



Iliotibial Band Syndrome (Runner's Knee)

DESCRIPTION

The iliotibial band is the tendon attachment of hip muscles into the bone on the upper part of the lower leg (tibia) just below the knee to the outer side of the front of the leg. Where the tendon passes the knee (lateral femoral condyle), there is a bursa sac between the bone and the tendon. This tendon moves over a bony bump at the outer knee as it passes in front of and behind it. The bursa functions like a water balloon to reduce friction and wear of the tendon against the bony bump. In this condition, overuse causes excessive friction at this bump, resulting in inflammation and pain of the bursa (bursitis), tendon (tendinitis), or both.

COMMON SIGNS AND SYMPTOMS

- Pain, tenderness, swelling, warmth, or redness over the iliotibial band at the outer knee (above the joint); may travel up or down the leg
- Initially, pain at the beginning of exercise that lessens once the muscle is warmed up; eventually, pain throughout the activity worsens as the activity continues; pain may cause the athlete to stop in the middle of training or competing.
- Pain that is worse when running down hills or stairs, on banked tracks, or next to the curb on the street
- Pain that is felt most when the foot of the affected leg hits the ground
- Possibly, crepitation (a crackling sound) when the tendon or bursa is moved or touched

CAUSES

Iliotibial band syndrome is caused by excessive friction of the iliotibial band and the underlying bursa as a result of repetitive knee-bending activities. This is an overuse injury, although direct trauma to the outer knee may cause the bursa to get inflamed. Often the deceleration of running down hills may lead to excessive friction.

FACTORS THAT INCREASE RISK

- Sports with repetitive knee-bending activities, such as distance running and cycling
- Incorrect training techniques, including sudden changes in the amount, frequency, or intensity of training as well as inadequate rest between workouts
- Poor physical conditioning (strength, flexibility), especially a tight iliotibial band
- Inadequate warm-up before practice or play
- Bowlegs
- Arthritis of the knee

PREVENTIVE MEASURES

- Appropriately warm up and stretch before practice or competition.
- Allow time for adequate rest and recovery between practices and competition.
- Maintain appropriate conditioning that includes knee and thigh flexibility, especially at the iliotibial band; muscle strength and endurance; and cardiovascular fitness training.
- Use proper training technique, including reducing the mileage run, using a shorter stride, and avoiding running on hills and banked surfaces.
- Wear arch supports (orthotics) if you have flat feet.

EXPECTED OUTCOME

Iliotibial band syndrome is usually curable within 6 weeks if treated appropriately with conservative treatment and resting of the affected area.

POSSIBLE COMPLICATIONS

- Prolonged healing time if not appropriately treated or if not given adequate time to heal
- A chronically inflamed tendon and bursa that causes persistent pain with activity that may progress to constant pain
- Recurrence of symptoms if activity is resumed too soon, with overuse, with a direct blow, or with poor training technique
- Inability to complete training or competition

GENERAL TREATMENT CONSIDERATIONS

Initial treatment consists of medication and ice to relieve the pain; stretching and strengthening exercises, particularly of the iliotibial band; and modification of the activity that initially caused the problem. These all can be carried out at home, although referral to a physical therapist or athletic trainer for further evaluation and treatment may be helpful. An orthotic (arch support) for those with flat feet or a wedge for the shoe for those with tight iliotibial bands may be prescribed to reduce friction to the bursa. A knee sleeve or bandage may help keep the tendon and bursa warm during activity and may reduce some symptoms. Training techniques can be altered by lessening the amount of the training activity, changing the stride length, avoiding running on hills or stairs, changing the direction you run on a circular or banked track, or changing the side of the road you run on if you run next to the curb in the same direction all

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the time. Cyclists may need to change the seat height or foot position on their bicycles.

To treat the pain and inflammation, an injection of cortisone into the bursa may be recommended. Surgery to remove the inflamed bursa and part of the scarred or inflamed iliotibial band is usually only considered after at least 6 months of conservative treatment.

MEDICATION

- Nonsteroidal antiinflammatory medications, such as aspirin and ibuprofen (do not take for 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician, and contact your doctor immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Pain relievers are usually not prescribed for this condition, although your doctor will determine this. If pain relievers are prescribed, use them only as directed, and take only as much as you need.
- Cortisone injections can reduce inflammation.

HEAT AND COLD

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. It should be applied for 10 to 15 minutes every 2 to 3 hours as needed and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

WHEN TO CALL YOUR DOCTOR

- Symptoms get worse or do not improve in 2 to 4 weeks despite treatment.
- New, unexplained symptoms develop. Drugs used in treatment may produce side effects.

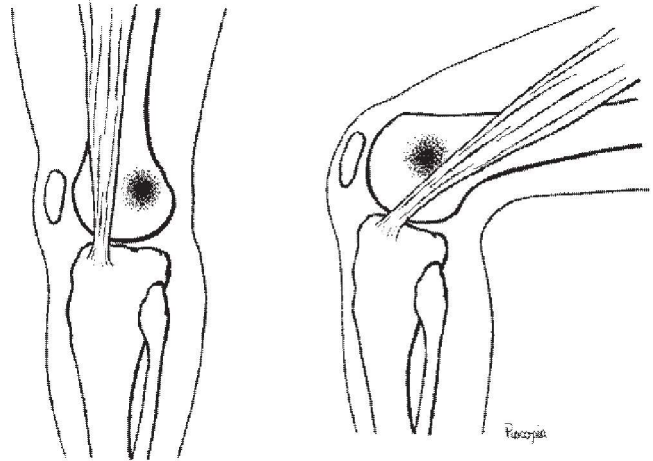


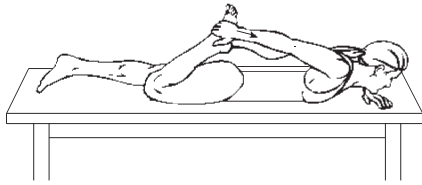
FIGURE 1 From Nicholas JA, Hershman EB: *The lower extremity and spine in sports medicine*, St Louis, 1995, Mosby Year Book, p 928.

RANGE OF MOTION AND STRETCHING EXERCISES

Iliotibial Band Syndrome

These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or your symptoms resolve. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation should be felt.



FLEXIBILITY • Quadriceps Stretch

1. Lie on your stomach as shown.
2. Bend your knee, grasping your toes, foot, or ankle. If your leg feels too tight to do this, loop a belt or towel around your ankle and grasp that.
3. Pull your heel toward your buttocks until you feel a stretching sensation in the front of your thigh. *Keep your knees together.*
4. Hold this position for ____ seconds.
5. Repeat this exercise ____ times, ____ times per day.



FLEXIBILITY • Iliotibial Band Stretch

1. Lie on your side as shown. The muscle and iliotibial band to be stretched should be on top.
2. With your hand, grasp your ankle, pull your heel to your buttocks, and bend your hip so that your knee is pointing forward as in drawing A.
3. Rotate your hip up so that your thigh is away from your body as shown and in line with your body. Keep your heel to your buttocks (B).
4. Bring your thigh back down and behind your body. Do not bend at the waist, and keep your heel pressed to your buttocks (C).
5. Place the heel of your opposite foot on top of your knee, and pull your thigh down farther. You should feel a stretch on the outside of your thigh near your knee-cap (D).
6. Hold this position for ____ seconds.
7. Repeat this exercise ____ times, ____ times per day.

STRENGTHENING EXERCISES

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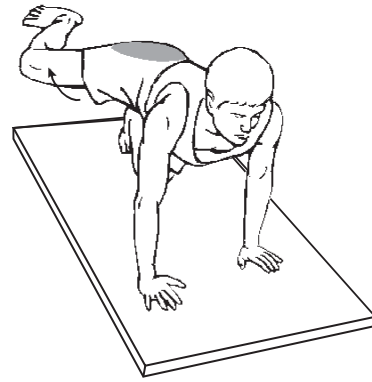
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- Strong muscles with good endurance tolerate stress better.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.



STRENGTH • Hip Abduction

1. Lie on your side as shown with your weak leg on top.
2. Bend your bottom knee slightly for balance, and roll your top hip slightly forward.
3. Lift your top leg straight up, leading with your heel. Do not let your leg come forward. Hold this position for ____ seconds.
4. *Slowly* lower your leg to the starting position.
5. Repeat this exercise ____ times, ____ times per day.



STRENGTH • Hip Abduction in Quadruped

1. Get on your hands and knees into the position shown.
2. Keeping your knee bent, lift it up and out to the side from the hip. Hold this position for ____ seconds.
3. *Slowly* lower your leg to the starting position.
4. Repeat this exercise ____ times, ____ times per day.