

## Sports Injuries

### Epidemiology

- High School Sports (2000 Study)
  - 27-39% yearly incidence for all sports combined for boys
  - Football in boys and soccer in girls account for the highest number of injuries
  - Gymnastics, Basketball, baseball, Softball, Track and Field and Cross-Country: 7-46% of injuries
- 25-30% of injuries occur in organized sports and 40% of injuries occur in non-organized sports.
- Over 1/3<sup>rd</sup> of school age children (10 million) will sustain an injury requiring a visit to a M.D. or nurse with the yearly cost of up to 1.3 billion dollars (2003 Study).
  - 38% high school children
    - Football: 41-61%
    - Wrestling/Gymnastics: 40-60%
    - Basketball: 31-37%
    - Volleyball, Basketball, Soccer, Cross0Country, Softball and Track: 7-18%
  - 34% middle school children
- Most common areas of the body include the ankle and knee followed by the hand, wrist, elbow, and shin and calf, head, neck, and clavicle.
- Contusions and strains are the most common injuries sustained by young athletes.
- Acute injuries occur more often in practice than in games. In adolescents, overuse injuries are the most common. Overuse injuries can be secondary to anatomical factors, equipment related, environmental factors, training errors, growth related factors and other neuromuscular disorder, arthritis or other conditions.
- Injury Prevention
  - Pre-participation evaluation
  - Medical coverage of practices and games
  - Proper coaching and officiating
  - Advocacy to ensure a proper environment for sports participation
  - Appropriate playing surfaces
  - Playing conditions conducive to play
  - Appropriate matching of athletes for competition and properly supervised
  - Weight-training programs

Psychological management  
Ongoing conditioning and training  
Prompt and adequate rehabilitation

### **Anterior Cruciate Ligament (ACL)**

- One of four main ligaments that stabilize the knee.
- The ACL prevents anterior (forward) displacement of the tibia (shin bone) and excessive tibial (shin bone) rotation on the femur (thigh bone).
- When the ACL becomes torn, the knee becomes unstable. Thus, requiring surgery to reconstruct a new ACL to re-stabilize the knee.
- The number of female athletes incurring non-contact ACL injuries exceeds their male counterparts by 2-8 times which would indicate a level of gender specificity.
- 2004 Study on Pediatric and Adolescent Soccer Players (Analysis of Insurance Data).
  - 8215 injury claims
    - 22% were knee injuries
      - 30% female and 16% males
      - 31% of knee injuries were ACL injuries
        - 37% female and 24% were males
  - Estimated cost of reconstructing and rehabilitating the ACL is roughly \$700 million annually PLUS the loss of entire season, scholarship funding, lowered academic performance, long-term disability, and greater risk of radiographically diagnosed osteoarthritis.
- Causes
  - 70% Are non-contact
    - Biomechanics-consensus of researchers
      - Start with bent knee and hips and finish with straight hips and knees with feet flat
    - Other Causes-Nonconsensus
      - Anatomic-size of notch, size of ligament and leg alignment
      - Environmental-Quality of playing field, shoe design
      - Hormonal

### **ACL Prevention Program**

- Prevent Injury and Enhance Performance Program (PEP)
  - 3 Warm-up activities
  - 5 stretching techniques for the trunk and lower extremity
  - 3 strengthening exercises
  - 5 plyometric activities

3 soccer-specific agility drills

5 cool down exercises

During the 2000 season, there was an 88% decrease in ACL injury

During the 2001 season, there was a 74% reduction in ACL injury

14-18 year olds

15-20 minutes, 2-3 times per week at beginning of practice

[www.aafla.org](http://www.aafla.org)

click on Amateur Athletic Foundation of Los Angeles

click on coaching education (located on left side of the web page)

click on ACL Injury Reduction (located at the top of the web page)