The end result is inflammation of the involved structure with complaints of pain, tenderness, swelling, and disability.

Stress Fractures

Stress fractures are a consequence of repetitive, excessive stress on the bone that causes microfractures within the bone. Continued stress to the bone can lead to spread of the microfracture and eventual macrofracture. The pathogenesis of stress injury to the bone is multifactorial and includes everything from the footwear to the fitness level of the athlete. Stress fractures occur most commonly in the lower extremities, particularly the tibia. Track and field athletes have the highest incidence of stress fractures (Patel, Roth, and Kapil, 2011).

The most common symptom of stress fracture is a sharp, persistent, progressive pain or a deep, persistent dull ache located over the bone. Sometimes there is pain on impact (heel strike), but the most important clinical sign is pain over the involved bony surface. Diagnosis is based on clinical observation and history. Plain radiographs are rarely diagnostic of stress fractures during the initial few weeks because callus formation is not yet evident. Magnetic resonance imaging (MRI) is used when other causes of pain must be ruled out.

Therapeutic Management

Development of inflammation is common to all overuse syndromes; therefore, management involves rest or alteration of activities, physical therapy, and medication. Rest is the primary therapy, usually interpreted as reduced activity and the use of alternative exercise—not bed rest or immobilization with an orthosis. The main purpose is to alleviate the repetitive stress that initiated the symptoms. It is important to keep the adolescent mobile, and training can be continued. Alternative exercise is selected that maintains conditioning without aggravating the injury. For example, pool running (treading water in the deep end of a pool) can use the same movements as running but without the weight bearing; bicycling, swimming, and rowing are viable alternatives.

Other modalities include cryotherapy and cold whirlpool baths. Sometimes taping, bracing, splinting, and other orthoses are used,