

# Common Injuries in the Young Athlete

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PEEK N' PEAK

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## Objectives

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1. Recognize that overuse dominates injuries of the young athlete
  2. Identify the benefits of exercise and the benefits of team sports in children and adolescents
  3. Discuss the spectrum 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

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- 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

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

## Benefits of Exercise

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- Aerobic
- Anaerobic
- Childhood Obesity
- Balance

## Benefits of Team Sport / Organization

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- Cooperation
- Accountability
- Sharing
- Time Management

## Adolescent Classic Injuries

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- Slipped Capital Femoral Epiphysis
- Leg Calve Perthes Disease

## Overuse Injuries

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Name:	Joint / Anatomy Involved	Mechanism of Injury (Repetition)
Little League Shoulder		
Little League Elbow		
Spondylolysis	Pars Interarticularis	Extension-Based Landing / Forces
Osgood Schlatter	Tibial Tubercle	Running, Jumping
Sinding Larsen Johansson	Patellar Tendon	Running, Jumping
Sever Disease	Calcaneal Apophysis	Running, Ankle Dorsiflexion
Iselin Disease	Fifth Metatarsal	Running, Jumping

Overuse Injuries

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Overuse Injuries

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## 'Burnout'

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- Physical Stress
- Psychological Stress

## Overuse Concept - *Children and Adolescents*

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- 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

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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

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- 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

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

## Preparticipation Evaluation

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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

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**PreParticipation Physical Evaluation (PPE) Monograph, 4<sup>th</sup> Edition**

# ACL Prevention

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## 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)
  - Length of Recovery from Sports-Related Concussions in Pediatric Patients Treated at Concussion Clinics, *Clin J Sport Med* 2018; 28:56-63



## Concussion

- '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**

Concussion Education Websites	
CDC Concussion Education / “Heads Up”	<a href="http://www.cdc.gov/concussion/sports">www.cdc.gov/concussion/sports</a>
NCAA Concussion Program	<a href="http://NCAA.org/concussion">NCAA.org/concussion</a>
NFL Health and Safety	<a href="http://NFLhealthandsafety.com">NFLhealthandsafety.com</a>

## 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