DIAGNOSING AND TREATING COMMON SPORTS RELATED INJURIES

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Team Physician ECHL Tulsa Oilers
DISCLOSURES

- I have nothing to disclose
ABOUT ME

- Primary Care Sports Medicine Fellowship
  - Lake Erie College of Osteopathic Medicine
  - Team Physician for Mercyhurst University, OHL Erie Otters, NBA-D League Erie Bayhawks
- OSU Medicine Midtown/ Sand Springs
  - Team Physician ECHL Tulsa Oilers
OBJECTIVES

- Review conservative treatment strategies including NSAID selection
- Recognize and treat common sport related injuries related to trauma and overuse
- Review special testing to aid in diagnosis of musculoskeletal injuries
- Learn when to refer and when to treat
- Discuss RTP timelines regarding particular injuries
- Update on concussion
**WHY DO WE CARE**

- Approximately 90% of all sports injuries are non-surgical. (Which means YOU can treat them)
- Common things you see in primary care
- Knee injuries make up 55% of all sport related injuries.
- Returning people to the things they enjoy in a timely and safe manner
- Two categories of injuries:
  - Traumatic
  - Overuse
CONSERVATIVE MANAGEMENT

- PRICE not RICE
  - Protection
  - Rest
  - Ice
  - Compression
  - Elevation

- NSAIDs
  - When to use
  - Which one to use
  - Route

- Physical Therapy
  - Modalities
NSAIDs:
Evidence Based Decision Making

- Acetaminophen should be used as a first line agent, particularly for mild pain.
- Ibuprofen at the lowest effective dose would be preferred NSAID.
- Addition of mucosoprotective agents for those at high risk of developing GI events.
- Naproxen should be used as secondary choice when required.
- COX-2 inhibitors may have a place for high risk patients who could not take anti-ulcer co-therapy and for patients who have intolerance to other NSAIDs.
- Topical diclofenac solution is equivalent to that of oral NSAIDs in knee and hand OA.
- Decreased GI adverse events noted with topical NSAID vs oral.

WHAT’S THE DIFFERENCE?

*Acetaminophen (Paracetamol) – weak anti inflammatory properties, mechanism of action not entirely understood

PHYSICAL THERAPY PRESCRIPTION

- Name:
- Diagnosis:
- Precautions:
- Frequency/ Duration: 3 times per week for 4-6 weeks, adjust as indicated
- Please evaluate and treat patient using the following modalities:
  - Ultrasound/ E-Stim
  - Heat/ Ice
  - Phonophoresis
  - Iontophoresis
  - Manual Therapy
  - Massage
  - Low Level Laser Therapy
  - Balance Training
  - Gait Training
  - Aquatherapy
  - Strength Training
  - Neuromuscular Re-education
  - Traction
- And other modalities as indicated per your recommendations with the goal of decreasing edema and pain and improving range of motion, flexibility, and functional mobility.
- Please include in your instructions a home exercise program that the patient can complete once discharged from your treatment.
Doc, My _________ Hurts
Doc, My Shoulder Hurts

- Traumatic
  - AC separation
  - Shoulder dislocation/ instability
- Overuse
  - RTC tendinitis
  - Biceps tendinitis
DOC, MY SHOULDER HURTS

- Exam
  - ROM
    - Forward Flex 180 degrees
    - Extend 40 degrees
    - Abduct 180 degrees
    - External Rotation 40 to 50 degrees
    - Internal Rotation 55 degrees
    - Apley Scratch test (IR and Adduction)
      - Spinous process level reached
    - Spinous process level reached
SHOULDER EXAM

Exam

- **Strength- Rotator Cuff**
  - Supraspinatus (Arm Elevation)
    - “Empty Can” test
    - “Full Can” test
  - Infraspinatus (External Rotation)
    - Arm by side, elbow flexed
  - Teres Minor (External Rotation)
    - Arm by side, elbow flexed
  - Subsacapularis (Internal Rotation)
    - Lift off test
SHOULDER EXAM

- Exam
  - Palpation
    - Sternoclavicular joint → Clavicle → AC joint
    - Spine of scapula
  - Tests
    - Impingement
      - Neers
      - Hawkins
    - Biceps Tendon
      - Speed’s
      - Yergason’s
    - O’Briens
    - Apprehension/ Relocation
<table>
<thead>
<tr>
<th>Injury: AC Separation</th>
<th>History</th>
<th>Physical Exam</th>
<th>XR</th>
<th>MRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 &amp; 2</td>
<td>Acute blow to shoulder; Land on corner of shoulder</td>
<td>TTP AC joint; swelling; minimal or no joint deformity</td>
<td>AP Shoulder 1: No step off 2: &lt;50% step off</td>
<td>1: AC ligaments intact; edema at AC 2: Edema and minor step off AC lig torn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 3</td>
<td>Same</td>
<td>TTP AC joint; obvious elevation of clavicle</td>
<td>3: &gt; 50% step off; clavicle dislocated</td>
<td>AC &amp; CC ligament torn &gt; 50% elevation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 4, 5, 6</td>
<td>Same</td>
<td>TTP AC joint; clavicle under skin</td>
<td>4: &gt; 50% + post 5: &gt;100% 6: Under coracoid</td>
<td>AC &amp; CC ligaments torn, &gt; 50% clavicle elevation 4: clavicle under skin</td>
</tr>
<tr>
<td>Injury</td>
<td>Tx</td>
<td>RTP</td>
<td>Points</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------</td>
<td>-----------</td>
<td>---------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Type 1 &amp; 2</td>
<td>Sling/ Ice/ Rehab</td>
<td>1-3 weeks</td>
<td>+/- injection</td>
<td></td>
</tr>
<tr>
<td>Type 3</td>
<td>Sling/ ice</td>
<td>3-6 weeks</td>
<td>Non-op vs operative</td>
<td></td>
</tr>
<tr>
<td>Type 4, 5, 6</td>
<td>Likely surgery</td>
<td>4-6 months</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Orthobullets.com*
# Traumatic Injuries

<table>
<thead>
<tr>
<th>Injury</th>
<th>History</th>
<th>Physical Exam</th>
<th>XR</th>
<th>MRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Anterior Dislocation</td>
<td>Fall or hit to abducted/ ER arm</td>
<td>Pain with ROM. Arm in ADD/ IR position</td>
<td>Not needed prior to reduction</td>
<td>Determine pathology once reduced</td>
</tr>
</tbody>
</table>
TRAUMATIC INJURIES

<table>
<thead>
<tr>
<th>Injury</th>
<th>Tx</th>
<th>RTP</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Anterior Dislocation</td>
<td>REDUCE</td>
<td>1-3 weeks</td>
<td>Surgery vs Rehab</td>
</tr>
</tbody>
</table>

Reduction Techniques:
- Traction-countertraction
- Stimson maneuver
- Scapular manipulation
- External rotation
- Milch technique
- Spaso technique

Signs of Successful Reduction:
- Palpable or audible clunk
- Return of rounded shoulder contour
- Relief of pain
- Increase in range of motion
ANTERIOR SHOULDER DISLOCATION

Management

- Non-operative
  - 1st time dislocations

- Risks for secondary dislocation
  - age < 20 (highest risk)
  - male
  - contact sports
  - hyperlaxity
  - glenoid bone loss >20-25%

- Physical Therapy
  - RTC and Periscapular

- Bracing
# Overuse Injuries

<table>
<thead>
<tr>
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<th>History</th>
<th>Physical Exam</th>
<th>XR</th>
<th>MRI</th>
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</thead>
<tbody>
<tr>
<td>Rotator Cuff Tendinitis</td>
<td>Pain with overhead movements Decreased strength</td>
<td>Pain with Shoulder Abduction and Flexion + Neers + Hawkins</td>
<td>R/O other causes or prior to injection Acromial Types (1-4)</td>
<td>Evaluate for tear</td>
</tr>
<tr>
<td>Biceps Tendinitis</td>
<td>Anterior Shoulder Pain</td>
<td>TTP biceps groove + Speeds + Yergason</td>
<td>Not needed</td>
<td>Can show thickening or tenosynovitis</td>
</tr>
</tbody>
</table>
# Overuse Injuries

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<thead>
<tr>
<th>Injury</th>
<th>Tx</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Rotator Cuff Tendinitis</td>
<td>NSAIDs, PT, Steroid Injection</td>
<td>As tolerated</td>
<td>Timing of MRI</td>
</tr>
<tr>
<td>Biceps Tendinitis</td>
<td>NSAIDs, PT, Strengthening</td>
<td>As tolerated</td>
<td>Injection? Rupture-“Popeye deformity” Surgical release</td>
</tr>
</tbody>
</table>
Doc, My Elbow Hurts

- Traumatic
  - Distal Biceps Tear
  - UCL injury

- Overuse
  - Tennis Elbow
  - Golfers Elbow
ELBOW EXAM

- Palpation
  - Medial/ lateral Epicondyle
  - Olecranon
  - Radial head
  - UCL

- ROM

- Strength

- Special Tests
  - Varus/ Valgus stress
  - Tinels sign over Ulnar nerve
## Traumatic Injuries

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<tr>
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<th>History</th>
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<th>MRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biceps Distal</td>
<td>Felt a pop</td>
<td>Cannot hook tendon</td>
<td>Normal</td>
<td>Hematoma and torn tendon</td>
</tr>
<tr>
<td>Tear</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCL Injury</td>
<td>Medial Elbow pain</td>
<td>Milking Maneuver</td>
<td>Normal</td>
<td>Signal uptake to disruption</td>
</tr>
</tbody>
</table>
# Traumatic Injuries

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<th>Injury</th>
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</thead>
<tbody>
<tr>
<td>Biceps Distal Tear</td>
<td>ROM, ice compression</td>
<td>If surgery, 6 months</td>
<td>Early surgery or none</td>
</tr>
<tr>
<td>UCL</td>
<td>Avoid valgus stress</td>
<td>1-12 week</td>
<td>PRP? Surgery?</td>
</tr>
</tbody>
</table>
# Overuse Injuries

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</thead>
<tbody>
<tr>
<td>Lateral epicondylitis</td>
<td>Overuse</td>
<td>TTP lat epicondyle. Poor grip</td>
<td>Normal</td>
<td>Torn extensor tendon</td>
</tr>
<tr>
<td>Medial Epicondylitis</td>
<td>Swing at object and hit something hard</td>
<td>TTP medial epicondyle</td>
<td>Normal</td>
<td>Tendon with fluid</td>
</tr>
</tbody>
</table>
# Overuse Injuries

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<tbody>
<tr>
<td>Lateral Epicondylitis</td>
<td>Ice, Injection, stretching</td>
<td>If surgery, 3 months</td>
<td>Brace?</td>
</tr>
<tr>
<td>Medial Epicondylitis</td>
<td>Ice, Injection</td>
<td>If surgery, 3 months</td>
<td></td>
</tr>
</tbody>
</table>
Doc My Finger Hurts

- Traumatic
  - Mallet Finger
  - Jersey Finger
# Traumatic Injuries

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<tr>
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</thead>
<tbody>
<tr>
<td>Mallet Finger</td>
<td>Tip finger hit by ball</td>
<td>Cannot extend distal phalanx</td>
<td>AP/ Lat</td>
<td>Not needed</td>
</tr>
<tr>
<td>Jersey Finger</td>
<td>Fingertip caught in jersey</td>
<td>Cannot flex distal phalanx</td>
<td>AP/ Lat</td>
<td>Localize retraction</td>
</tr>
</tbody>
</table>
# Finger Injuries

<table>
<thead>
<tr>
<th>Injury</th>
<th>Tx</th>
<th>RTP</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallet Finger</td>
<td>Extension Splinting 6-8 weeks</td>
<td>1 week</td>
<td></td>
</tr>
<tr>
<td>Jersey Finger</td>
<td>Buddy Tape, Hand Consult</td>
<td>Dependent on Surgery</td>
<td>Surgery needed</td>
</tr>
</tbody>
</table>

[Images of finger injuries and splints]
Doc, My Hip Hurts

- Traumatic
  - Hip Pointer
  - Rectus abdominal strain
  - Adductor strain

- Overuse
  - Labral Tear
  - Impingement
  - Snapping Hip
HIP EXAM

- **Palpation**
  - Greater Trochanter / Bursa
  - Anterior Superior Iliac Spine
  - Ischial tuberosity
  - Iliac crest
  - Pain with oblique avulsions / hip pointers
  - Iliotibial band / TFL

- **ROM**
  - Flexion 135 deg
  - Extension 30 deg
  - Abduction 50 deg
  - Adduction 30 deg
  - Internal rotation 30 deg
  - External rotation 50 deg

- **Special Tests**
  - FADDIR
  - FABER
  - Log Roll
  - Thomas test
  - Ober’s test
<table>
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<th>History</th>
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<th>XR</th>
<th>MRI</th>
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</thead>
<tbody>
<tr>
<td>Abdominal Strains</td>
<td>Throw/ swing/ twist/ pivot</td>
<td>TTP along muscles</td>
<td>Not needed</td>
<td>If persisting</td>
</tr>
<tr>
<td>Adductor Strains (MCC)</td>
<td>Lateral Lunge</td>
<td>Pubic tubercle to adductor tubercle</td>
<td>Not needed</td>
<td>If chronic</td>
</tr>
<tr>
<td>Hip Pointer</td>
<td>Direct Contact to iliac crest</td>
<td>Contusion</td>
<td>R/O Fracture</td>
<td>If concerned for growth plate injury</td>
</tr>
</tbody>
</table>
## Traumatic Injuries

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<tbody>
<tr>
<td>Abdominal strains</td>
<td>Rest, ice, core stability</td>
<td>1 day to 10 weeks</td>
<td>Inject?</td>
</tr>
<tr>
<td>Adductor strain</td>
<td>Rest, Ice, deep tissue, stim, strengthening</td>
<td>0-6 weeks</td>
<td></td>
</tr>
<tr>
<td>Hip Pointer</td>
<td>Ice, shield, stim</td>
<td>0-3 weeks</td>
<td></td>
</tr>
</tbody>
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## Overuse Injuries

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<tbody>
<tr>
<td>Labral Tear</td>
<td>Deep groin pain, mechanical symptoms</td>
<td>FAddIR</td>
<td>AP pelvis, Dunn view</td>
<td>If conservative fails</td>
</tr>
<tr>
<td>Impingement</td>
<td>Deep groin pain</td>
<td>FAddIR</td>
<td>AP Pelvis, Dunn view</td>
<td></td>
</tr>
<tr>
<td>Snapping Hip</td>
<td>Change in regimen</td>
<td>Dynamic-FABER to FAddIR</td>
<td>AP pelvis, Dunn view</td>
<td></td>
</tr>
</tbody>
</table>
# Overuse Injuries

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<th>Injury</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Labral Tear</td>
<td>Rehab, core, squat, lunge</td>
<td>0-6 weeks</td>
<td>Injection?</td>
</tr>
<tr>
<td>Impingement</td>
<td>Rehab, core, squat, lunge</td>
<td>0-6 weeks</td>
<td>Injection?</td>
</tr>
<tr>
<td>Snapping Hip</td>
<td>Hip extension/stretching</td>
<td>0-6 weeks</td>
<td>External: IT Band Internal: Iliopsoas Tendon</td>
</tr>
</tbody>
</table>
Doc, my Knee Hurts

- Traumatic
  - ACL
  - PCL
  - LCL
  - MCL

- Overuse
  - PFPS
  - Jumpers knee
Knee Pain

- Internal vs External Derangement
  - Locking
  - Catching
  - Giving Out
  - Swelling
Knee Exam

- Exam
  - Ambulation
    - Have patient walk down the hallway
  - ROM
    - 130 degrees flexion to 0/-10 degrees extension
  - Palpation
    - Anterior, lateral, medial, and posterior structures
    - Point tenderness can accurately determine LOCATION of the lesion 78% of the time
Knee Pain

- **Exam**
  - **Patella**
    - Bulge Test
    - Patellar grind
    - “J sign”
  - **Ligaments**
    - Lachman’s test (ACL stability)
      - Sensitivity of 87%, specificity 93%
      - Varus/ Valgus Stress (MCL/ LCL)
    - Anterior/ Posterior Drawer (ACL/ PCL)
  - **Menisci**
    - McMurray test
    - Apley compression
    - Thessaly test
Knee Pain

- Exam
  - Other Tests
    - Ober’s test (IT band)
    - Thomas’ Test (Hip Flexion Contracture)
    - Neurovascular Exam
# Traumatic Injuries

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<th>History</th>
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<th>XR</th>
<th>MRI</th>
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</thead>
<tbody>
<tr>
<td>ACL</td>
<td>Pop, 70% non-contact + Lachman + Pivot Shift</td>
<td>R/o fracture</td>
<td>Confirm dx</td>
<td></td>
</tr>
<tr>
<td>MCL</td>
<td>Blow to outside knee</td>
<td>G1: Stable G2: laxity at 20 degrees G3: Laxity at 0</td>
<td>R/o fracture</td>
<td>Grading</td>
</tr>
<tr>
<td>PCL</td>
<td>Fall directly on knee + Post drawer</td>
<td>R/o fracture</td>
<td>Partial vs complete</td>
<td></td>
</tr>
<tr>
<td>LCL</td>
<td>Blow to inside knee Same as MCL</td>
<td>R/o fracture</td>
<td>Grading</td>
<td></td>
</tr>
</tbody>
</table>
## Traumatic Injuries

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</thead>
<tbody>
<tr>
<td>ACL</td>
<td>Rehab, surgery</td>
<td>Min 6 months</td>
<td></td>
</tr>
<tr>
<td>MCL</td>
<td>G1: Brace</td>
<td>G1: 1 week</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G2: Brace</td>
<td>G2: 1-4 weeks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G3: Surgery</td>
<td>G3: High likelihood of ACL</td>
<td></td>
</tr>
<tr>
<td>PCL</td>
<td>Rehab/ Brace</td>
<td>1-6 weeks</td>
<td>Partial vs complete</td>
</tr>
<tr>
<td>LCL</td>
<td>Brace</td>
<td>Same as MCL</td>
<td></td>
</tr>
</tbody>
</table>
MCL/ LCL

- Pain and swelling over medial aspect of knee
- Varus/ Valgus testing performed at full extension and 30 degrees flexion
- Grade I
  - Pain with minimal laxity
- Grade II
  - Laxity with 5-10 mm of joint space opening
  - Firm end point
- Grade III
  - Soft end point or no end point
  - Complete tear
  - Strong correlation with ACL injury
- Treatment
  - Grade 1 – Ice, compression, bracing. RTP 2 weeks
  - Grade 2 – Ice, compression, bracing. RTP 4 weeks
  - Grade 3 – Orthopedic referral
## Overuse Injuries

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<th>XR</th>
<th>MRI</th>
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</thead>
<tbody>
<tr>
<td>PFPS</td>
<td>Anterior knee pain</td>
<td>+ Patellar compression, no effusion</td>
<td>Normal</td>
<td>Not needed</td>
</tr>
<tr>
<td>Jumpers Knee</td>
<td>Localized Pain</td>
<td>Focal pain</td>
<td>Normal</td>
<td>In severe cases</td>
</tr>
</tbody>
</table>
# Overuse Injuries

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<th>Injury</th>
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<tbody>
<tr>
<td>PFPS</td>
<td>Rehab, Brace, NSAIDs, VMO</td>
<td>1 week</td>
<td>2-3 months MRI</td>
</tr>
<tr>
<td>Jumpers Knee</td>
<td>Rehab</td>
<td>1 week</td>
<td>Possible surgical consideration</td>
</tr>
</tbody>
</table>
Patellofemoral Pain Syndrome

- Most common knee overuse injury
- NSAIDs are more effective than steroids
- Patella stabilizing braces
- VMO strengthening
- Surgery only considered after one year of conservative therapy
VMO Strengthening

- Seated Isometric VMO And Adduction Contractions
- Foam Roller Leg Extensions
- Plie Knee Squats
- Ball squats
- Split Squats (Stationary Lunge)
- Single ¼ leg squats
- Step-ups
- Step-downs
JUMPERS KNEE

- Ice
- REST
- NSAIDs
- Activity Modification
- Counter Force Brace
- Physical Therapy
  - Quadriceps
  - Hip Flexor
  - Leg Extensions
  - Lunges and squats when pain allows
- Surgery only after conservative methods have failed
Doc, My Ankle Hurts

- Traumatic
  - Ankle sprains
- Overuse
  - Achilles tendinitis
ANKLE EXAM

- **Exam**
  - Palpation
    - Ottawa Ankle Rules
    - Achilles insertion
  - Special tests
    - Anterior Drawer Test (ATFL)
    - Talar tilt (CFL)
    - Thompson Test (Achilles)
  - ROM and Strength
    - Dorsiflexion
    - Plantarflexion
    - Eversion
    - Inversion
    - Achilles
ANKLE SPRAIN

- Ankle Sprain
  - Lateral (85%)
    - ATFL - Most Common
    - CFL
    - PTFL
  - Medial
    - Deltoid - Uncommon

<table>
<thead>
<tr>
<th>Classification of Low Ankle Sprains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ligament disruption</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Grade I</td>
</tr>
<tr>
<td>Grade II</td>
</tr>
<tr>
<td>Grade III</td>
</tr>
</tbody>
</table>
**Ankle Sprain**

- **Treatment**
  - XR to rule out fracture
  - Non-operative treatment initially for all injuries
    - PRICE
  - Consider short course of offloading for 1-2 weeks
    - High tide walking boot
  - ASO brace
  - Early physical therapy/ HEP
  - MRI at 8 weeks if not responding for all grades
  - RTP
    - Grade I- 1-3 weeks
    - Grade II- 2-4 weeks
    - Grade III- 5-8 weeks
# Overuse Injuries

<table>
<thead>
<tr>
<th>Injury</th>
<th>History</th>
<th>Exam</th>
<th>XR</th>
<th>MRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achilles Tendinitis</td>
<td>Posterior Heel Pain, swelling</td>
<td>TTP at insertion</td>
<td>May show bone spur</td>
<td>Degree of degeneration</td>
</tr>
</tbody>
</table>
# Overuse Injuries

<table>
<thead>
<tr>
<th>Injury</th>
<th>Tx</th>
<th>RTP</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achilles Tendinitis</td>
<td>Foam roll, heel lift, PT</td>
<td>2-4 weeks</td>
<td>Surgery, Prolo/ PRP</td>
</tr>
</tbody>
</table>
Low back pain is a common source of pain in athletes, leading to significant time missed and disability. The general categories of treatment for low back pain are medications and therapies.

- 60% recover in 1 to 3 weeks
- 90% recover in 6 to 8 weeks
- 95% recover in 12 weeks

Take away point, no imaging until 4 weeks of conservative treatment failure, unless red flag symptoms are present.

- Saddle Anesthesia
- Bowel or bladder dysfunction
Doc, My Head Hurts

- 2017 Concussion in Sports Group (CSIG)
  - Sports Related Concussion (SRC)
    - Sport related concussion is a traumatic brain injury induced by biomechanical forces.
    - SRC typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously.

Consensus statement

Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016

CONCUSSION

- Removal from Competition
- SCAT5
  - The symptom checklist does demonstrate clinical utility in tracking recovery.
- BESS Balance Testing
- Neurocognitive Testing (If available)
- Symptom Resolution
  - Typically resolve within 10 days
  - 10% last over 3 months (Post Concussive Syndrome)
- RTP
  - Stepwise RTP
  - 1 day per step
BESS Balance Testing

CSIG 11 R’S OF SRC MANAGEMENT

1. Recognize: Know the signs of concussion
2. Remove: Stop activity until seen by a physician
3. Reevaluate: A follow-up exam is recommended
4. Rest: Two days usually does it
5. Rehabilitation: For any damage to areas outside of the brain
6. Refer: Persistent symptoms need sustained treatment
7. Recovery: Full recuperation can take weeks
8. Return to sport: Gradually and carefully
9. Risk reduction: A history of concussion warrants extra precautions
10. Residual effects: Research is looking into the long-term impact
11. Reconsider: Children and adolescents may need special care

http://www.buffalo.edu/news/releases/2017/05/024.html
# Return to Play/School

## Table 1: Graduated return-to-sport (RTS) strategy

<table>
<thead>
<tr>
<th>Stage</th>
<th>Aim</th>
<th>Activity</th>
<th>Goal of each step</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Symptom-limited activity</td>
<td>Daily activities that do not provoke symptoms</td>
<td>Gradual reintroduction of work/school activities</td>
</tr>
<tr>
<td>2</td>
<td>Light aerobic exercise</td>
<td>Walking or stationary cycling at slow to medium pace. No resistance training</td>
<td>Increase heart rate</td>
</tr>
<tr>
<td>3</td>
<td>Sport-specific exercise</td>
<td>Running or skating drills. No head impact activities</td>
<td>Add movement</td>
</tr>
<tr>
<td>4</td>
<td>Non-contact training drills</td>
<td>Harder training drills, e.g., passing drills. May start progressive resistance training</td>
<td>Exercise, coordination and increased thinking</td>
</tr>
<tr>
<td>5</td>
<td>Full contact practice</td>
<td>Following medical clearance, participate in normal training activities</td>
<td>Restore confidence and assess functional skills by coaching staff</td>
</tr>
<tr>
<td>6</td>
<td>Return to sport</td>
<td>Normal game play</td>
<td></td>
</tr>
</tbody>
</table>

## Table 2: Graduated return-to-school strategy

<table>
<thead>
<tr>
<th>Stage</th>
<th>Aim</th>
<th>Activity</th>
<th>Goal of each step</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Daily activities at home that do not give the child symptoms</td>
<td>Typical activities of the child during the day as long as they do not increase symptoms (e.g., reading, texting, screen time). Start with 5–15 min at a time and gradually build up</td>
<td>Gradual return to typical activities</td>
</tr>
<tr>
<td>2</td>
<td>School activities</td>
<td>Homework, reading or other cognitive activities outside of the classroom</td>
<td>Increase tolerance to cognitive work</td>
</tr>
<tr>
<td>3</td>
<td>Return to school part-time</td>
<td>Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day</td>
<td>Increase academic activities</td>
</tr>
<tr>
<td>4</td>
<td>Return to school full time</td>
<td>Gradually progress school activities until a full day can be tolerated</td>
<td>Return to full academic activities and catch up on missed work</td>
</tr>
</tbody>
</table>

*Each step over 24 hours*
NEW FINDINGS

- A brief period (24–48 hours) of cognitive and physical rest is appropriate for most patients. Following this, patients should be encouraged to gradually increase activity.
- Cervical and Vestibular Rehabilitation
- Refer for persistent symptoms
  - Adults with symptoms > 2 weeks
  - Children with symptoms > 4 weeks
- Currently, there is limited evidence to support the use of pharmacotherapy.

REFERENCES

- Uptodate.com
- Orthobullets.com
- Cleveland Clinic Sideline Guidelines
QUESTIONS?