



relieving

S.C.I.A

CHANCES ARE YOU HAVE CLIENTS WHO COME IN
COMPLAINING OF THIS CHRONIC CONDITION. SO HOW
CAN YOU HELP? BY TIMOTHY AGNEW

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PHOTOGRAPHY BY
HERB BOOTH



FIGURE 1A. START
GLUTEUS STRETCH

This stretch isolates the lateral hip, specifically the bursae and often inflamed soft tissues.

The importance of the rotation of the femur shown here is manifold. It exposes the attachments of the gluteals and intensifies the stretch, and also spreads the belly of this muscle to expose the sciatic nerve. The client contracts adductors and moves the knee at an oblique angle to her opposite shoulder. You can then apply a gentle two-second stretch at the end movement and repeat.

FIGURE 1B. FINISH
GLUTEUS STRETCH
(pictured at right)

For severe cases, you can pull the calcaneus toward the client's body during this stretch, effectively spinning the femur and gluteal attachment externally as the knee is brought to the shoulder. Try this yourself. You should feel a different, specific isolation.

The chronic condition known as sciatica has plagued us for centuries, and it is not an uncommon one for any working health professional to encounter, especially you. In fact, sciatica-related pain is likely a common complaint you get from the clients who come to your practice. Results for relief of pain from this condition in massage and other health care modalities are usually good, with one caveat: the relief usually does not last without continued treatment.

Traditional Treatments Examined

Today, management for the condition can be a lot more expensive—treatment for sciatica accounts for more than \$50 billion in annual medical expenses. Yet patients do not get much better.¹

For the last 70 years, many in the medical profession have believed that a herniated disk in the lower back is the likely culprit of sciatic pain.² While at times a bad disk is the problem, this is not always the case. Treatment for sciatica, however, is often based on a diagnosis of a damaged disk occluding the sciatic nerve.

For example, as massage therapists you often look for dysfunction in the piriformis muscle. Piriformis syndrome, a term that describes dysfunction in this small muscle, could be causing the sciatic pain. If the path of the sciatic nerve is

traced as it comes out of the sacrum, it passes just under the piriformis muscle. The fibular (peroneal) part of the nerve may perforate the muscle itself.³ Massaging this muscle can be of great help in releasing its hold on the nerve. But there is a larger question here: How long will it last?

One Approach to Therapy for Sciatica

Clinical Flexibility and Therapeutic Exercise (CFTE) is a self-developed approach derived from traditional kinesiology and biomechanics. CFTE was developed to treat and educate clients who failed to get results from other health care modalities. In my private practice spanning nine years, these methods have worked well with not only sciatic clients, but those with carpal tunnel syndrome, sacroiliac dysfunction, bursitis, disk herniations, post knee and hip replacements, and arthroscopic surgeries as well.

CFTE consists of an entire set of exercises done in a specific order to open soft tissue and restore range of motion (ROM). CFTE is rooted in kinesiology, so its approach is often very new to many health care professionals. It essentially utilizes ROM, something with which massage therapists are most likely familiar. Instead of focusing on one thing, the entire body is considered in every therapy. Also, the sciatic client becomes involved with her own therapy by learning

***NOTE** Sheets and lotions are not necessary to perform CFTE.



A CLOSER LOOK AT SCIATICA

The sciatic nerve runs from the pelvis to the hip area and buttocks and down each leg, making it the longest nerve in the body. It also controls many of the muscles in the lower legs and provides feeling to the thighs, legs and feet. When pain radiates along this nerve, it is referred to as sciatica.

Your clients may come in complaining of discomfort almost anywhere along the nerve pathway. However, it's especially likely to follow one of these routes:

- * From the lower back to the knee;
- * From the mid-buttock to the outside of the calf, the top of the foot and into the space between the last two toes;
- * From the inside of the calf to the inner ankle and sole.

The pain can vary widely, from a mild ache to a sharp, burning sensation or excruciating discomfort. It often starts gradually and intensifies over time, and more than one lower extremity is affected.

Clients suffering from sciatica may also experience numbness or muscle weakness along the nerve pathway in their leg or foot. Some also experience tingling or a pins-and-needle feeling in their toes or part of their foot.

Source: www.mayoclinic.com



FIGURE 2.
USE OF THE ISOLATION BELT

In CFTE, an isolation belt and pad are used to help isolate structures. Shown here, the belt is over the ASIS. The belt is also used over the PSIS (see the rotator stretches) and femur (see the gluteus stretch).



**CONDITIONS THAT MIGHT
COEXIST WITH SCIATICA**

- Trochanteric/ischial/iliopsoas bursitis
- Muscle atrophy/sarcopenia
- Loss of ROM
- Tendinitis
- Bilateral/unilateral knee, shoulder or neck pain
- Plantar fasciitis
- Leg shortness
- Antalgic gait

Source: Magee JD. Orthopedic Physical Assessment. W.B. Saunders Company, 2002.



FIGURE 3A. START
BICEPS FEMORIS



FIGURE 3B. FINISH
BICEPS FEMORIS

This stretch targets much more than the biceps femoris. Because of its close relationship with the sacrotuberous ligament, pelvis stability can be helped at the same time.

This stretch is safe for arthroplasty clients, but the femur should not move beyond 90 degrees of flexion. To isolate the biceps femoris using AIS, an isolation belt is strapped across the ASIS to prevent compensation at the origin of the hamstring group, the ischial tuberosity.



exactly what needs to be done to help it. All clients follow a self-stretching program on a daily basis, and in essence, become proactive in their health.

At the core of CFTE is the Active Isolated method of assisted Stretching (AIS) pioneered by kinesiologist Aaron L. Mattes. This method of stretching is used in CFTE because of its dynamic and safe components:

- * AIS is always *active* stretching; the client contributes 100 percent.
- * There is only a two-second hold; a stretch is achieved by repetitions.
- * Clients learn how to perform AIS themselves.
- * AIS does not irritate injuries further by long holds.
- * AIS strengthens, lengthens and encourages muscle re-education.

To perform CFTE therapy on the lower extremities, an isolation belt, which resembles a car seat belt, is used over a 3-inch hip pad to help isolate structure (see Figure 2, opposite page). To work areas that might affect sciatica,

Externally rotate the entire leg (femur) to isolate the fibers of the biceps femoris. This places the fibers in the proper plane to be lengthened. The client is instructed to lift her thigh to the opposite shoulder using the hip flexors and adductors, while keeping the knee flexed about 3 degrees. Note: If you are working with a client who has Parkinson's disease or is recovering from a stroke who may be weak, the anterior thigh is palpated to help this client "feel" which muscle to activate. While the movement should remain active, you may have to assist the client to some degree. As in all AIS stretches, this is repeated 10 times, and several sets may be required to completely open the ischemic tissue. Remember, part of the philosophy of CFTE is that absolute movement in the muscle fibers is necessary to completely heal injured tissue—deep hand pressure will not change the length of a muscle unless a stretch is applied at the same time.

the belt is placed over the anterior superior iliac spine (ASIS). This keeps the ischial tuberosities down on the table, and stabilizes the hip completely, allowing for specific isolation of muscle tissue.

To effectively treat and hopefully solve sciatica, the therapist must look at sciatica as a plural entity. It may not be a singular condition and it may not have a singular diagnosis. Sciatica is often accompanied by trochanteric bursitis, tendinitis, muscle atrophy, muscle weakness and muscle shortness, among other conditions (see sidebar, opposite page). With sciatic pain, there might exist same-side knee pain, ankle pain or plantar fasciitis. Right-side sciatica might be accompanied by right-side shoulder or neck pain. All of these things must be considered when you are working with sciatica clients.

CFTE consists of looking at the entire body as a whole to solve dysfunction. Those skilled in CFTE examine all the pieces of dysfunction. If you measure the sciatic area taught in massage schools, this area is a small circle. Inside this circle are piriformis, gluteals and a portion of the sciatic nerve. This



**FIGURE 4A. START
INTERNAL ROTATOR STRETCH
(GLUTEUS MEDIUS/MINIMUS)**

This stretch is extremely beneficial to women who have experienced childbirth or are considering having children. These stretches affect the supportive ligaments in the pelvis and will help strengthen and restore them.

The client is prone on the table, and the pad and belt are placed on the highest portion of the gluteus maximus along the posterior superior iliac spine (PSIS). It is important to tighten the belt to avoid any lifting of the pelvis during this stretch, and also to help stabilize and protect the low back. Sit or stand on the opposite side the client is stretching, facing the client's head. With the knee bent at 90 degrees, place one hand under the knee and the other hand over the foot. It is important to use the hand that is cradling the knee to externally rotate the femur with the movement. (Note: From this prone position, the femur is rotated externally, but the actual movement is to rotate the foot and lower leg internally.) This protects the collateral ligaments of the knee. The leg should be extended beyond neutral. This isolates gluteus medius and minimus for a dynamic stretch as rotators. Instruct the client to help rotate the leg toward you, while keeping the abdominals tight.



**FIGURE 4B. FINISH
INTERNAL ROTATOR STRETCH
(GLUTEUS MEDIUS/MINIMUS)**

A gentle two-second stretch is applied at the end of movement.



is a good start, but it is still necessary to look at other probable causes of that pain to work with sciatica clients.

If the biomechanical dysfunction of the body is not corrected, sciatica will keep occurring—the imbalance in the body is irritating the sciatic injury. For example, if a client has a leg length discrepancy on one side, and her biceps femoris and gluteus maximus are limited and atrophied, the opposite hip will compensate for the dysfunction. This abuses the opposite hip and may cause inflammation (bursitis), among other things.

While parts of the upper extremity could be involved, the goal for now becomes to stretch the soft tissue in the lower extremities. Stretching muscle tissue increases circulation, pumps in oxygen and disposes of scar tissue, which are all necessary for optimal healing. It also balances the body by restoring ROM. Normal ROM means that the body will move through gravity the way it was designed to, without compensation from other muscles. In the hip, this is called antalgic gait.

Some of the things to look for when using CFTE are included in the sidebar on page 81. While there are more than 20 different AIS movements, the focus of this article is to lengthen the major groups that contribute to sciatic dysfunction: biceps femoris and the internal rotators (tensor fascia latae, gluteus medius and minimus).

Before beginning the exercises, it is important to remember therapy should start with the first stretch in the AIS protocols; then move through each step. The order of stretches is important because many muscles cannot be lengthened until others are. For example, the quadriceps cannot be stretched until the psoas is stretched. The hip must be moved into the



For research about sciatica and massage go to www.pubmed.gov. Type “sciatica and massage” in the search box for results.

neutral, or in line with the hip, before the quad can be stretched. The psoas often blocks this hyperextension of the hip. Usually, larger muscles and fascia are opened first.

In CFTE consideration is given to the *action* of the muscle. The lever (femur) is positioned to obtain the most specific isolation during the stretch. For example, the piriformis muscle is a hip abductor and external rotator; therefore it would be stretched in these two positions. Keep in mind the following movements will be performed in one to two sets with 8 to 10 repetitions, and no longer than 2 seconds on the hold. Performing 8 to 10 is important because this method uses repetitions to get blood flowing and to achieve a change of ROM. The repetitions also help strengthen the opposite muscle being stretched.

If your client has had a hip replacement, all of these movements—with the exception of the sacrotuberous stretch—are safe, with limitations. These will be discussed in each section below. Clients with active disk herniations may be able to perform these stretches, but each stretch might need to be adjusted so the injury is not irritated. If you are not comfortable trying these on an injured client, refer him or her to the appropriate health care professional.

Gluteus Maximus

The gluteus maximus is a large, rotary muscle that should be very powerful from daily use. It should push the human body out of a seated position, help when climbing stairs and propel the body during running. More importantly, this muscle is a large shock absorber, helping absorb vector forces during

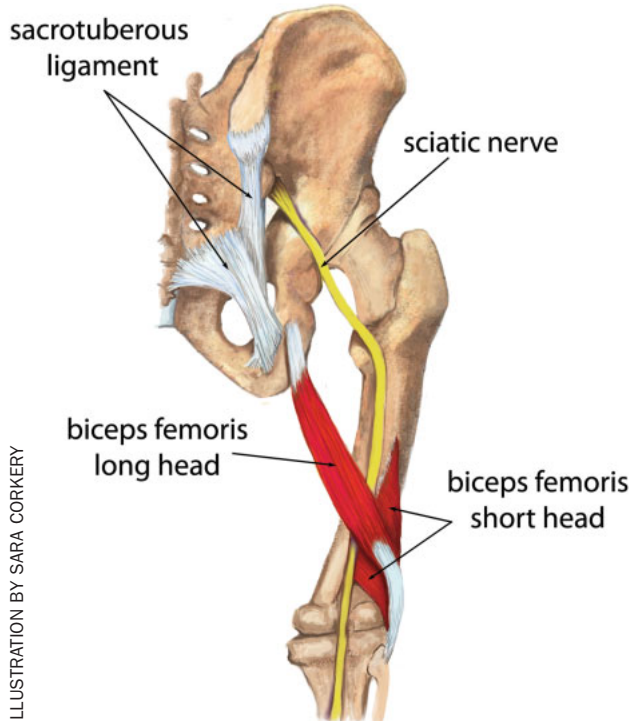


ILLUSTRATION BY SARA CORKERY

POSSIBLE CAUSES OF SCIATICA

MUSCLE/LIGAMENT	PROBLEM
Biceps femoris semitendinosus and membranousus	Weakness and atrophy is usually toward the proximal attachment on the ischial tuberosity. Often involved with sciatic and lumbar pain because of occlusion of sciatic nerve. Affects gait when dysfunctional. Overlooked in strength, flexibility and is often injured with adductors. Affects lumbopelvic rhythm.
Adductor magnus	Often weak and limited. Vector forces pull down on pelvis; high rate of back pain involvement. Affects lumbopelvic rhythm.
Psoas	Involved with faulty gait problems due to negative hip hyperextension. Affects lordotic curve of spine due to anterior vector forces. Involved with herniated disks. Usually weak. (Quadratus lumborum will assist when weak.) Affects lumbopelvic rhythm.
Sacrotuberous ligament	Overlooked in treatment; functions with biceps femoris to stabilize pelvis. Affects lumbopelvic rhythm.
Gluteus medius and minimus	When weak and atrophied causes hip drop. Dysfunction causes extreme compensation from other muscle groups. Trochanteric bursa usually inflamed. Affects lumbopelvic rhythm.
Gastrocnemius	Atrophied, weak. Provides unstable push off during gait, forces transferred to knees and hips. Often tightest in the popliteal space. Sciatic nerve pain is often referred here.
Gluteus maximus	Atrophied, weak. No shock absorption or stabilization for hip. Trochanteric bursitis. Affects lumbopelvic rhythm.
Piriformis	Piriformis syndrome, muscle must be stretched as a rotator and abductor to relieve occlusion.

Source: Hoppenfeld S. Physical Examination of the Spine and Extremities. Prentice Hall, 1976.

< THE SACROTUBEROUS LIGAMENT

The sacrotuberous ligament is situated at the lower and back part of the pelvis. It is flat and narrower in the middle than at the ends; it attaches by its broad base to the posterior inferior spine of the ilium, to the fourth and fifth transverse tubercles of the sacrum, and to the lower part of the lateral margin of that bone and the coccyx. The biceps femoris tissue blends with this ligament.



FIGURE 5A. START
SACROTUBEROUS
STRETCH/INTERNAL
ROTATORS

This stretch places the sacrotuberous ligament in a position to be lengthened in a rotatory fashion. Because the femur is rotating externally while its in hyperextension, tension is being placed on the ligament to be lengthened.

Along with the gluteus medius, the sacrotuberous ligament is addressed in this stretch, but with a slight variation. This is one of the most intense stretches so be very careful. As mentioned earlier, the sacrotuberous ligament works with and is part of the biceps femoris. To stretch it, the client is in the same position as the previous stretch. Great care must be given in assisting knee rotation.



activity. It also helps support and protect the lower back. The gluteus maximus also should have tone and thickness to it. If you palpate the gluteus maximus of a client with sciatica, you will find this muscle to be weak or hypotonic. Clients will mention that they have difficulty getting out of a chair, and do so by pulling themselves out with their arms. If this muscle is weak, it serves no purpose to treat the sciatic client.

This muscle has an attachment at the gluteal tuberosity of the femur, as well as the iliotibial tract (IT) of the fascia lata. Parts of this muscle blend with and affect the sacrotuberous ligament as well as the lumbar fascia. Since part of its attachment is on the femur and the IT band is a lateral structure, it will be stretched with this in mind.

This stretch is safe for hip arthroplasty clients, but you must be very gentle during the movements. If pain is elicited, stop the movement. You stand on the opposite shoulder of the client, and bend the client's affected thigh 90 degrees. It is important to keep the knee open during this stretch so that the knee is not irritated. With one hand under the calcaneus, and the other above the knee, the femur is *externally* rotated so that the *medial side* of the knee is facing the opposite shoulder (Figures 1A and 1B, page 76).

Biceps Femoris

The biceps femoris is a vital muscle to look at in cases of sciatica. Yet, it is all too often ignored in treatment. It originates from the ischial tuberosity and may also partly originate and

blend with the sacrotuberous ligament. This ligament is situated at the lower and back part of the pelvis. It has an important role in stabilizing the pelvis, and because these two soft tissues work together, the sacrotuberous ligament cannot be ignored in therapy. When stretching the biceps femoris in AIS, the sacrotuberous ligament is stretched as well, but it is also stretched during the medial rotator stretches later.

The hamstring group has a close relationship to the sciatic nerve. The only muscular branch to arise from the lateral side of the sciatic nerve is the nerve to the short head of the biceps femoris. If you follow the nerve down the posterior thigh, you will find it is sandwiched between the biceps femoris and semitendinosus and semimembranosus muscles before it divides above the popliteal fossa.

Also, the fibers of the biceps femoris have a strong line of pull in relation to the back and pelvis. Tightness of this muscle will contribute to low back pain (Figures 3A and 3B, page 79).

Gluteus Medius and Minimus and the Sacrotuberous Ligament

The gluteus medius has an important role in therapy for sciatica. Because of its attachment (greater trochanter) and muscle action (medial rotation, abduction), it serves the hip during gait. In my experience, I often find the gluteus medius to be hypotonic and weak. If it is not working correctly, it cannot prevent hip drop to the unsupported leg. If the hip drops, the body must compensate with contributions from



**FIGURE 5B. FINISH
SACROTUBEROUS/INTERNAL
ROTATOR**

This time the leg is moved into extension beyond neutral at -10 degrees, and into adduction across the other lower extremity at 10 degrees. This is an extreme position for the hip, so be very careful. The hip will not move much, but a gentle stretch is applied as the femur is externally toward you.

other muscles such as the quadratus lumborum. The dropped hip must be lunged into the step phase by these muscles. Clients with sciatic pain should walk without lunging; compensating only irritates the already inflamed tissues on the injured side. To establish a normal lumbopelvic rhythm, this muscle must be restored by lengthening and strengthening. While the following AIS stretch will help restore its length and muscle contraction capability, you can refer the client to a colleague trained in physical therapy to strengthen this muscle entirely.

This first movement may be performed with hip arthroplasty clients, but rotation should be no more than 20 to 25 degrees. *The sacrotuberous movement should not be performed with hip replacement clients* (Figures 4A and 4B, page 80). Please use extreme caution when trying this stretch, and pay particular attention to the client's knee. Feedback is important, so continually ask how the client feels. Hip rotator stretches can be intense; they are tiny muscles that often hold traumatic memories. It is important to understand the difference between a stretch pain—pain that is a result of lengthening a tight muscle—and real pain, which is sharp and acute. Ask the client what he or she feels, and work through the stretch discomfort. Hip extension beyond neutral is involved with these movements (Figures 5A and 5B, above). If the psoas muscle is limited, this stretch will be impossible to do. If this is the case, stretch the psoas first to open it.

Conclusion

CFTE was developed as an empowering approach to work with and teach clients how to overcome chronic dysfunction. Quality of life means doing the things you enjoy doing, and chronic sciatica should not hinder this.

While this article only discussed three of the many movements used in CFTE, the entire AIS protocol would be followed for any sciatic client. Muscle testing for strength is normally performed during the AIS protocol, and an assessment is made on what needs to be strengthened to help the client. Gait and posture assessments are also part of a CFTE therapy. Most importantly, all of the stretches discussed are shown to your clients. They would perform these stretches using a simple soft rope, and in my practice a stretch manual is included in all treatments. It is this methodology that breaks the cycle of chronic sciatic pain. ■

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