Aching and soreness on the outside of the knee and lower thigh is frequently reported by our more active patients. This is often mentioned as a secondary or “offhand” area of pain, but can develop into a chronically disabling problem. Iliotibial band syndrome (ITBS) is the most common cause of lateral knee pain in runners and walkers, with an incidence as high as 12% of all running-related overuse injuries.¹

ITBS results from recurrent friction of the iliotibial band (ITB) sliding over the lateral femoral epicondyle. This problem can progress to become a sharp, burning pain at the lateral knee that persists after just a small amount of walking. While recognition of iliotibial band syndrome isn’t difficult, treating the condition can be a challenge because underlying biomechanical imbalances often contribute to the patient’s persisting pain and disability. A comprehensive postural and biomechanical evaluation is usually necessary for a complete recovery and return to all recreational activities.
Orthotics

Anatomy and Function
The iliotibial band is the continuation of the tendinous portion of the tensor fascia lata muscle. It also attaches indirectly to parts of the gluteus medius, gluteus maximus, and the vastus lateralis muscles. An intermuscular septum connects the ITB to the linea aspera femoris until just proximal to the lateral epicondyle of the femur. Distally, the ITB spreads out and inserts on the lateral border of the patella, the lateral patellar retinaculum, and Gerdy’s tubercle of the tibia. The ITB is only free from bony attachment between the superior aspect of the lateral femoral epicondyle and Gerdy’s tubercle.2

Controlled Adduction at Heel Strike
The ITB assists the tensor fascia lata as it abducts the thigh or, more precisely, controls and decelerates adduction of the thigh as the foot is planted. As such, it contributes to the biomechanical stability of the pelvis on the leg, as well as acting as an anterolateral stabilizer of the knee. During knee extension, the ITB moves anteriorly, and then it slides posteriorly as the knee flexes, remaining tense in both positions.

A study of runners with ITB symptoms found that the posterior edge of the band was impinging against the lateral epicondyle just after foot strike in the gait cycle.3 The friction first occurred at less than 30° of knee flexion. Recurrent rubbing can produce irritation and chronic low-grade inflammation, especially beneath the posterior fibers of the ITB, which are thought to be tighter against the lateral femoral condyle than the anterior fibers.

“Osis”, not “Itis”
We now know that the lateral knee pain that develops in ITB syndrome is due to a “tendinosis” condition. It is not due to inflammation, but an underlying degeneration of collagen tissues in response to mechanical overuse. There is a loss of collagen continuity and an increase in ground substance and cellularity, which is due to fibroblasts and myofibroblasts, but not inflammatory cells.4 This is the reason that anti-inflammatory strategies (such as NSAIDS drugs and corticosteroid injections) are not indicated for these conditions, and actually may interfere with complete repair.5

Treatment of ITB Syndrome
Initially, a reduction in stressful activities is necessary to allow the body to catch up with healing. This means limiting all aggravating sport and work activities for a few weeks to a month. Running and any other potentially exacerbating activity such as cycling should be avoided to reduce the repetitive mechanical stress at the lateral femoral condyle. Contract-relax exercises to lengthen shortened iliopsoas, rectus femoris, and gastrocnemius-soleus muscles are performed three times daily in three bouts of a 7-second sub-maximal contraction, followed by a 15-second stretch (contract-relax procedure).

Particular attention is given to increasing the length of the ITB. If necessary, gait and treadmill running analyses can be used to screen for dynamic muscle imbalance or weakness contributing to the injury. Chiropractic adjustments for biomechanical imbalances and restrictions in the lumbopelvic region are usually necessary.

Long-term Control
James observed that runners with ITBS often demonstrate excessive pronation at heel strike.6 Others have noted that leg-length discrepancies contribute to ITBS.7 This can be secondary to a true anatomic discrepancy or environmentally induced by training on crowned roads. Studies have demonstrated a significant decrease in tibial internal rotation and on pronation velocity when using orthotics, which can help to control the position of the knee and absorb some of the joint stress at heel strike.

For the long-term, most patients with ITBS will need stabilizing, custom-made orthotics in order to control underlying biomechanical faults. The most common problem seen is excessive pronation, which causes a variety of symptoms, but...
Orthotics responds well to the use of flexible or semi-flexible orthotics. In some cases, an added heel lift will be needed to compensate for anatomical leg length discrepancy.

References

About the Author
An enthusiastic speaker, Dr. William Austin provides an energetic approach to learning. He draws from over 38 years of healthcare experience, which includes Athletic Training, Chiropractic, and Chiropractic Research. He has developed two successful practices. He is a 1986 graduate of Logan College of Chiropractic, and is currently Director of Professional Education at Foot Levelers, Inc. of Roanoke, VA.