

A Pain in the Butt

Prevention and Treatment of Piriformis Syndrome

By Cathy Fieseler

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You're 12 weeks into your marathon training program; while out on a long run, you develop a sharp pain in your buttocks. As you continue to run, the pain persists. Your hamstrings feel tight and even a little sore, though by slowing the pace the symptoms subside a little, and you finish the run. While sitting at your favorite post-run hangout, there is a tingling sensation in the back of your thigh and calf.

You've just been introduced to your piriformis muscle. This muscle arises from the sacrum, passes through the sciatic notch (an opening in the pelvic bone) and attaches to the bony prominence on the side of the thigh (greater trochanter). The piriformis plays a role in the outward rotation of the hip. The sciatic nerve is formed by five nerves exiting from the spinal cord; it typically passes through the notch in front of the piriformis. In approximately 15 percent of the population, the nerve passes through the muscle.

Problems occur when the piriformis becomes inflamed. This may be due to direct trauma (falling on your butt), overuse, or a sudden, forced rotation of the hip, which may occur when running on an uneven surface. The inflamed muscle may cause pain in the center of the buttock or may compress the sciatic nerve causing pain, aching or tingling in the leg. Pain may be increased by sitting, climbing stairs, or squatting. Deep palpation of the center of the buttocks will cause pain, as will sudden stretches of these muscles. Initially you can run through the pain, but in many cases, symptoms become severe enough to restrict activity. The muscle tightens and may even spasm during activities, which can cause an alteration in gait. The affected side of the pelvis is pulled upward, creating a functional leg length difference; stride on the affected side is shortened. These alterations in gait can cause a number of overuse injuries due to poor biomechanics.

Why Me?

Why did you develop this problem? A common finding is tight hip adductor muscles (these are the muscles along the inner aspect of the thigh that pull the leg inward), which override the hip abductors (muscles along the outside of the thigh that pull the leg outward); the piriformis acts as a hip abductor. If your foot excessively pronates when pushing off, your leg rotates inward; the piriformis acts as an external rotator of the hip (turns outward) and contracts in reaction to each push-off.

Not all pain in the buttocks and legs is due to piriformis syndrome; diseases of the lumbar spine, such as a ruptured disc, and dysfunction of the sacroiliac joints are just a couple of the common causes of pain in this region. Stress fractures of the sacrum or pelvis can cause recalcitrant pain in this region.

If you are avoiding the doctor, you will need to work on stretching your piriformis muscle. One method of doing so is to lie on your back, bend the affected knee and hip (illustrated above). Grasp your knee with the right hand and push toward your left shoulder. Grasp your right ankle with your left hand and rotate the leg inward.

To stretch the hip adductor muscles, sit on the floor and put the soles of your feet together, holding your feet with your hands. Very gently pull yourself forward until you feel a stretch, not pain, in the groin muscles. Make sure to lean from the hips and lower back, not the upper back and neck. Hold this stretch for 20 to 30 seconds. Work on stretching all of the muscles of the hip, as they will have been affected by the alteration in gait.

Strengthening the hip abductors is very important. Lie on your side and lift the upper leg 25 to 30 inches, making sure that your pelvis remains perpendicular to the floor. Hold this position for 10 seconds. Perform 10 repetitions at the start and gradually increase the number over time. As you become stronger, you may wear an ankle weight while performing this exercise. You can work other major hip muscles in a similar manner, lying on your back for the flexors, on your abdomen for the extensors (upper hamstrings) and on your side with the upper (non-exercise) leg moved back for the adductors.

Depending on the severity of your symptoms, you may be able to continue running, but will need to decrease your mileage by at least 50 percent. Avoid speedwork; you should not run hills or on uneven terrain.

Getting Help

If you are working on stretching and strengthening, but running has become progressively more difficult, you should see a local sports medicine specialist. The evaluation should reveal a tender area in one buttock. Provocative stretches will cause pain, possibly even symptoms radiating into your leg. Evaluation of your lower back and hip will be normal; X-rays will be unremarkable. If nerve studies are performed (not usually ordered), they are typically normal; if your hip is manipulated during this test, abnormal results may be seen. Other tests, such as an MRI, may be used to help rule out other sources of your pain, but results usually are normal with piriformis syndrome.

Once the diagnosis is made, what next? Treatment may include a combination of physical therapy (exercises and modalities, such as ultrasound), anti-inflammatory medications, deep tissue massage, and possibly a cortisone injection. You may need to stop running and perform cross training that does not cause pain. Once symptoms subside, continue the exercises as you gradually increase your training. Once you have re-established your base, you can slowly add hills or speed work.

If symptoms are not improving despite all of these measures, surgical release of the piriformis may be necessary; other muscles will take over the function of the piriformis. The majority of patients have pain relief following this surgery, but this treatment is a last resort.

Be smart with your training; maintain good strength and flexibility of your trunk and hip muscles to decrease the chances of an introduction to your piriformis.