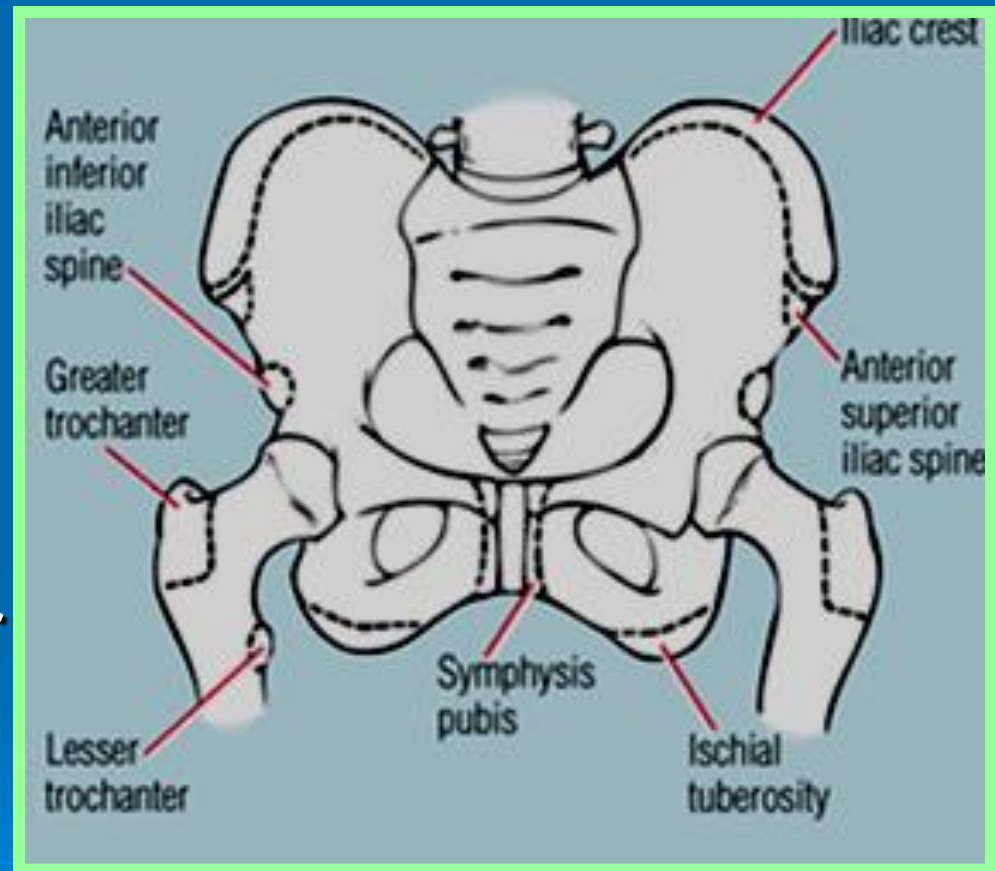
- Abdominal

➤ Lesser Trochanter

- Iliopsoas

➤ Ischial Tuberosity

- Hamstring



Mechanism

➤ ASIS + AIIS

- Kicking
- Coming out of starting blocks

➤ Ischial tuberosity

- Hurdler
- Splits

➤ Iliac crest

- Change of direction with running

Treatment

- Rest + Protect until pain free
 - Ice + NSAID
- ROM
- Progressive resistive exercise
 - Start when 75% ROM reached
- Stretch, functional exercise, proprioception
- RTP

Stress Fracture: Hip

➤ Adolescent

- Runners, dancers, soccer, basketball

➤ Sx

- Limp
- Achey groin pain
 - Early: pain after practice
 - Mid: pain occurs earlier and earlier
 - Late: pain at rest

➤ **Ameno/oligomenorrhea**

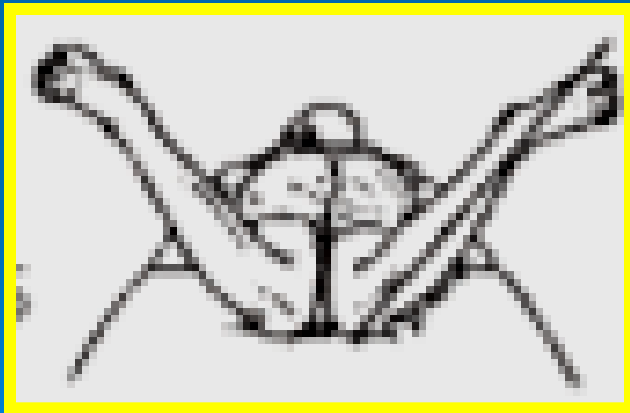
Stress Fracture

➤ Mechanism

- Repetitive microtrauma
- Training error
- Energy deficiency
 - Poor calorie intake

Exam

- Pain w/ IR + flexion
- Pain w/ single leg hop



Compression v. Tension

Tension

Compression

Displaced

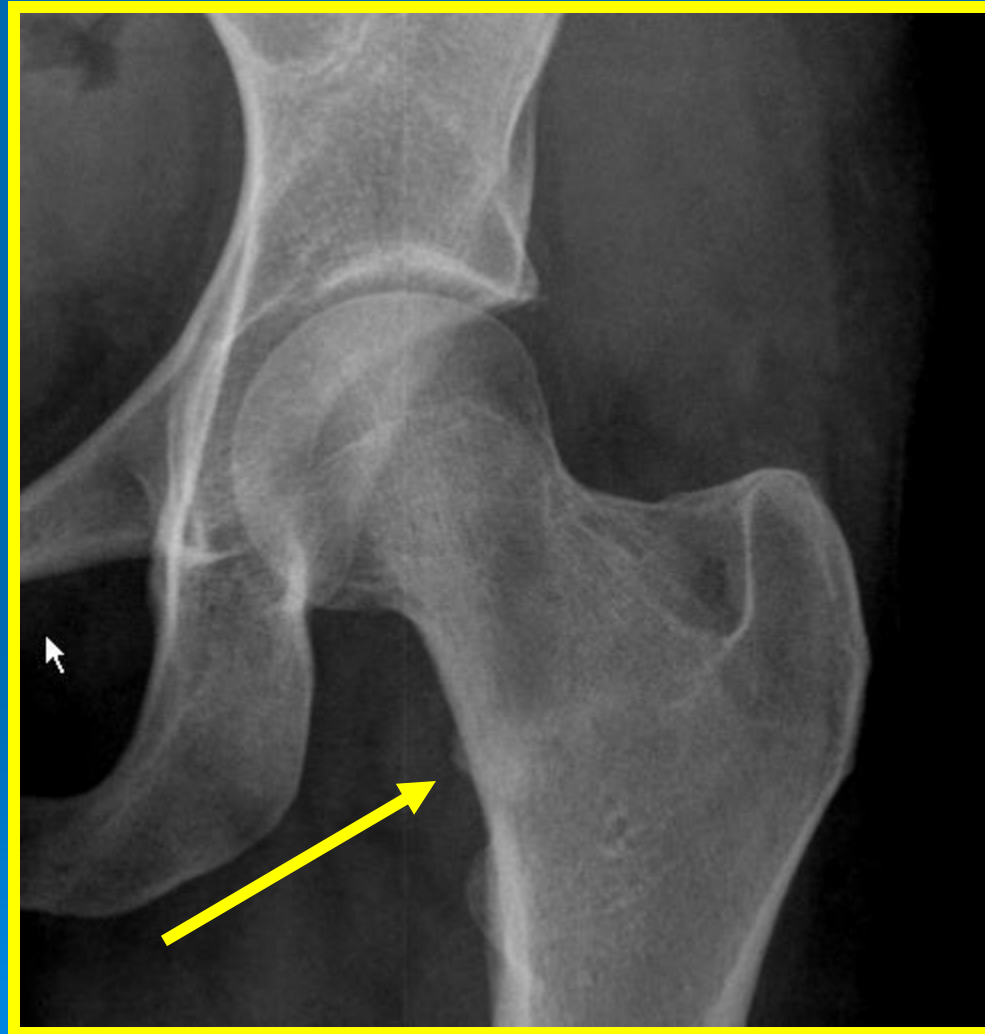


Diagnostic Imaging

- X-ray
 - + in 50%
- Bone scan + after 3 days
 - Bone scan + x-ray: + 90%
- MRI
 - 90%



Femoral Neck: Stress Fracture



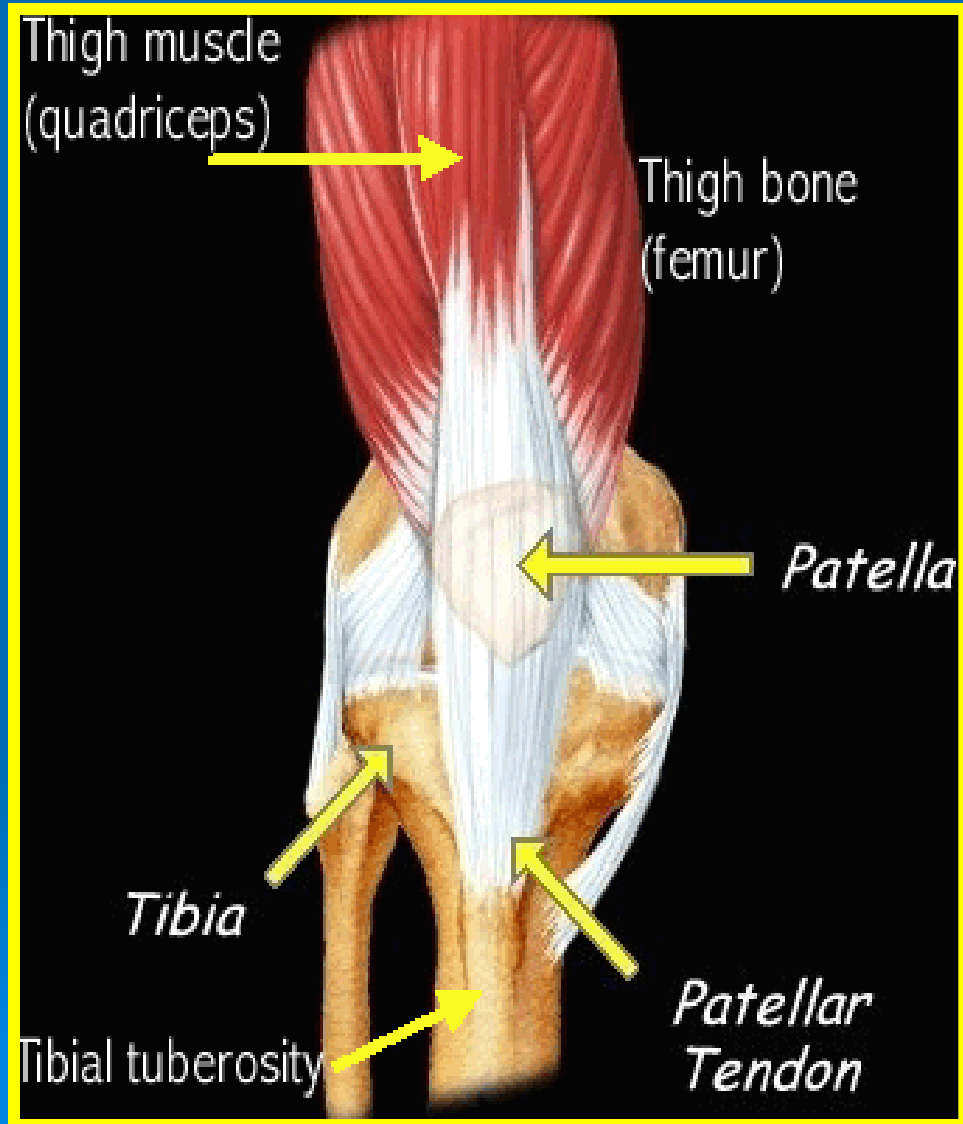
MRI



Treatment

- Compression side: nondisplaced
 - Crutches until pain free + full ROM
 - Gradual RTP
- Distraction side
 - Urgent ortho referral
- Both:
 - **Nutrition:** Ca 1500mg, Vit D 2000IU
 - Assess calorie intake
 - Cross training (pool running, bike)

Knee



10 y/o Hockey Player

- R Knee Pain
- Limp after activity
- Intermittent swelling
- No locking or catching
- Occasional giving way
- No specific injury



Exam

- Effusion
- Quad size ↓
- FROM
 - Pain at 30° flexion



Radiology

➤ Tunnel View

- Most useful



➤ MRI

- Size and viability of subchondral bone



OCD

➤ Any age

➤ History

- Aching knee pain
- Knee “give way”
- Intermittent limp
- Intermittent swelling

Treatment

➤ Immobilization/NWB

- If painful to walk
- 1-2 weeks

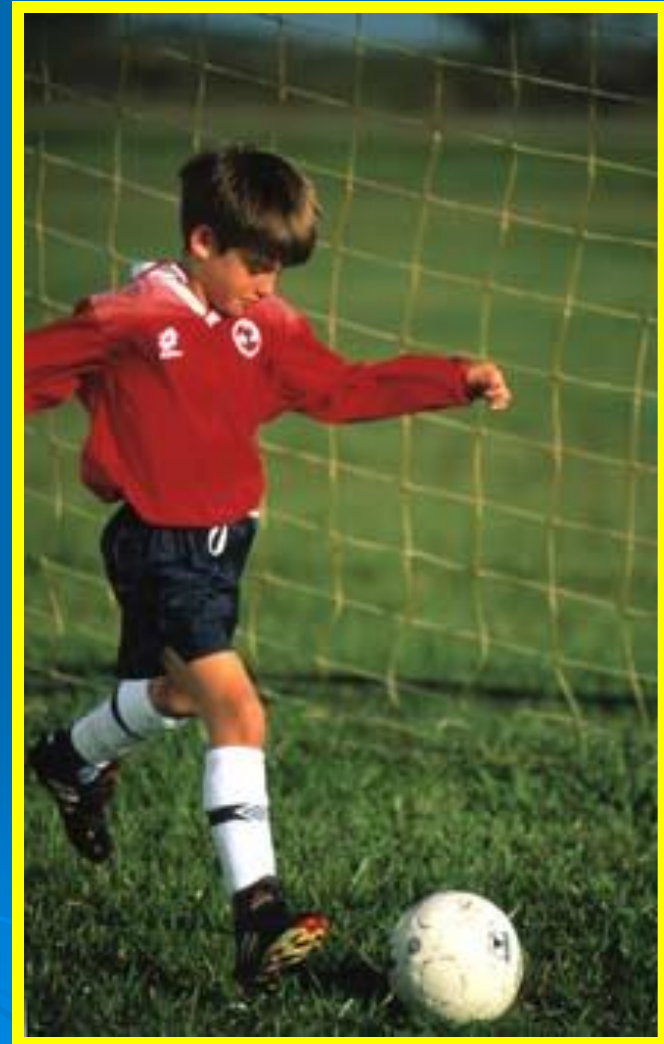
➤ Activity modification

- 6-12 weeks
- No cutting, jumping, contact, sprinting activity
- Gradual return to full activity
 - Progress as tolerated

RTP

➤ RTP Criteria

- No pain
- Normal PE
- +/- normal XR



More Knee Injuries



Osgood Schlatter Disease

➤ Sx

- Pain swelling tibial tubercle
 - Variable
- Limp
 - After activity only → all adl's

➤ Apophysitis of Tib Tub

➤ Age

- 11-13 ♀
- 13-15 ♂

➤ Running + jumping sports



Pre-disposing Factors

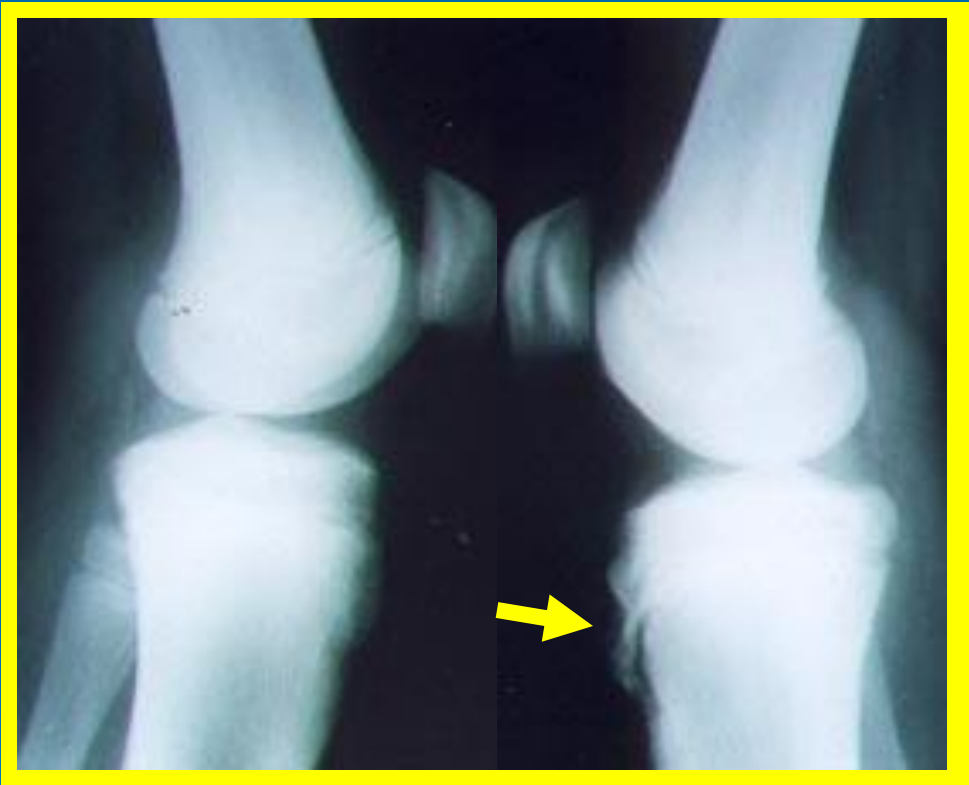
- Inflexible quads
- Patella alta
- Maltracking patella
- Foot pronation

Exam

- TTP tib tub
- Swelling tib tub
- 20-30% bilateral



Radiographs



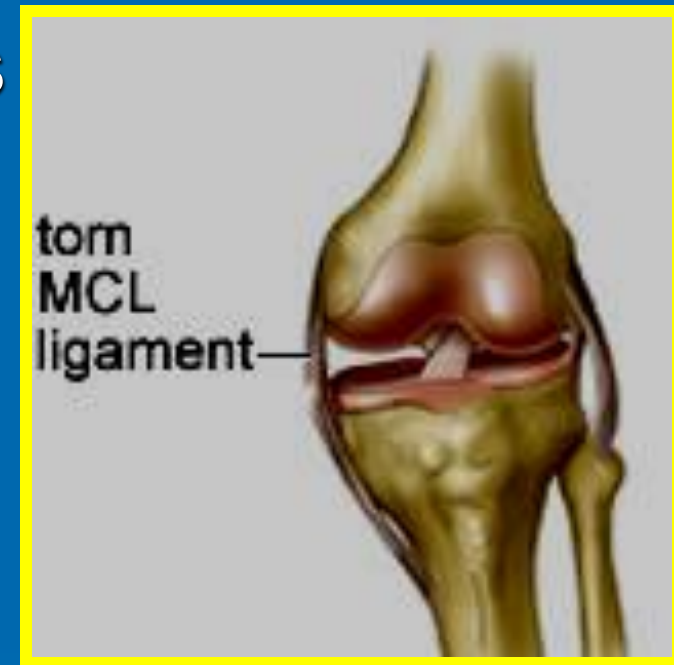
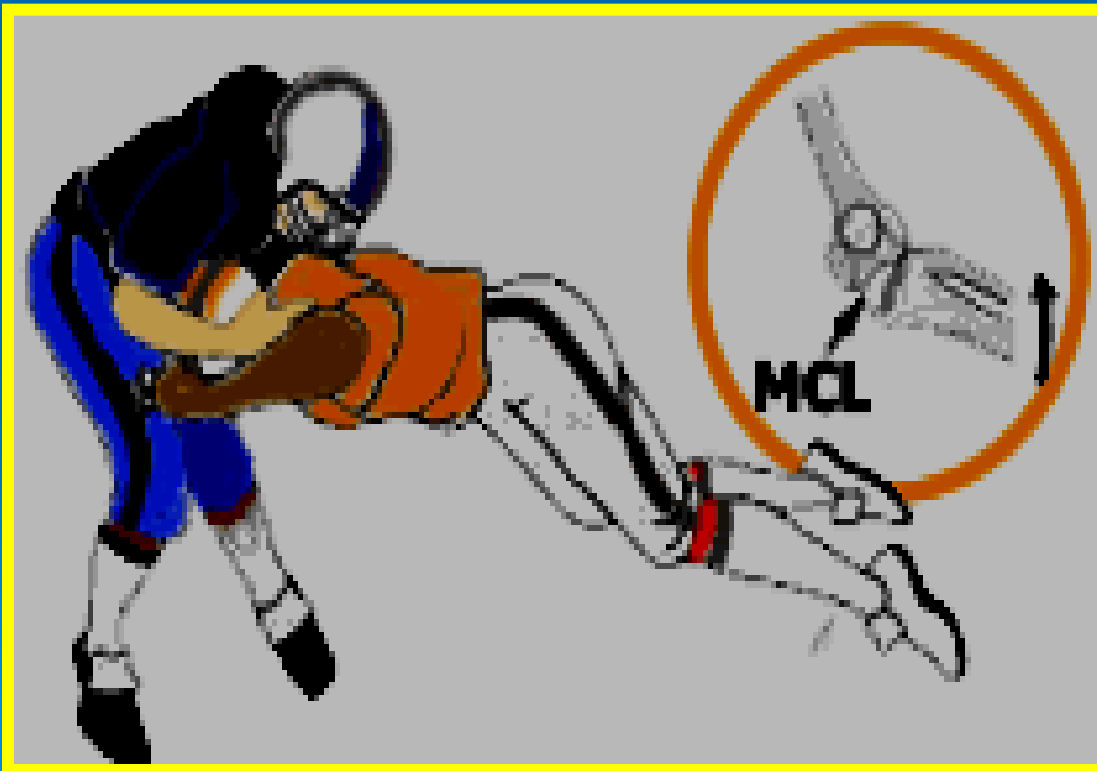
Treatment

- Improve flexibility
- Improve strength
- Ice
- NSAIDS
- Relative rest
- Cho-pat strap
- RARELY
 - casting



MCL

- Planted foot + valgus stress
- Swelling + limp
- NO or small effusion



Physical Exam

➤ Pain

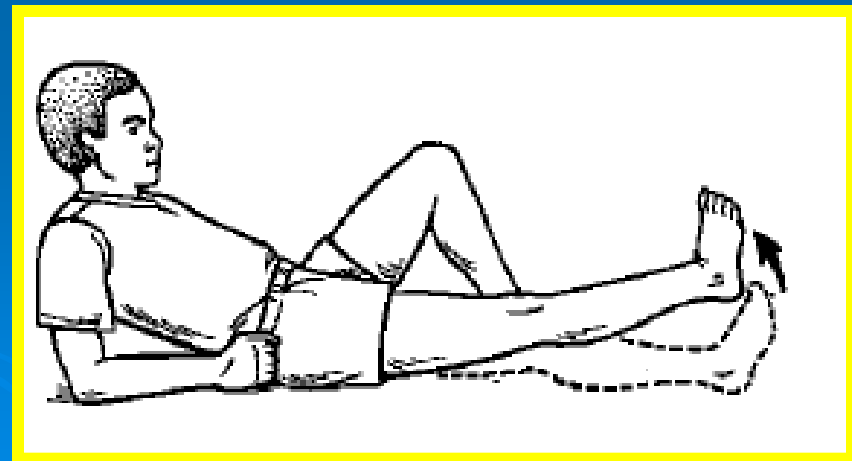
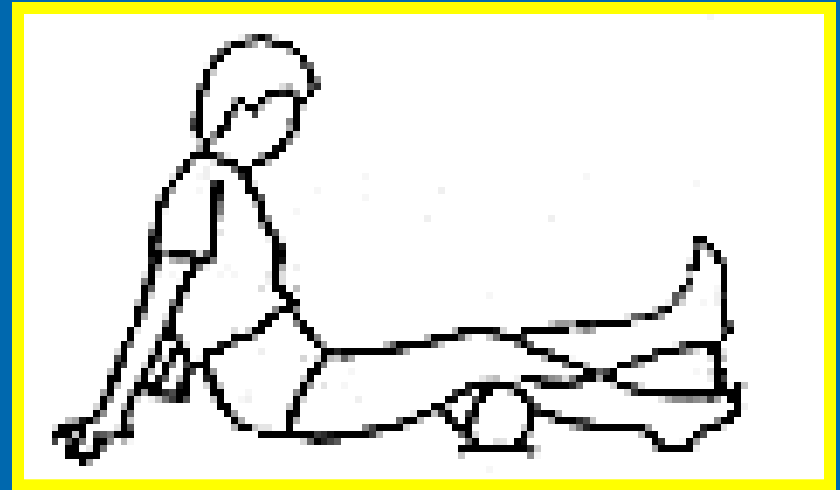
- TTP distal femur and medial jt line

➤ Eval ACL



Treatment: Grade I + II

- Initial
 - RICE, NSAIDS
 - Bracing
 - Quad sets/SLR/wall sits
- When pain improves
 - ROM
- At 60% strength
 - Straight ahead jogging



Treatment: Grade I + II

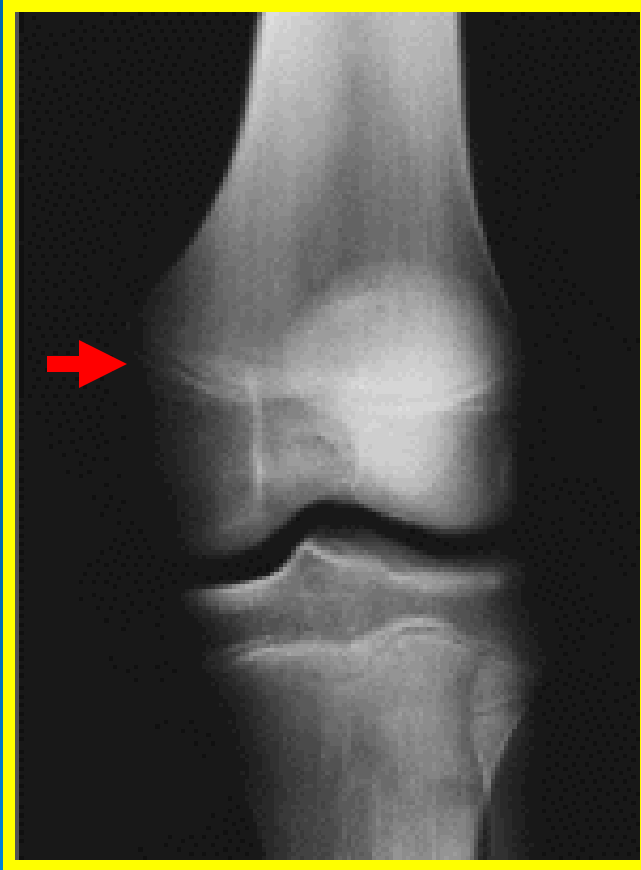
- At 80% strength
 - Agility drills
- RTP: when doing sport specific skills
 - Grade I: few days - wk
 - Grade II: 2 -- 3 wks

MCL: immature athlete

- BEWARE the distal femoral physis injury
 - Often mistaken for MCL injury
 - Associated with growth arrest

Distal Femoral Physis

➤ Stress Radiographs



AP

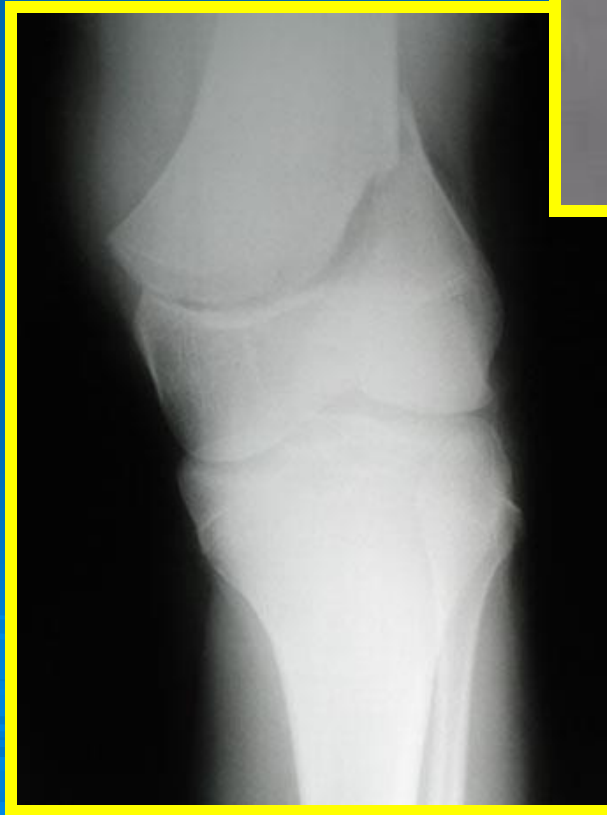


Stress View

Distal Femoral Physis

➤ Treatment

- SH I
 - Immobilization + NWB 2-6 weeks
 - Until non tender
- SH II-V
 - Surgical referral



Distal Femoral Physis

- 13 y/o knee pain
- Plain x-ray
 - Normal
- Very signif swelling
- ROM very limited



Stress Fracture

- Pain + limp
 - Insidious onset
 - Comes on earlier and earlier during activity
- May have visible swelling



Stress Fracture: Diagnosis

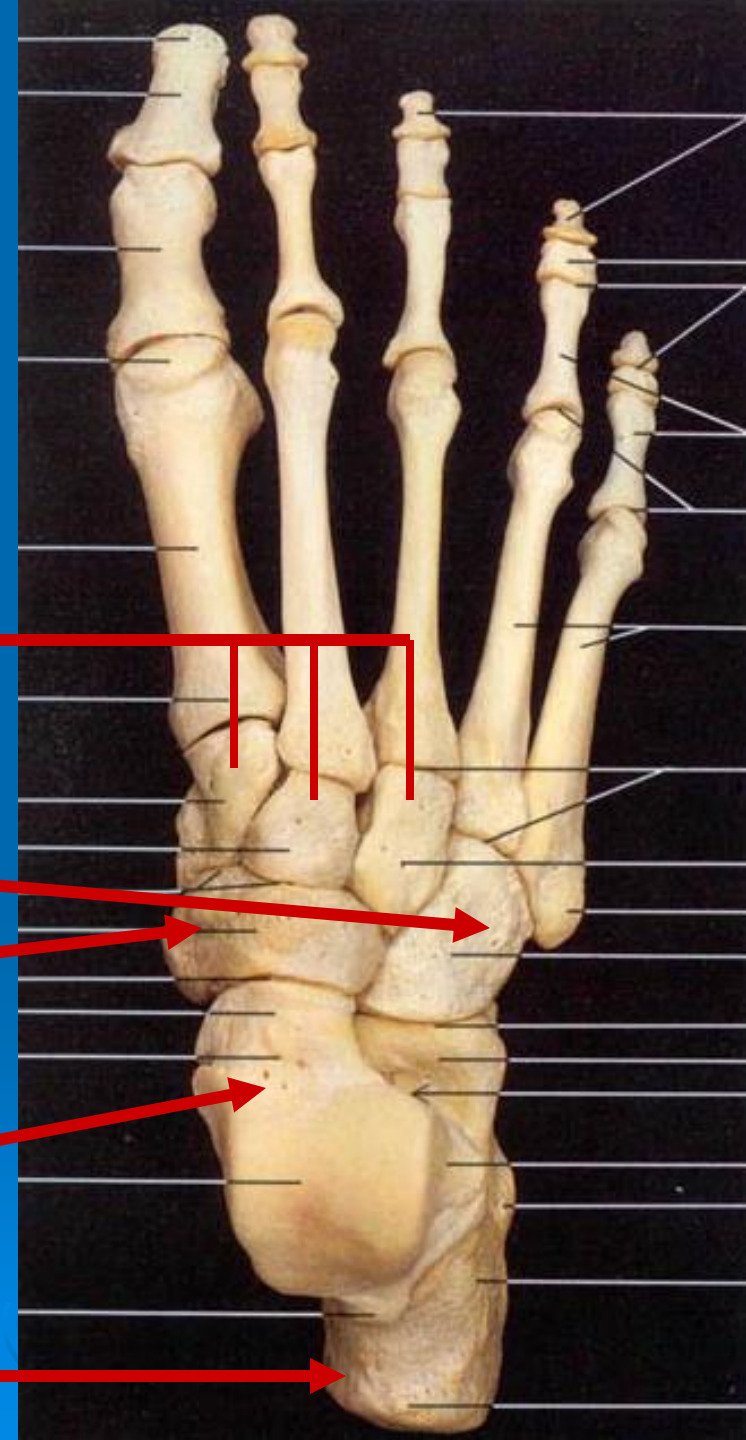
➤ X-ray

- May need to repeat after 2-4 weeks
- MRI sometimes needed

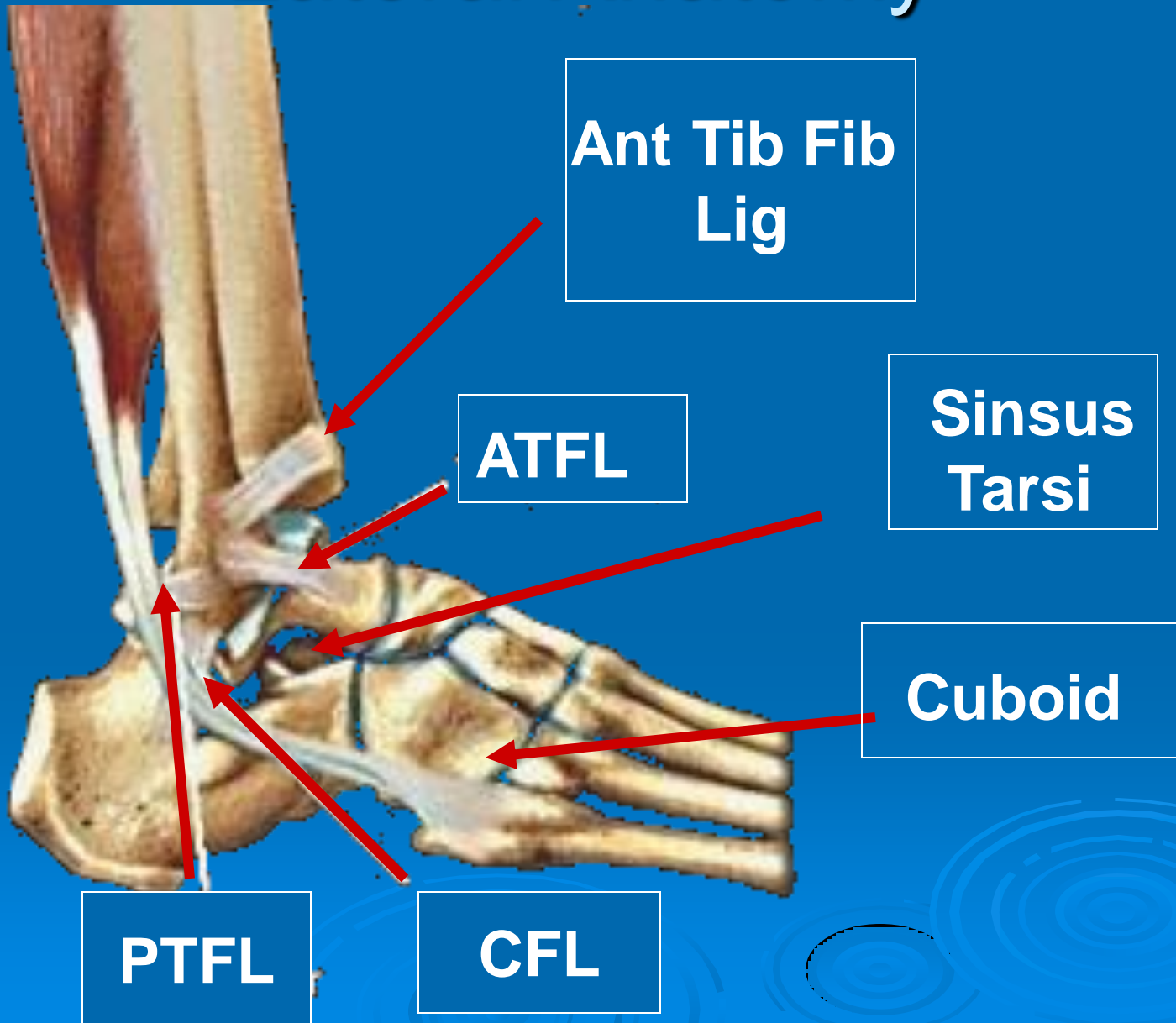


Foot + Ankle

- Cuneiforms
- Cuboid
- Navicular
- Talus
- Calcaneus



Lateral Anatomy



9 y/o Basketball Player

- Foot pain + intermittent limp x 1y
- Worse with long walks, basketball
- No swelling, erythema



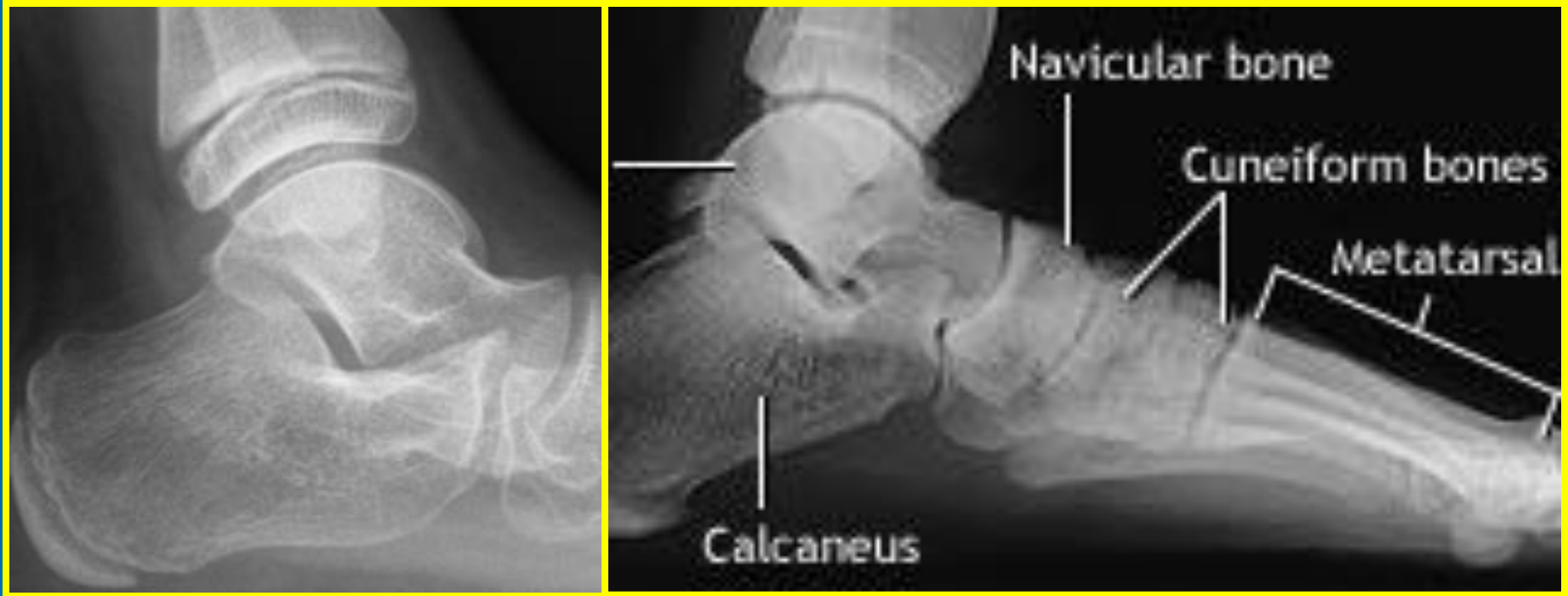
Exam

- Pes planus
 - Rarely pes cavus
- TTP subtalar jt

Calcaneal-navicular



Calcaneonavicular Coalition



Tarsal Coalition

➤ Symptoms

- Foot pain + limping
 - Worse with activity
 - Walking uneven ground

➤ Pre adolescent - adolescent

- Calcaneo-navicular: age 8-11
- Talo-calcaneal: age 12-15

➤ 50% bilateral

➤ 1-3% incidence

Diagnosis

➤ X-ray

- CT may be needed

Talo-Calcaneal



➤ C sign

Stress Fracture

➤ Symptoms

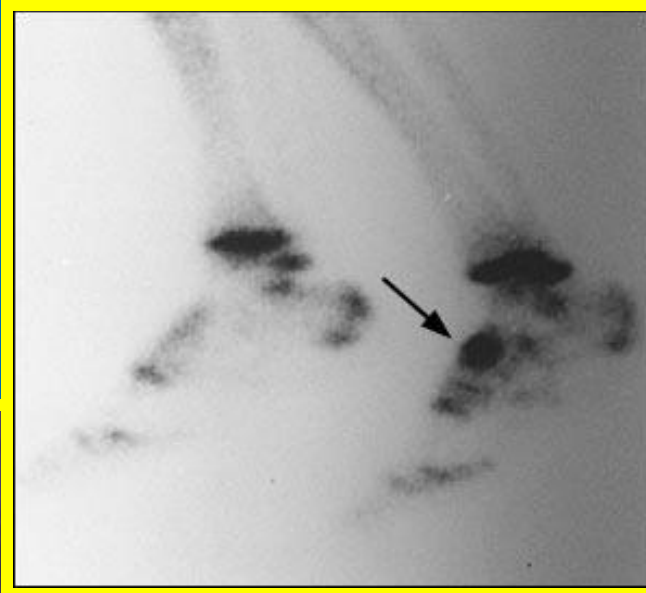
- Limping
- Worse with activity
 - Eventually pain at rest

➤ PE

- Localized TTP over site of fracture

Navicular Stress Fracture

- TTP navicular
- X-ray often neg
- Bone scan/CT/MRI often needed



Navicular Stress Fracture

- High rate avascular necrosis
- 6 wk cast
 - Non-weight bearing until pain-free with WB
- 6 wk relative rest then RTP

OCD Talus

Symptoms + History

- Intermittent:
 - Pain
 - Swelling
 - Limp
- Previous ankle sprain
 - Often multiple

Exam

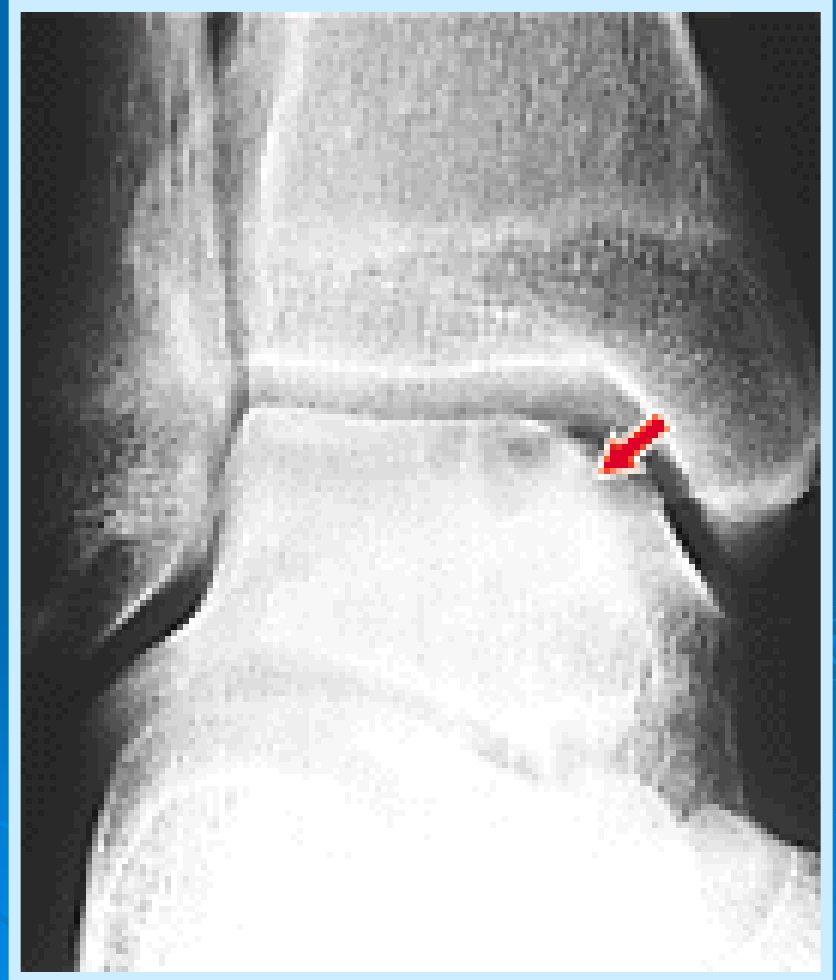
- Effusion (+/-)
- Palpation
 - TTP talus

Radiograph

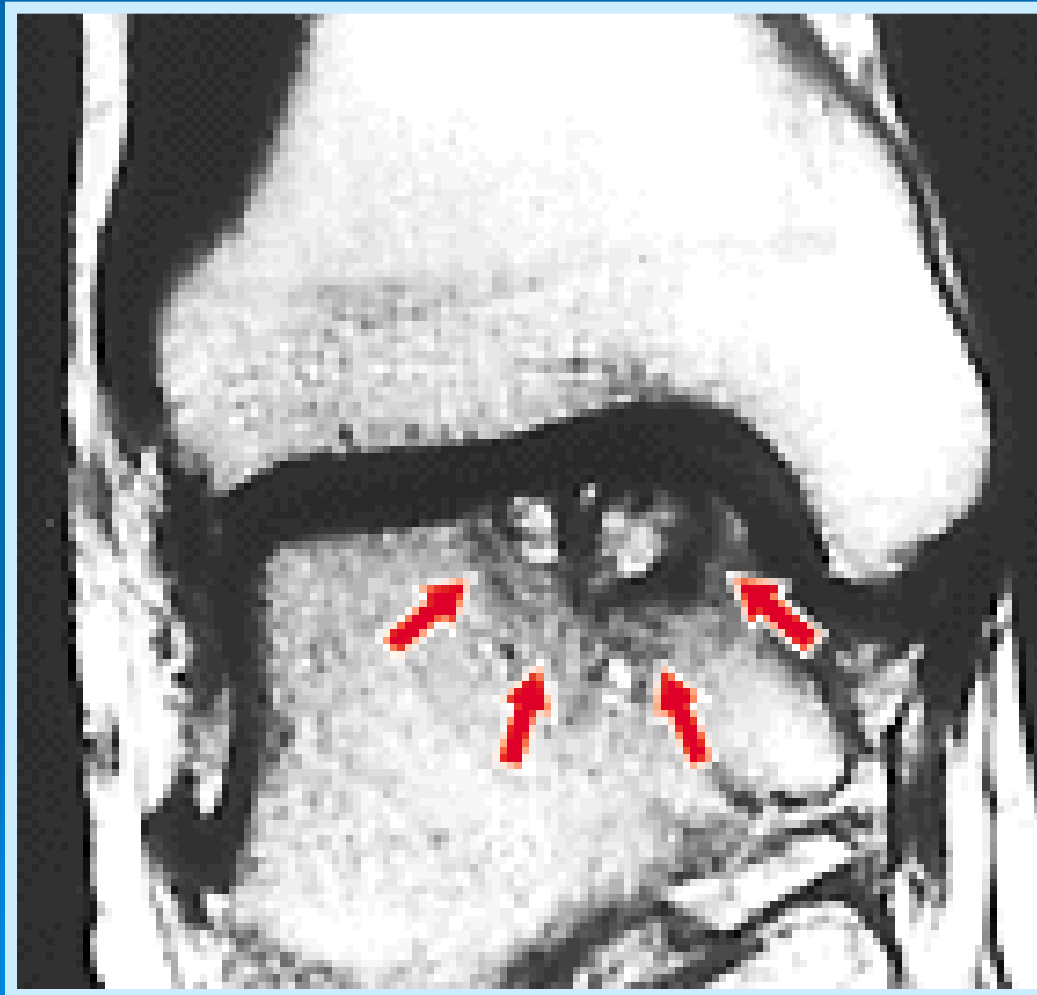
Early



Late



MRI



Management

- Non-displaced
 - 6-8 wk NWB cast
- Surgery
 - Displaced
 - Chronic

Tumor



Symptoms: LE Tumor

- Painful limp
 - Distal femur/prox tibia most common site
- Night pain + Pain at rest
- Systemic symptoms
 - Weight loss
 - Fatigue
- Leukemia: vague pain
 - pain out of proportion to injury
 - Pallor, LAD, HSM

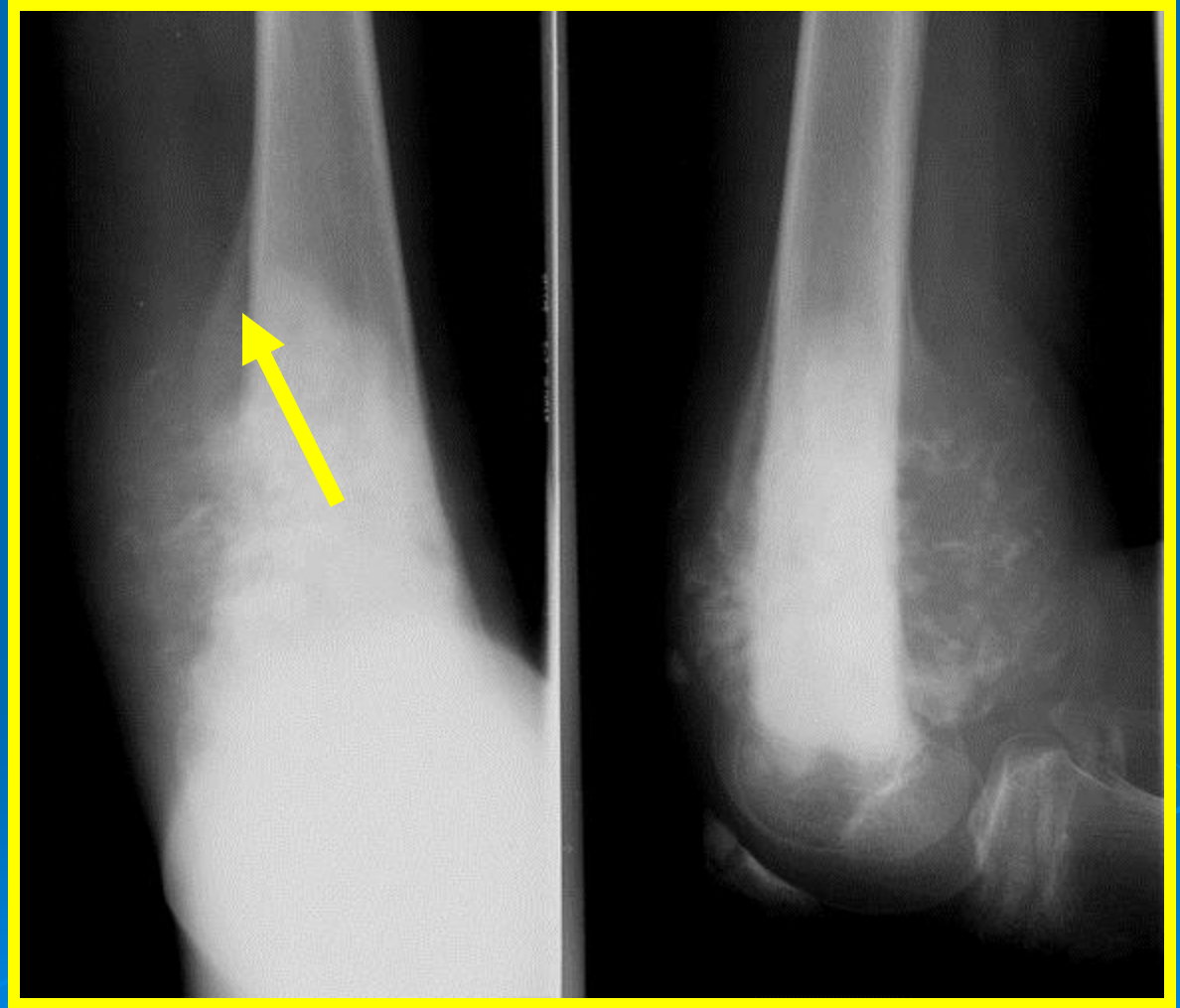
Ewing's Sarcoma

- Permeative, mottled appearance



Osteosarcoma

- Periosteal elevation
- Sunray spicules



Growing Pains

•Diagnosis of exclusion

➤ Inclusion criteria

- Intermittent
- Bilateral
- Location
 - Anterior thigh
 - Calf
 - Distal hamstring
- Late afternoon/evening pain
- Normal PE + Labs

➤ Exclusion criteria

- Persistent pain
- ↑ ing pain
- Joint pain
- am pain
- Swelling, erythema
- TTP or ↓ ROM jt
- Limping during day
- + labs/radiology

Thank You

Questions??

