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ILIOTIBIAL BAND SYNDROME

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Iliotibial band syndrome (ITBS) is the most common cause of lateral knee pain in runners, with an incidence as high as 12% of all running related overuse injuries (Noble CA: Iliotibial band friction syndrome in runners. Am J Sports Med 1980;8 (4):232-234). Unlike many overuse injures, ITBS shows no mercy and affects seasoned runners almost as much as beginners. By gaining an understanding of the anatomy of the iliotibial band (ITB) and causes of ITBS, the athlete may be better equipped to run clear of its grasp.

ANATOMY AND SYMPTOMS: The ITB is considered a continuation of the tendinous portion of the tensor fascia latae muscle in the hip and is indirectly attached to parts of the gluteus medius (side of hip), gluteus maximus ("buttocks" muscle), and vastus lateralis (outside of quadriceps) muscles and inserts on the outside of the knee. Its main purpose is to help the function of two muscles in the hip, the tensor fascia latae and gluteus maximus, and to promote lateral stability of the knee. It moves anterior to the lateral part of the knee as the knee straightens and slides posteriorly as the knee bends. Biomechanical studies of runners who had ITBS found that the band rubs on the lateral aspect of the femur just after the foot strikes the ground when the knee is bent about 30 degrees. Recurrent rubbing can produce irritation and subsequent inflammation and pain on the outside of the knee. The pain may also radiate up the side of the thigh to the hip. Swelling is not usually present and motion is usually normal but but with the feeling of "tightness". Snapping may also be present as the band passes over the lateral condyle of the femur.

ATTRIBUTING FACTORS: Many factors have been implicated in the cause of ITBS. One major cause of an ITB injury is too much pronation in the foot and ankle. This happens because the ITB's attachment to the front and outside portions of the leg tries to give lateral stability to your knee and to resist internal roation of your lower leg. The resultant pain comes from the ITB's attempts to resist the repeated excessive internal rotation of the lower leg with overpronation. The ITB is also very susceptible to the forces from underpronation when the foot moves too little and doesn't absorb much shock when it strikes the ground. With a foot that underpronates, the ITB is subjected to more shock than normal, which causes inflammation and irritation at the head of the fibula. Other attributing factors to ITB syndrome include but are not limited to: a high arched foot, increase varum of the leg (bowlegged), flexibility imbalance, leg length discrepancy, hip abductor weakness, running on hard surfaces, running on crowned

roads, worn out running shoes, running too many track workouts in the same direction, excessive downhill running or simply running too many miles.

PREVENTION: ITBS can be prevented by decreasing your mileage or taking a few days off when you initially feel pain on the outside of your knee and treating it with ice and anti-inflammatory medication. No, this doesn't mean resting after 6 months of 80-90 mile weeks of running but after the first 1-2 runs of "something not quite right". This also means you do not go out and ride your bike 100 miles to make up for your lack of running as the repetitive motion of your knee while cycling may also lead to ITBS problems. If you don't give yourself a break, ITB syndrome can become chronic and lead to other overuse injuries. Further prevention tips include proper warm up, wearing proper shoes and replacing frequently, running in the middle of the road where it's flat (make sure a car isn't coming at you in the opposite direction!), avoiding concrete surfaces (the boardwalk is beautiful but hit the bike path instead), changing directions repeatedly when running on the track (for example, warm up and cool down in the opposite direction you do your intervals), and stretching (yes, the dreaded "S" word). It is best to seek professional guidance to determine the proper stretching program for your limitations but a few ITB specific stretches are the following assuming the right leg is involved:

1. Sitting on the floor with your left leg out straight, put your right leg over the left with your foot flat at approximately knee level. Pull your right knee towards your left armpit and use your left hand to grab your foot/ankle and rotate it towards your buttocks to internally rotate your tibia.
2. Lie on the left side of the bed close to the edge and extend your right leg back behind you, letting it drop off the edge of the bed towards the floor as far as your flexibility allows.
3. Lie on your back with a towel or rope around your foot. Keeping your knee straight, bring your right leg across your body to the left as far as possible.
4. While standing, cross your right leg behind your left so your feet are 6-12 inches apart and bend forward at the waist while leaning towards the left. Another option is to place arms overhead and lean to the left, creating an arc from your hands to your ankles.

Hold each stretch 10-30 seconds and repeat 2-5 times. You may feel the stretch more towards the hip than by the knee where you are experiencing the pain. It is equally important to stretch other muscles that may lead to ITB such as the iliopsoas, hamstrings, quads, and calf muscles to name a few.

TREATMENT: If pain persists for a week after taking time off and treating yourself with ice and anti-inflammatory medication, it is best to seek professional guidance for a full screening to determine the cause and proper course of treatment. Modalities such as ultrasound and electrical stimulation with topical medication may be indicated to reduce pain and inflammation. If a high arched foot is observed, orthotics may be prescribed. If increased varum of the knee is discovered, a lateral heel wedge may be indicated. If an error is found in training, it should be addressed and avoided in the future. Once the acute inflammation has subsided, any problems with flexibility should be addressed as well as any myofacascial restrictions. Identifying and eliminating these myofascial components should precede strengthening and muscle re-education. Soft tissue treatment usually eliminates a significant part of the pain pattern and allows for a

more successful treatment of ITBS. Problematic trigger points can be managed with deep tissue therapy and a foam roller for follow through at home for self- myofascial release. Progressive strengthening exercises should be initiated once flexibility and myofascial restrictions are resolved and may include the following:

1. Side-lying leg lifts: Lying on your left side with your left knee bent, lift your right leg up towards the ceiling to a 30-45 degree angle. Keep your leg in line with the rest of your body. If you find that your hip keeps rolling back, perform in front of a wall so the back of your leg and buttocks is against the wall.
2. Step down exercise: Stand on a step facing the bottom of the step. Slowly step down with your left leg, while keeping your pelvis level.
3. Pelvic Drop: Stand on the edge of a step with your right foot parallel to the edge of the step and your left foot off the edge of the step, holding on for balance as needed. Slowly lower the left side of your pelvis toward the floor by shifting your body weight to the inner part of your right foot, creating a swivel action at the hip that lowers the foot by a couple of inches. Return to the starting position by contracting the gluteus medius on the right side.

Start with one set of 15-20 repetitions and build up to 3X30 repetitions by adding 5 repetitions each day, providing you are not experiencing any soreness.