

participation.

Acute overload injuries are those that occur suddenly during an activity and produce immediate symptoms. A blow or overstretching, twisting, or sudden stress to tissues can cause these injuries. For descriptions and management of traumatic injuries, see earlier in chapter.

Overuse Syndromes

To excel in sports, young athletes are forced to train longer, harder, and earlier in life than previously. The rewards are an increased level of fitness, better performance, faster times, and the satisfaction of attaining a personal goal. However, risks are associated when young people overtrain; these risks include recurrent upper respiratory infections, sleep and mood disturbances, loss of appetite, decreased interest in training and competition, and inability to concentrate ([Winsley and Matos, 2011](#)). Growing numbers of young people participate in organized sports, resulting in an increase in overuse injuries. Nearly half of all injuries evaluated in pediatric sports medicine are overuse injuries ([Biber and Gregory, 2010](#)).

The risk of overuse injury is always present and can be related to several factors, including training errors, muscle/tendon imbalance, anatomic malalignment (e.g., femoral anteversion, excessive lumbar lordosis, tibial torsion), incorrect footwear or playing surface, an associated disease state, and growth (growth cartilage is less resistant to microtrauma). Chronic pain in athletes is often associated with overuse injury, which can occur at any level of athletic participation. The common feature in overuse injuries is the **repetitive microtrauma** that occurs to a particular anatomic structure. Performing the same movements repeatedly can cause several types of injury:

1. **Frictional**, or rubbing of one structure against another
2. **Tractional**, or repeated pull on a ligament or tendon
3. **Cyclic**, or repetitive loading of impact forces (stress fractures)