Podiatrists, by definition, are experts in treatment of the foot and traditionally have been the best physicians for the treatment of running injuries. Dr. George Sheehan helped to champion podiatrists as the running experts and was one of the founding fathers of the American Academy of Podiatric Sports Medicine (for more information about this great man, go to http://www.georgesheehan.com/). In order to properly treat runners and their injuries, it is important to look above the foot even if we are treating a foot injury. The converse is also true in that sometimes injuries in the leg, knee, and hip are due to the biomechanics of the foot. Runners often present to a podiatrist seeking treatment for injuries up to the hip.

**Iliotibial Band Syndrome**

One common injury in distance runners is iliotibial band syndrome (ITBS). ITBS typically presents as a painful clicking on the outside of the knee aggravated by hill running. The pain will usually increase as the run progresses and will significantly limit the athlete’s ability to train properly.

The IT band begins in the hip as the tensor fascia latae muscle and has attachments at the origin from three different muscles: the gluteus medius, gluteus minimus, and vastus lateralis. The muscle becomes a fibrous band of tissue as it progresses down the thigh, then crosses the knee joint, and inserts along the lateral portion of the patella and into the tibia at Gerdy’s tubercle.

The main functions of the ITB are to assist the hip muscles in abduction (outer movement) of the thigh and to stabilize the lateral side of the knee. The ITB is not a strong structure, and if the surrounding muscles have any weakness, that can lead to injury and ITB syndrome. Runners are notoriously weak in their hips and core muscles, particularly if strength training or participation in sports that involve side-to-side movement are lacking.

Traditional treatment of ITBS has focused mainly on stretching, which should definitely be included as part of the training plan. While stretching plays an important role in the treatment of this injury, there are several other forms of therapy that need to be incorporated including massage, ice therapy, and strengthening. The medical literature also typically recommends custom orthotic devices as part of the treatment plan. However, controlling too much pronation may aggravate ITBS. One suggestion is often to get into a more neutral position.

**These conservative treatments can be very effective.**
trol running shoe if the patient is in a motion-control shoe.

The main focus of treatment needs to be improving core strength and, in particular, the hip abductors. Drawing from the anatomy of the ITB, strengthening of the gluteal muscles is tantamount. Dr. Michael Fredericson\(^1\)\(^2\) has published several great papers about the importance of the core for the treatment of ITBS. In Dr. Fredericson’s initial study on the topic in the Clinical Journal of Sports Medicine (July 2000)\(^2\) runners with ITB syndrome were compared with 30 healthy runners. The injured runners were found to have statistically significantly weaker hip abductors (mainly gluteus medius and minimus) than the non-injured runners.

The injured runners were enrolled in a six-week standardized rehabilitation protocol, with special attention directed to strengthening the gluteus medius. After rehabilitation, the females demonstrated an average increase in hip abductor torque of 34.9 percent in the injured limb, and the males showed an average increase of 51.4 percent. After six weeks of rehabilitation, 22 of 24 athletes were pain-free with all exercises and able to return to running, and at a six-month follow-up there were no reports of recurrence.

Dr. Fredericson also examined three common stretches prescribed for ITBS and found that one stretch was more effective than the others.\(^3\) You can see the three stretches in Figure 1; all three were found to work but stretch B was the most effective.

**Massage**

Massage is another important aspect of the treatment plan. Patients can perform self-massage with a foam roller. There are excellent guides at http://www.smiweb.org/omt/guides.htm which explain the use of the foam roller, along with a core strengthening for athletes. Core strengthening goes beyond the typical sit-ups. The SMI guide demonstrates six simple exercises, including planks and bridge ups. Additional exercises which utilize an exercise ball can be performed.

**Core Strengthening**

Core strengthening should not only be part of the treatment plan for ITBS but also should be considered for other injuries that are not responsive to the normal remedies. Achilles tendonosis and medial tibial stress syndrome are two injuries that may benefit from improving core strength.

As an example, approximately ten years ago, a runner presented to my office with Achilles tendonosis. The patient was a 50+ year old serious runner who also was a college professor. His Achilles had been swollen and painful for a month. Normally, I advise runners with this injury to take some time off from running, but this patient had not missed a day of running in over 30 years and had run every Boston Marathon in that same span of time. I was fortunate to work with an excellent physical therapist, and we tailored our athlete’s treatment plan around the fact that he would attempt to run the marathon in less than two months, without taking any days off from running. His finishing time was not as important as just finishing the marathon in order to keep the streak intact. The key aspect of the treatment plan, which allowed the patient to continue training and successfully complete Boston that year, was focusing on improving the strength of his core musculature and, in particular, his hip abductors along with eccentric strengthening of the tendon.

**Eccentric Exercises**

Eccentric exercises are another extremely important aspect of the treatment of tendonopathies, especially Achilles and patellar tendonoses. Fyfe and Stanish in Clinics in Sports Medicine outlined a good program on the use of eccentric training for tendon injuries.\(^4\)

An eccentric moment occurs in a tendon when it contracts and lengths at the same time. When an athlete runs, the patellar and Achilles tendons undergo an eccentric contraction with every step. The initial phase of treatment of a tendon injury should involve reduction of any pain or swelling, and then the focus needs to eventually shift to rehabilitation of the tendon.

**Achilles Tendinopathy**

The most common cause of Achilles tendinopathy is overuse. Tendons will typically not get injured until they are fatigued. Other causes include lack of flexibility, excessive over-pronation, changes in training terrain, changing shoes, training in the morning, increases in training intensity, adding speed work or hill work. Two miscellaneous causes include prior use of oral steroids and the antibiotic class known as quinolones, which includes the commonly pre-

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Anatomically, the Achilles differs from all the other tendons in the body due to the surrounding sheath. Most tendons are surrounded by a synovial sheath; the Achilles is covered by paratenon. This is a fibrous layer of tissue that provides the blood supply to the tendon. The paratenon can become inflamed and thickened, leading to a different diagnosis, paratendinitis. The calf muscles fire to decelerate the forward motion of the leg when the foot initially contacts the ground; then the load is gradually increased on the tendon until you reach toe-off. At toe-off (propulsion) up to six to eight times your body weight is transmitted though the tendon. The tendon also serves to resupinate the foot; if the foot is over-pronating, the Achilles has to work harder to compensate for the excessive pronation.

Traditional treatment of Achilles tendinopathy has centered on stretching, heel lifts, and orthotic devices. NSAIDs are not going to have much of an impact beyond the first two weeks, since the tendon is no longer inflamed after the initial injury but rather undergoes a degeneration, as has been proven in several histologic studies.3,5,11

Given that tendon degeneration may be the root cause of Achilles problems, it makes sense that strengthening of the tendon produces the best rehabilitation results. In a prospective study, Alfredson4 noted that all 15 athletes on a progressive eccentric loading program returned to activity within 12 weeks. In a supervised program, the athlete should lower the heels below the level of a step, progressing from having equal weight on both feet to having the majority of the weight-load on the injured leg.

**Shockwave Therapy**

Shockwave therapy is another treatment modality that should be considered if pain persists after all the above treatments have been utilized. A recent study by Saxena13 showed a statistically significant improvement in Achilles tendinopathies after a series of three treatments with a device from Storz medical, the D-Actor 200.

In cases that are not responsive to all conservative treatment, obtaining an MRI is very useful to determine if there is a central core lesion or if one needs to excise the paratenon. Athletes may return to activity in less than two months following paratendonysis.14 Surgery should always be considered a last resort, along with adding the use of eccentric exercises and core strengthening to your treatment armamentaria for lower extremity running injuries.

**References**

11. Maffulli N, Barrass V, Ewen SW.