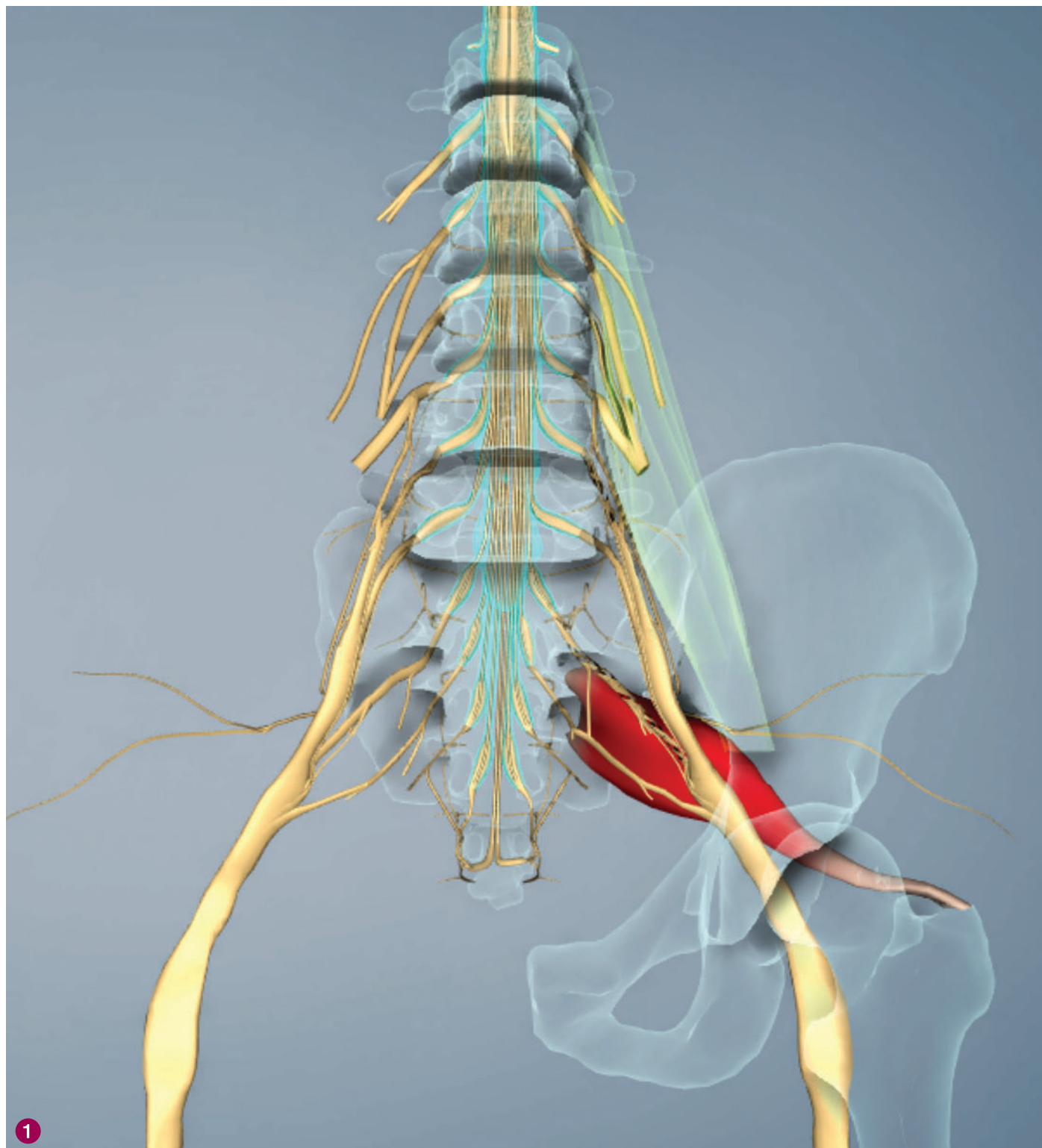


myofascial techniques

BY TIL LUCHAU



1 The sciatic nerve (yellow) is the largest and longest nerve in the body. Pain results when its nerve roots are compressed where they exit the lumbar spine (axial sciatica), or entrapped distally by other structures (appendicular sciatica). The dura (aqua), psoas (green), and piriformis (red) can each contribute to sciatic pain. *Image courtesy Primal Pictures. Used with permission.*

ASSESSING SCIATIC PAIN

Sciatica is a real pain in the rear—not just for the individuals who experience it, but for society as a whole. Although estimates vary, studies indicate that up to 43 percent of people experience sciatic pain at some point in their lives. A 2008 meta-analysis of sciatic studies concluded that compared to low-back pain, sciatic pain is more persistent, more severe, and consumes even more health resources.¹

Sciatica can also be a pain for manual therapy practitioners. Sometimes, sciatica responds quickly; other times, it seems intractable, and can even worsen in response to hands-on work. As a practitioner, how do you determine which approaches are most likely to be helpful? In the first of two articles, we'll look at straightforward and relatively reliable assessments for differentiating between two types of sciatic pain and discuss important considerations for working with the first

(axial) type. The next part will describe techniques and approaches for relieving the second (appendicular) type.

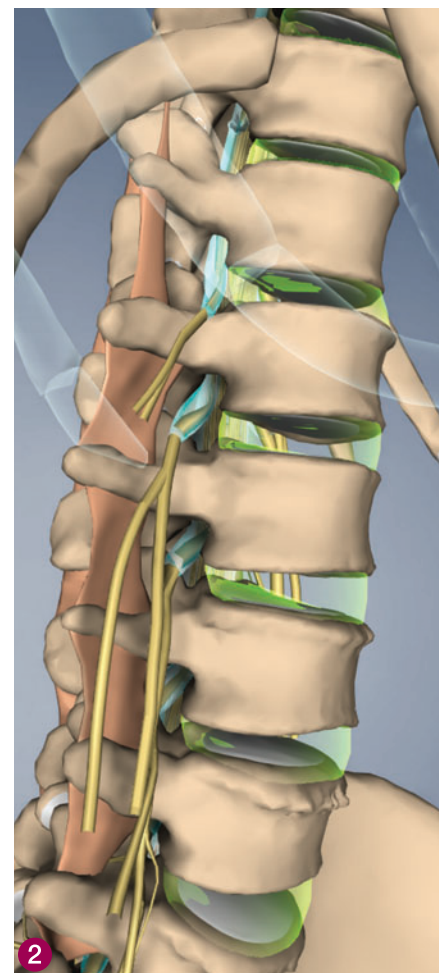
Much of sciatica's ubiquity and variability comes from the broadness of the term. Originally derived from "ischialgia," meaning pelvic or ischium pain, sciatica has come to mean any pain involving the lower back or buttocks that radiates down the posterior leg. For this reason, the term "sciatica" is in disfavor amongst some clinicians. They argue that sciatica is a symptom, not a diagnosis, since there are many possible causes of sciatic pain. For manual therapists, knowing how to distinguish between sciatic pain's different types will allow you to be far more effective in your work (and help you know when to refer to a specialist).

One thing is common to all sciatic pain: it is nerve pain, and so it can be radiating, shooting, sharp, tingling, or numb. Sciatic pain involves an irritating mechanical force on a nerve, usually somewhere along the neurons (nerve cells) that make up the sciatic nerve. (I say "usually" because irritation of other nerves can radiate to the sciatic nerve distribution area as well.)

Sciatic pain can be described as having two types, as outlined in Table 1:

1. *Axial sciatica* arises from compression on the nerve roots at the intervertebral foramina of nerves L1-S3.²
2. *Appendicular sciatica* is pain from nerve entrapment distal to the nerve roots.

The first type, axial sciatica, involves narrowing of the foramina (openings between the vertebra where the peripheral nerves exit the spinal canal; Image 2). This narrowing can result from:



Protruding or degenerated intervertebral discs (green) or the dura (aqua) can impinge nerve roots where they exit the spinal canal, causing axial sciatic pain. Image courtesy Primal Pictures. Used with permission.

	AXIAL SCIATICA	APPENDICULAR SCIATICA
ALSO KNOWN AS...	TYPE I, "TRUE SCIATICA"	TYPE II, PSEUDOSCIATICA, PIRIFORMIS SYNDROME, ETC.
ENTRAPMENT SITE	NERVE ROOTS	DISTAL TO NERVE ROOTS
ENTRAPMENT MECHANISM	BONE-TO-BONE OR DISC-TO-BONE COMPRESSION	MYOFASCIAL DENSITY OR NEUROFASCIAL TETHERING
LOW-BACK PAIN	USUALLY PRESENT	USUALLY ABSENT
POSTERIOR THIGH AND/OR BUTTOCK PAIN	USUALLY PRESENT	USUALLY PRESENT
PAIN DISTAL TO KNEE	USUALLY ABSENT	SOMETIMES PRESENT

Table 1: Types of Sciatic Pain. In addition to the mechanisms of entrapment listed above, infection, tumors, and direct trauma either at the nerve roots or distally can also cause nerve entrapment and sciatic symptoms.

- Postural or positional issues, including the postural strain of late pregnancy, sacral instability, or spondylolisthesis (instability and anterior shift of a vertebra on the one below it, narrowing their intervertebral foramen).
- Articular disc degeneration, herniation, or bulging into the foraminal space.
- Stenosis (bony deposits in the foramen or spinal canal).

These mechanisms involve compression of the nerve roots between adjacent vertebrae (bone-to-bone compression), or between a disc and vertebra (disc-to-bone). There are also reports of small accessory muscles being found within the foramen parallel to the nerves,³ as well as dural tube adhesions at the nerve roots, either of which could conceivably cause axial sciatic pain. Infections, tumors, cancer, or trauma at the nerve roots (or elsewhere along the nerve) can also cause sciatic pain, and are reasons why referral to a specialist is prudent when sciatic pain is persistent, unresponsive, or severe.

Axial sciatica will show one or more of these signs:

- Pain in the low back along with buttock or thigh pain, usually without pain below the knee (unless there are also appendicular contributors).⁴
- Sciatic scoliosis: a reluctance to put weight on affected side, resulting in leaning away from affected side in order to minimize pain.
- A positive (i.e., painful) result when performing the Straight Leg Test.

STRAIGHT LEG TEST

The Straight Leg Test (SLT), or the Lasègue Test, is a common and reliable assessment for identifying lumbar nerve root compression. With your client seated at the front edge of a chair, ask him or her to raise a straightened leg at the hip (with the knee extended straight). The straight leg test is positive (meaning that it indicates likely nerve root compression) if sciatic pain is reproduced with the motions listed in the caption of Image 3. Pain in the opposite (supporting) leg can be due to more severe disc herniation, and is clear cause for referral.

Why does ankle dorsiflexion, slumping, or neck flexion increase the pain when a nerve root is compressed? All three of these movements stretch

the nerve tissues further, putting a little more tension on any entrapment. Slumping and neck flexion also pull upward (caudally) on the dural tube within the spinal canal. The dural tubes' projections surround the nerve roots and line each foramen (Image 2), so restrictions here can be a cause of axial sciatic pain. If this is the case, the slump test itself can be a helpful self-treatment, gently stretching the dural adhesions. However, clients should be instructed not to overdo the stretching, or do too many repetitions, so as to avoid aggravating the already inflamed nerve roots.

When performed and interpreted correctly, the SLT has a high statistical sensitivity (91 percent of correct positive results), and a lower statistical specificity (26 percent of correct negative results).⁵ In other words, the SLT is quite reliable at assessing compression of sciatic nerve roots (on average, 9 out of 10 positive results will accurately indicate nerve root involvement). But the SLT is a less reliable at determining that there is not compression at the roots

(3 out of 4 people who test negative, prove to have nerve root compression verifiable by other clinical means).

I should mention that unless your training and licensing specifically permit you to diagnose conditions like disc issues, it is of course inappropriate to offer your client a diagnosis or even suggest an interpretation of the SLT, for a variety of good reasons. Even if you are a licensed physical therapist, chiropractor, or other professional whose scope of practice does include diagnosis, telling someone with a positive SLT that they have a 9 in 10 chance of having a disc issue is a loaded and potentially complex conversation, with the potential for inadvertent harm as well as good. For most massage and manual therapists, a positive SLT is reason to refer to a specialist for further evaluation, or to confirm that your client is already under a specialist's care. Even in these cases, knowing and using the SLT will allow you to strategize your own work appropriately.

PIRIFORMIS TEST

Whether or not the SLT indicates possible nerve root compression, you'll want to check for piriformis contributions to sciatic pain to further narrow down your choice of possible techniques. Although you will often see combined patterns of axial and appendicular entrapment, you'll approach each issue differently when you go to the table. Nerve entrapment by the piriformis muscle is probably the most common cause of appendicular sciatica (accounting for about 70 percent of all nonlumbar sciatic pain⁶), so this test will help identify the most likely cause of appendicular sciatic pain.

To perform the test, ask your seated or supine client to pull the knee of the affected leg to their chest (Image 4). If actively bringing the knee across the midline of the body (adduction with flexion)

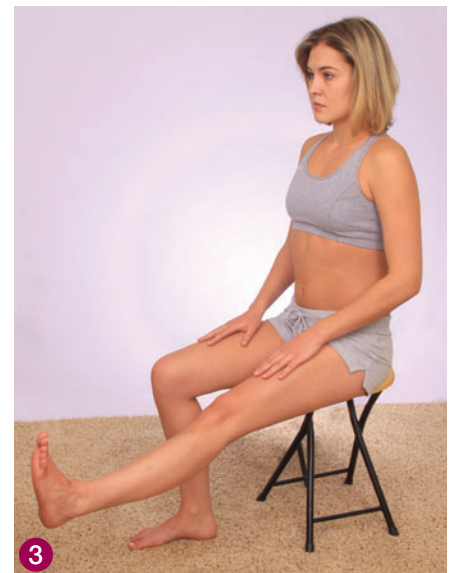
increases sciatic pain, this indicates probable piriformis or hamstring entrapment of the sciatic nerve.

Both the SLT and the Piriformis Test can be performed passively, or supine instead of sitting. Some sources suggest that including the passive and supine variations in assessment increases the accuracy of the Straight Leg and Piriformis Tests. Other sources purport that positional differences in results suggest “malingering” (purposeful feigning of symptoms for secondary gain, such as insurance benefits). In most of our practices, of course, it is a safe working assumption that we can wholeheartedly believe our clients when they report pain.

WHAT YOU CAN DO

Since they involve different entrapment sites and mechanisms, axial and appendicular sciatica are approached in different ways. Because many of the causes of axial sciatic pain involve instability, bone-to-bone, or whole-body patterns, direct myofascial work with axial sciatica can be quite tricky. Although there are very effective manual therapy approaches to the lumbar causes of axial sciatic pain, they often involve skilled discernment and judicious application by an experienced practitioner. While sometimes deep lumbar work can be quite helpful for someone with axial sciatic symptoms, if it is performed unskillfully, deep or overly-focused work (including active release, deep massage, direct myofascial release, structural work, or trigger point work) can in some cases worsen symptoms of lumbar disc issues by inadvertently releasing the adaptations and compensations that are providing stability to an unstable spine.

For this reason, many of the actual techniques for working with axial sciatica are probably beyond the scope of a journal article and are best learned in an in-person training



The Straight Leg Test (SLT) can help you determine if there is likely cause for referral to a specialist. The test may indicate possible nerve root compression if:

1. Sciatic pain is reproduced between 30° and 70° of hip flexion (70° is pictured).
2. Pain worsens with ankle dorsiflexion, slumping, or neck flexion (dropping the head forward).
3. Pain is relieved by knee flexion of the raised leg.

Images courtesy Advanced-Trainings.com.



The Piriformis Test. An increase in sciatic symptoms when the flexed leg is brought across the body (adduction) indicates probable piriformis involvement.



YOU CAN SEE TECHNIQUES FROM THIS COLUMN IN *MASSAGE & BODYWORK*'S DIGITAL EDITION, WHICH FEATURES A VIDEO CLIP FROM ADVANCED-TRAININGS.COM'S ADVANCED MYOFASCIAL TECHNIQUES DVD AND SEMINAR SERIES. THE LINK IS AVAILABLE AT BOTH MASSAGEANDBODYWORK.COM AND ABMP.COM.

environment, followed by cautious practice while having access to experienced supervision and advice.

However, even without specialized in-person training, there is a tremendous amount of benefit that massage and manual therapists can provide. These pointers will help minimize risk to your clients who show signs of axial sciatica:

1. The safest, most universally helpful intentions for massage therapists dealing with axial sciatica are to gently ease the effects of unnecessary splinting and guarding, and to relieve the overall tension and stress of dealing with pain. Relaxation and calming approaches, as well as work around the lateral hips, shoulders, and neck, are especially helpful.
2. Work slowly. If you do deep work, proceed very gradually, noting your client's response between sessions. If there is a persistent increase in pain after your session, work less deeply next session, and/or in different places. What may feel good on the table may worsen the symptoms when upright, so if possible, ask your client to sit or stand partway through your session to check in about pain level, and adjust or redirect your work accordingly.
3. Use your client's own gentle active movements, rather than passive moving, stretching, or positioning. Use your client's comfort as a guide. Painful work is not helpful with inflammatory conditions such as sciatica, so your clients should be instructed not to push through their pain. Find a level of depth and pressure that allows your client to relax into the work.
4. Especially in sciatica and other nerve issues, the point of greatest pain is often the place that is least in need of direct, deep pressure. Because tissues are already inflamed or unstable in the spot of pain, direct

work may worsen the symptom later. Instead, ease the body around the most painful areas.

5. Avoid any techniques that apply longitudinal compression or shearing forces (listhesis) to the spine, such as some seated techniques or passive stretches. Also, use caution with positions or techniques that twist the spine, which can narrow the foremen around an already crowded nerve root (twists can also relieve compression, but use them cautiously).
6. It is a good idea for your client with acute axial sciatic signs to be under the care of a spine specialist such as an chiropractor, orthopedist, physical therapist, or other rehabilitation specialist. If you suspect undiagnosed lumbar disc issues (for example, if your client feels a worsening of sciatic symptoms with the SLT), be sure to refer your client to a qualified medical specialist for an evaluation and possible rehabilitative work. Don't hesitate to get supervision or advice from a mentor as well.

Even with this long list of cautions, don't be discouraged. Remember that your work can dramatically help someone with axial sciatic pain. Relaxing and calming are always helpful, and easing the overall patterns of guarding and stress from chronic pain can be a godsend for someone with unrelenting sciatic pain.

Often, axial sciatica is accompanied by appendicular sciatica as well. In contrast to the bone-to-bone or disc-to-bone compression of axial sciatica, appendicular sciatica entrapment is typically related to the soft tissues, which respond readily to direct manual therapy. We will examine this second type of sciatic pain, and describe hands-on approaches for working with it, in our next installment. **m&b**

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NOTES

1. There is wide variation in sciatica prevalence estimates: "sciatica prevalence from different studies ranged from 1.2% to 43%." This same meta-study concludes that "[sciatica] is more persistent and severe than low-back pain, has a less favorable outcome, and consumes more health resources." K. Konstantinou and K.M. Dunn, "Sciatica: Review of Epidemiological Studies and Prevalence Estimates," *Spine* 33, no. 22 (October 15, 2008): 2464–72.
2. The sciatic nerve itself has components from nerves L4–S3; however, impingements of L1–L3 have been observed to cause sciatic-type symptoms as well. J.P. Valat et al., "Sciatica: Best Practices," *Research in Clinical Rheumatology* 24, no. 2 (April 2010): 241–52.
3. As mentioned by Jim Donak and Tom Myers in an August 2010 Facebook discussion, accessed May 2011, www.facebook.com/topic.php?uid=120301201315055&topic=181.
4. Although there are differing opinions about the significance of sciatic pain in the lower leg, respected physician and pain researcher Nikolai Bogduk says, "The only pain that has ever been produced experimentally by stimulating nerve roots is shooting pain in a band-like distribution. There is no physiological evidence that constant, deep aching pain in the lower leg arises from nerve root irritation." Nikolai Bogduk, *Clinical Anatomy of the Lumbar Spine and Sacrum*, 4th ed. (London: Churchill Livingstone, 2005). Thanks to Australian Rolfer Colin Rossie for this reference.
5. W.L. Devillé et al., "The Test of Lasègue: Systematic Review of the Accuracy in Diagnosing Herniated Discs," *Spine* 25, no. 9 (2000): 1140–7.
6. Researchers at Cedars-Sinai Medical Center, the University of California, Los Angeles, and the Institute for Nerve Medicine in Los Angeles examined 2,239 sciatic patients (using magnetic resonance neurography) who hadn't improved with lumbar disc treatment. Results of the study confirmed that 69 percent had piriformis syndrome, while the remaining 31 percent had a combination of other nerve, SI joint, or muscle conditions. A. Filler, J. Haynes, S. Jordan, et al., *Journal of Neurosurgery: Spine* 2 no. 2 (2005): 99–115.