

Chapter 1: THE CONCEPT OF SPORTS INJURY

- ❖ _____ (Slide 2).
- ❖ Approximately 30 million school-age children are involved in community-based sports. Since the _____ (Slide 3) became law, there has been a 700% increase in female sports participation.
- ❖ Historically females have been discouraged from sports participation because it was believed they were not tough enough to play sports. Negative stereotypes still persist within some sports organizations.
- _____ (Slide 3). Overall, females are at no greater risk for injury than males.
- ❖ Injuries involving the *anterior cruciate ligament (ACL)* of the knee occur more frequently in female high school athletes who participate in basketball and soccer than in males involved in the same sports. The same trend has been observed in college athletes. In a study of injuries among collegiate basketball players, the majority of ACL injuries were *noncontact*, that is, they did not result from a collision with another player or inanimate object. Noncontact ACL injuries are associated with sports that involve rapid directional changes or deceleration when running, or repeated jumping and landing.
- ❖ In a study of sports in one Honolulu school, Beachy et al. found that football yielded the highest injury rate for boys, while soccer was the highest for girls. In a study of high school athletic injuries, Grollman et al. found almost 3070 reportable injuries from ten sports (boys and girls) across 40 high schools in Pennsylvania during the 1994-95 school year. Tackle football had the highest percentage of injuries (____%), followed by boys' basketball (____%), and wrestling (____%). Among girls, basketball participation resulted in the highest percentage of injuries (____%). (Slide 4)
- ❖ In a study of emergency room admissions at 4 hospitals during a one-month period, 1275 young people ranging from 5 to 21 years of age were treated for over 1400 injuries. Of these injuries, 41% were attributed to sports participation. Sprains, contusions, and fractures were the most common injuries. Males sustained more injuries to the musculoskeletal system than females.
- ❖ In a two-year study of injuries sustained by children involved in a community sports program, soccer participation had the highest rate of injury, followed by baseball, football, and softball. More injuries occurred during games than practices, and _____ (Slide 5).

I. Definition of Sports Injury (Slide 6)

A. _____

1. Majority of current definitions use “_____” as the major determinant. For example, an injury results in the athlete being forced to discontinue play and/or practice for a predetermined length of time.

B. In 1982 the NCAA established the Injury Surveillance System (ISS) that established a common set of injury and risk definitions for tracking collegiate injuries. To qualify, an injury must meet the following criteria (Slide 7):

1. _____
2. _____
3. _____

4. Time lost does not accurately reflect severity of injury. Severity of injury determinations may be made by a variety of people, including the athlete. Additionally, there is no standard length of time that must be lost to qualify as a specific level of injury severity.

C. Once identified, an injury can be further described in terms of type of tissue(s) involved, injury location, and time frame of injury (acute or chronic).

D. Accepted definitions of acute and chronic injury

1. **Acute injury** - _____ (Slide 8)

a. Acute injuries typically involve significant trauma followed immediately by pain, swelling, and loss of function.

b. **Critical force** is the _____ (Slide 8). Potential for critical force is clearly seen in tackle football. Forces generated in a tackle can exceed the critical force of the cervical spine.

2. **Chronic injury** is an _____ (Slide 9)

a. Chronic injuries develop over time and are often associated with repetitive, cyclic activities, such as running. Such injuries are commonly called _____ (Slide 9) Common sites include _____ (Slide 9).

b. Overuse injuries occur when workload exceeds the ability of the musculotendinous tissues to recover, causing a progressive breakdown of tissue, leading to failure.

c. Chronic injuries are often associated with **eccentric contraction**, a type of contraction identified as a causative factor in tendon injury. These can be related to repeated overhead movements of the arms, such as those that occur in tennis.

d. Overuse injuries may be caused by intrinsic factors: _____; or extrinsic factors: _____ (Slide 10).

E. Terms for differentiating tissues

1. Soft tissue includes: _____ (Slide 11). Majority of soft tissue injuries involve bruises, sprains, and strains.

2. Skeletal tissues include _____ (Slide 11).

F. Catastrophic injury

1. **Catastrophic injuries** _____ (Slide 12) and are potentially life threatening or permanent.

a. In the context of school/college sports, a catastrophic injury has been defined as “sport injury that resulted in a brain or spinal cord injury or skull or spinal fracture.”

2. A catastrophic injury can occur as either a _____ result of participation such as spinal fracture that occurs when a football player is tackled or an _____ (Slide 12) result of participation such as heat stroke that a runner develops during a cross-country event.

3. In the 2004 season, high school–level football participation resulted in the highest number of catastrophic injuries. Wrestling, ice hockey, baseball, and track (specifically pole vaulting) are also high-risk sports for catastrophic injury.

II. Injury Classifications. In 1968, the Committee on the Medical Aspects of Sports of the American Medical Association published *Standard Nomenclature of Athletic Injuries (SNAI)*, a text that provided standardized terminology associated with sports injuries that affect connective tissue.

A. **Sprains** are _____ (Slide 13) with three levels of severity

1. **First-degree sprains** are _____

2. **Second-degree sprains** involve _____

3. **Third-degree sprains** involve _____

B. **Strains** are _____ (Slide 14)
(which is tissue between tendon and muscle)

1. **First-degree strains** are _____.

2. **Second-degree strains** involve _____

3. **Third-degree strains** involve a _____. Damage may occur in a variety of locations in the region and may include avulsion fracture of bone. _____

C. **Contusions** (bruises) are the most common sports injury and _____ (Slide 15). Contusions can occur in any sport, but contact sports are more likely to blame for these injuries, which can be life threatening when a vital organ is damaged.

1. Contusions are associated _____ (Slide 15).

2. If not properly treated, contusions can result in _____ (Slide 15), the development of bonelike formations in muscle tissue.

D. **Fractures** are _____ (Slide 16). Refer to Figure 1.8 on page 8 for illustrations of types of fractures.

1. In a _____, the bone ends do not break through the skin.

2. In an _____, the bone ends break through the skin. Infection and serious bleeding can result.

3. First aid is essential to prevent shock, blood loss, and permanent damage.

4. Symptoms include swelling, deformity, pain and tenderness, loss of use, grating sensation.

Suspect a fracture when severe forces cause an injury.

5. _____ is a break or crack in bone that develops over a relatively long time.

a. Stress fractures are associated with pain and tenderness, an absence of trauma, history of repetitive activity, and symptoms that developed over a period of days, weeks, or months.

b. Stress fractures are difficult to diagnose, in part, because in the early phase they may not be seen on a standard X-ray.

6. _____ involve the epiphyseal growth plate. There are five types of these fractures; fractures are typed according to severity. Refer to Figure 1.10 on page 10.

E. Dislocations are defined as _____ (Slide 17)

There are two types: **subluxation** (_____) and **luxation** (_____).

Dislocations are a severe type of sprain.

1. Dislocations should not be reduced (put back in place) in the field by non-medical personnel, such as coaches. _____ (Slide 17).

III. Injury Recognition.

Coach's Role: _____ (Slide 18)

The school or agency sponsoring the sports program should hire an athletic trainer who is certified by the Board of Certification (BOC).

1. Less than 2% of reported injuries are to the head; safety equipment for catchers and batters has been effective in protecting players.

a. _____
_____ (Slide 26). Eye injuries that result from pitched balls are also a major concern. Proper safety equipment, including screening around dugout and player benches, is recommended to protect players.

2. Little League Elbow: _____ (Slide 26).
Two large studies conducted in the late 1970s found no relationship between Little League elbow (elbow damage) and pitching. However, Micheli and Fehlandt (1992) found baseball to be associated with the highest occurrence of elbow injury in a population of 445 children.

a. In softball, sidearm pitching is associated with a greater risk of elbow problems than overhand pitching. Injuries to softball players are similar to those in baseball players.

D. Wrestling. Over _____ (Slide 27) youth participated in high school wrestling programs during the 2004 season. _____

_____ (Slide 27). Approximately 27% of participants sustained injuries during the competitive season.

1. _____ (Slide 28). Over 50% of these injuries are strains or sprains. Other injuries _____ (Slide 28).
Wearing protective gear and cleaning facilities and mat surfaces reduced the incidence of these problems.

E. Volleyball. During the 2004 season, nearly _____ (Slide 29) high school girls participated in volleyball. According to a NATA study (1995-97), 14.9% of players sustained injuries, 51.5% of which were sprains. _____ (Slide 29).

F. Soccer. In the United States, _____ (Slide 30) million soccer participants are under the age of 18. During the 2002 season, almost 340,000 boys and 300,000 girls participated in high school soccer programs.

1. _____ (Slide 31); injuries to lower extremities, specifically knee, ankle, and shin, occur most often. The majority of these injuries are not severe.

2. _____, accounting for about 60% of injuries.

3. The knee and ankle joints are the most commonly injured areas.

4. Female youth players are more likely to suffer ACL injuries than their male counterparts.

Females suffer from a higher rate of knee injuries and ACL injuries than male athletes.

5. Heading may result in head injury but research has shown _____

6. A number of deaths and severe injuries related _____.

For the period of 1979-1994 at least 21 deaths were reported as well as an additional 120 non-fatal injuries. The majority of fatalities and injuries occurred when goals tipped over and struck victims.