



by Tim Garl

LOWER LEG PAIN IN BASKETBALL PLAYERS

Tim Garl is the Indiana University's basketball trainer. He is also the program's Director of Basketball Operations. He has served as the Trainer for the USA 1982, and 1986 FIBA World Championship Teams, and 1984 USA Olympic Gold Medal Basketball Team. He is also a member of the United States Olympic, Sports Medicine Committee.

Lower leg pain is common in athletes and is frequently seen in basketball players.

The conditions causing the pain can be soft tissue injury or involve the tibia or fibula.

Soft tissue lower leg pain is often referred to in a catch all term "shin splints" and is technically called Medial Tibial Stress Syndrome (MTSS). This condition usually affects athletes involved in running and jumping activities.

This complaint is frequently seen in basketball players'.

It is a result chronic strain or overuse resulting in micro-trauma to the muscles and connective tissue, tibia and occasionally the fibula.

It is most commonly seen early in training where there is increase in activities such as running and jumping.

It may also occur anytime when training is increased suddenly in speed and distance or when the training surface is changed.

MTSS is characterized by pain

that occurs during exercise in the lower leg.

Typically pain is significant at the beginning of training and usually decreases once the player is warmed up. It may then intensify, with fatigue, at the end of activity.

Symptoms are most commonly located along the inner (medial) portion of the tibia in the middle third of the bone.

The painful area is often diffuse and may move around. Pain subsides after activity however the athlete may complain of aching pain at night.

The exact cause of the injury has many theories, and frequently may have more than one contributing factor.

These factors may include muscle fatigue or imbalance of muscles of the lower leg, improper or worn footwear, poor flexibility, and overtraining.

Training surface may also contribute to the injury (figure 1).

All of these mechanisms can result in an overload to lower leg in the form of repetitive trauma from weight bearing.

Torsion to the tibia from muscle/tendon insertions that contract during running and jumping may also contribute (figure 2 and 3).

One challenge of managing lower leg pain (MTSS) is determine the extent of the injury and identifying proper treatment. The history and characteristics of the pain, such as length of symptoms, changes in training routine, other inju-

FIGURE 1



Figure 1. Stretching the muscles of the lower leg and good flexibility is important in treating and preventing injuries.

FIGURE 2/3



Figure 2 and 3. There are numerous appliances available that a player can wear to help manage the MTSS symptoms.





FIGURE 4



Figure 4 and 5.
Strengthening the muscles of the lower leg is important part of prevention and rehabilitation.

FIGURE 5



FIGURE 6



Figures 6 and 7.
Some weight machines allow for stretching and strengthening during the same activity.

FIGURE 7



ries that might contribute to biomechanical errors, painful activity versus pain free activity, should all be evaluated to help make the correct diagnosis and determine the proper management.

Athletes, who present a history of recent change in level or intensity of training, recent onset of symptoms, diffuse pain that is most severe during the beginning and end of training may be suffering from MTSS or inflammation to the soft tissue of the lower leg(s).

Management consists of first eliminating the insulting activity and treating the area for acute inflammation.

Although many therapies exist for soft tissue inflammation, the author finds that ice, rather than any thermal modality, provides the best relief of symptoms.

Anti-inflammatory or analgesic medications may also be used as part of the treatment.

Examination of the players' footwear is essential to determine wear patterns and to help identify biomechanical problems.

High quality footwear is essential and custom orthotics may be needed to correct biomechanical errors.

Training routine will need to be modified, and cross training should be incorporated to reduce stress.

Stationary cycling, swimming and stair stepper machines are all good cardiovascular activities that can supplement reduced running.

Jumping activates, if allowed, should be done on soft surfaces (figure 4 and 5).

Prevention consists of maintaining good flexibility in the lower body. Increase training moderately over a period of time.

Strengthening the muscles of the lower leg should be part of the training routine.

Proper footwear must be worn for the activity and surface. A player should attempt to train on the softest surface possible, especially when doing jumping drills (figure 6 and 7). Emerging thought is that lower leg injuries exist along a continuum and more serious injuries such as stress fractures, compartment syndromes and preiostitis often result from complications of mistreatment or untreated lower leg pain.

Stress fracture is the most common serious complication of overuse injuries in the lower leg and can occur very quickly in the athlete with serious training errors.

Positive signs include local tenderness, pain on direct or indirect percussion, and continuous pain during weight bearing.

Imaging studies are usually needed to confirm clinical diagnosis.

Bone scan has traditionally been the standard diagnostic study.

An increasing number of clinicians are using Magnetic Resonance Imaging instead because of its ability to access the bone and surrounding soft tissue structures. Standard x-ray is usually not sensitive enough to make an early diagnosis of the micro fractures to the bone.

Management begins with rest to allow the bone to heal and remodel.

Non-weight bearing activity such as deep water pool workouts and stationary cycling may be used to keep the athlete conditioned during this period.

Early management and treatment of lower all leg pain is the best approach to eliminate stress fractures.

New studies suggest that electric and electromagnetic fields or sound waves may help in the healing of stress fractures.