Common Injuries in the Young Athlete

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Objectives

1. Recognize that overuse domi-nates injuries of the young athlete
2. Identify the benefits of exercise and the benefits of team sports in children and adolescents
3. Discuss the spec-trum of overuse injuries in the young athlete
4. Explain the concept of ‘Burnout’ as it applies to the young athlete
5. Distinguish the negative effects of sport specialization at the high school level
6. Apply new treatment protocols to a pediatric patient with concussion
7. Define treatment concepts of overuse and ‘Burnout’
8. Formulate a treatment plan for a patient that exhibits signs and symptoms of an overuse injury
Epidemiology

United States, Less than 18 years old:
- ‘Team Sports’ - 27 million
- ‘Organized Athletics’ – 60 million

Very Limited Data on Injuries in general
- Definition of Acute vs. Overuse Injury
- Estimate 50% of pediatric ‘sports’ injuries are overuse in nature

Pathophysiology and Risk Factors

Sport Specialization
- Greater than 8 months per year
- Year-round training and competition
- Travel Teams, Interscholastic
- Same muscle and joint stresses
Benefits of Exercise

- Aerobic
- Anaerobic
- Childhood Obesity
- Balance

Benefits of Team Sport / Organization

- Cooperation
- Accountability
- Sharing
- Time Management
Adolescent Classic Injuries

- Slipped Capital Femoral Epiphysis
- Leg Calve Perthes Disease

Overuse Injuries

<table>
<thead>
<tr>
<th>Name</th>
<th>Joint / Anatomy Involved</th>
<th>Mechanism of Injury (Repetition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little League Shoulder</td>
<td></td>
<td></td>
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<tr>
<td>Little League Elbow</td>
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<tr>
<td>Spondylolysis</td>
<td>Pars Interarticularis</td>
<td>Extension-Based Landing / Forces</td>
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<tr>
<td>Osgood Schlatter</td>
<td>Tibial Tubercle</td>
<td>Running, Jumping</td>
</tr>
<tr>
<td>Sinding Larsen Johansson</td>
<td>Patellar Tendon</td>
<td>Running, Jumping</td>
</tr>
<tr>
<td>Sever Disease</td>
<td>Calcaneal Apophysis</td>
<td>Running, Ankle Dorsiflexion</td>
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<tr>
<td>Iselin Disease</td>
<td>Fifth Metatarsal</td>
<td>Running, Jumping</td>
</tr>
</tbody>
</table>
Overuse Injuries
‘Burnout’

- Physical Stress
- Psychological Stress

Overuse Concept - *Children and Adolescents*

- Physis
  - ‘Growth Plate’ – cartilage of epiphysis of immature bone
  - susceptible to injury and fracture
  - Growth Spurt - peak height velocity

- Apophysis
  - Shape and contour of skeleton
  - Inflammation
    - Muscle attachment can cause avulsion fracture
Osteopathic Medicine Precepts

1. The Body is a Unit
2. Structure and Function and Interrelated
3. The Body possesses Self-Regulatory Mechanisms
4. The Body has the Inherent Capacity to Defend and Repair Itself

Treatment Concepts

- Activity Moderation
  - Intensity, Volume, ‘Impact’ Exercise
  - Repetition
  - Cross Training
  - Pitch Counts
- Decisions based on Interests and Personal Talents
- Development of Skills vs. Elite Athlete

- EDUCATION
  - Athletes, Coaches, Parents
Treatment Concepts

- Development of Skills vs. Elite Athlete
- ‘Unstructured Free Play’
  - Adult supervision and instruction
  - Repetitive Drills

Preparticipation Evaluation

1. Organized and Methodical Approach
2. Medical and Orthopedic concerns are identified by History, approximately 75% of the time

3. There are no routine screening tests required in an asymptomatic athlete
4. Middle and High School student PPE history design should allow for review and verification from a parent or guardian

5. Defer Clearance
   - Additional information or diagnostics are available
Preparticipation Evaluation

PreParticipation Physical Evaluation (PPE) Monograph, 4th Edition

ACL Prevention
Concussion

- Concussion – a traumatically-induced, transient disturbance of central neurologic function
- Repetitive lower impact forces

- Children/Adolescents have a longer recovery time than adults
  - Pediatric Athlete - Median length of recovery 17 days (n 1840)

- When In Doubt, Sit Them Out’
- Mental and Physical Rest
  - ‘Subthreshold Aerobic Activity

- SCAT 5
- Return to Play
  - Return to Learn
  - ADHD and Learning Disabilities

- EDUCATION
  - Athletes, Coaches, Parents

- Functional vs. Structural
  - Serial CT Scans
Concussion

- Better Enforcement
  - Rule Changes
- Better Equipment
- Better Education

<table>
<thead>
<tr>
<th>Concussion Education Websites</th>
<th></th>
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<tr>
<td>CDC Concussion Education / “Heads Up”</td>
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Conclusion

1. Overuse and ‘Burnout’ are very common in the young athlete
2. Physicians should counsel patients on the concept of sport specialization
3. There are an array of benefits of exercise and team sports, especially in children and adolescents
4. The foundation of treatment is education and activity modification