Overuse Injuries in Pediatric Sports Medicine

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Objectives

- Identify and diagnose chronic overuse injuries in the pediatric and adolescent athlete
- Apply practical guidelines for management of injuries in the pediatric and adolescent athlete

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Practical Approach

- Elicit a clear narrative that identifies the circumstances by which the injury or pain occurred
  - you will start to see patterns over time

  Example: Baseball Athlete
- Confirm that the story fits with your preliminary diagnosis
  - if it's an overuse injury there should be overuse
- Perform the exam to rule in/out specific diagnosis
- Prescribe a specific treatment plan

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Common Sense Treatment Plan

1. Decrease inciting activities. "*If it hurts, don't do it*"
2. Encourage appropriate dosing of anti-inflammatories and pain medications. (*dosing based on weight*)
3. ICE
4. If indicated, least restrictive orthosis. (*more is not better*)
5. Physical therapy and gradual progression back to full activity.
6. Participation w/ pain free ambulation and minimal pain with activity. Typically less than pain level of a 3.

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Foot & Ankle

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Posterior Tibialis Tendonitis

- Hx: Pain over medial foot and ankle w/ running, jumping and going up on toes.
- PE:
  1. Pain with resisted inversion of the foot
  2. Pain or disability with single leg toe raise
  3. Tenderness to palpation along the tendon

TIP# Common in dancers, gymnast and runners who have recently increased activity, or participate at high volumes.

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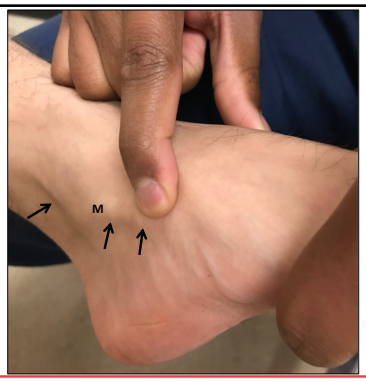

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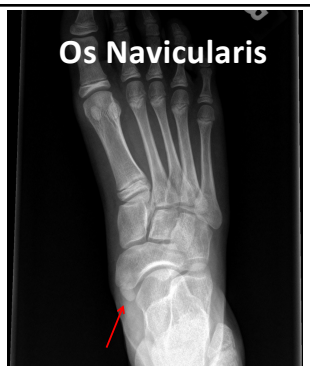

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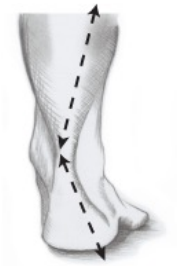

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Peroneus Brevis Tendonitis

- Hx: Pain w/ running, jumping, cutting and going up on toes.
  - Pain can be reported in lower leg or lateral foot
  - Also common in dancers and gymnast.
- PE:
  1. Pain with resisted eversion of the foot.
  2. Tenderness to palpation along the tendon

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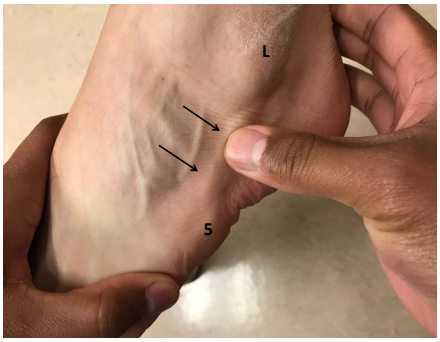

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5th Metatarsal Apophysitis

- Can be same presentation as peroneus brevis tendonitis.
- May be aggravated by trauma or tight cleats
- PE:
  1. Tenderness over the distal aspect of the 5th metatarsal

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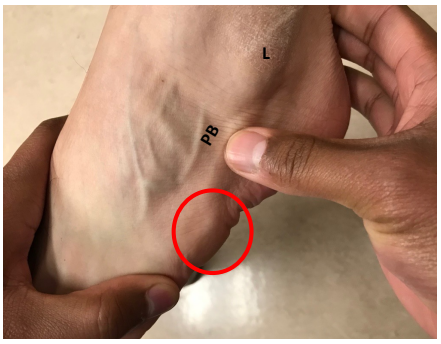

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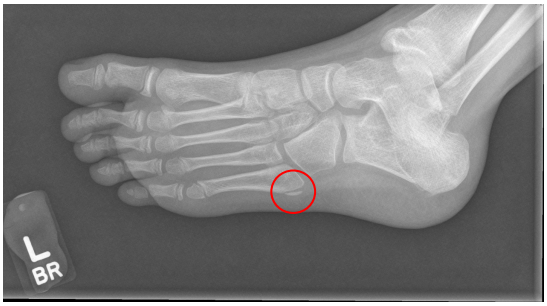

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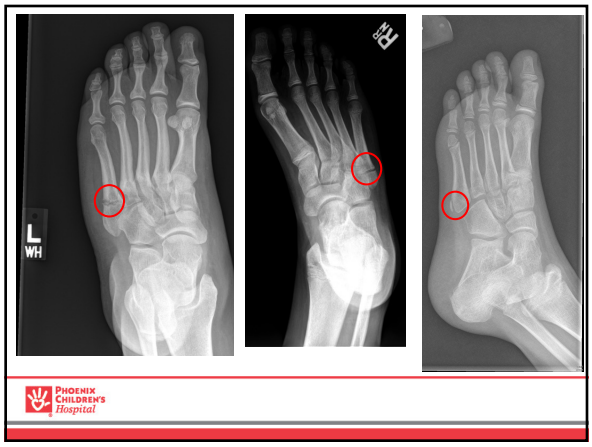

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Calcaneal Apophysitis

- Hx: Heel pain associated with running and jumping activity.
  - Pain is usually vague, and patient is non-specific
  - Typical cases pain resolves with rest and returns with next episode of physical activity
  - More severe cases can have persistent pain even at rest
- PE:
  1. Pain may not always be present on exam, if not recently active
  2. May need to ask "is this where the pain would be?"
  3. Calcaneal squeeze test is done on medial and lateral sides, NOT plantar surface.

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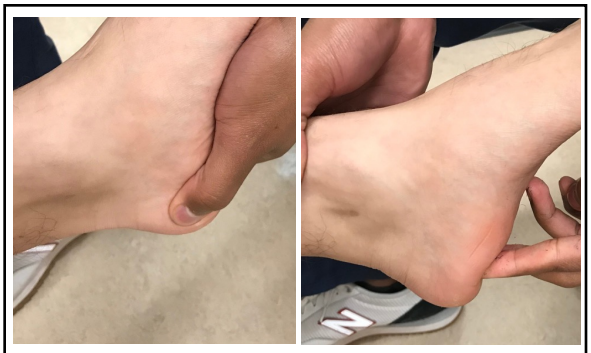

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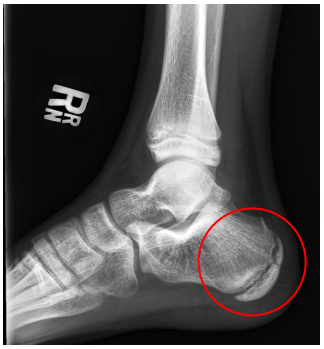

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Medial Tibial Stress Syndrome

- Traction Theory vs Bone Tension Theory
  - Traction of the periosteum by strong pull of calf muscles
  - Subtle bending of the bone due to repetitive impact
- MTSS etiology is not definitively understood and therefore treatment and prevention are generally not evidenced based.
- Literature shows studies supporting or refuting almost all interventions for treatment and prevention of MTSS

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Medial Tibial Stress Syndrome

- Off Season – focus on hip, gluteal, core and ankle strength, rather than simply running
  - At home calf raise program, consider plyometrics
- Pre-season – gradual progression of running program with 10-15% increase in mileage per week.
- If history of shin splints, + navicular drop, or foot pronation consider OTC rigid orthotic or taping
- In season lower extremity rehab or strength program in lieu of running every single day

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Medial Tibial Stress Syndrome

- When symptomatic can consider symptom-based treatments such as ice, OTC pain medication, stretching; but should not be primary treatment strategy.
- On the other hand, modifying intensity & mileage, stride frequency as well as cross training may be more prudent.
- Consider treatments such as compression sleeves or dry needling (periosteal pecking)

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Knee Pain

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Osgood-Schlatter's Disease

Presentation

- Common in tweens and older
- Usually no known injury
- Pain with general activity
- May report "bumps" on their knees
- If mild, usually goes away after a day of rest

Exam

- May not actually be able to identify the exact spot until you touch it
- Pain directly over the tibial tuberosity
- Swelling at tibial tuberosity
- Tight hamstrings & quad
  - Supine hip flexed and extend knee

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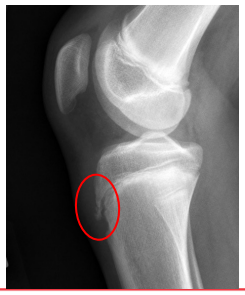
Osgood-Schlatter's Disease



Management

- Common sense approach
- Aggressive hamstring stretches
- +/- Patella strap
- Severe cases may need rest in full extension

TIP#1 – Be realistic with the family about the natural course of the condition

TIP#2 – Be fanatic about stretching

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Sinding Larsen Johansson

Presentation

- Tend to be on average slightly younger than Osgood Schlatter's patients
- Usually, no known injury
- Pain with general activity
- If mild usually goes away after a day of rest

Exam

- May not actually be able to identify the exact spot until you touch it
- Pain directly over lower pole of patella
- Generally, do not have swelling

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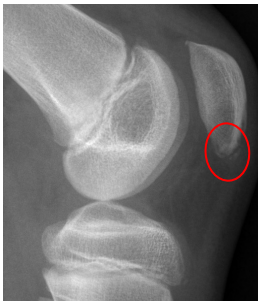
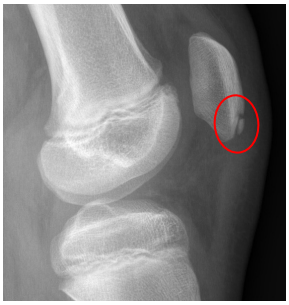
Sinding Larsen Johansson





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Sinding Larsen Johansson

Management

- Common sense approach
- Aggressive quad and hamstring stretches
- +/- Patella strap

TIP#1 – Typically do not have as complicated course as Osgood Schlatter's

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Patella Tendonitis/opathy

Presentation

- More common in teenager and older (growth plate cxd)
- Usually no known injury
- Pain with running, jumping
- Typically not associated with traumatic event.

Exam

- Generally will be very clearly identified
- Palpate entire patella tendon, not just central portion
- +/- swelling
- Differentiate from fat pad impingement

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Patella Tendonitis/opathy

Management

- Common sense approach
- Aggressive quad and hamstring stretches
- +/- Patella strap

TIP#1 – If greater than 3 months of symptoms, need to take a different approach.

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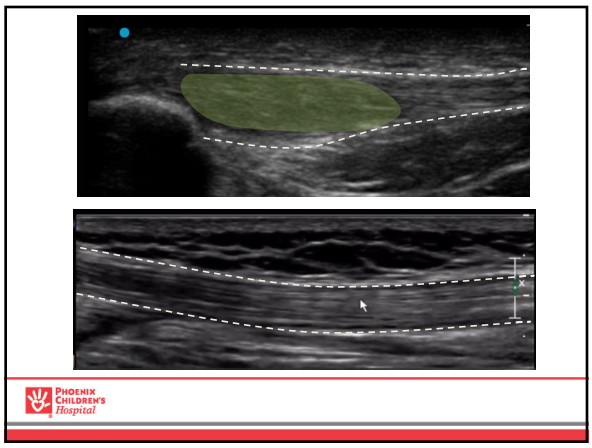

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Patella Tendonitis/opathy

Management

- Eccentric Training
- Graston, Dry Needling
- US Guided Needle Tenotomy

Patella tendon tear is rare in adolescents

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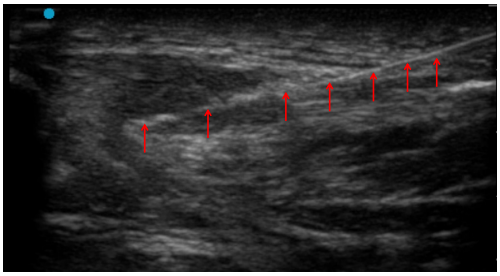
US Guided Tenotomy



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IT Band Friction Syndrome

Presentation

- Lateral knee pain usually with running or dance
- Gradual onset
- In general, not able to specifically pinpoint the location.

Exam

- Pain can be over femoral condyle, crossing knee joint or Gerdy's tubercle
- Testing in figure 4 position may help pinpoint pain
- May have false + McMurray's

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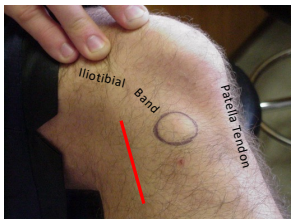
IT Band Friction Syndrome



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IT Band Friction Syndrome

Management

- Common sense approach
- Aggressive IT & TFL Stretching

TIP#1 – In younger patients there really is not much pathology laterally for chronic pain

TIP#2 – If the patient has a positive McMurray's test make sure it makes sense.

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Patellofemoral Syndrome

Presentation

- Pain w/ running, jumping, lunging, squatting, sitting for long periods.
- Gradually worsens with activity
- Many times bilateral
- Stairs typically give the patient significant pain

Exam

- Patella Grind – Push patella into trochlear grove
- Patella Articular Facet Pain – Undersurface of patella
- Hip and Gluteal weakness
  - Single leg squat
- Remainder of physical exam essentially normal
- J Tracking

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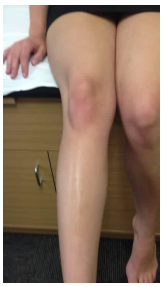
Patellofemoral Syndrome



Management

- Common sense approach
- Hip & Gluteal Strength
- +/- Rigid Foot Orthotic

TIP#1 – Be VERY clear that the patient will need dedicated PT

TIP#2 – Typically need at least 4-6 weeks to see any meaningful improvement.

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Hip Pain

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Iliac Crest Apophysitis

- Typically, in older athletes who participate in repetitive twisting and bending of the torso.
- Symptoms of iliac apophysitis include pain and tenderness over the iliac crest
- Can also test with side planks or side plank hip ups

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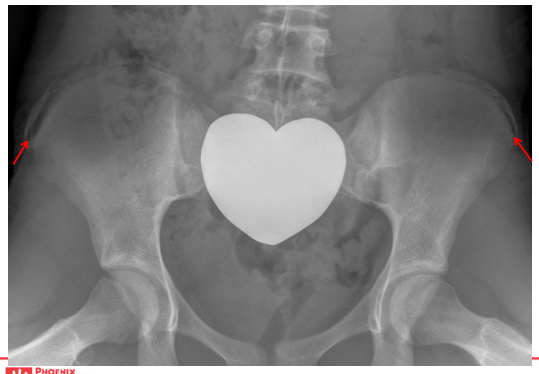

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Wrist and Hand

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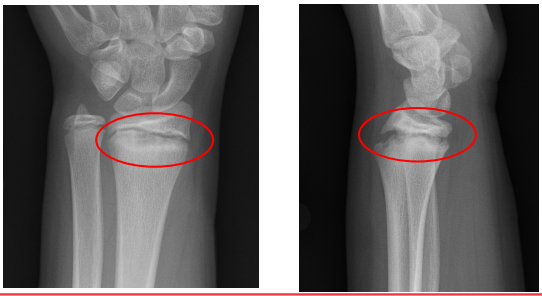
Gymnast Wrist



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Gymnast Wrist

Management

- In general, a simple wrist brace is sufficient treatment for 4 weeks w/ modified activity.
- A cast can be used depending upon the degree of pain, as well as parent's preference.
- RTP 4-6 weeks with resolution of pain, supplemented with wrist and forearm PT

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Elbow & Shoulder

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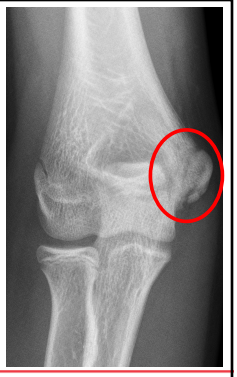
Medial Epicondylitis

- Typically, adolescent age group, pain with throwing
- On exam, pain with direct palpation to epicondyle
- Evaluate for risk factors, volume, mechanics, positions
- Rest and PT protocol
  - 4-6 weeks rest
  - 4-6 weeks PT gradual return



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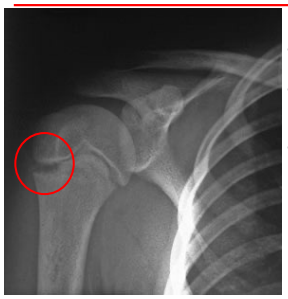
Little League Shoulder



Management

- Restrict throwing 6 weeks
- Sling or Shoulder Immobilizer if pain at rest (rare)
- In general, start ROM and strengthening ASAP.
  - Ok to do lower body lifting and conditioning
  - Ok to start running and non-contact if pain free at rest

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Start return to throwing program once pain free

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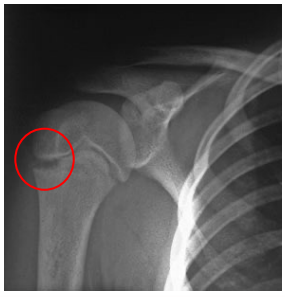
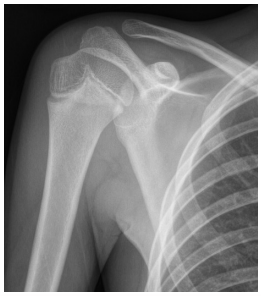
Little League Shoulder





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Questions?

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