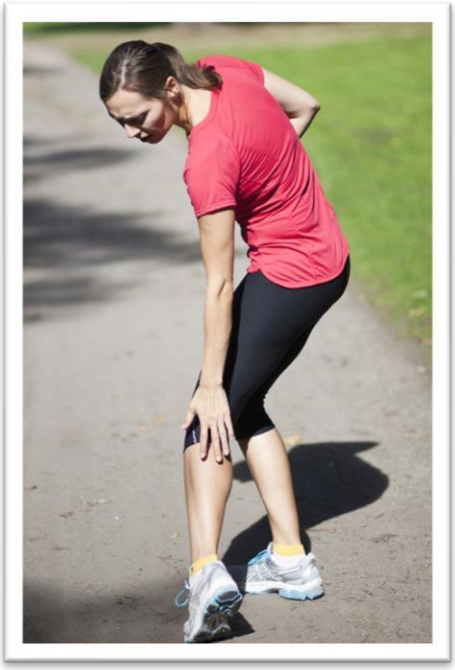
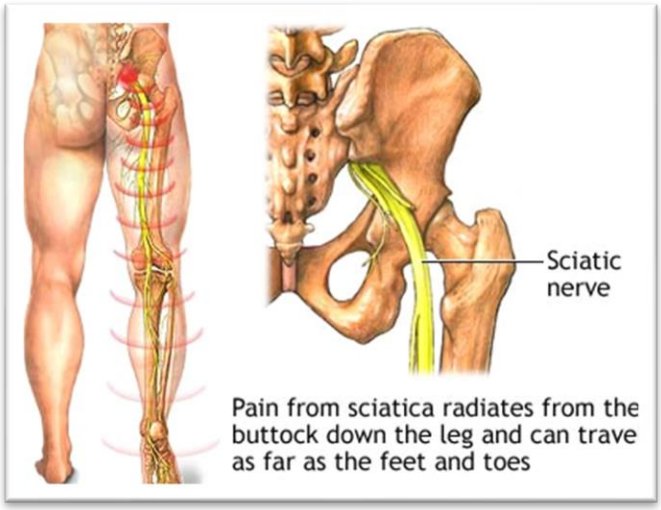


Solutions for Sciatica and chronic neck and back pain

The term sciatica is not a diagnosis, it is a description of irritation of the sciatic nerve. And yes, it can literally be a pain in the butt or the leg or even in the foot. The sciatic nerve is the largest nerve in our body. It is created by contributions from spinal nerves that originate in our low back and sacrum. Nerve fibers from L3 (lumbar) through S4 (sacral) join together and run down the back of the leg as the sciatic nerve. Just above the knee the sciatic nerve splits into the tibial nerve and the peroneal (fibular) nerve. The tibial nerve goes to the back of the leg and bottom of the foot and the peroneal nerve goes to the front of the leg and top of the foot. Because the sciatic nerve covers so much territory it can cause a wide variety of symptoms such as the following:

Symptoms of Sciatica

- buttock pain
- pain in the thigh
- pain in the lower leg or foot
- weakness in the leg or foot (foot drop)



Although the term sciatica means there is inflammation to the nerve, the most common cause of the inflammation is pressure and irritation from disc degeneration and protrusion. Pathological causes such as cancer that has metastasized from the gastrointestinal or genitourinary systems as well as tumors or infection of the nerve should be screened for and ruled out. Fortunately, in the majority of cases, the cause of the inflammation is either mechanical or compressive in nature.

Causes of Sciatica

Mechanical:

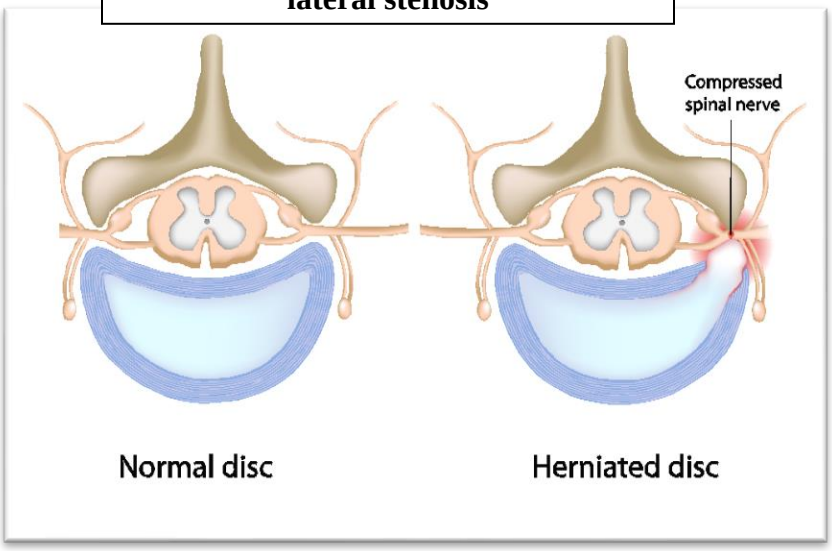
Mechanical inflammation is caused by abnormal alignment and motion of the spine and pelvis or impaired strength and stability of the supportive musculature.

Compression:

Compressive inflammation is caused by disc, ligament or bone causing pressure on the nerves or spinal cord.

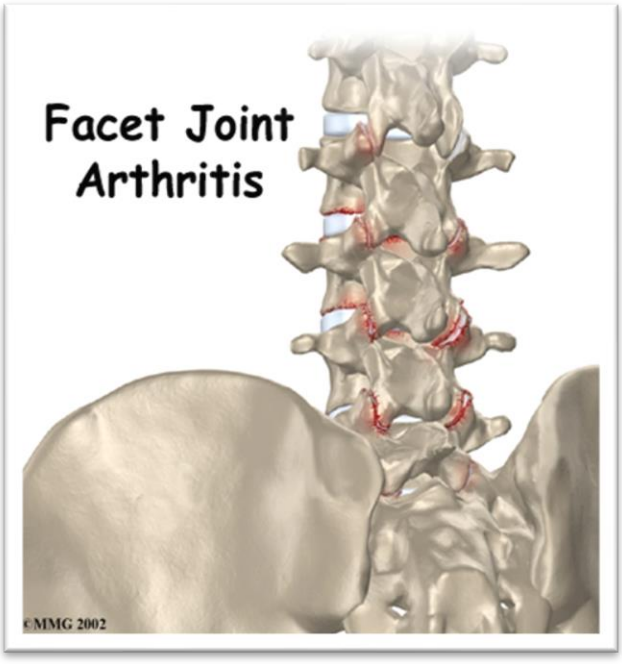
There are a number of conditions that can cause compressive lesions. Because the terminology used is often a source of confusion to sciatica sufferers, I'm including the following list of frequent offenders with a brief description:

Spinal disc herniation producing lateral stenosis



Stenosis: This is a narrowing of the spinal canal (where the spinal cord and descending nerve roots are located) or the intervertebral foramen (where the nerve exits). Stenosis of the spinal canal, often called central stenosis is diagnosed by measuring the size of the canal from front to back. A dimension of 13 mm or more is considered normal. Central stenosis can be congenital or degenerative. Congenital means that it grew that way. Degenerative means that over time wear and tear has caused disc bulging, arthritic development in the joints, swelling of the ligaments or a combination of these factors that has resulted in stenosis.

Spondylolisthesis: The literal meaning is slippage of the vertebra. The slippage can be due to a separation between the front and back portions of the vertebra in what is called a" pars defect." It also can be from degeneration of the joints in the back of the spine, called facets. The slippage of the vertebra can cause compression and stretching of the spinal nerve roots



Facet Arthropathy/Arthritis: This describes additional bone deposits in the small directional joints in the back of the spine, the facet or posterior joints. Excessive stress causes degeneration of the joints and the body's response is to fortify the overtaxed joint by depositing more bone. Facet arthropathy, as mentioned before can be a contributing factor to spinal stenosis or it can create sciatica all on its own by directly irritating the exiting nerve.

Diagnostic Imaging and Special Testing:

Once a thorough history and physical examination have been completed, recommendations can be given for diagnostic imaging and special testing. The most common tests for sciatica sufferers are as follows:

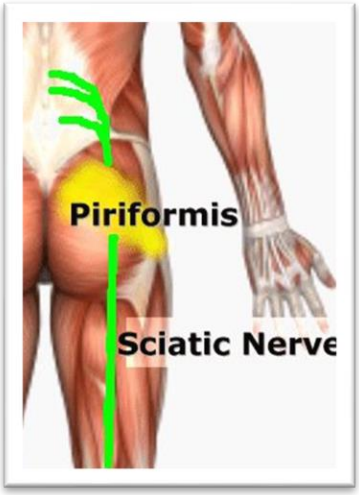
- X-Ray
- MRI/CT
- Electrodiagnostic studies. EMG/NCV

Treatment for Sciatica Sufferers:

When the appropriate evaluation and testing has been completed, an accurate working diagnosis can be arrived at. Providing that underlying pathology has been ruled out, most often the cause can be traced to mechanical irritation and/or compression. Fortunately now there are safe, effective, non-invasive treatments for sciatica.

Treatment for Mechanically Induced Sciatica:

Piriformis Syndrome is an example of sciatica stemming from a mechanical cause. In this condition the sciatic nerve is irritated by compression from the piriformis muscle. The piriformis muscle lies deep the gluteal muscles, and its primary action is to rotate the leg outwards. It is estimated that in 15% of the population the sciatic nerve pierces the piriformis muscle making it more susceptible to compression. Compression of the sciatic nerve by the piriformis muscle is classified as an entrapment neuropathy. We have developed a combination of non-invasive treatments that are highly successful in resolving sciatic pain of a mechanical origin. Those treatments often include the following:



Piriformis Syndrome

Bioelectrical Therapy

The NeoGEN machine by RST Sanexas uses communication level digital technology. It is not like standard TENS or muscle stimulation electrotherapies. The unit's microprocessors continually vary the wave frequency, amplitude, polarity, and can pulse the signal up to 20,000 times per second. Additionally, for some patients, injections of anesthetics like lidocaine or vitamin supplements are used to enhance treatment effectiveness. This advanced therapy is described as electric cell signaling treatment because it activates second messenger signaling (cyclic AMP) resulting in accelerated healing, reducing pain, and restoring function. The revolutionary bioelectrical therapy and supplemental injections are performed by trained, licensed medical providers.

How does it work?

Studies have shown that electro-medical treatment can reduce pain and restore function through the following mechanisms:

Reduction of pain by:

1. Sustained nerve depolarization resulting in a nerve block.
2. Blocking pain signal transmission at the spinal cord via competition (Gate control theory Melzak and Wall).

Acceleration of cell repair by:

1. Increased levels of cAMP
2. Improved cell membrane stabilization/repair.
3. Reduction of inflammation/edema.
4. pH normalization.
5. Increased circulation.

What does that science mean for your symptoms?

In a pilot study on reduction of opioid use, patients suffering with chronic back, joint and nerve pain reported marked reduction in pain. Patients received an average of 23.4 treatments. They reported a reduction of opioid use by an average of 67%, with 50% being able to stop their opioid use all together!

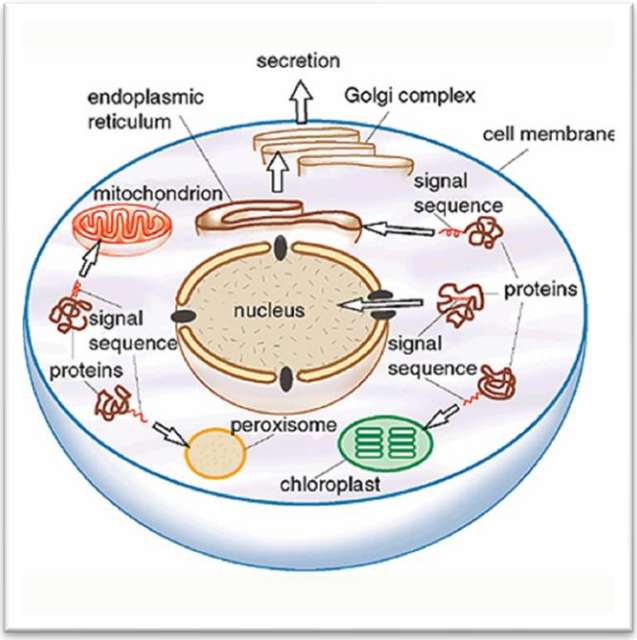
Chiropractic Adjustments/Joint Mobilization

If you hear “chiropractic adjustment” and you picture a doctor forcing a dislocated shoulder back into place, you’re not alone. However, we want to set your mind at ease; we don’t do that. We never use forceful manipulation for chronic joint problems. By using gentle joint mobilization, low force instruments or table adjustments, these therapies should be virtually pain free. If a treatment causes pain, we don’t use it!

To understand the value of joint adjustments and mobilization it’s important to understand why they’re needed. Often when a joint is injured or degenerates, scar tissue forms in the muscles and ligaments around the joint. These are called periarticular adhesions. This scar tissue can limit motion and alter loading patterns, creating further degeneration and pain. Adjustments and mobilization can stretch and release these adhesions.

As one of the most effective therapies in our treatment toolbox, adjustment and mobilization can address impairments and pain that no other treatment can.

Non-invasive Laser Therapy



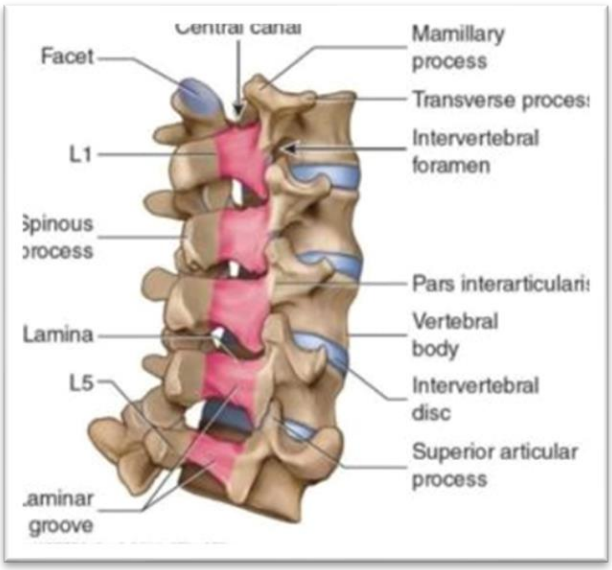
Unlike lasers used in surgeries, we do not use lasers to make incisions, we use them to heal. The human body can absorb very specific frequencies and wavelengths of light. Similar to the way plants absorb sunlight and perform photosynthesis to produce energy for growth, our bodies can absorb near infrared light and convert it into ATP. ATP (Adenosine Triphosphate) is the "energy currency" of human cells. Therefore, higher levels of ATP increase the fuel available for cellular function. As a result, it can increase the rate of regeneration. In our experience, high dose laser therapy allows us to use more powerful therapies so we can get faster results. The fact that laser therapy reduces inflammation and pain so that you feel better in the meantime, is a fantastic secondary benefit.

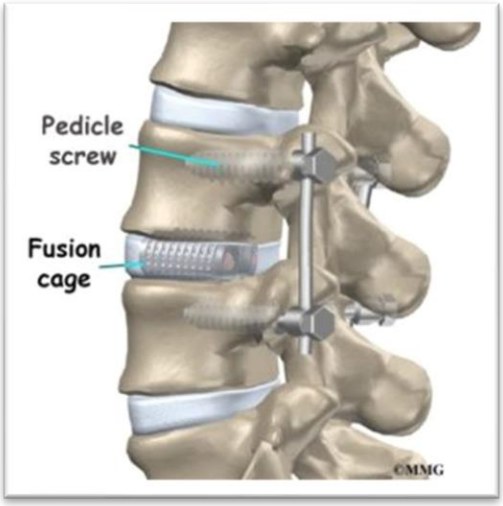
Treatment for Sciatica Due to Compression

Treatment for sciatica due to nerve compression falls into one of 2 categories: surgical or non-surgical.

Surgical Decompression

The most common type of decompressive surgeries are laminotomies and laminectomies. A laminectomy involves complete removal of this bony arch, whereas in a laminotomy, only a portion of bone that is causing the nerve impingement is removed. To perform either a laminectomy or a laminotomy an incision is made cutting through skin and dissecting muscle to expose the bone of the spine. If these procedures are not sufficient to decompress the nerve, the surgeon may have to perform a discectomy to remove part of the bulging/herniated disc. With a laminectomy, removing these significant portions of bone creates the potential for instability in that region of your spine. As a result, a laminectomy is often combined with a spinal fusion at that level, which requires the surgeon to insert screws into the vertebra above and below the affected level and connect them with steel rods.





Spinal fusion rods and screws

This hardware is required to maintain stability. This in turn creates a block of bones that can severely restrict normal ranges of motion. The result of this restriction can accelerate degeneration of the discs and joints above and below the fusion site resulting in pain, inflammation, and potentially additional surgeries. (Ma et al 2019).

Due to the invasive nature of the procedure and risks associated with anesthesia, surgery is not an option for some patients. This is often the case due to a patient's age, systemic disease, etc. If surgery is not an option, commonly patients are told the only treatment available to them are pharmaceuticals to try to manage their pain

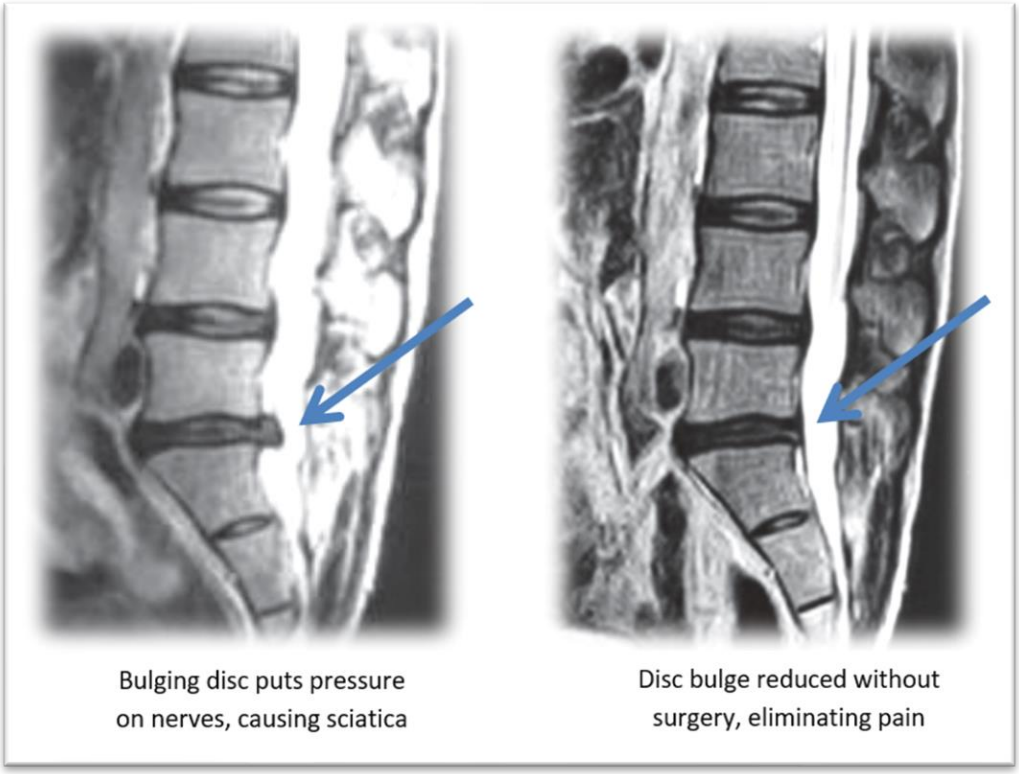
Non-Surgical Decompression

Prompted by the poor success rate and high incidence of complications for spine surgery, non-surgical spinal decompression was invented. In 1991 a medical researcher, Dr Allan Dyer MD, PhD, created a therapy device to mechanically reduce nerve compression. Combining his medical understanding with basic physics principles, Dr Dyer reasoned that applying a sufficient axial load to the spine would create a vacuum in the disc that could reduce the protrusion of a herniated disc. It helped Dr Dyer get relief from his back pain and was quickly embraced by the conservative health care community. Spinal decompression machines work by gently stretching the spine, creating a vacuum inside the discs and joints. The negative pressure can reduce disc bulges, draw nutrients and water into the disc, reduce swelling and inflammation, and improve joint motion.

On the next page are MRI images of a patient with a disc herniation at L5-S1. The before picture clearly demonstrates the disc bulging into the spinal canal. The after picture was taken following a course of treatment including spinal decompression and shows a reduction of the herniation.

Non-surgical decompression machines are not the same as inversion or traction units. With inversion, traction force is generated by hanging from your ankles or knees, the only control over the force is the angle you hang at. The force is static unless you move. With a spinal decompression machine, the force is controlled and

directed. The rate of application of pressure, the maximum and minimum levels of force and length of pressure application are all programmed into the machine. The cycling of the pressure, like a sign wave, /\/\/\/\ produces a pumping action that improves circulation. This is particularly important where disc conditions are concerned since discs do not have a direct blood supply. In addition to being effective, spinal decompression is safe and pain-free. Our decompression machines are FDA cleared and can be turned off by the patient if they have any discomfort. For most patients, decompression is so comfortable and relaxing, they can take a nap during their treatment.



Bulging disc puts pressure on nerves, causing sciatica

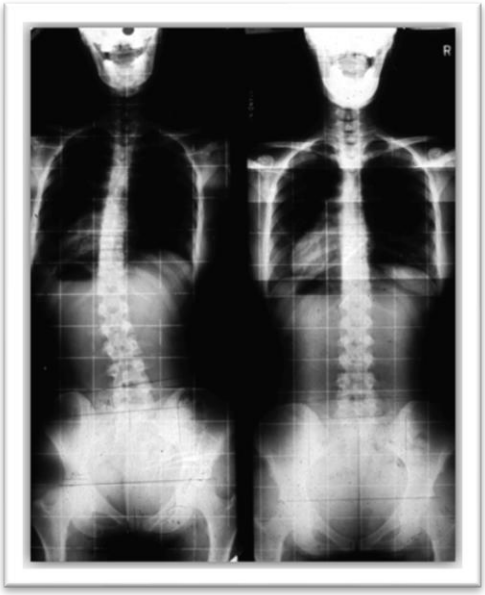
Disc bulge reduced without surgery, eliminating pain

Comprehensive Treatment:

Many chronic sciatic pain sufferers experience relapses that increase in both frequency and severity. This often is an indicator that the underlying cause of the sciatic irritation has not been addressed. What we have learned over decades of treating chronic pain sufferers is that a comprehensive three-step treatment approach is often the best answer to lasting relief of sciatica.

Step Number One: Reduction of pain, inflammation and compression

The first priority in the treatment of sciatic pain is to address the cause of compression and inflammation. To do this we often combine the use of non-surgical decompression, bioelectrical therapy, chiropractic care, and high dose laser therapy, described previously. With a comprehensive treatment plan, once pain is under control, we progressively add treatment to correct the underlying biomechanical problems.



Step Number Two : Correction of alignment and motion

Faulty biomechanics are the root cause of most cases of sciatic nerve irritation. To address this, a combination of well researched treatment modalities, collectively known as chiropractic biophysics (CBP) are employed. CBP is a crossover of chiropractic and physical therapy procedures and consists of the following:

- Mirror image exercises to retrain muscles
- Postural adjustments to restore nerve and joint function
- Postural traction to reshape ligaments

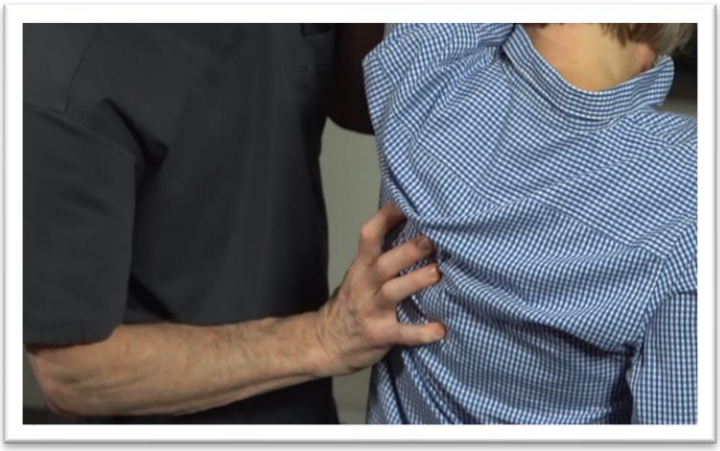
When pressure and inflammation have been reduced and alignment and motion have been improved, the final step is stabilization.

Step Number Three: Strengthening and stabilizing Manual Therapy

This final phase of treatment relies predominantly on physical rehabilitation and Trigenics® manual therapy treatment.

Trigenics ®

When an injury occurs, our body goes into a "protective mode" to limit further damage. For example, if you sprain an ankle, it will swell up and the muscles surrounding it will "splint". They do this to protect the joint and prevent further injury. However, if the muscle contraction persists after the injury has healed, it can allow an acute injury to progress into a chronic and degenerative condition. The same process can occur because of repetitive use disorders or from chronic postural stress. Regardless of the root cause, injury or imbalance, the solution is the same: joint motion and stability must be restored. That is where Trigenics® comes.



Also known as myoneural manual medicine, Trigenics® consists of three components: 1. Resistive exercise 2. Nerve receptor activation 3. A neurologic breathing technique.

Trigenics® looks like massage therapy combined with exercise, however, it is not massage. It is a powerful functional neurologic treatment that retrains the way the nervous system controls muscles associated with a joint. Often, it can reduce pain, improve motion, and restore strength and stability. For many of our patients, the results are immediate and dramatic.

Trigenics ® treatment objectives:

-lengthen contracted muscles

-strengthen weak muscles

-restore proper length/tension ratios of im-balanced muscles

-reduce pain

-increase restricted motion

-improve strength and stability

Physical Rehabilitation

The final component of our comprehensive treatment program is physical rehabilitation. When muscles haven't been used for a protracted period of time, they become lazy. To wake them up, we use exercises that specifically target them. The term for this is reactivation. This can be accomplished using light therapy bands or gently performing stabilization exercises like a pelvic tilt. In the diagram to the left, reactivation is demonstrated by the "gold columns". The objective in the reactivation phase is just to get the muscle to fire/contract not to try and build strength or endurance. At this stage, although pain has been reduced, the tissues are not healed. If a patient tries to do too much and uses too much force or

tries to do too many repetitions, it will flare up their symptoms.

Once the muscles have been awakened and are reactivated, the patient should be progressed to more advanced exercises known as integrated functional rehabilitation. This phase is demonstrated by the “green columns” in the diagram. Initially, functional exercises are used to retrain proper joint motion and create stability. Once relatively normal joint motion is possible, the patient can be progressed into force-control training. The objective in this phase is to be able to cope with real world, dynamic environments, and ultimately to build endurance, so the patient can safely return to a healthy active lifestyle.

Sciatica Summary

Sciatica is not only painful but dealing with it can be extremely frustrating. Sometimes, months or even years can elapse while the patient searches for lasting relief. When medication, therapies, and injections fail, often patients conclude that surgery is their only option.

At Olympic Spine and Sound Pain Solutions, we have been able to help hundreds of patients find relief from sciatica. We have accomplished this without the use of prescription drugs or surgery. To be clear, we believe there is a time and place for surgery. If comprehensive conservative treatment is not successful, surgery may be the only option. Naturally, we recommend being evaluated to determine if conservative treatment is an option before proceeding to invasive procedures. We believe the best treatment for a patient, is the treatment that is the safest, most effective, and most economical. We provide consultations free of charge to determine if a patient is a good candidate for care. To schedule a consultation, you can reach us at (425) 774 – 2411 or email us at help@olympicspine.com. Helping patients find relief and regain their quality of life is why we are here.

Testimonials

"I was sure I'd end up in a wheelchair".

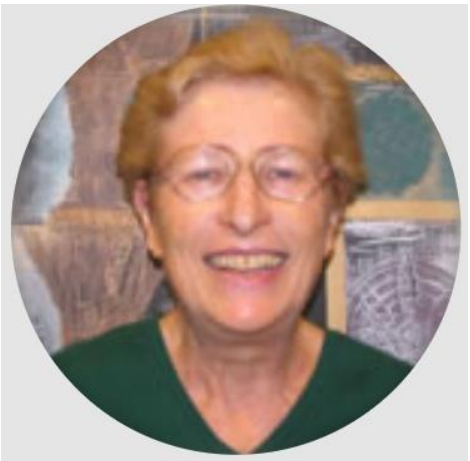
"Since 2010 I've had pain in my right hip including sciatic pain that radiated down my entire right side from years of being an umpire. I hadn't had success with the other doctors, so I was reluctant to try anything. By the end of the firs week I felt better. I've been able to reduce my pain medication, to work for longer periods of time, even squat to work with catchers! Everyone at Olympic Spine is friendly. They are so successful because they attack the condition from so many directions, laser therapy, chiropractic care, physical rehab therapy and decompression therapy."

- **Brian H., Everett, WA**

"Now that I'm no longer focused on my pain my quality of life has improved greatly".

"I have suffered from degenerative arthritis in my lumbar spine for nearly twenty years, plus I have scoliosis and a herniated disc. I decided against surgery, but then the clenching pain became so intense it radiated from my hip down my leg to my toes. One of my friends recommended Dr. Shelley; my progress was slow at first, but now I'm hugely improved! The staff is upbeat, cheerful, and very supportive. A couple of times I was in so much pain I came to the office in tears, they were so caring."

- **Jinny T., Bothell, WA**



"I feel younger, and I am able to do more with friends!".

"Over the years I have struggled with sciatica in my legs, pain in my left hip, low back, neck and shoulder. My back used to get so stiff I couldn't move very easily and I had difficulty sleeping. Now, after going through treatment at OSST my pain is reduced and I have more flexibility. I can do computer work without my neck stiffening up and I am able to spend more time in the garden without hurting my low back. I feel younger, and I am able to do more with friends! The staff at OSST are great people. They provide the tools you need to help yourself and hen create a very encouraging atmosphere that motivates you to use them!"