

Rehab Recommendations for Piriformis Syndrome

Kim Christensen, DC, DACRB, CCSP, CSCS

Piriformis syndrome is a symptomatic hip condition commonly seen in chiropractic offices. The piriformis originates on the second through fourth anterior segments of the sacrum and on the sacrotuberous ligament. The muscle travels anterior and inferior through the greater sciatic foramen, as it passes superior and posterior to the femoral head. The piriformis inserts on the greater trochanter, allowing it to laterally rotate the thigh and assist in the tracking of the femoral head within the acetabulum.

Piriformis syndrome is six times more likely to occur in women than men,¹ and has been reported in as high as 6 percent of patients seen in a tertiary care facility.² Piriformis syndrome develops when a tight piriformis muscle inflames the sciatic nerve, causing posterior hip aching along with paresthesiae down the back of the leg, in the sciatic distribution. Since the piriformis is an external rotator of the hip, treatment commonly includes inward-rotation stretches for the piriformis muscle and strengthening of the internal rotator muscles. Complete chiropractic care also will encompass corrections of subluxations and biomechanical faults of the lumbar spine and pelvis, as well as predisposing factors such as an anatomically short leg and/or foot pronation.³

Examination

The most common finding in piriformis syndrome is that deep palpation over the greater sciatic notch reproduces the chief complaint. Palpating tenderness or trigger points in the piriformis, located halfway between the greater trochanter and the sciatic notch, is highly suggestive of piriformis syndrome.^{4,6} Tenderness to palpation often is found over the sacroiliac joint,^{4,7} as is diminished motion upon motion palpation of the sacroiliac joint.⁴ Some orthopedic tests have been developed specifically for piriformis syndrome. Pace's sign (pain and weakness with resisted external rotation and abduction of the hip) is positive in piriformis syndrome.^{1,6,7} A positive Freiberg's sign, or pain with forced internal rotation of an extended hip, also indicates the presence of piriformis syndrome.^{1,7}

When a straight-leg-raise test is performed, it may be positive, since the sciatic nerve is entrapped.^{6,7} If the straight-leg test is negative, adding internal rotation of the hip may produce pain in the low back or buttocks with radiation into the leg, thus helping to differentiate piriformis syndrome from dural mobility disorders.⁵ Resting the patient in prolonged adduction, flexion and internal rotation of the hip often reproduces the symptoms of piriformis syndrome, because it places the muscle at a maximum stretch.^{5,8}

Rehab for Piriformis Syndrome

Stretching and passive mobilization. Improving the flexibility of the short and tight piriformis

muscle is necessary. Muscle imbalance inhibits normal joint function and limits functional range of motion. Frequent, gentle and sustained stretching of specific muscle groups should be demonstrated to the patient, who usually can start the stretching immediately, even in the early stages after an injury or with chronic pain.

Isotonic resistance exercise. A weak or injured piriformis muscle can be strengthened quickly with isotonic resistance exercises. Since the hip joint functions as part of a closed kinetic chain during most daily and sports activities, weight-bearing exercises that require the co-contraction of accessory and stabilizing muscles are most effective. Examples of closed-chain exercises for the piriformis muscle include partial squats, lunges (forward, back and to the side), and step-ups or stair climbing. Initially, the patient's own body weight will be sufficient. Resistance can be increased gradually and progressively with the use of hand weights or a weight bar. A closed-chain exercise available at many gyms is the leg-press machine; however, this machine does not retrain the co-contraction of accessory hip support muscles as fully as do weight-bearing exercises.

Proprioception and coordination. It is important for athletes, whether recreational or competitive, to regain the fine neurological control necessary for accurate hip and lower-extremity movements. Stimuli from articular and muscle mechanoreceptors must be modulated with efferent responses to maintain "dynamic joint stability."⁹ This means that some time (five to 10 minutes each day) should be spent exercising on one leg, with the eyes closed, while standing on a mini-trampoline or using a special rocker board.

Functional alignment. Leg-length discrepancies and foot pronation problems are frequently found in association with piriformis syndrome. Studies have found osteoarthritis is much more common in the hip joint of a longer leg.¹⁰ The use of custom-made, stabilizing orthotics and/or heel lifts frequently is a necessary part of a comprehensive piriformis rehabilitation program.

Conclusion

Several rehab techniques for piriformis problems are available, none of which requires expensive equipment or great time commitments. Selecting the best exercise approach for each patient's hip problem is not difficult. A closely monitored home exercise program allows the doctor of chiropractic to provide cost-efficient, yet quite effective rehabilitation care.

Since biomechanical alignment problems are frequently found in association with chronic piriformis complaints, patients must be screened for excessive pronation and/or leg-length discrepancies. When the lower extremities are aligned properly, when the piriformis muscles are strengthened and lengthened, and when the hip joints work smoothly, patients will be able to enjoy the benefits of independent mobility well into their elder years.

References

1. Papadopoulos SM, McGillicuddy JE, Albers JW. Unusual cause of "piriformis muscle syndrome." *Arch Neurol* 1990;47:1144-1146.
2. Pace JB, Nagle D. Piriformis syndrome. *West J Med* 1976;124:435-439.
3. Souza TA. *Differential Diagnosis and Management for the Chiropractor: Protocols and Algorithms*, 3rd ed. Sudbury, MA: Jones and Bartlett Pub., 2005.
4. Neel SS, Jheeta GS. Piriformis syndrome. *ACA J of Chiro* 1986;23(12):32-35.
5. Barton PM. Piriformis syndrome: a rational approach to management. *Pain* 1991;47(3):345-352.
6. Vandertop WP, Bosma NJ. The piriformis syndrome: a case report. *J Bone and Joint Surg* 1991;73A(7):1095-1097.

7. Sayson SC, Ducey JP, Maybrey JB, et al. Sciatic entrapment neuropathy associated with an anomalous piriformis muscle. *Pain* 1994;59(1):149-152.
8. Fishman LM, Zybert PA. Electrophysiological evidence of piriformis syndrome. *Arch Phys Med Rehabil* 1992; 73(3):59-64.
9. Laskowski ER, Newcomer-Aney K, Smith J. Refining rehabilitation with proprioception training. *Phys Sports Med* 1997;25:89-102.
10. Friberg O. Clinical symptoms and biomechanics of lumbar spine and hip joint in length inequality. *Spine* 1983:643-645.

Kim Christensen, DC, DACRB, CCSP, CSCS
Director, Chiropractic Rehabilitation and Wellness Program
PeaceHealth Hospital
Longview, Washington
kchristensen@peacehealth.org

JANUARY 2006