

Overuse Injuries in Children and Adolescents

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WHAT ARE GENERAL INJURY TYPES?

There are two types of injuries. An acute injury is due to a single traumatic event. Examples of acute injuries are fractures, sprains or dislocations. An overuse injury is due to repetitive micro-trauma to bone, growth plate, muscle, tendon or cartilage. This is a chronic injury which develops over time. Examples of overuse injuries are little league shoulder or elbow, jumper's knee, or stress fracture.

WHY DO OVERUSE INJURIES OCCUR?

The human body needs daily exercise. However, too much exercise can stress the body leading to an imbalance. This imbalance leads to more breakdown than build up, and subsequently an overuse injury develops.

WHAT CAUSES AN OVERUSE INJURY?

Overuse injuries develop from training errors, technique error, equipment error, and general inherent imbalances of the athlete. Training errors involve rapid acceleration of intensity, duration or frequency of activity which does not allow enough time for the body to recover. Improper technique places too much stress on a body part leading to breakdown, fatigue and injury. Equipment failure predisposes to more stress on the body. Inherent imbalances of the athlete such as poor flexibility, limb length discrepancy, high or flat arches are additive insults as well.

HOW ARE OVERUSE INJURIES DIAGNOSED?

The diagnosis can usually be made after a thorough history and physical examination. At times further testing such as X-rays, MRI, CT scan or bone scan is necessary.

WHAT IS THE TREATMENT FOR OVERUSE INJURIES?

Rest! Cutting back the intensity, duration and frequency is the common prescription. During the period of rest it is critical to address any technique error, equipment error, and athletic imbalances to prevent re-occurrence.

CAN OVERUSE INJURIES BE PREVENTED?

Yes! Listen to your children's complaints. The "No pain, No gain" mantra does not apply. The following are general helpful tips based from the American Academy of Pediatrics Position Statement on Overuse Injuries in 2007¹.

1. Encourage your child to play a variety of sports when young. This will exercise different body parts and help maintain balance.

2. Encourage fun and sportsmanship in the athletic activities chosen.
3. Encourage your child to develop at their own pace with sport readiness. All children develop differently. Avoid extra coaching and training to speed up their sport readiness.
4. Avoid early sport specialization, prior to age 12, due to risk of injuries. If your child specializes in a sport early, initiate a three month consecutive rest period from the single sport to allow rest.
5. Avoid playing same sport year round. Initiate a three month consecutive rest period from the single sport to allow rest.
6. Avoid playing on multiple teams simultaneously. Remember too much of one thing is a set up for failure.
7. Seek advice of your child's doctor or sports medicine specialist early if the child is experiencing pain.

BIBLIOGRAPHY

1. Brenner JS, The Council of Sports Medicine and Fitness. Overuse injuries, overtraining, and burnout in the child and adolescent athletes. Clinical Report. Pediatrics. 2007; 119: 1242-1245.

Table 1. Common Sites of Apophysitis in the Skeletally Immature Athlete

Sever's Disease	Calcaneus and Gastrocnemius and Soleus
Iselin's Disease	5 th Metatarsal and Peroneal Brevis
Osgood-Schlatter Disease	Tibial tuberosity and Quadriceps Extensor Muscle
Sinding-Larsen-Johansson Disease	Inferior Pole of the Patella and Quadriceps Extensor Mus
Apophyseal Disorders of the Pelvis	Anterior Superior Iliac Spine and Sartorius Anterior Inferior Iliac Spine and Rectus Femoris Ischial Tuberosity and Hamstring
Little League Elbow	Medial Epicondyle and Flexors of the Forearm