



GUIDELINES FOR PEDIATRICIANS

SOCCER

Online Issue 1

Soccer is the most popular participant sport in the world, and has been one of the fastest growing sports in the United States over the last 30 years. Parents often encourage soccer due to the perception of a lower injury rate than many other popular sports. However, soccer does share many of the medical concerns of other contact / collision sports, and does have some unique injury patterns and special considerations.

Common Injuries

Soccer is generally perceived as a safe sport, with injury rates in boy's high school varsity soccer lower than the rates in football, basketball, and wrestling¹. However, girls have an overall injury rate higher than boys (up to twice as high), and in one study, had the highest injury rate of all girls high school varsity sports¹. Injury rates are increased by 150% in game situations (over rates at practice), and are 6 times higher in indoor soccer than outdoor soccer².

- 1) **Leg** – Injuries to the lower extremities are the most common, accounting for $\frac{3}{4}$ of injuries in high school varsity soccer players¹. The majority of injuries are to the soft tissues (sprains, strains, and contusions), but 3 to 9% are fractures, especially of the lower leg, ankle, and foot.
 - a) **Ankle / foot** – 40 to 45% of leg injuries involve the ankle and foot, with the majority of injuries being sprains or strains (See Sport Short #3 - "Lateral Ankle Sprain"). However, in the skeletally immature athlete, Salter I fractures of the distal fibular physis can be caused by ankle inversion injuries. This can present with a normal X-ray, and the diagnosis is made based on the history (mechanism of injury) and the physical exam (area of maximal tenderness). Fracture of the proximal 5th metatarsal can also be caused by an inversion injury of the ankle and foot. Calcaneal apophysitis (Sever's Disease) is a common overuse injury seen in the pre-pubertal athlete.
 - b) **Knee** – Injuries to the knee account for about 25% of lower extremity injuries, with ACL tear being the most common major problem. A disturbing trend of increasing ACL injuries in female soccer players has been noted over the last several years, with female athletes having three times the incidence of ACL injuries of male athletes⁴. In the skeletally immature athlete, Osgood-Schlatter Disease (tibial apophysitis) is a common cause of knee pain. (See Sport Short #7 – "Anterior Knee Pain").
 - c) **Lower leg** – Tibial shaft fractures are uncommon, but represent the most severe type of lower extremity trauma in soccer². In one study³, 90% of patients were wearing shin guards at the time of the injury, and the shin guard was the point of contact in 62%. Returning to competitive soccer took up to 40 weeks (depending on the extent of the fracture), and complication rates were high.
- 2) **Upper Extremity** - Injuries to the upper extremities are relatively uncommon in soccer, and occur mainly in the hand. Fractures are reported more frequently (per injury) in the upper extremity than the lower extremity.
- 3) **Head and Neck**
 - a) **Eye** – Injuries to the eye, including hyphema and blowout orbital fracture, are frequent enough that both the AAP and the American Academy of Ophthalmology recommend eye protection with polycarbonate lenses for both practice and games.
 - b) **Orofacial trauma** – Injuries to the teeth, including avulsions and fractures, and orofacial injuries are common. Protective mouth guards are recommended.
 - c) **Head Injuries** – Most severe head injuries in youth players are the result of acute traumatic injury resulting from a collision with another player or with the goal post.
 - d) **Heading** - The neurologic consequences of repeated "heading" the ball have recently come under scrutiny⁵. Three studies from Holland have suggested decreases in cognitive function in soccer players when compared to other elite athletes. However, several studies in the US were unable to detect any change in cognitive function between soccer players and other athletes, or in soccer players tested after a 20 minute heading practice. At present, there is insufficient evidence to prove conclusively that heading does or does not cause problems, and longitudinal studies are underway to answer this question. Until more information is available, common sense rules for heading (see Parent's side) should be considered. (See Sport Short #1 – "Head Injuries")

Equipment / Special Conditions - See Parent / Coach's side of this issue for specific guidelines.

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GUIDELINES FOR PARENTS, ATHLETES & COACHES

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Soccer is the most popular participant sport in the world, and has been one of the fastest growing sports in the United States over the last 30 years. It is popular among young athletes due to its use of basic motor skills that are relatively easy to learn, its lack of expensive equipment, and the social aspects of team participation. Although ideal height, weight, and speed are important, they are not essential for success, and certainly not necessary for the fun of the game. Parents often encourage soccer due to the perception of a lower injury rate than many other popular sports. However, soccer does share many of the medical concerns of other contact / collision sports, and does have some unique injury patterns and special considerations.

Conditioning

Soccer is an aerobic sport involving running, jumping, kicking, and rapid changes in direction. Proper stretching before games and practices is important for injury prevention. Also, proper attention to hydration, especially in areas of high temperature and humidity is essential. Because soccer can be played by young children, the proper balance of conditioning, skill development, and fun play is very important. A good coach, with the support of parents, is invaluable in this goal.

Equipment / Special Conditions

Shin Guards – Despite the fact that many leg fractures occur with players wearing shin guards, shin protection is still recommended for all practices and games.

Shoes – Shoes with molded cleats or ribbed soles are recommended for injury prevention (rather than removable, baseball- or football-type spikes).

Other Equipment – Both eye protection (with polycarbonate lens) and mouth guards are recommended. As a contact / collision sport, athletic supporters with a protective cup are recommended in males.

Goalposts – Most soccer fatalities occur through contact with the goalposts, usually resulting from goalposts falling on players. Properly anchoring goalposts is essential in limiting this injury, and padding of the goalposts should be strongly considered. Players should never be allowed to hang or swing from the goalposts.

Ball – Waterproof, synthetic-covered balls should be used for youth soccer, as leather balls can become heavy when wet, and increase the risk of injury.

Field Conditions – Despite the inability of coaches and parents to control the weather, attention to good field conditions is important in preventing injury. Filling in holes whenever possible, and removing debris from the field should always be done prior to games or practices.

Rules / Coaching – 40% of lower leg fractures occur during slide tackles. In addition, an estimated 15 to 25% of soccer injuries occur as a result of a rule infraction. Proper teaching of both the skills needed for safe play, as well as the rules of the game, is an invaluable part of injury prevention. Insistence on fair play, and strict adherence to the rules, is an essential part of the teamwork of good coaching and supportive parents.

Head Injuries / Heading

Most severe head injuries in soccer are caused by collisions with other players or with the goalposts. Recently, questions have been raised with regard to brain function and the safety of allowing children to head a soccer ball. All the information needed to answer this question with certainty is still being gathered. Until more facts are known, common sense must prevail. Heading should not be encouraged until the child can learn the skills needed to head safely. Proper technique is essential (contact with the forehead, neck held rigid, and legs used to propel the player toward the ball). Players unwilling to head the ball should never be forced to do so.

Safety Rules

1. Goalposts must be properly secured at all times, and padding is strongly encouraged. Players should never be allowed to hang or swing from goalposts.
2. Shin guards should be worn at all times.
3. Mouth guards and eye protection are recommended. Eye glasses should be secured with a sports strap. Athletic supporters with a protective cup should be worn by males.
4. Discourage hair combs, barrettes, or any jewelry during play.



References:

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5. Patlak, Margie and Joy, Janet E. "Is Soccer Bad For Children's Heads? Summary of the IOM Workshop on Neuropsychological Consequences of Head Impact in Youth Soccer" National Academy Press, 2002