



Growth Plate Injuries in Young Athletes

What Young Athletes and Parents Need to Know to Prevent Injury

What are growth plates?

Growth plates are regions of developing cartilage in children's bones that act as centers of the rapid cell production, which result in increased bone length and proper bone formation. As children enter adulthood, their growth plates are gradually replaced by solid bone and sealed.

Where are growth plates located?

Children have growth plates primarily at each end of long bones, such as near the shoulder joint, elbow joint, hip joint, and knee joint. The ankles and wrists also contain growth plates that are especially susceptible to injury.

How can growth plates be injured?

Growth plates are susceptible to injury because of their relative weakness compared to the surrounding stable bone, ligaments, and tendons. As a result, when children fall and place great pressure on a bone, the growth plate will be injured more commonly than the relatively stronger supporting structures. In addition, growth plate injuries can occur because of overuse. Growth plate fractures make up 15% to 30% of all childhood fractures. Common growth plate injury, secondary to overuse, is reported in the wrists of young gymnasts, in the ankles of young runners, and in the shoulders of children participating in throwing sports, such as baseball.

What can parents do to recognize a growth plate injury?

Parents should always be attentive to the physical condition of child and adolescent athletes. A growth plate injury can be recognized by persistent pain and one point of tenderness in any of the areas previously mentioned that are near growth plates. If a child reports a sudden fall or accident during play and complains of persistent pain, the injury should be brought to a physician's attention. If ability to participate in athletics is hindered by any discomfort in motion, it is possible that overuse has resulted in a growth plate injury. Any deformities observed in growth plate regions also should be reported to a physician. Because of the possible long-term effects of growth plate injuries on growth, medical attention should not be postponed if there is any suspicion of injury.

How does a doctor treat a growth plate injury?

A doctor will treat a growth plate injury differently depending on the degree of injury sustained. Minor injuries may simply require a period of rest to allow the damaged region of the bone to reform without added stress to inhibit the process. A more serious injury may require immobilization and, possibly, surgery to restore the integrity of the growth plate and ensure the proper maturation of the bone. In addition, strengthening and range-of-motion exercises may follow treatment to restore normal mobility. If left untreated, growth plate injuries can potentially cause disability to young athletes. Therefore, medical attention should be sought immediately if the symptoms described earlier are observed.

How can growth plate injuries be prevented?

Growth plate injuries can be prevented in young athletes by improving their skeletal condition and ensuring that their bones are strong enough to withstand the pressures placed on their bodies during rigorous activity. This can be accomplished by doing the following:

- *Encourage children to include calcium in their diet.* The increased consumption of milk and other dairy products will favor production and increase bone density. This will strengthen the bones and enable them to withstand the forces exerted upon them during play. If children refuse to eat foods that are high in calcium, or are lactose intolerant, consult a physician about alternative diet plans or calcium supplements.
- *Begin strength training in young athletes.* Children should be in appropriate condition to participate in their sport. The increased fitness of children's muscles will provide support for their more fragile skeleton and will decrease the risk of fracture. In addition, strength training increases bone mineral density, which will increase bone strength.
- *Young athletes should wear precautionary protective gear.* Required and recommended protective apparatus should be worn by children during participation in athletics. Gear, such as shin guards, helmets, and appropriate padding, should be worn during all forms of competition to provide protection from injury.

These measures will reduce the risk of growth plate injury in young athletes, but children are still more susceptible to injury from play than adults and should be monitored carefully in their activity. By recognizing growth plate injuries in young athletes, parents can ensure a safer sports environment for their children.