

# Hip-related Sciatica, Piriformis Syndrome, Deep Gluteal Syndrome

## WHAT IS HIP-RELATED SCIATICA?

The term “sciatica” is often used incorrectly in reference to any pain felt in the area running from the back, down into the leg. Back-related nerve pain is more correctly referred to as radicular pain. Radicular pain is pain related to an irritation of the nerve roots as they exit the spine. Nerve roots (Figure 1) leave the spine via the intervertebral foramina (holes or spaces between the vertebrae) and join together from various levels of the spine to travel as cord-like structures, called nerves, to their destinations. It is these nerves that travel outside the spinal cord that are referred to as “peripheral nerves”.

Along their journey these peripheral nerves run between and through muscles and fibrous tunnels. The sciatic nerve (Figure 1) is a peripheral nerve. While radicular pain arises from a problem as the nerve root exits the spine, nerve-related pain may develop due to a problem along the pathway of a peripheral nerve, outside the spine. Pain related to a nerve is called “Neuralgia” – which simply means nerve-pain. The term “sciatica” should be used to refer to neuralgia of the sciatic nerve. Here we will discuss sciatica associated with irritation of the nerve as it runs through the buttock, across the back of the hip.

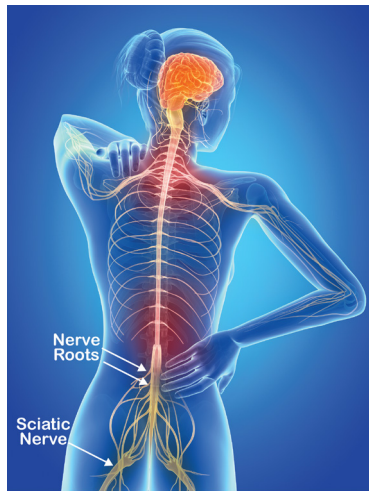


Figure 1: The Nervous System, demonstrating nerve roots emerging from the spine and the sciatic nerve that develop beyond the spine

## WHAT ARE THE USUAL SYMPTOMS?

Hip-related sciatica often presents as deep buttock pain, which may extend down the back of the thigh and even further into the lower leg and foot.



Even if the irritation of the nerve is in the buttock, pain can also be felt into the lower back as well. This sometimes results in delayed or incorrect diagnosis, as the lower back may be presumed to be the source of the issue.

There may be odd zings or zaps of pain

Tingly sensations or numbness sometimes accompany the pain

Pain is usually aggravated in positions where the hip is bent – such as in sitting, even more so if the knee is higher than the hip and/or the foot is reached out in front. Driving can therefore be problematic.



Pain may also be aggravated by any strong contraction of the buttock muscles such as walking or running uphill or upstairs, on uneven surfaces or performing exercises that target the buttock muscles.



Pain is often worse at night and is eased somewhat in the morning by standing and walking.

In more severe cases, walking may be accompanied by a painful limp.

## WHAT CAUSES HIP-RELATED SCIATICA?

Peripheral nerves can be irritated along their pathway from the spine to the structures they serve. The sciatic nerve does not exit the spine as a single nerve. Nerve roots from the lower levels of the lower back (lumbar spine) and tailbone (sacrum) join together in the pelvis. Here they form a thick, cord-like structure, called “the sciatic nerve”. This large nerve exits the inner pelvis via the greater sciatic notch and runs through the buttock and down the back of the thigh (Figure 2).

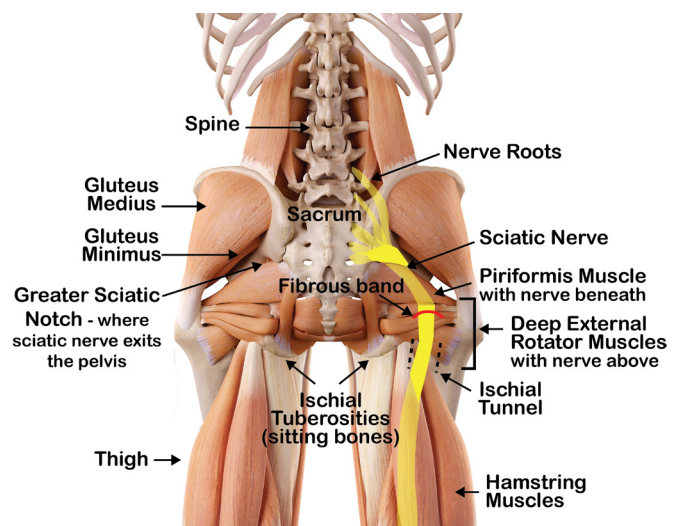


Figure 2: View of the back of the pelvis demonstrating the relationship between the sciatic nerve and the bony and muscular structures. The light-yellow areas of the nerve indicate that these parts are on the other side of the structures you can see, that is, inside the pelvis, under the piriformis muscle and within the hamstring muscles.

## Piriformis Syndrome

The sciatic nerve can sometimes be compressed, irritated or entrapped as it runs through the soft tissues of the buttock. Traditionally, sciatica (sciatic neuralgia) generated from issues within the buttock has been termed "Piriformis Syndrome" (see Figure 2 to view the piriformis muscle and the sciatic nerve). This was based on a finding that in about 20% of the population, all or part of the sciatic nerve runs through the piriformis muscle. Compression of the nerve within the piriformis muscle was thought to be the problem in all cases of nerve related buttock and leg pain that could not be associated with a problem in the back.

It is now thought that this is the case in only a relatively small number of cases. In most people the sciatic nerve runs under the piriformis muscle to emerge into the "deep gluteal space" – the deep buttock area beneath the gluteus maximus (large, superficial buttock muscle). It is thought that the nerve may still be compressed as it runs under the piriformis muscle, particularly if the piriformis is particularly bulky, tight or excessively active. It remains unclear how commonly this occurs, but it should be considered as one of a number of causes of hip-related sciatica.

## Deep Gluteal Syndrome

The term Deep Gluteal Syndrome has been suggested recently to include all causes of irritation of the sciatic nerve in the buttock, under the gluteus maximus.

The sciatic nerve may be compressed or irritated as it runs:

- under the piriformis muscle (piriformis syndrome)
- over the deep external rotator muscles or
- through the ischial tunnel, a tunnel formed by the outer side of the sitting bone (ischial tuberosity) and the upper thigh bone (femur). In this tunnel it may be squeezed between the bones or irritated by unhealthy hamstring tendons joining onto the sitting bones (Figure 2).



Anywhere through the buttock, tight or heavily used muscles and also tight (fibrous) bands may apply more pressure on the nerve, causing restricted movement of the nerve and reduction in normal healthy blood flow. Fibrous bands may develop after trauma such as a hard fall onto the buttock or due to inflammation related to muscle or tendon injury or overuse.

Postural and movement habits (e.g. pattern of walking, running, standing on one leg) that result in reduced space in the ischial tunnel (Figure 2), may also contribute to the development of symptoms.



## GETTING HELP: WHAT IS THE TREATMENT FOR HIP RELATED SCIATICA?

### 1. Education

Understanding what the problem is and what types of positions and activities are likely to irritate the sciatic nerve, can help significantly in controlling the symptoms of hip-related sciatica. Understanding pain and what happens within the brain and the whole nervous system with long-standing conditions is also very important.



### 2. Exercise

Exercise may be used to assist in reducing pain and improving function via a number of mechanisms:

- Improvement in mobility and blood flow of the sciatic nerve
- Optimisation of health of the muscles and tendons of the deep gluteal space. This might involve various stretching or strengthening exercises.
- Improvement in control of pelvic position during dynamic movements



### 3. Manual Therapy

Manual therapy provided by a health professional can, in some cases, be useful. This may temporarily reduce tension in the muscles of the deep gluteal space and increase blood flow through the region. Exercise and education will usually be required to achieve longer term changes.



### 4. Medications

Particular medications that aim to calm nerve irritability may be prescribed by your doctor to help control pain, maintain activity levels and assist with sleep

### 5. Injections

Your doctor may also suggest an injection to assist with diagnosis and/or pain relief. Injecting local anaesthetic around the sciatic nerve in the buttock may, if pain is relieved, assist in determining if this is the problem area. A cortisone (corticosteroid) injection may also be provided to reduce inflammation and pain associated with irritation of the sciatic nerve in the deep gluteal space. Sometimes botox injections are used to reduce muscle activity and size.

### 6. Surgery

All other measures should be exhausted prior to a surgical intervention. Surgery always carries risks, does not guarantee full resolution of symptoms and the recovery from these surgeries can be prolonged. This is why it is important to ensure all other avenues have been explored first and that your surgeon is experienced in this particular surgical procedure.

**Your Hip Pain Professional will be able to discuss these options with you and develop a plan that is most likely to provide best outcomes for your personal situation.**