Pediatric Sports Medicine for the Primary Care physician

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Sport Involvement

- ESPN The Mag published data on how many kids in 2011 participated in team sports

- 21.47 million kids between 6 and 17

- More than the population of Texas in 2000
Pediatric Sports Injury Statistics

• According to the National SAFE KIDS campaign and the American Academy of Pediatrics:

  • >3.5 million kids ages 5 to 14 get hurt each year

  • >775,000 children, ages 14 and younger, are treated in hospital emergency rooms for sports-related injuries each year. Most from falls, being struck by an object, collisions, and overexertion during unorganized or informal sports activities.

  • Overuse injuries account for nearly half of all Adolescent and high school related injuries
Statistics continued

• Although death from a sports injury is rare, the leading cause of death from a sports-related injury is a brain injury.

• Sports and recreational activities contribute to approximately 21% of all traumatic brain injuries among American children.

• ~50 % of head injuries sustained in sports or recreational activities occur during bicycling, skateboarding, or skating incidents.
Estimated injury statistics by sport for 2009 from the Consumer Product Safety Commission

- Children ages 5 to 14 who were treated in ERs

- Football. ~ 215,000
- Bicycling. >200,000
- Basketball. >170,000
- Baseball and softball. ~110,000 - Baseball also has the highest fatality rate among sports for children ages 5 to 14, with three to four children dying from baseball injuries each year.
- Soccer. ~88,000
- Skateboarding. >66,000
- Trampolines. ~65,000
- In-line and roller skating. >47,000
- Snow skiing or snowboarding. >25,000
- Ice hockey. >20,000
- Sledding or toboggan. >16,000
The Real Issue

• year around sports

• single sport focus (not well rounded, young- poor motor control, joint stability)

• earlier sport involvement

• Improper helmet use
Outline

• Common injuries (~1/2 due to overuse)
  • Who's at risk?
  • What are the risk factors?
  • When to image?
  • Management
  • Prevention
When and Where?

- Playground, sports, and bikes
- The highest rates during **contact and collisions**.
- More severe during **individual sports and recreational activities**.
- Most organized sports-related injuries (62%) occur during practice.
Out of complexity, find simplicity!

— Albert Einstein —
Uniqueness of pediatric anatomy

- Physeal junction between epiphysis and metaphysis vulnerable to disruption from sheer forces

- Tendon attachment sites, apophyses, cartilaginous plates are weak and prone to injury
Case #1

- 13 y/o male
- Pain anterior knee with sprinting
- No locking, catching or effusion
- Recent growth spurt
Osgood Schlatter (Tibial Tubercle Apophysistis)

- Most common osteochondrosis
- Common Presentation-growth spurt, tight quads, running, jumping
- Physical exam- (IPRT) pain and swelling of the tibial tuberosity, tight quads, excessive subtalar pronation
- Imaging-not usually necessary, maybe to r/o tumor
- Treatment- relative REST, self limited, may persist up to 2 yrs, ice, Nsaids, OMT to correct biomechanics
- Prevention-flexibility of quads
Case #2

- Consulting on a patient from local high school
- 15 y/o M
- Hurdler with atraumatic anterior knee pain
- Comes in with x rays from pediatrician
Sinding Larsen Johanssen (Patellar Apophysitis)

- Common Presentation-similar to OS
- Physical exam-ttp inferior patellar pole
- Imaging-not usually necessary
- Treatment- relative REST, same as OS
- Prevention-same as OS
Case #3

- Shoulder pain in a 14 y/o baseball pitcher

- New pitching coach and has not been limiting pitch count

- Gradual onset
Little League Shoulder (Humeral Epiphysitis-Salter Harris I)

- Common Presentation: pain of the proximal humerus
- Physical exam: circumferentially ttp around the proximal humerus
- Imaging: x ray
- Treatment: relative **REST**, ROM, RC strengthening, throwing mechanics, kinetic chain, OMT to correct biomechanics
- Prevention: pitch/throwing/swim limits
Case #4

- 8 y/o

Is My Child's Heel Pain Just Growing Pains?

rockyfootandankle.com
Sever’s Disease
(Calcaneal Apophysitis)

- 2\textsuperscript{nd} Most common osteochondrosis (after OS)
- Common Presentation-activity related heel pain 7-10 y/o
- Physical exam-ttp at the distal achilles attachment
- Imaging-usually not required unless persistent sxs
- Treatment-activity mod, relative **REST**, ice, stretching, heel raise, biomechanical corrections
- Prevention-strengthening plantar flexors
Case #5

- Elbow pain in a 13 y/o thrower
- Came on gradually
- Recently began working on his change-up
Little League Elbow (Medial Condyle Apophysitis)

Considerations: medial stress, lateral compression, posterior impingement
Pathology: laterally generated forces
Physical exam: IPRT
Imaging: x-ray, MRI? With persistent sx
Treatment- relative REST, ROM, RC strengthening, throwing mechanics, kinetic chain
Prevention-pitch/ throwing limits
Case #6

- Hip pain in a 17 y/o soccer player with anterior pelvic pain

- Started abruptly after a hard corner kick

- Slight limp but still able to walk but not able to continue playing
ASIS Avulsion

- Common Presentation-pop with a hard kick
- Physical exam: ttp over ASIS (sartorius)
- Imaging: Xray
- Treatment: similar to a grade 3 strain-analgeisa, OMT low back and pelvis, ROM, strength, biomechanical issues, surgery rarely necessary
- Prevention: flexibility/ strength training
Case #7

• Back pain in a 18 y/o volleyball player

• Worse when hitting and jump serving

• no radiation of pain

• Better with rest worse with extension
Oblique X-Ray of the Lumbar Spine

VirtualMedStudent.com
Spondylolysis (Stress fracture of the Pars Interarticularis)

Common Presentation: ballet, gymnastics, diving, volleyball, football linemen, olympic lifting

Physical exam: + stork

Imaging: x rays, bone scan or MRI (helps to determine if acute or not)

Treatment: Rest, Bracing, correct underlying biomechanical issues, Nsaids. Surgery for unstable spondylolisthesis

Prevention: pre-hab, focus on “at-risk” athletes
Case #8

- 16 y/o basketball player came down on the a-foot of the opposing team and inversion injury to his ankle

- Pain, swelling, and bruising laterally

- Unable to walk off the court
Ankle injury
Normal  Type I  Type II  Type III  Type IV  Type V

S  A  L  T  E  R

Straight across  Above  Lower or Below  Two or Through  ERasure of growth plate or CRush
NOT SURE IF I SHOULD ENFORCE THE RULES

OR LET THEM PLAY LIKE IDIOTS
Take Home Points

• Recommendations--how much is too much?
  • Let kids be kids-let them have fun!
  • Be aware of limits: parents, coaches, officials
  • Play multiple (all) sports-especially prior to puberty
  • Limit year round, single sports for the young
  • Wear a helmet!
  • When in doubt, get it checked out!
References / Resources

- stopsportsinjuries.org
- Common Pediatric Sports Injuries, Auringer ST, et Al. 1999, Musculoskelet Radiol
- Clinical Sports Medicine, Brunkner and Khan, et al, 3rd Ed.
Thank you