

Too Much, Too Soon: Overuse Injuries in Young Athletes

by Todd C. Battaglia, MD, MS

Although the physical and emotional benefits of sport are widely recognized, it is also obvious that too much activity can lead to injury. This is as true for younger athletes as it is for older athletes, and unfortunately, physicians are now seeing a dramatic increase in sport-related overuse injuries in children and adolescents.

These overuse injuries occur gradually, when the frequency of an athletic activity is repeated such that areas of the body do not have enough time to heal between playing. Such injuries can affect muscles, ligaments, tendons, bones, or growth plates (the areas of developing cartilage where bone growth occurs in children, and which are weaker than nearby ligaments and tendons). In children, growth is generally uneven—bones grow first, which then pull at tight muscles and tendons. This uneven pattern actually makes younger athletes more susceptible to overuse injuries, the consequences of which can include growth impairment, and may lead to long-term health problems. In other words, young athletes are not simply small adults; because young athletes are still growing, they are actually at greater risk for injury than adults.

Currently, approximately 6-8 million children are involved in scholastic sports. If one also includes programs based outside the school, there are at least 35-40 million children and young adults between the ages of 6 to 19 participating in organized sports of some form. Within that population, there are estimated to be at least 2 million injuries per year requiring formal treatment, with nearly 1.5 million coming just from the “big four” sports (football, basketball, baseball, and soccer). And of these injuries, it is now found that more than half—and in some sports a much higher percentage—are overuse injuries.

Such injuries occur in nearly any sport, from baseball and basketball, to track, soccer, and gymnastics, and can occur at essentially any joint, with no discrimination between girls and boys. Some injuries are relatively specific to a certain sport, such as the throwing injuries of the elbow and shoulder (often termed “Little Leaguer’s elbow” or “shoulder”) that are prevalent in baseball players. Others are commonly found in numerous sports and include Sever’s Disease (heel), Osgood-Schlatter Disease (knee), rotator cuff tendonitis, and stress fractures of any number of bones.

As organized youth athletics have grown in popularity, the pressure to compete has led to two dangerous phenomena, sometimes termed “specialization” and “professionalism.”

“Specialization” refers to early devotion to a single sport. In past generations, children changed sports throughout the year, but today it is common for a child to play just a single sport year-round, and often on more than one team at the same time. When a child participates in just one sport throughout the year, he or she continually uses the same muscle groups, and applies unchanging stress to specific areas of the body. This leads to muscle imbalances that, when combined with over-training and inadequate periods of rest, put children at serious risk for overuse injuries. The related concept of “professionalism” refers to the hyper-intense, often maniacal, training that occurs, frequently accompanied by intense pressure from parents and coaches. Too many laps, too many throws, too many miles—these things all add to repetitive stress and cumulative damage to young bodies.

Many specific factors place the young athlete at risk for an overuse injury. Some are intrinsic to the individual and include poor nutrition, prior injury, and physiological factors such as immaturity or low self-esteem. However, extrinsic factors—controllable in large degree by others—play an even larger role

and include over-rapid training progression, inadequate rest periods, incorrect sport technique, inappropriate equipment or footwear, and excessive pressure from peers, parents, or coaches.

Avoidance of such injuries would be most ideal. Although not all can be prevented, careful attention to detailed and established guidelines will go a long way:

- Choose sports that are age-appropriate. Children should be at least 5-6 years old before playing team sports.
- Before beginning a sport, make sure your child is in appropriate physical condition; conditioning may include stretching, endurance training, and aerobic exercise.
- Always prepare for activity with warm-up exercises and end with cool-down exercises.
- Don't overdo. Start out slowly and gradually increase the training program or activity.
- Initial emphasis should be on athletic technique. Once good technique is mastered, power and speed can be introduced.
- Follow guidelines for your child's specific sport – there are nationally-published guidelines for nearly all sports – including throwing recommendations (including pitch type, frequency, and rest periods), swimming (frequency and duration of participation), and running (distance and frequency).
- Stay well hydrated and nourished. This decreases fatigue and the chance of injury.
- Ensure use of appropriate athletic shoes and equipment.
- Encourage cross-training: different sports and activities from day-to-day and season-to-season.

Should prevention fail, coaches and parents must be aware of the more common signs of overtraining and overuse injury, and should be prepared to act. Some signs may be subtle. These include: (1) pain not tied to an acute injury, such as from a fall. This pain often increases with activity; (2) joint or muscle swelling; (3) changes in form or technique; (4) slower times in distance sports such as running, cycling, and swimming; (5) irritability and unwillingness to cooperate with teammates or coaches; (6) decreased interest or motivation to practice. Most importantly, no child should play through pain. When a young athlete repeatedly complains of pain, a period of rest from the sport is absolutely necessary. If the pain persists, it is important to seek proper medical treatment from your primary physician or an orthopaedic sports specialist. After diagnosis, to ensure the best possible recovery, athletes, coaches, and parents must follow safe guidelines for returning to the game.

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