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Common Overuse Injuries in the Lower Extremities of Runners

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As the snow melts from the Iowa sidewalks, hundreds of athletes dig their shoes from their cold winter closets. While pounding the pavement can bring both personal and team successes, it can also bring multiple overuse injuries. Roughly 50% of runners experience injury yearly and 25% are injured at any one time. Unfortunately, sustaining an injury while running leaves the athlete 1.5 times more likely to succumb to injury in the future. Running injuries commonly involve the lower extremity. The most common injuries being: tibial stress injury or shin splints, Achilles tendonitis, plantar fasciitis, and stress fractures.

Prevention

Prevention is paramount although difficult to achieve. It is important to start slowly and increase training intensity or volume 10% per week at most. It is important to adequately rehabilitate previous injuries with successful strengthening of the surrounding muscles to help prevent injury in the future. Also, any biomechanical abnormalities or errors should be addressed and corrected. Because prevention is not always possible, quick recognition and treatment will often allow swift recovery and minimize time away from sport.

Tibial Stress Injury or Shin Splints

The most common overuse running injury affecting up to 65% of runners is tibial stress injury. Runners will suffer from pain on the inside of the tibia bone, the large bone of the shin. Constant impact of running exacerbates the pain and is also thought to be the main cause. The origin of pain however is often multifactorial that can be attributed to biomechanical factors as well as foot type. A foot type where the arch collapses when weight bearing is more likely to suffer a tibial stress injury. Inflexibility in the calf muscles has also been implicated, as well as inflammation in the muscles that attach to the tibia bone. Initial treatment consists of reducing inflammation with rest, ice, non-steroidal anti-inflammatory medication, or physical therapy. Reducing volume and intensity of exercise and slowly increasing as pain subsides may be advised. Prevention of recurrence is often achieved with a fitted orthotic device or simple heel walking before and/or after working out. Heel walking may help to strengthen the

muscles on the frontal aspect of the shin. Persistent pain may indicate more advanced injury like a stress fracture or compartment syndrome.

Achilles Tendonitis

The Achilles tendon is the largest tendon in the body connecting the calf muscles to the heel bone. The calf muscles are most active as the foot pushes off in running or jumping; therefore, excess jumping exercises may put strain on this tendon. Inflammation and pain may then ensue. Most pain is felt at the back of the heel bone as the tendon attaches at this location. Pain is also commonly felt approximately 2cm above this area where blood supply to the tendon is limited. Lack of blood flow to this area causes prolonged healing time. Treatment may consist of reducing inflammation with rest, ice, compression, or non-steroidal antiinflammatory medications. A decrease in exercises involving a vigorous push off may also help reduce symptoms. A small pad under the heel may help to reduce tension on the tendon and decrease inflammation. Rehabilitation and prevention of further injury may be obtained by eccentric muscle contraction exercises. These are performed by standing on the toes of the injured foot on a stair with the heel hanging behind the stair. The heel is then slowly lowered below the stair level to achieve a stretch. The other foot assists in moving the foot back into the starting position.

Plantar Fasciitis

Plantar fasciitis affects 2 million Americans per year. The plantar fascia is a thick ligament stretching from the bottom of the heel to the ball of the foot that helps to support the arch of the foot. Plantar fasciitis is a build up of inflammation in the fascia usually just in front of the heel bone. Pain is most common upon the first steps after long periods of non weight bearing. Plantar fasciitis often occurs in people who stand for long periods of time, although athletes are also susceptible. Foot type often plays a role in the cause of plantar fasciitis. Athletes with a low arch are at risk for plantar fasciitis as each step will put excess strain on this ligament. Athletes with a high arch that easily lowers with weight bearing are also at risk. Treatment again consists of controlling inflammation at the forefront. Rest is often required as the blood supply to the ligament is again decreased causing prolonged healing time. Ice and anti-inflammatory medications are also recommended. Stretching the calf muscles also helps to reduce the strain on the plantar fascia as well as helps to prevent future recurrence. Support for the plantar fascia through arch support orthotics may also help to prevent recurrence.

Stress Fracture

A stress fracture is a type of incomplete bone fracture, also known as hairline fractures. These occur in up to 6% of athletes. It is caused by repeated stress on the weight bearing bones, often the long bones of the foot and lower leg. Runners will often have severe pain as they begin their workout that will ease slightly during the workout and progress back to severe pain toward the end of a workout. Diagnosis is made with x-rays, although often more advanced bone imaging is required. Healing will be delayed with persistent stress to the bones; therefore, immobilization is necessary. A cast or walking boot may be applied for up to 12 weeks for adequate healing. After which activities may be gradually resumed.

Summary

The above has been a description of the more common running related injuries. There are certainly numerous running related conditions and it is important to properly warm-up and prepare prior to any sports activity. Proper preparation is the most basic and important aspect in preventing injury.

Dr. Lee Evans practices at Des Moines Orthopaedic Surgeons and offers clinic at both DMOS – East and DMOS – West. Timothy M. Holcomb, DPM is a first year surgical resident at Iowa Methodist Medical Center and has been training at DMOS with Dr. Evans. For more information or to schedule an appointment with Dr. Evans please phone 515-224-5224.