



## PRACTICE

## 10-MINUTE CONSULTATION

## Iliotibial band syndrome

James Pegrum *orthopaedic fellow*<sup>1</sup>, Alex Self *consultant radiologist*<sup>2</sup>, Nick Hall *general practitioner*<sup>3</sup>

<sup>1</sup>Nuffield Orthopaedic Centre, Oxford, UK; <sup>2</sup>The Newcastle upon Tyne Hospitals NHS Foundation Trust, Freeman Hospital, Newcastle upon Tyne, UK; <sup>3</sup>Leckhampton Surgery, Cheltenham, UK

## What you need to know

- Iliotibial band (ITB) syndrome (ITBS) is the most common cause of lateral knee pain in runners, but may be provoked by other activities such as swimming, rowing, cycling, and hiking
- Activity modification and ITB stretches can be recommended in primary care
- Consider referral to physiotherapy for biomechanical and sport specific rehabilitation when severe or not responding to initial management

*A 25 year old woman has recently started training for her first marathon. When she increased her typical running distance from 10 to 18 km she started getting lateral knee pain and tightness. It occurs at the same distance each time she runs, and is worse when she runs downhill.*

Iliotibial band (ITB) syndrome (ITBS) affects 7-14% of runners,<sup>1,2</sup> although it is associated with a variety of activities including cycling, field sports, hockey, rowing, swimming, hiking, and basketball.<sup>1</sup> The pain or tightness typically affects the lateral knee but can radiate along the length of the ITB, presenting with hip or thigh pain (fig 1). ITBS is usually caused by biomechanical abnormalities, often combined with overtraining, although it can develop with quite modest levels of exercise. This article outlines how to diagnose ITBS in someone presenting with lateral knee pain, and offers a practical guide to initial management in primary care.

## What you should cover

Understanding the location and pattern of the pain and biomechanics is important to evaluate and treat the condition. The assessment and differential diagnosis is summarised in the table .

## History

You might ask

*Where is the exact site and what activities (both sport and sedentary) exacerbate the symptoms? (table )*

*What sports do you participate in? Is the pain relieved at rest? Has your training intensity or pattern changed recently? The pain and tightness in ITBS occurs at a recurrent and predictable time course during activities, typically running. It is relieved by rest. Cambered circuits and downhill running are particularly aggravating.*

Ask about locking, giving way, or joint swelling. These are mechanical features of intra-articular pathology such as osteoarthritis, meniscal pathology, or cruciate ligament injury, and do not occur in ITBS.

*Do you use or have you been advised to use orthotics? Anatomical factors such as foot over-pronation increase lateral knee pressure and can be corrected with orthotics.*

## Examination

- Assess the person standing upright for any swelling, deformity, effusion, or skin changes. The presence of an effusion is a key distinction from ITBS, and suggests intra-articular pathology.
- In someone with ITBS there is classically tenderness 2-3 cm above the lateral joint line, with crepitus over the lateral femoral epicondyle during 20-30° of knee flexion. A single leg squat may reproduce symptoms during early knee flexion.
- Check for joint effusion or lateral joint line tenderness (the presence of which means ITBS is unlikely); meniscal provocation tests are negative.
- Provocation tests, such as combining Ober's and Noble's tests, aim to reproduce pain on compression of the ITB over the lateral femoral epicondyle (box 1, fig 2).
- Biomechanical assessment is helpful in tailoring management advice, but may not be feasible in primary care. This involves assessing muscle imbalance, tightness, and limb alignment.

- Subtle gluteal weakness can be assessed with the patient lying in the lateral position. Examine the power of hip abduction in both legs.
- Check for leg length discrepancy, which can also increase ITB tightness.

#### Box 1: Provocation tests for ITBS (fig 2)

**Ober's test** assesses the tightness of the ITB. Lay the patient on the unaffected side and hold the knee at 30° of flexion. The examiner extends and adducts the hip and feels for involuntary extension of the knee. Knee extension during hip extension and adduction confirm ITB tightness. A positive Ober's test can also occur with abductor muscle tightness.

**Noble's test** aims to compress the ITB over the lateral femoral epicondyle. This is achieved by applying direct pressure to the ITB over the lateral femoral epicondyle at 30° of knee flexion. The friction pain can then be reproduced while flexing and extending the knee. If the test is positive, a further useful modification is to lift the leg from hip adduction back to neutral, while maintaining the direct lateral epicondyle pressure, and then passively flex and extend the knee. Patients with ITBS will describe marked lessening of the pain as the ITB is detensioned. The sensitivity and specificity of these tests are unknown.

Combining the Ober and Noble compression tests into a singular special test may better differentiate ITB related pain from other causes of lateral knee pain. Begin with the patient in the Ober's position with the knee flexed to 90°. Passively extend and flex the knee, while applying direct pressure over the lateral femoral epicondyle. A positive test occurs with pain. In our experience, the combination of the two tests raises the clinical reliability of the test, although often ITBS symptoms will only come on after some duration of running, therefore a few repetitions of passive knee flexion in the clinic may not provoke symptoms.

## What you should do

For those with a typical history of ITBS and mild to moderate symptoms, offer initial self care advice. This includes activity modification (reducing or stopping exercise sessions to avoid the pain), stretching, simple analgesics, and addressing training errors (avoiding running downhill or running on cambered circuits). Forty four per cent of people with ITBS can expect to return to sport at eight weeks and 92% by six months.<sup>3</sup> We recommend a shared decision making approach to management, particularly in light of the limited evidence base for treatments, mostly from small trials with methodological limitations.<sup>4</sup> We have produced an information leaflet (see supplementary material) which can be offered to patients.

## Advice for patients

Explain that the pain is thought to be caused by the ITB rubbing against the bone above the knee, when the knee bends. The problem usually only starts when people run or train harder; altering how you train while strengthening some of the muscles around the hip should help.

Advise activity modification, stretches, and correction of training errors:

- Suggest avoiding all pain provoking exercises for up to six weeks, depending on severity and the patient's goals
- Simple analgesics and ice can be offered if pain relief is required
- Five ITB stretches should be done three times a day and continued until resolution of symptoms (fig 3)
- When they return to exercise, reducing running distance and avoiding running on hard surfaces will reduce the strain on the ITB, as will alternating running direction on circuit tracks, and avoiding running downhill<sup>4,5</sup>
- People with ITBS can often undertake high speed interval training without aggravating this condition, as knee flexion angles are different during fast running, reducing ITB friction.<sup>6</sup> Reducing longer, slower runs and replacing them

with interval sprint training is often part of management in competitive runners

- Replacing damaged, ill-fitting, and old shoes may help as these can also increase ITB friction.<sup>7</sup>

## Referral

- If initial self care management is not effective, consider referral for physiotherapy. This will focus on correcting biomechanical errors, improving ITB tightness with stretching of the ITB, fascia lata, quadriceps, and strengthening of the hip abductors.
- We suggest that further investigations, such as ultrasound or magnetic resonance imaging, be considered only after six months of physiotherapy and adjustment of training errors.
- Corticosteroid injection at the level of the lateral femoral epicondyle can be considered following eight weeks of stretches and activity modification.<sup>8</sup>
- Surgery is rarely considered, and only if symptoms persist for longer than 6-12 months. This may involve distal release of the ITB, removal of inflamed tissue, or z-lengthening of the ITB.<sup>9,10</sup>

### Education into practice

- Introduce and practise stretching regime with colleagues during a clinical meeting
- Bookmark the information sheet on bmj.com so you can easily print it out or email it to patients
- Use the [table](#) during your next consultation with someone with lateral knee pain, to help you reach a provisional diagnosis together

### Patient involvement

Figures in this article are from a patient information leaflet that accompanies the article on bmj.com. Patients were involved in testing the leaflet and providing feedback to the authors.

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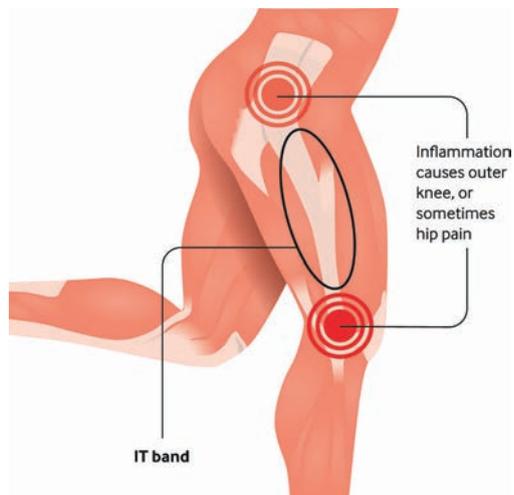
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## Table

**Table 1 | Common causes of lateral knee pain**

Condition	Location of pain	History	Signs
Iliotibial band syndrome	2-3 cm above lateral joint line (over the lateral epicondyle)	Outer knee pain and tightness occurring after a predictable time or distance during activity	Positive Ober's and Noble's tests
Lateral meniscal or cartilage injury	General lateral ache localised to joint line on examination	Sharp joint line pain aggravated by twisting with intermittent knee locking	McMurray's or meniscal provocation tests reproduce pain
Patellofemoral joint syndrome	Lateral border patella	Anterolateral knee pain exacerbated by stair climbing. Those affected typically straighten their knee with prolonged sitting. A previous dislocation indicates instability	Reproduction of pain on compression of patellofemoral joint
Fat pad impingement syndrome	Anterolateral joint line pain	Anterior knee pain exacerbated by extension	Hyperextension of the knee or compression of the fat pad reproduces pain
Biceps femoris tendinopathy	Posterolateral knee pain usually of delayed onset, unlike ITBS which occurs during exercise	Lateral hamstring and tendon pain, especially after exercise or the next morning. Associated with acceleration and deceleration activities. Hamstring tightness contributes to the condition	Pain on resisted flexion and palpation of the biceps hamstring
Lateral compartment arthritis	Advanced lateral compartment arthritis may present with valgus knee position and lateral joint line pain	Stiffness particularly after periods of rest. Pain exacerbated by activities and milder ache at rest	Effusion and stiffness with presence of crepitation

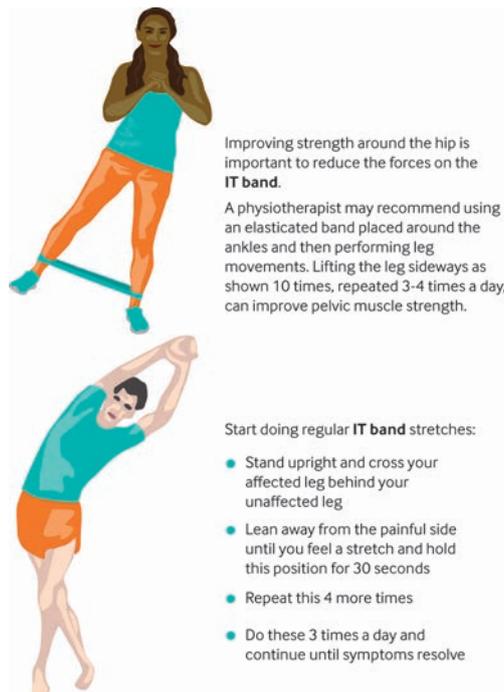
## Figures



**Fig 1** Iliotibial band syndrome



**Fig 2** Provocation testing for ITBS



**Fig 3** ITB stretches. Crossing the legs and leaning away from the affected side places the ITB under maximum stretch. Hold for 30 seconds, and repeat five times, three times a day