

**THE TREATMENT OF ILIOTIBIAL BAND FRICTION SYNDROME**

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Johannesburg, South Africa***ABSTRACT**

Iliotibial band friction syndrome is a common cause of knee pain in long distance runners. The pain is caused by friction of the iliotibial band over the lateral epicondyle of the femur. Two hundred and twenty one cases were seen in a two year period. Tenderness over the lateral epicondyle associated with pain at 30 degrees of flexion on compressing the iliotibial band against the lateral epicondyle is diagnostic.

Conservative treatment consisted of treating the cause, mostly training irregularities and the local inflammation mostly with steroid injections and rest.

Nine cases failed to respond to conservative treatment and these were treated by surgical release of the posterior fibres of the iliotibial band.

Key Words: Injuries – Overuse, Knee, Distance Runners

**INTRODUCTION**

Iliotibial band friction syndrome is an overuse syndrome found in athletes especially long distance runners. It is found occasionally in other sport activities, e.g. cycling and skiing. It is caused by friction between the lateral femoral epicondyle and the iliotibial band during running. It was first well described by Renne (1975) although it was mentioned by Colson and Armour (1961). It is well known in Northern Europe (Orova 1978). The anatomy has been well described (Kaplan 1958) as have the clinical features (Renne 1975, Orova 1978, Noble 1978). Renne described 16 cases, Orova 88 cases and Noble 94 cases. In both Renne and Orova's cases treatment was conservative. Noble described surgery in five knees which failed to settle on conservative therapy. It is the purpose of this paper to detail the indications for surgery, technique and anatomical findings in nine cases, (four additional cases having been added since my previous paper.) In addition a diagnostic test which has been found to be positive in all cases will be described.

**MATERIALS AND METHODS**

In a two year period 221 cases of iliotibial band friction syndrome have been diagnosed in long distance runners. Nine of these cases failed to settle on conservative treatment and required surgery.

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**DIAGNOSIS**

The diagnosis of iliotibial band friction syndrome is suggested by pain on the outer side of the knee in a long distance runner. The site of the pain is usually just above the lateral joint line of the knee but may radiate down the iliotibial band to just below the knee. It usually results from training error and is aggravated by downhill running and is relieved by walking with the knee held in extension. The pain is usually not affected by other non-continuous running sports, e.g. tennis or squash.

Examination reveals tenderness over the lateral femoral epicondyle. This site of tenderness may not be sufficient to differentiate it from other extra-articular causes of lateral knee pain, e.g. popliteus tendonitis or bicipital tendonitis.

The diagnosis may be confirmed by a compression test. With the knee flexed to 90° pressure is applied to the lateral epicondyle or one to two centimeters proximal to it and the knee gradually extended. At 30° flexion the patient will complain of severe pain over the lateral epicondyle which is the same pain he gets when he runs. (Fig 1).

**TREATMENT**

The principle of treatment is to treat the cause and the result. In most cases the cause is training error. In South Africa the common problem is excessive distances, either in a single run or a rapid increase in weekly training distance. Cessation of training would usually be the answer but unfortunately most long distance runners would usually give up the doctor rather than stop running. A reduction in training is usually acceptable. As

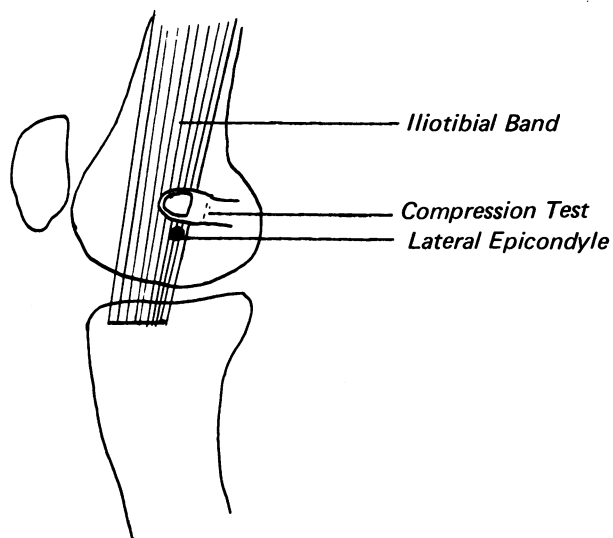


FIGURE 1

most overuse injuries are due to a failure of the body to adapt to the stress of running, reduction of training will usually allow such adaptation to take place. Occasionally if the inflammatory response has been severe, permanent damage with scarring may ensue. In these cases complete rest is mandatory. There is also a strong feeling among runners that one can "run through the pain". This is sometimes possible but as there is always a danger of permanent damage it should be discouraged.

Interval running, i.e. walking followed by running at variable speeds provided there is no pain, is encouraged. If pain is present at the outset when running, then no running is allowed. Distance is reduced by half and provided there is no return of pain gradual progression is advised. Should the runner not be particularly dedicated then total cessation of running is advised for three weeks as I did with my own injury. Sports involving non-continuous running does not usually aggravate the condition and thus is therefore encouraged to assist cardiovascular fitness.

If the runner does continue to run, running on flat surfaces with some cushioning, e.g. grass, is advised. In view of the fact that overstriding may be a contributing aetiological factor the runner is advised to shorten his stride.

Obvious biomechanical abnormality of the foot is treated with orthoses, (Subotnick, 1975). The resultant inflammation caused by the friction is treated by oral anti-inflammatory drugs, local steroid injections and ice. Some of the cases have also had physiotherapy with ultrasound and/or shortwave diathermy.

Injections of long acting steroid are given at two weekly intervals into the site of maximum tenderness until the pain disappears. However, if three injections have been given and the pain still continues, cessation of all running is advised for a four to six week period depending on the severity of the pain.

Should there be a recurrence of pain on resuming running after the rest period, surgery is advised.

## SURGERY

The surgical technique is based on the fact that at 30° flexion (the position at which pain occurs) the posterior portion of the iliotibial band overlies the lateral epicondyle. This was initially found clinically and subsequently confirmed at surgery. (Figs 2, 3 & 4).

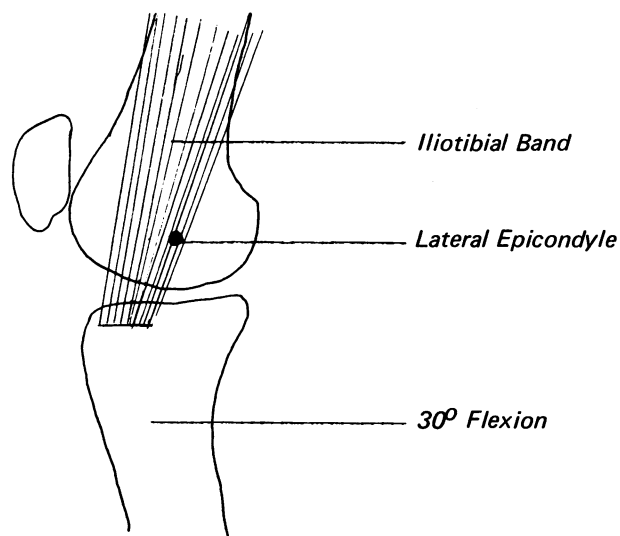


FIGURE 2

Initially, on my first case, the posterior 2 cm of the iliotibial band overlying the lateral epicondyle was cut across the line of its fibres leaving a knee gap over the prominence in 30° flexion. The prominence was excised almost completely. Subsequently only the fasciotomy was performed.

## SURGICAL FINDINGS

In eight of the cases a well defined edge of the posterior part of the iliotibial band was found. In one case the band appeared continuous with the intermuscular septum but at 30° of knee flexion a ridge at the site of the would be posterior edge was seen with the more posterior fibres dipping off medially almost at right angles to the ridge. In full extension the iliotibial band

curved smoothly into the intermuscular septum. Deep to the band a second layer of tissue was found which was often inflamed both micro- and macroscopically. Histologically this was fibrous tissue with no evidence of true bursal tissue. In three cases a fibrinous exudate was found deep to this layer. The tissue overlying of lateral epicondyle was also inflamed to a variable degree.

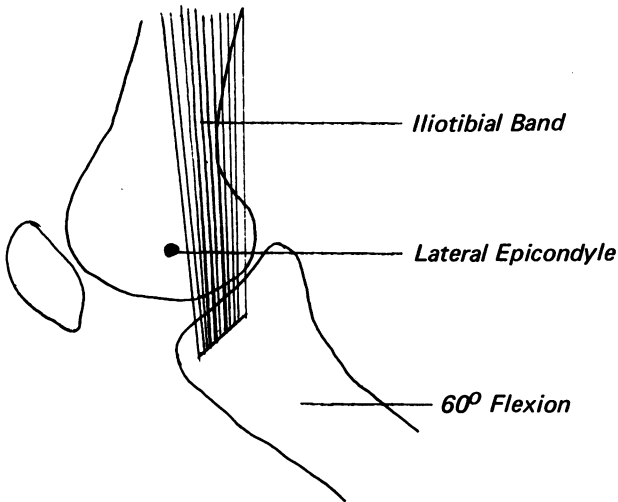


FIGURE 3

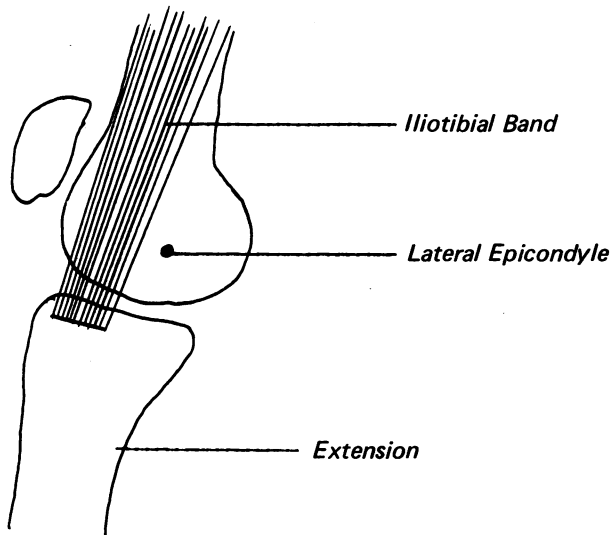


FIGURE 4

## RESULTS

Of the 221 cases seen over a 2 year period only 73 cases were followed up. These were from my first series of 100 knees. Only 30 of these settled on the initial regime of a single injection of steroid locally and a reduction in the training programme. A further 21 cases settled following the second injection two weeks later. Eight cases settled following the third injection. The remaining 14 cases rested for four to six weeks. Nine of these cases had no recurrence upon resuming training. Five cases in the series consented to surgery. Subsequently four more cases have had surgery after failure to settle on a conservative regime. Follow-up in these nine cases has been from two months to sixteen months. Eight of the cases have returned to running. One case with a follow-up of four months has been unable to return to running owing to pain. Clinically, however, he now has no signs of iliotibial band friction syndrome. One case ran a 32 kilometre race three weeks after surgery without pain. There has been no recurrence. One patient developed the symptoms of iliotibial band friction syndrome on the other knee nine months after the first operation. This settled on conservative treatment. With the exception of one knee all those operated upon were left sided although there was a fairly even distribution of knees with this condition. This may not be statistically significant owing to the small numbers in the series. This may be related to the camber of the road with more stress being placed on the left knee because of running on the right hand side of the road, (against the traffic) in South Africa.

## DISCUSSION

Renne (1975) treated his cases with rest and anti-inflammatory agents with effective relief in all. Orova (1978) also only used conservative treatment. He states that fourteen became chronic or recurred during the follow-up period but most remained bearable with local steroid injections and physiotherapy. His conservative regime was similar to the one outlined above but he only used local steroid injections 28 times. He also used vasodilatory agents topically before training. The poorer results of conservative treatment in this series may well be due to the fact that many of these runners were training for the Comrades Marathon (90 kms) which has become South Africa's national race. In 1978 there were over 3,000 entrants but many more were not accepted because of the qualifying time. Thus ultra-distance running would seem to increase the severity of the condition.

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### BOOK REVIEW

*Title:*           **TOWARD AN UNDERSTANDING OF HUMAN PERFORMANCE**  
*Author:*        Edmund J. Burke  
*Publisher:*     Mouvement Publications, Ithaca, New York. 1977   92 pages   26 papers.   £2.95

The lazy man's easy way of keeping up to date with published work in his field is to let someone else collect the material for him, and this Dr. Burke has done, in a most useful and readable way. The 26 collected papers on exercise physiology are by 24 different authors, which obviously leads to the usual lack of conformity of style, depth of study, tables and illustrations, and especially a lack of standardisation of printing the references after each paper. The papers have been selected well, 9 being reprints from other journals, but more editing could have been done, and there is no index. I found several points most interesting and instructive.

The first paper is by the editor, and gives an excellent review of the circulation and respiration, and the changes that occur in exercise and training. It provides a useful revision of exercise physiology and defines terms and concepts used in later papers. Londeree gives an interesting discussion on aerobic and anaerobic training, including the role and fast- and slow-twitch muscle fibres, that is obviously an edited version of a lecture to knowledgeable coaches; Counsilman continues this section on muscle training by discussing the rationale of isokinetic training and Dorothy Harris describes secondary amenorrhoea in athletes, suggesting that the lack of fat in the training athlete naturally unsuits her for pregnancy until she stops training and allows her body to take up its natural endomorphy. She dispels several "MCP" theories about women's physical inferiority. Jetté suggests the use of the tape measure for assessing the amount of fat that has to be lost in overweight athletes, rather than relying on scales that fail to differentiate between fat loss and dehydration. Although the book is subtitled "Reading in exercise physiology for the coach and athlete" it is really more suitable for the physician and sports scientist.

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