



BACK & BODY

SCIATICA

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| SCIATICA

Sciatica is a broad term that is used to refer to any kind of pain that is caused by the irritation or compression of the sciatic nerve. Sciatica is said to occur when the sciatic nerve is either compressed or irritated, causing pain and discomfort throughout the lower half of the body. Here, we'll break down what you need to know about the sciatic nerve and sciatica, including the causes of sciatica, the signs and symptoms, and potential treatment options.

| WHAT IS THE SCIATIC NERVE?

The sciatic nerve is the longest nerve in the human body. This nerve starts in the lower back in lumbar segment three, moving throughout the lower back, the buttocks, and down the back of each leg. Specific portions of the nerve branch out into each leg to innervate its various parts, including the thigh, calf, foot, and toes. It is responsible for supplying sensation and strength to the legs, as well as for controlling reflexes in the leg.



The sciatic nerve is actually composed of five different smaller nerves, formed on the right- and left-hand side of the lower spine by the combination of the fourth and fifth lumbar nerves, as well as the first three nerves in the sacral

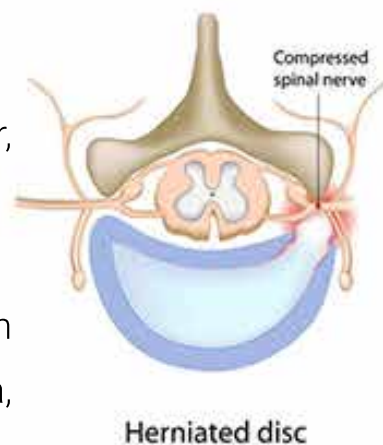
spine. Each of these nerves exists in the spine in-between two vertebral segments. Subsequently, each of these five nerves is named for the segment that is situated just above it. These five nerves group together in the piriformis muscle in the buttocks to form one nerve. Above the back of the knee in each leg, the nerve then divides into two: the peroneal nerves, which move sideways along the outer part of the knee and down into the upper foot, and the tibial nerves, which travel down to the heel and sole of the foot.

Keep in mind that because the sciatic nerve essentially runs through the entire lower half of the body, any problem in the lower spine can affect one of the nerves that feed into the sciatic nerve, which can then generate pain throughout the lower body.

WHAT CAUSES SCIATICA?

Sciatica is rarely caused by one specific injury. Rather, sciatica tends to develop over time. The most common causes of sciatica include the following:

A herniated disc in the lumbar region. When the soft inner core of the disc, known as the nucleus pulposus, leaks out through the disc's tough exterior, it is known as a herniated disc. Sometimes also called a slipped disc or a ruptured disc, this can irritate the contiguous nerve root. A herniated disc in the lower spine especially raises the risk of sciatica, as it will likely put pressure on the sciatic nerve.



I Degenerative disc disease. Degenerative disc disease tends to occur as an individual ages. The cause is typically multifactorial, although research suggests that there may be a genetic component. Degenerative disc disease is pretty common, affecting approximately 30 percent of people between the ages of 30 and 50. After the age of 60, some degree of disc degeneration has almost always occurred. Because of degenerative disc disease, inflammatory proteins from the inside of the disc can become exposed and subsequently can irritate nerve roots in the area.

I Isthmic spondylolisthesis.

Isthmic spondylolisthesis occurs when a vertebral body slips forward on another as a result of a stress fracture in the pars interarticularis, which is a small segment of bone that connects the two joints on the back side of the spinal segment. This can cause a pinched nerve, resulting in sciatica. The fracture of the pars interarticularis typically occurs in childhood and often is the result of cumulative stress as opposed to trauma. However, problems associated with the fracture often don't occur until much later in life, typically in adolescence or adulthood.



MRI of of Lumbar Disc Herniation at L3 & L4 with Spondylolisthesis at lower levels

■ **Lumbar spinal stenosis.** Because of lumbar spinal stenosis, the spinal canal narrows. In the vast majority of cases, this will compress the sciatic nerve, causing sciatica. The condition typically occurs in individuals over the age of 60.

■ **Piriformis syndrome.** The piriformis is a muscle in the buttock. The sciatic nerve runs under this muscle, and it can become irritated as it passes underneath it, as the muscle can either irritate or pinch the root nerve.



Piriformis Syndrome

■ **Sacroiliac joint dysfunction.** The sacroiliac joint is located at the very bottom of the spine. If it becomes irritated, it can also irritate the L5 nerve in the lower lumbar region. Sacroiliac joint dysfunction is most common in young and middle-aged women, although there is no clear cause.

■ **Scar tissue from a previous spinal injury.** In some cases, the growth of scar tissue from previously sustained trauma can press on the nerve.

■ **Diabetes.** Individuals with diabetes are at an elevated risk of developing sciatica. This is because of the damage that abnormally high blood sugar levels do to the peripheral nerves throughout the body.

It should be noted that sciatica is always a symptom, never a diagnosis.

Therefore, sciatica always has some kind of root cause that must be identified and treated.

| WHAT ARE THE SIGNS AND SYMPTOMS OF SCIATICA?

The specific location and type of pain associated with sciatica will depend on where specifically the nerve is compressed. For example, a nerve that is pinched in section five of the lumbar region can cause weakness in the extension of the big toe and ankle while sciatica in the L4 root nerve will most typically affect the thigh, with patients reporting weakness in the leg or a diminished knee-jerk reflex. How much the nerve is compressed will also affect the site of pain and pain levels. However, there are several general symptoms of sciatica. These include:

| Constant pain on one side of the buttock or in one leg. Pain experienced on one side of the lower body is a hallmark symptom of sciatica. In fact, people often commonly mistake sciatica for a leg injury. “The majority of patients with sciatica will experience back pain alongside the leg pain, but in rare cases, patients may not experience back pain,” explained Michael A. Gleiber, M.D, a spine surgeon. “Sciatica can sometimes be mistaken for a leg injury. Recently, Dallas Cowboys quarterback Tony Romo suffered from a herniated disc that caused sciatica, but it was initially thought that he had injured his hamstring. If you are receiving treatment from a leg injury and do not see any improvement, you may want to be examined to see if sciatica is causing your leg pain.” Keep

in mind that this constant pain is typically experienced as a sharp pain, as opposed to a throbbing pain or dull ache.

I Pain that is intensified by sitting. A hallmark symptom of sciatica is pain that begins in the lower back and then radiates throughout the buttocks, legs, and even into the toes. This is especially common when a nerve in the lower back is pinched or compressed, and this type of pain is often intensified when sitting down, as it puts even more pressure on the nerve. Typically, patients will report less pain when lying down or walking.



Sitting pinches or compresses a nerve in the lower back that intensifies pain even up to the toes

I Leg pain or discomfort characterized by burning, tingling, or searing. The legs are most commonly affected by sciatica, even more so than the lower back.

Patients often report burning, tingling, or searing in their legs.

I Weakness, numbness, or difficulty moving either your leg or foot. Because the sciatica nerve delivers both strength and sensation to the legs and feet, a pinched or compressed nerve may mean that your feet or legs feel especially weak, making it difficult to move them.

It should be noted that the type, intensity, and frequency of pain associated with sciatica tend to vary greatly between individual cases. Furthermore, if more than one type of nerve is compressed, patients may experience pain in different parts of the body.

| HOW CAN SCIATICA BE TREATED?

There is no one single treatment for sciatica. Rather, treatment is developed on a case-by-case basis, taking into account the cause of sciatica. For example, surgery may be required to treat sciatica caused by a herniated disc, but sciatic pain because of degenerative disc disease could likely be managed with anti-inflammatory medication. Typically, a combination of treatment options is the most effect way to treat sciatica and help manage the pain. Sciatica can be treated in the following ways:

| Anti-inflammatory medication: Anti-inflammatory medications, such as NSAIDs, including ibuprofen, naproxen, and COX-2 inhibitors, can be used to reduce inflammation and help patients manage their pain levels. In more serious cases, oral steroids can be used to relieve inflammation, and in the most serious cases, a doctor may suggest epidural steroid injections. They deliver steroids directly into the spine's epidural space, which encircles the dural sac and is filled with blood vessels. These injections provide temporary pain relief and are an especially good option for acute pain that is difficult to manage.

I Alternating heat and ice therapy: Patients can use alternating heat and ice therapy to get some relief from acute sciatic pain. This works to ease tension while also reducing inflammation.

I Exercise: Physical activity has proved to be beneficial in helping patients manage sciatica-related pain. Many patients are tempted to stay in bed and rest when experiencing sciatic pain, and while it is a good idea to rest in the day or two following a flare-up, long periods of inactivity can actually worsen sciatica. Without sufficient exercise, your lower back muscles will inevitably weaken, which means they are less able to support the back and spine. “If you become inactive for too long, the back muscles can become weak and lose conditioning. Strong core and back muscles help to support the spine and improve posture,” explained Dr. Glieber. When exercising with sciatica, there are a few things that you will want to keep in mind:

- **Keep your hamstrings flexible.** For a lot of sciatica patients, working to develop flexibility in the hamstrings proves to be an effective way to decrease pain. This is primarily because tight hamstrings inevitably put more stress on the lower back, which can aggravate lower back problems and make sciatic pain worse, especially if the pain is the result of a herniated disc.
- **Focus on developing strength.** Try to focus on strengthening exercises that will work to strengthen the spinal column, as well as its supporting muscles, ligaments, and tendons throughout the lower back, buttocks, and hips. These muscle areas all support the spine, helping keep it in alignment. The stronger

these muscles, the less likely it is that you will have back problems.

- **Don't forget about cardio.** Any kind of low-impact cardiovascular exercise, whether it is walking, swimming, or biking, will help facilitate a speedier recovery. This is because aerobic activity facilitates the exchange of fluids and nutrients, which optimizes the healing environment.

All in all, one of the best ways to treat sciatica is to develop a comprehensive exercise program that includes stretching, strengthening, and low-impact cardiovascular exercise. Medical professionals have suggested therapeutic yoga as a way to keep active and improve pain, as it not only helps to strengthen the body but also works to balance nervous system functioning and neutralize stress. Even after sciatica has cleared up, a well-rounded exercise routine can help prevent future flare-ups.

I Acupuncture: Acupuncture is recognized by the National Institutes of Health as an acceptable alternative to conventional therapies for pain in the lower back.



I Manipulation: The goal of manipulation is to improve joint range of motion while also balancing tissues and muscle mechanics in order to relieve pain. It can be effective in treating sciatica.

■ **Surgery:** It should be noted that in some cases, surgery may be the best option for treating sciatica, especially if non-surgical treatments (including physical therapy, chiropractic treatment, steroid injections, etc.) have not helped with pain. Surgery should only be considered when severe pain has persisted for over six weeks and the condition is debilitating to the patient or limiting his or her everyday activities. If you have sciatica and feel that surgery may be the best option for you, you will need to discuss it with your doctor.

In conclusion, if you feel you may be suffering from sciatica, you will want to seek professional medical attention. It is never a good idea to self-treat, as establishing a correct diagnosis is the first step in achieving pain relief and different diagnoses will require different types of treatment. In addition, if you wait too long to seek treatment and the problem is a serious one, you could end up with permanent nerve damage. The bottom line is that if you are experiencing any of the symptoms or signs of sciatica, it is absolutely a wise idea to make an appointment with your doctor.

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OUR DOCTORS



David Perna DC, CCSP, CCEP

Dr. Perna uses an integrated approach to help his patients. He has focused his post-graduate studies on soft tissue techniques as well as exercise rehabilitation. This experience is why he treats professional athletes as well as weekend warriors with great success.

Dr Shan Sivendra MD

Dr. Shan Sivendra is the Director of Medicine for the Back and Body Medical group in Midtown Manhattan and has been practicing in the New York Metro Area since 1995. He is the Director of House Physicians at St. Barnabas Medical Center in Livingston, New Jersey and is working towards a certification in acupuncture.





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