



# Hughston Health Alert

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## Inside...

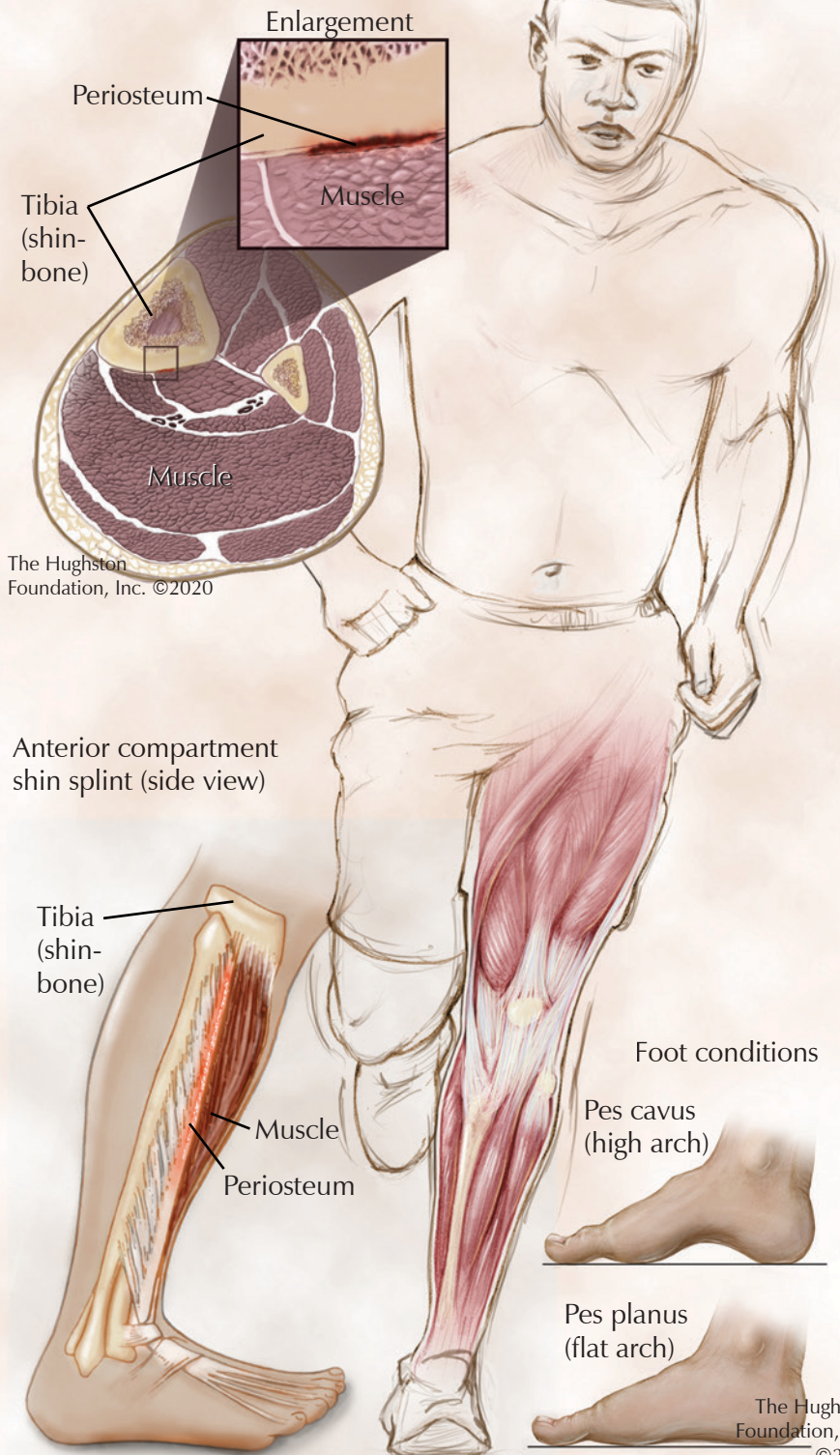
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## How to Manage Shin Splints

Shin splints, known as medial tibial stress syndrome, are a common sports injury incidental to overuse activities (**Fig.**). Orthopaedists and athletic trainers frequently see medial tibial stress syndrome in military recruits and athletes, specifically when their activity or sport requires repetitive running and jumping. While often not a serious health issue, shin splints can be disabling and, without proper management, can progress to more serious conditions. Fortunately, with early recognition and proper management, shin splints are a very manageable condition.

Shin splints are an overuse, repetitive-stress injury that results in periostitis (inflammation of the tissue surrounding a bone) at the posterior medial (inner) border of the distal tibia (shinbone). Historically, clinicians considered the tibialis posterior muscle the primary source of shin splints, but studies have also identified other lower leg muscles including the soleus, tibialis anterior, and flexor digitorum longus as possible sources of the condition. The cause is often multifactorial and involves both abnormal biomechanics and training errors.

Fig. Shin splint (Cross-sectional view in the middle of the shin)



## What are the symptoms?

People suffering from shin splints typically notice pain, specifically in the lower two-thirds of their tibia, which can be painful to touch. The pain is usually a vague, dull, achy pain that becomes intense with activity, is noticeably worse at the beginning of exercise, and gradually subsides during activity or shortly after cessation of exercise. However, as the injury progresses, pain may be present with everyday activity and even at rest.

## Diagnosing shin splints

An orthopaedist can often diagnose shin splints after taking a thorough patient health history and performing a physical examination. Additionally, your doctor may inquire about your type of activities, the duration of the activity, and the type of footwear you use. The physical examination can include assessment of your flexibility, particularly in the lower extremity, strength, neurovascular status (sensory and motor function), and any lower leg or foot abnormalities. These abnormalities can include knee alignment, leg length differences, rotational difference, and pes cavus (high arch) or pes planus (flat arch) of the feet. Examination of the core muscles, spine, and pelvis may also reveal imbalances that can contribute to dysfunction in the lower extremity.

Your orthopaedist may order imaging studies if he or she is suspicious that stress fractures are causing your pain. Because shin splints can progress without proper treatment, your doctor may opt to order radiographs (x-rays), bone scans, or magnetic resonance imaging (MRI scan that shows bones, muscles, tendons, and ligaments) in order to rule out fractures or other injuries and diseases.

## How do you treat shin splints?

Your initial treatment for shin splints primarily focuses on pain and inflammation reduction. Your doctor may instruct you to reduce activity and take a break from your sport or training activities for 2 to 6 weeks. During that time, you should apply ice 3 to 4 times daily for 15 to 20 minutes and take nonsteroidal anti-inflammatory medications (NSAIDs), such as naproxen sodium or ibuprofen, to control pain and reduce inflammation in the affected area. Additionally, you may benefit from physical therapy modalities including ultrasound, whirlpool, phonophoresis (uses ultrasound and topical medications), soft tissue management, and electrical stimulation which can help reduce pain and promote tissue healing. In severe cases, you may need to remain nonweightbearing for a period of time, which means you may need to use crutches and wear a cast to relieve the stress placed on the lower extremity.

After initial treatment, your orthopaedist will focus on long-term management and prevention of recurrence, by modifying your training program and addressing any biomechanical abnormalities. Decreasing activity frequency, intensity, and duration by 50% often improves

symptoms without completely stopping activity. Additionally, you are encouraged to avoid running on uneven, firm surfaces as well as up or down hills since these activities increase the stress placed on the lower leg musculature. Transitioning to a synthetic track or comparable surface is a good way to continue activity while not causing further injury. You can also replace or change your training with low impact exercises such as water aerobics, swimming, stationary biking, or using an elliptical machine.

To address biomechanical problems, your physician can recommend that you use proper footwear or orthotics for your sport or everyday activities. Shoes, specifically those used during training activities, should have sufficient shock absorption in order to reduce the forces transmitted into the lower leg. Shoes should fit properly and you may need to alternate with another pair if they are wet, since this can compromise the support. You should replace your shoes between 250 and 500 miles as distances beyond this tend to decrease their shock absorption and support by up to 40%. If you have flatfeet or foot malalignment, over-the-counter or custom orthotics can be beneficial.

During all phases of treatment, you should place emphasis on improving lower extremity flexibility and strength. Calf stretching, lower leg strengthening, and core stability exercises can be demonstrated to you and performed at home multiple times a week in order to prevent recurrence.

Manual therapies to improve or correct musculoskeletal abnormalities may be used. Your therapy should focus on areas with imbalance that affects the lower extremity, such as the spine, sacroiliac joints, and pelvis. Your orthopaedist and physical therapist can use osteopathic manipulation and physical therapy to address these dysfunctions. You can incorporate proprioceptive training with a 1-legged stance, wobble, or balance board into the manual therapies to increase postural stability and improve the musculoskeletal support required during training activities.

In cases that do not respond to nonsurgical treatment, injections with substances that promote local healing such as platelet-rich plasma or surgery that focuses on the problematic musculature are often successful. If your treatment fails to bring you relief, your orthopaedist will discuss more invasive options to alleviate your pain.

## How can you prevent shin splints?

If you have a history of shin splints or if you are beginning a new workout routine, you should pay particular attention to the prevention of shin splints. You should focus on your flexibility, proper footwear, core and lower extremity strengthening, as well as training in moderation especially when beginning a new program. Physicians, physical therapists, and athletic trainers can help educate you as well as demonstrate the proper techniques to use for prevention.

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# EMG Testing: Questions for a Specialist

When you are injured, your nerves tell you where the damage is located in your body. For example, when working properly, the nerves of a stubbed toe send signals to your brain that your toe is hurt and you respond by stepping carefully for a bit. However, when you damage your nerves, disruption of these signals make it harder to pinpoint the problem. A pinched nerve in the neck can cause tingling in the fingertips or inflammation at the wrist can make your whole arm feel like it is burning. Situations like this can be frustrating, but one method to cut through the confusion is for your doctor to order an EMG.

“EMG” is short for electromyography and nerve conduction study. This special test assesses the function of each nerve individually to find out which nerves are damaged, what part of the nerve is affected, and the severity of the problem. If your doctor has ordered an EMG test for you, here are some questions you may have before your appointment:

## Why does my doctor want me to have an EMG?

There are many reasons why you might experience pain, weakness, numbness, or tingling. An EMG helps your physician determine if there is nerve involvement and what part of the nervous system is affected.

## How does my doctor use an EMG to diagnose my condition?

Knowing which nerve(s) are injured and the extent of the damage helps your doctor to determine the best course of treatment, whether it is medication, therapy, injections, or surgery.

## Who performs an EMG? Do they have special qualifications and training?

A doctor of physical therapy (DPT) who is board certified in clinical electrophysiology performs the test. These physical therapists have undergone a thorough and rigorous training process, which includes over 2,000 hours of direct EMG testing, more than 500 individual EMG studies, and they must pass a specialty board examination.

## Where do I get the test completed?

Often, your therapist will complete the test in a private treatment room in the physical therapy department. Your physician's office can help you to find a location and time that is convenient for you.

## How should I prepare for an EMG?

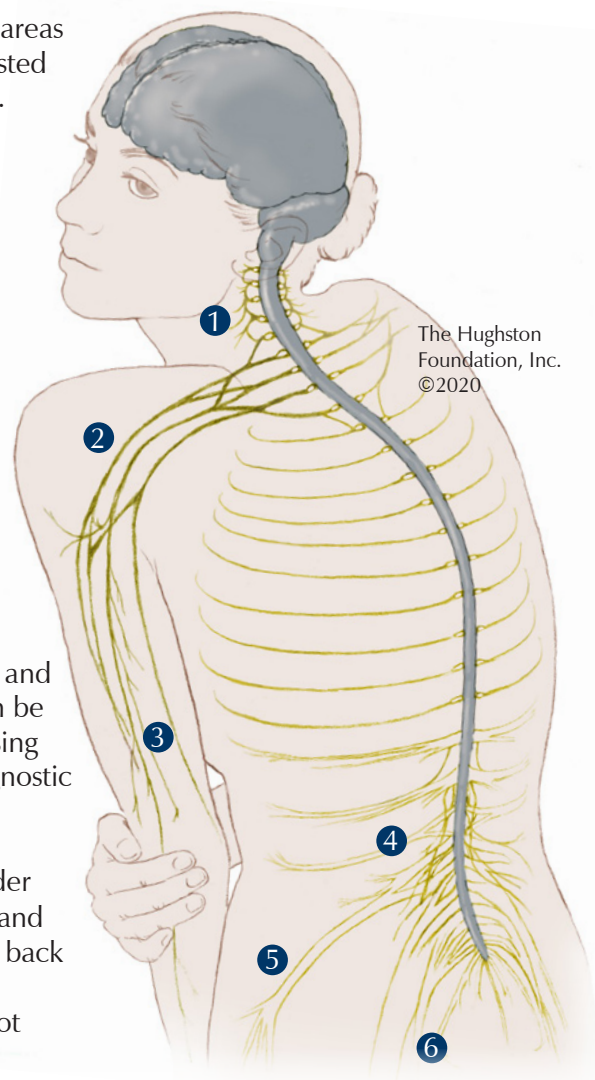
You should wear loose fitting garments for your test. Wear a short-sleeved shirt or tank top if your neck or arms are to be tested, and a pair of loose shorts if the problem

is in your back or legs. Do not apply any lotions, oils, or creams to your skin the day of testing, as it can interfere with the examination process. Most medications will not affect the test, but pyridostigmine products, such as Mestinon® should be discontinued for 24 hours before testing.

## How do you perform the test?

The test is divided into 2 parts. During the first part, your nerves are stimulated electrically, causing you to feel a mild shock sensation. This produces nerve signals which are recorded through small electrodes placed on your skin. During the second part, a small wire in the form of a needle records electrical activity in various muscles.

**Fig.** Nerve areas typically tested using EMG.



Symptoms of pain, weakness, numbness, and tingling can be assessed using electrodiagnostic testing in:

1. Neck
2. Shoulder
3. Arm/hand
4. Lower back
5. Hip
6. Leg/foot

## Does the test hurt?

The physical therapist will position an electrode just under the skin, which can cause a slight prick. Some aspects of the testing may also be uncomfortable, but the physical therapist will work closely with you to make it as pleasant as possible.

## Is the test safe?

The testing is safe with minor complications. For example, there may be some bruising or soreness where your physical therapist places the needle electrode, especially if you take prescription blood thinners.

## Will an EMG affect my pacemaker or spinal stimulator?

The test does not affect implanted medical devices such as pacemakers or spinal stimulators. However, it is best to turn off the spinal stimulator since it can produce electrical interference, which can make the test more difficult to complete.

## How long does it take to complete the test?

It takes approximately 1 hour to complete the full test; with much of this time spent discussing your symptoms and helping you get comfortable before the testing begins.

## When will I get the results?

The physical therapist performs the test, interprets or reads the data, and prepares the final report with impressions and conclusions. The physical therapist will send the EMG report directly to your physician within 1 to 2 business days following your test. Your physician may schedule a visit with you to explain the results, or he or she may prefer to call you and discuss the findings over the telephone.

EMG tests offer a unique and informative look at the health of the peripheral nervous system. Don't worry, an EMG is easy to perform, and most people are surprised that the test isn't as uncomfortable as they imagined it would be. The information the test provides will help your doctor get you on the road to recovery quickly and more effectively.

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# Hearing Aids

"I can hear you, but I don't understand you," this is probably the most frequent complaint patients with hearing loss describe. These patients often experience feelings of isolation, frustration, and embarrassment. In the United States, 1 in 8 people aged 12 years or older have hearing loss, but only about 13% seek assistance. Despite the low number of people who pursue treatment, some forms of hearing loss are medically correctable while others are successfully treated using an amplification device.

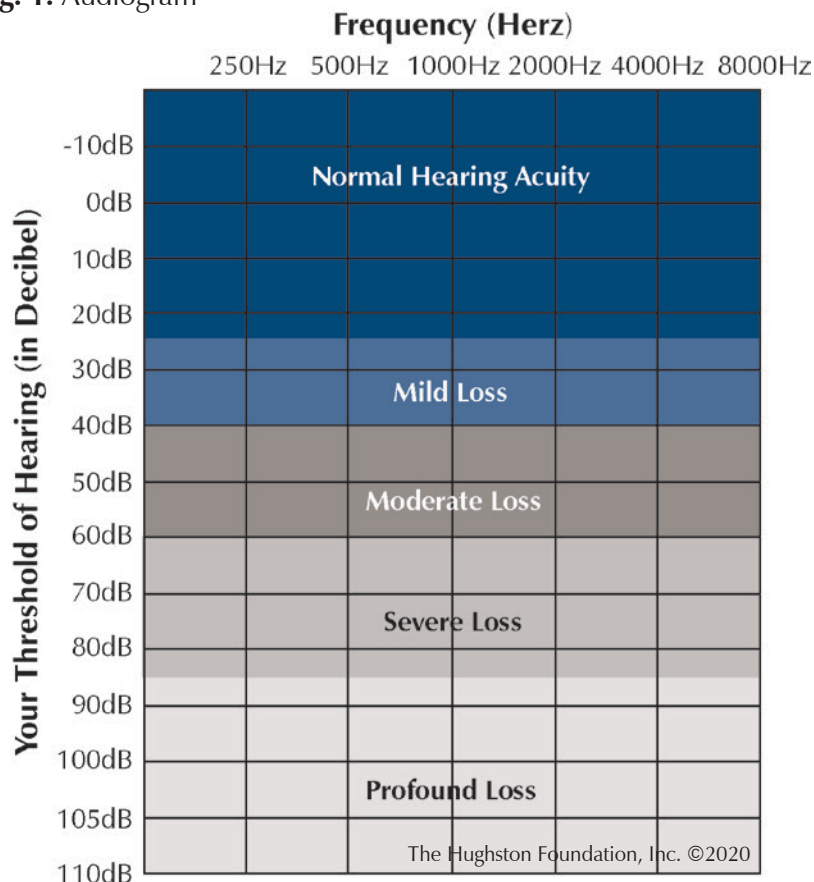
## Testing

Having an audiometric evaluation (hearing test) is the best way to know if you have a hearing loss and what type of loss you have. An audiologist (a trained medical professional who evaluates hearing) performs the test. Some audiologists have the credentials AuD listed after their name, which means that he or she holds a clinical doctorate degree in audiology. Once your test is complete, the audiologist will explain the result of your audiogram (a graph of your hearing test results) (**Fig. 1**). The audiogram indicates the thresholds, or the softest sounds, you can hear at each frequency or pitch. After the evaluation, your audiologist will refer you to a physician if needed or recommend a type of amplification that best fits your needs.

## Types of hearing loss

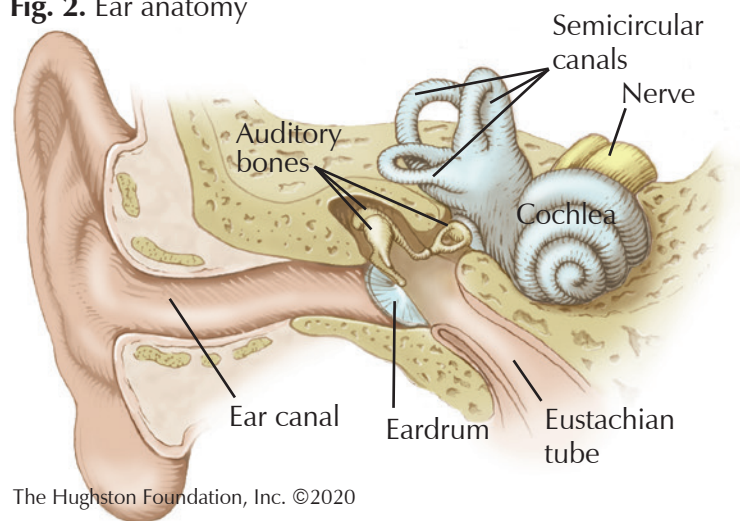
There are 3 kinds of hearing loss: conductive, sensorineural, and mixed. Conductive hearing loss can result from wax in the ear canal, ear infections, or holes in the eardrum and is usually medically correctable

Fig. 1. Audiogram





**Fig. 2.** Ear anatomy



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**(Fig. 2).** On the other hand, sensorineural hearing loss caused by damage to the ear's sensory organ or nerves can arise from heredity, noise exposure, or age and is not medically correctable. Mixed hearing loss is a combination of both conductive and sensorineural loss.

While reptiles and birds can regenerate parts of their sensory organs, humans unfortunately cannot. Therefore, patients who experience hearing loss that is sensorineural or mixed may benefit from hearing aids.

### Types of hearing aids

Hearing aids come in an abundance of styles, shapes, and levels of technology. To figure out which is best for you, consult with an audiologist who is experienced in working with multiple hearing aid manufacturers and products (**Fig. 3**).

Traditional, daily-wear hearing aids are small and fit in the ear canal or around the back of the ear and worn during the day. An audiologist can recommend which style works best for you, depending on the degree of hearing loss and your individual needs. Since hearing aids are little computers that manipulate the sounds going into your ear, you should have a good working relationship with your audiologist. This is especially true since hearing aids are tailored to each patient to provide the best possible results for hearing and understanding speech and they often need adjustments for optimal performance. Additionally, it is important to feel comfortable with your audiologist so you can openly discuss how the hearing aids sound or any problems you may have. The audiologist can then modify the programming of your hearing aids to fit your needs.

Extended-wear hearing aids are an option for patients who don't want to take out their hearing aids each night. These devices fit deep into your ear canal and have the added convenience of no batteries to change or cleaning requirements. These disposable devices stay in your ears for approximately 2 months before your audiologist removes and replaces them.

Sometimes hearing aids are not enough. When the hearing loss is so significant that the hearing aids are not providing any benefit, then cochlear implants may be your best option. A cochlear implant is a 2-part system: a physician surgically inserts the internal part into the hearing organ and you wear the external part over the ear. The internal part includes several small electrodes that stimulate the hearing nerve directly. The cochlear implant doesn't amplify sounds like traditional hearing aids; instead, it converts sounds to electrical impulses which the brain is able to interpret.

Furthermore, technological advances in the field of audiology have grown tremendously during the past 10 years. Hearing aid products today are rechargeable, offer faster and more sophisticated computer processing, can connect and stream with cell phones, and can sense health information, such as detecting falls and monitoring your body activity.

### Where do I begin?

If you suspect that you may have some hearing loss, begin by contacting an audiologist. A comprehensive evaluation is the first step to solving your problem. The hearing test only takes about 15 minutes and most insurance companies cover the cost of the test.

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**Fig. 3.** Examples of hearing aid options



# Greater Trochanteric Bursitis – A Common Cause of Hip Pain

Bursae are found throughout the body and serve as cushions, lubricants, and shock absorbers around the shoulder, elbow, hip, knee, and heel. Bursae or bursal sacs are filled with synovial fluid (a clear, slippery substance) that allow structures such as ligaments, tendons, and muscles to glide over bone and one another by reducing the amount of friction between them. Bursitis is the term doctors use to describe a bursa when it has become inflamed and swollen. A leading cause of hip pain in adults is from greater trochanteric bursitis.

## Anatomy

The greater trochanter is a prominent portion of the femur where strong hip abductor muscles attach (**Fig. 1**). There are several other bursae located near the greater trochanter bursa, which can be attributed to the number of muscle attachments and the gliding movement at the hip joint. Greater trochanteric bursitis occurs when the bursa that lies between the iliotibial tract (dense fibrous connective tissue on the outside of the hip that connects to the knee) and the greater trochanter (the bony prominence at the top of the thighbone) becomes irritated and inflamed.

## What are the signs and symptoms?

Patients who have greater trochanteric bursitis often describe the pain as tender to the touch on the outside, prominent part of the femur. The pain becomes worse after lying on the affected side during sleep and can cause a dull ache that hurts while walking. Often, the pain starts as sharp and intense in the early stages and then later becomes dull and achy and spreads out over the hip and thigh. Pain can occur during repetitive motion, such as walking or stair climbing, and you may experience a sharp pain when you get up from a chair or get out of a car after sitting a while.

## Risk Factors

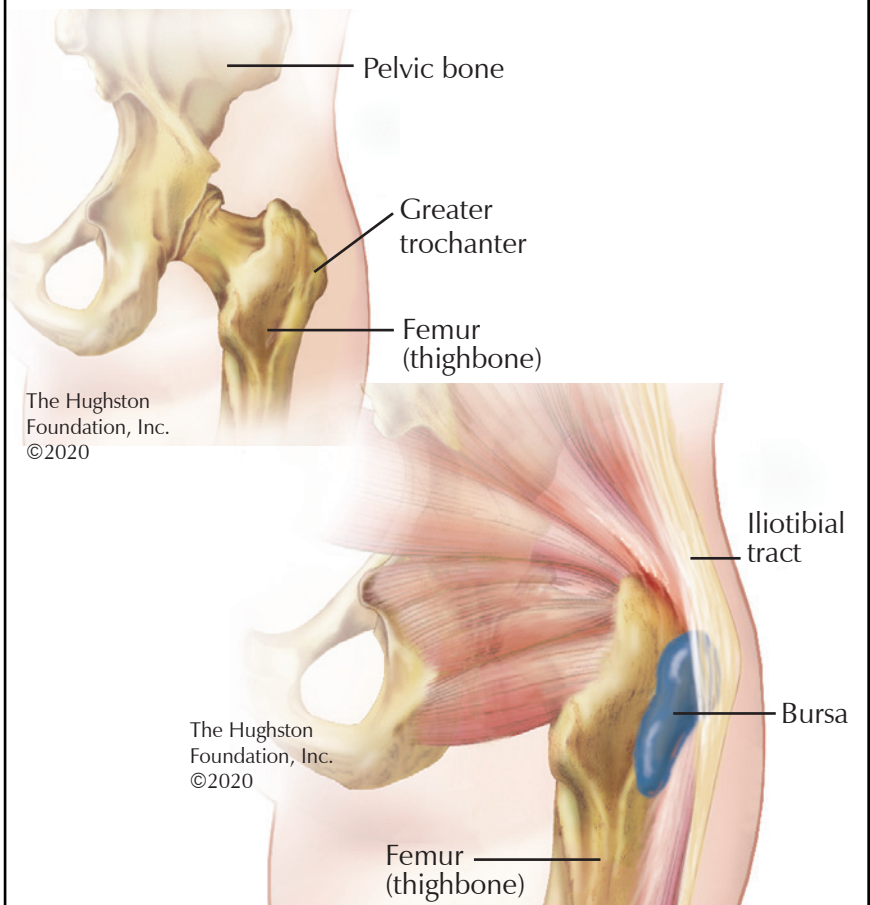
Certain populations can be more at risk of greater trochanteric bursitis. For example, it is predominant in females between 40 to 60 years of age and in runners. Researchers believe this may be because females have a larger pelvic diameter, which can contribute to a greater prominence of the greater trochanter. In runners, the repetitive friction over the bursa from the iliotibial band (IT Band) causes local irritation and inflammation. Additionally, individuals with a higher body mass index (BMI) score are more at risk of having greater trochanteric bursitis.

More often, a change in your walking pattern or an injury to your hip increases the pressure and friction near the greater trochanter resulting in bursitis. Previous surgery or a hip implant can affect your gait as well. Additionally, bone spurs, arthritis, spine disease, and gout can cause the bursa to become inflamed and lead to the development of bursitis.

## When should I seek medical attention?

You should see an orthopaedist if you have sharp pain on the outside of the hip or pain that radiates at night through your thigh. In addition to a thorough health history, your physician will need to know if you have fallen, or if you have been diagnosed with rheumatoid arthritis, gout, or spine disease, as well as any other symptoms you are experiencing. Your doctor will perform a physical exam, and may order additional tests, such as an x-ray or MRI (magnetic resonance imaging). During the exam your doctor may put pressure on your hip and touch the area of tenderness that is causing your pain.

**Fig. 1.** Hip joint anatomy





**Fig. 2.** Hip abduction exercise

**Step 1:** Lie on your unaffected side with your leg bent for stabilization. Rest your affected leg in a straight position. **Step 2:** Raise the affected leg up with control, keeping the knee straight, going as high as comfortable and without rolling your body backwards.



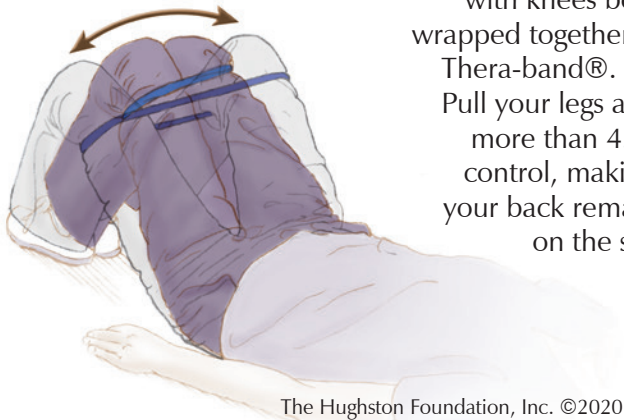
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### Is there an effective treatment?

The vast majority of patients improve with nonsurgical management. Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen can help with the pain and swelling. Other modalities include activity modification, avoiding activity that irritates the bursa, and physical therapy to stretch and strengthen the hip abductor muscles (**Figs 2 & 3**). A physical therapy program can address the range of motion and strength deficits that underlie gait deviations. First, neutral positioning of the lumbar spine and pelvis must be achieved. Then, range of motion and stretching activities are introduced to gain full extension, adduction, and rotation of the hip joint. Strengthening exercises for the stabilizing muscles of the lumbar spine and pelvis, as well as the gluteal muscles, are incorporated into the physical therapy program. The primary goal of physical therapy is to increase the patient's ability to perform desired activities with less pain.

**Fig. 3.** Hip rotation exercise

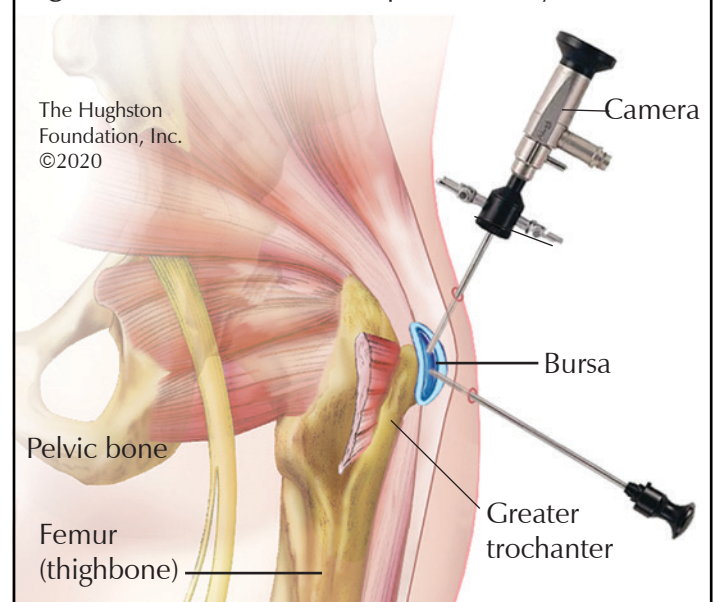
**Step 1:** Lie on your back with knees bent and wrapped together with a Thera-band®. **Step 2:** Pull your legs apart no more than 45° with control, making sure your back remains flat on the surface.



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Your orthopaedist can also administer a corticosteroid injection into the bursa that can help reduce the inflammation. Rarely is surgery necessary for greater trochanteric bursitis; however, if all conservative measures fail, surgery can be required. If so, the offending bursal tissue can be removed through an incision on the outside of the hip in a procedure called open bursectomy. By contrast, endoscopic hip bursectomy—inserting a camera through a small incision into the hip area and removing the bursa through another small incision—has an outcome comparable to that of open bursectomy, but with the advantages that it is less invasive and can be performed as an outpatient procedure (**Fig. 4**).

**Fig. 4.** Camera inserted for hip bursectomy



### Can I prevent this from happening?

Rest, stretching, and anti-inflammatory medications often help relieve the pain caused by greater trochanteric bursitis. To keep the inflammation from recurring, avoid repetitive activities that cause irritation of the bursa, such as running and jumping. You can also avoid stress on the hip by losing weight and performing physical therapy exercises that stretch and strengthen your hip abductor muscles. If you have a leg-length discrepancy, proper shoes can lift the leg and level the pelvis, which reduces the friction on the bursa as well. It is better to seek medical attention early to effectively use conservative methods of treatment and hopefully avoid surgery.

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