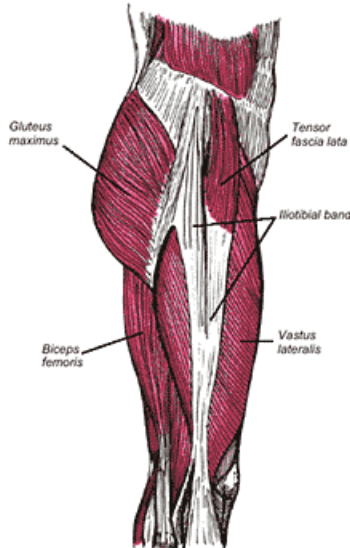


Iliotibial Band Syndrome

By: Elite Spinal & Sports Care

Fig. 1
Lateral View of the Muscles of the Pelvis and Thigh



As triathlon season comes to an end, many of us are ramping up our mileage in preparation for the year-end marathon races. With higher mileage, comes higher repetition and therefore, greater repetitive stress and cumulative trauma injuries. One of the most common injuries seen in runners training for the marathon distance events is Iliotibial Band Syndrome. When left unaddressed, this injury can be a “show stopper” that literally prevents you from running another step without excruciating pain. With proper preventative care and mindfulness to your running form, this problem easily be avoided.

The Iliotibial Band (IT Band) is a thick band of fascia (connective tissue) that is formed proximally by the connection of fascia from the Tensor Fascia Lata and the Gluteals. The band originates at the lateral iliac crest and extends distally to the patella, tibia, and lateral hamstring tendon.

Iliotibial Band Syndrome (ITBS) occurs when there is inflammation of the distal portion of the Iliotibial Band. Occasionally the Iliotibial Band becomes inflamed at its proximal origin, causing referred hip pain, however lateral knee pain is the most classic presentation. ITBS is a knee injury most commonly found in runners and cyclists; however it can affect any athlete whose sport involves repetitive flexion and extension of the knee.

What causes ITBS?

Fig. 2 Flexed Knee with Posterior Movement of the Iliotibial Band

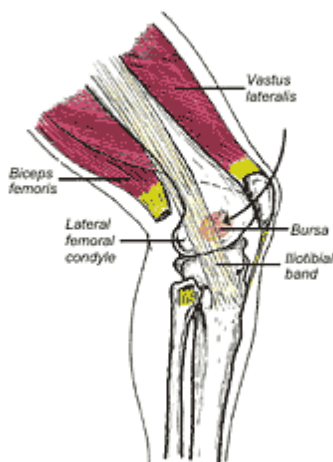
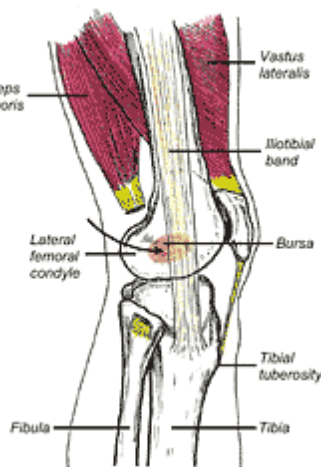


Fig. 3 Extended Knee with Anterior Movement of the Iliotibial Band



Iliotibial Band syndrome is caused by excessive friction of the distal Iliotibial Band as it slides over the lateral femoral epicondyle during repetitive flexion and extension of the knee.

Potential factors that can lead to ITBS include:

- **Excessive pronation:** This causes internal tibial and femoral rotation thereby increasing the stress onto the Iliotibial Band.
- **Excessive downhill running:** This increases the amount of times the knee goes from flexion to extension, forcing the IT Band to excessive rub onto the lateral epicondyle of the femur.
- **Lack of a post exercise stretching routine:** Tightness of the Tensor Fascia Lata and Gluteals can cause the IT Band to rub across the lateral epicondyle of the femur with more friction.

- **Increasing your mileage too quickly.**
- **Running on cambered / slanted surfaces** – runners who run with the traffic tend to have IT Band troubles in their right thigh because that leg must travel a greater distance each time it hits the ground.
- **Always running the same direction on a track** –counterclockwise running causes ITBS in the left thigh because the IT Band must control a greater deceleration of adduction in the left hip.
- **Excessive lateral hip sway with running.**
- **Toe-in running gait** – this causes internal rotation of the Tibia and Femur.
- **Slow running stride rate** – this increases contact time with the ground, increasing load onto the lower extremity.

Classic Presentation

The first symptom of ITBS is a mild ache on the outside of the knee. Typically this ache does not hinder training, and the discomfort disappears before the next training session. If training continues without proper treatment, the mild ache at the outside of the knee may progress to an intense burning or stabbing sensation, which can then radiate to the outside of the thigh and calf. At this later stage of the injury, the speed and distance of the training runs are decreased because of extreme discomfort with flexion and extension of the knee, and the intensity of the pain may eventually force the athlete to stop training.

Runners with ITBS usually find that their lateral knee pain has gradually increased over the past few days to weeks. Downhill running seems to be the most aggravating, however running on flat ground also commonly reproduces their knee pain. While running, athletes find that the pain is worst when extending the leg just prior to heel strike. Some runners may also hear a squeaking sound with flexion and extension of the knee.

Self Care in the Prevention of Iliotibial Band Syndrome

1. For Cyclists:

- Poor cleat position causes ITBS when cleats are excessively rotated internally.
- Incorrect saddle height: the saddle height should be set so that your legs are almost fully extended (about a 15 degree angle at the knee) at the bottom of each pedal stroke.
- Saddle positioned too far back causes a tightening of the IT Band.
- High gearing ratios and excessive hill work causes overstraining of the IT Band.

2. For Runners:

- Avoid training on uneven surfaces, as the down leg would be predisposed to the development of Iliotibial Band syndrome.
- Avoid adding many down hills to training runs.
- Replace running shoes before they have lost their shock absorbing capabilities. High mileage runners should alternate between two pairs of shoes during their training program (one to be used as their “training” pair, the other to be used only once a week as their “control” pair).
- Slowly increase training mileage.
- After a run, stretch and then ice the outside of the knee for 20 minutes.
- Include a proper strength training and stretching program to improve stabilization of the knee joint – be sure to especially focus on strengthening and stretching the hip abductors.
- Try cross training with swimming, biking and the elliptical machine. This will maintain aerobic capacity and help in the prevention of Iliotibial Band syndrome.

- **HAVE YOUR FEET EXAMINED!** ITBS can be caused by simply running in a shoe that is not adequate in controlling your pronation. Upgrading your footwear to a shoe that offers more motion control may be the solution to your knee pain. A semi-rigid orthotic may be indicated for athletes who have excessive or unbalanced pronation as well as those with high arches. Both of these conditions can increase the risk of developing Iliotibial Band syndrome.

Conservative Treatment Options

1. **Rest** from any activities that require repetitive knee flexion and extension.
2. **Ice** the lateral aspect of the knee at least twice a day for 15 minutes to control inflammation.
3. **Specific deep tissue therapy** to the muscles of the thigh and leg to free up soft tissue motion.
 - Once the inflammation is addressed the cause of the ITBS must be corrected. Primary muscles used in any activity repetitively require specific attention. If not, they will slowly tighten due to an accumulation of unwanted toxins and a reduction of normal blood flow (nutrition and oxygen) to the muscle. This is why specific soft tissue treatments like **Active Release Techniques** are so effective with ITBS. This soft tissue therapy removes the scar tissue thereby restoring the proper blood flow and oxygenation to the tissue. None of the OTC anti-inflammatories do this! If the scar tissue is not removed, the problem will never really be corrected.
 - Areas to be treated must include not only the IT Band, but the Tensor Fascia Lata, Gluteus Medius/Minimus, Piriformis, Vastus Lateralis, Biceps Femoris, and occasionally the calves and plantar surface of the foot.
4. **Ultrasound** and **electric muscle stimulation** to restore normal muscle tone, decrease pain, and absorb scar tissue.
5. Prescription of a **shoe with more motion control** for a runner with flat feet/moderate pronation, a **shoe with more cushion** for a runner with high arches/moderate supination or a **semi-rigid orthotic** for individuals with excessive or unbalanced pronation or supination.
6. **Specific joint manipulations** to any fixations found in the lower back, hip, knee and foot to restore proper joint motion of the entire lower kinetic chain.

Other Treatment Options – CAUTION!

- **Cortisone Injections** – Cortisone will help reduce inflammation however the root cause of your ITBS will still need to be addressed (modification of training, shoe wear, running gait, muscle tension/balance, etc). Also, be aware that cortisone is a catabolic substance (i.e. breaks down tissue) and has been shown to cause ligamentous laxity.
- **Surgery / Iliotibial Band Release** – for athletes that do not respond to conservative management, this is a last resort option.