



# ITB Friction Syndrome



Dr Keith Holt

*The ilio-tibial band is a long musculo-tendinous unit, coming from the iliac crest of the pelvis, and reaching past the knee to the tibia. When the knee bends, this tendon moves across the lateral femoral epicondyle, which is a prominent bony lump on the side of the knee. In some instances, but particularly in runners, the rubbing of this tendon over that bony lump can lead to local pain and inflammation. The treatment for this is usually a stretching program to loosen the tendon up a bit, and this is often combined with a cortisone injection to help relieve the local inflammation and swelling. If those treatments fail however, then division of part of the tendon, so that it no longer rubs over the epicondyle, is usually curative.*

## What is the ITB?

The ilio-tibial band is a muscle tendon unit that stretches all the way from the pelvic rim (the ilium) right down past the actual knee joint to the tibia (see diagram on right). Its main role is to abduct the hip (push the leg out sideways), and hence, it is important for sports that employ this motion (skiing, roller blading and ice skating). For most other activities, it acts to stabilise the leg, and it helps support the lateral side (the outside) of the knee.

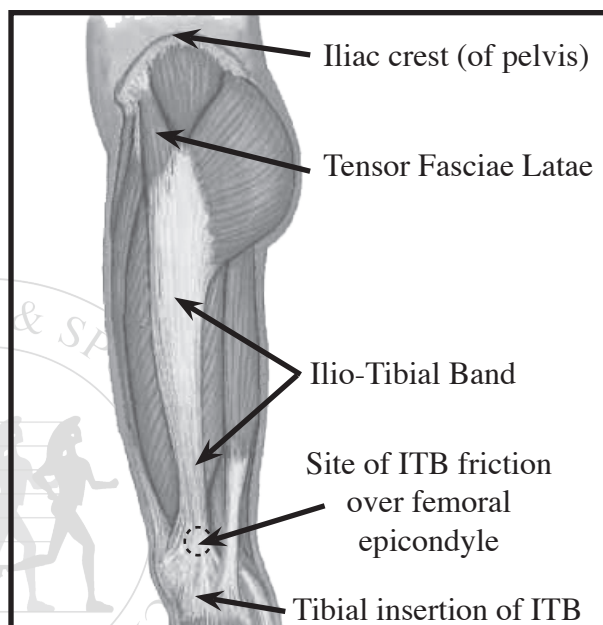
## ITB function

The approximate axis of rotation of the knee is a line through the origin of the medial and lateral collateral ligaments. These ligaments come from small lumps on each side of the distal femur, the so called medial and lateral femoral epicondyles (epi meaning outside; i.e. bony prominences outside the femoral condyles). The lateral one is quite prominent and, in most people, is easily felt just under the skin. The ilio-tibial band, the tendonous extension of the tensor fasciae latae muscle above, passes over the top of this lump. As the knee extends, this tendon passes forwards (anteriorly) over the epicondylar lump. With flexion (knee bend), the tendon moves backwards (posteriorly) over the epicondyle (see bottom diagram on right).

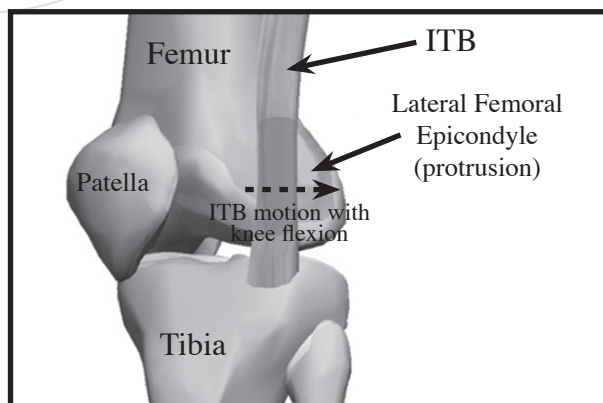
The occurrence of major contact of this tight tendon, is at about 20° - 30° of flexion. As one can imagine therefore, repetitive activities like long distance running, where the knee is taken through this range frequently, and where the muscle and tendon are contracting to stabilise the knee (and hence are tight) are the major causes of this overuse injury. As expected, it is more common in thinner individuals, and those with more prominent femoral epicondyles.

## Symptoms

The pain is very specific to the lateral femoral epicondylar region, and it is unusual that it is referred elsewhere. Usually, the area is focally tender, and applying local pressure to the area whilst taking the knee through a range of motion, will reproduce the pain. It is a problem that develops with time and with increased training and running distance.



**Left Leg from the side  
Showing TFL muscle and ITB**



**Left Leg model  
Showing ITB crossing epicondyle**

Often it is present at the start of a run, but then improves as the body warms up, only to be present again later in the run, or afterwards. With time, the pain free range gradually becomes less until, eventually, no significant running can be undertaken.

### Conservative treatment

This is an inflammatory problem. The tendon repeatedly rubs on the underlying bony lump, and the intervening bursa becomes more and more inflamed: subsequently becoming scarred up. Because it is an inflammatory problem, it is helped by rest and anti-inflammatory medication. It is also helped by local heat and massage.

The long term treatment is to try and loosen the muscle tendon unit up by stretching it, something that most sports therapists are good at. In addition to this, shoes and gait are important. Changing the arch support in a shoe, or indeed, changing shoes, can alter the mechanics of the leg such that the rubbing is decreased. Sometimes this is easily seen and adjusted but, occasionally, video assessment of running technique may be needed. Again, some of the Sports Physiotherapists are able to do this analysis, often in conjunction with a Sports Physician and / or Podiatrist.

The other option which is very effective, is to inject some cortisone (which is a strong anti-inflammatory) under the tendon and into the bursa. Not only does this give good, and relatively rapid, relief, it can also confirm that the diagnosis is correct. Such an injection is usually undertaken in conjunction with a stretching program as described above. This combination is regarded as the main stay of treatment for this condition, and is successful in the vast majority of cases: ultimately enabling return to full sport, including running.

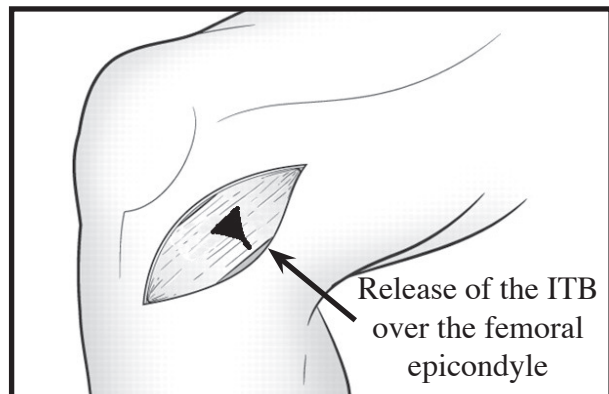
If an injection into the area does not give any relief, then neighbouring problems such as a lateral meniscal tear, or popliteal tendonitis, need to be looked for. An MRI is often helpful in that quest.

### Surgical treatment

Surgery for this condition has evolved over time, with increasingly more favourable results. The procedure that is performed most often, was developed in South Africa, where this condition became common because of the Comrades Marathon. This ultra-marathon resulted in large numbers of runners presenting with this problem, of which, a good many were not responding to conservative treatment. From that experience, a procedure developed that is now regarded as highly successful, and requires only a relatively short period of downtime from activity.

The main part of the surgical procedure is a tenotomy (tendon cut) whereby some of the posterior 2/3 (back part) of the tendon is cut transversely (see diagram opposite). This leaves an intact anterior 1/3 (front part) which, even in flexion, does not ever pass across the femoral epicondyle.

The procedure leaves a defect in the tendon such that, as the knee bends, the epicondyle (the bony lump on the side of the femur) sits in the defect throughout the range of motion. Sometimes the split needs to be made into a small hole rather than just a split, but this can be assessed at the time of surgery. Either way, there is some intact tendon both in front of, and behind the epicondyle, such that the function and strength seem to return to normal.



**Left knee - Showing ITB release**  
**Note that the normal incision is much smaller than the window shown**

The hole does heal over, but with softer, more pliable tissue, that tends not to give rise to recurrence. For most people therefore, this seems to be a curative procedure, usually allowing a return to normal sport and activities within a couple of months.

The surgery is done as a day case procedure, usually with a short general anaesthetic. It is done through a small (2 - 3 cm) incision (much smaller than the one shown in the diagram above) and just requires a small dressing for a few days. The leg can be walked on immediately, but it is best to rest it for a week, and not to walk around too much early on. This decreases the risk of bleeding and bruising, which slows down both the immediate recovery, and the eventual return to sport.

### Complications of surgery

**Bleeding (bruising)** is the single biggest problem of this surgery. The bursa underneath the tendon can be very inflamed and vascular and, as such, if it needs partial removal to get rid of the pathologic portions, then this can lead to the possibility of unusual bleeding and bruising. This is rarely a major problem unless there is an underlying bleeding tendency, but it can lead to local pain and swelling: and hence to a slower recovery.

**Swelling** is often seen, but is rarely a problem. The area of the surgery is just below the skin with bone immediately underlying it: hence, there is nowhere for the swelling to hide. This means that even a small amount of swelling will be noticed. The reality however, is that this is more a problem of the swelling being visible, than it is a real problem. It is also only temporary.

**D.V.T. and P.E.** (deep venous thrombosis and pulmonary embolism) are considered only a very small risk in this procedure given how minor it is. Hence, only those at risk are thought to need prophylactic anti-coagulation.

**Persistent pain** is very unusual, and would lead one to consider that another problem was either the sole cause of the pain, or was co-existing.

**Loss of strength and performance** would be considered very unusual. This procedure reliably provides good pain relief, and restoration of normal function.

**Further information** can be obtained on this and other topics at: <https://www.keithholt.com.au>