

Overuse Injuries in Children and Adolescents

By: *Becky Cheatham Racine, Physical Therapist*

Youth sport participation has intensified in the United States in the past few decades. Involvement in non-scholastic clubs such as soccer, basketball, baseball, dance and gymnastics also appears to be increasing. Parents are hiring “personal” coaches and trainers to furnish specialized training beyond that provided by schools or clubs. Because training has become more sport-specific and nearly continuous, overuse injuries are now common among young athletes.

Overuse occurs when a tissue is injured due to repetitive stress. The process starts when a repetitive activity fatigues a specific structure such as tendon or bone. If allowed sufficient recovery, the tissue adapts

to the demand and is able to undergo further loading without injury and normal training/playing can continue. Without adequate recovery, swelling, limited range of motion, and pain develop. This indicates damage at the local tissues involved which requires rest and appropriate rehabilitation to recover and return to activity.

Recurrent cases of overuse produce degenerative changes leading to weakness, loss of flexibility, and chronic pain. Some common overuse injuries in youth are: throwing injuries, Little League elbow, jumper’s knee, and patellofemoral (anterior knee) pain.

The key to prevention is understanding the risk factors contributing to these overuse injuries. Factors related to growth are particularly important. First is risk of damage to growth cartilage with repetitive stress. This tissue is found covering ends of long bones, tendon-bone interfaces, and growth plates. Vulnerability at the ankle, knee and elbow is often seen with development of osteochondritis dissecans (condition where a fragment of cartilage detaches from the bone inside the joint). Jumper’s knee (Osgood-Schlatter disease) is often seen with too much traction-induced microtrauma at the tendon-bone attachment of the tibial tubercle (area just below the kneecap). Growth plate injuries have been reported in the

proximal humerus in gymnasts leading to partial or complete growth arrest of that bone in the arm. Contributing factors include the weakness of the growth cartilage, rapid change in the relative lengths of the long bones and their adjacent muscle-tendon attachments, and poor flexibility.

Kids who have overuse injuries often have a history of previous injury which may signal repeated errors in training or technique, inadequate rehabilitated injury, or unaddressed cause of original injury. Other factors are:

- Alignment abnormalities: pes planus (flat feet), pes cavus (high arches), patellofemoral malalignment (kneecap moving abnormally), leg length difference, and excessive ligament laxity (loose joints)
- Faulty equipment: footwear not suited for demands of activity, inadequate grip size and string tension on tennis racquets, and an ill-fitting bicycle.
- Poor technique: flexing the wrist at ball impact during a backhand stroke in tennis commonly causes lateral epicondylitis (tennis elbow), changes in training surfaces, rapid introduction of hill running or running on beach or other tilted surfaces or on hard or uneven surfaces.



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A child's level of conditioning is a very important preventative factor. Youngsters benefit from developing general strength and endurance before participating in a training program. Unfit children may lack the proprioceptive (muscular balance) skills, have weak or inflexible musculoskeletal structures not able to withstand forces of training, and psychological barriers to training. The proper preparation and age-appropriate activities may help reduce injury. In recognizing differences in the child's level of maturity and self esteem, changes in training programs can be tailored to influence motivation and the ability of the child to focus on conditioning and safety. Pressure from others be it adult or peer, can contribute to the child's true interest in the activity. Assess to see if the child is genuinely interested in the activity or are they doing so because of other's expectations.

Rehabilitation is vital to restore normal function and return the youngster to activity as safely as possible. Emphasis on restoring full motion, muscular strength, control and gradual application of loads to healing tissue are all parts of a comprehensive rehab program.

Play safe and be well this summer. For more information on overuse injuries, call the Upper Michigan Rehabilitation Center at 1-800-562-9753 ext. 3186 or 906-225-3186.

Shoulder Subluxation

By: Sheila Richmond, Physical Therapist

The shoulder joint is a ball and socket joint. The arm bone (humerus) fits into a shallow groove on the scapula called the glenoid fossa. The shoulder joint is a multidirectional joint, moving in several directions. It is held in place by ligaments and muscles surrounding the joint.

Shoulder subluxation can be a chronic problem for young athletes with loose, flexible shoulders, especially if they are involved in a sport that requires throwing. Repeated subluxation can lead to long-term shoulder instability and pain if not addressed.

A shoulder subluxation occurs when the head of the humerus temporarily slips out of the glenoid fossa and then slips back in on its own. This is different from a shoulder dislocation where the head of the humerus comes out of the glenoid fossa but does not go back into place on its own. A shoulder dislocation usually needs to be put back into place by a trained medical professional.

A shoulder subluxation is described as a looseness feeling of the shoulder where the humerus feels like it slips in and out of the joint. Pain, a feeling of weakness, as well as numbness may occur. You may hear or feel a clicking sensation. A shoulder subluxation may result from trauma such as falling on an outstretched arm, a direct blow to

the shoulder or having your arm forced into an awkward position. People who are overly flexible or have lax ligaments may sublux their shoulder with throwing a ball, lifting, dressing, or simply just moving it into a certain position.



The more incidents of shoulder subluxation you experience, the more unstable or loose your shoulder may become. Repeated subluxation makes your shoulder more prone to dislocation which can damage the shoulder joint and require surgery to fix.

Exercises to strengthen the rotator cuff muscles of the shoulder and the mid scapular muscles of the upper back are very important to improve the strength and stability for the shoulder joint. Strengthening of these muscles has been proven to prevent repeated problems with subluxations of the loose shoulder.

If you have any questions regarding a strengthening program to improve stability and function of your shoulder, call the Sports Rehab department at 1-800-562-9753 ext. 3186 or 906-225-3186.