



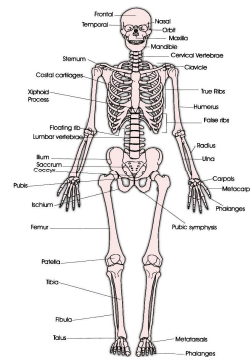
Common Orthopedic Running Injuries: An Illustration

Dr. Raju Vanapalli

All illustrations and text in the “notes” section come from www.merckmedicus.com – accessed 9/2006.

Human Physiology & Homeostasis

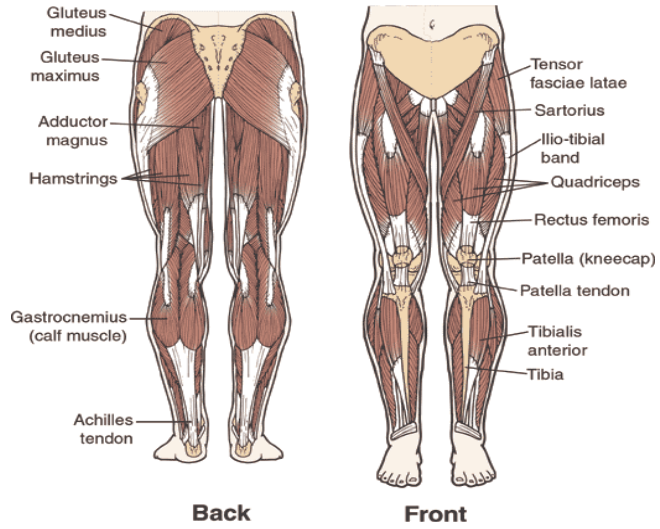
- 1 Aim of Running – achieve the highest benefit for the body while avoiding the negative physical consequences of running
- 1 Physics of Running – mechanics of movement
- 1 How to Meet the Goal?
 - Understanding
 - Training
 - Prevention



Sprains, Tears, Aches & Pains

- 1 Ligaments
- 1 Muscles
- 1 Tendons
- 1 Joints
- 1 Bones

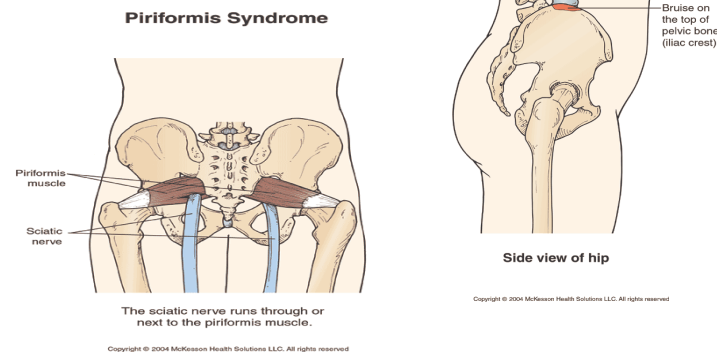
Leg Anatomy



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Hip Injuries

- 1 Hip Pointer
- 1 Piriformis Syndrome



Hip Pointer: **What is a hip pointer?**

A hip pointer is a deep bruise on the top portion of your pelvis, called the iliac crest. **How is it treated?**

At first, treat your injury with ice packs for 20 to 30 minutes every 3 to 4 hours for 2 to 3 days or until the pain goes away. A hip pointer needs time to heal itself. Protect yourself from further injury by placing padding over the injury.

How long will the effects last?

The pain from a hip pointer will usually last several weeks, sometimes longer. You will usually have pain with contact to the hip pointer for several weeks after the injury. A pad taped over the hip pointer can provide protection.

What is piriformis syndrome?

Piriformis syndrome refers to irritation of the sciatic nerve as it passes through or next to the piriformis muscle located deep in the buttock. Inflammation of the sciatic nerve, called sciatica, causes pain in the back of the hip that can often travel down into the leg.

How is it treated?

Treatment may include:

placing ice packs on your buttock for 20 to 30 minutes every 3 to 4 hours for the first 2 to 3 days or until the pain goes away

rest

taking prescribed anti-inflammatory medicines or muscle relaxants

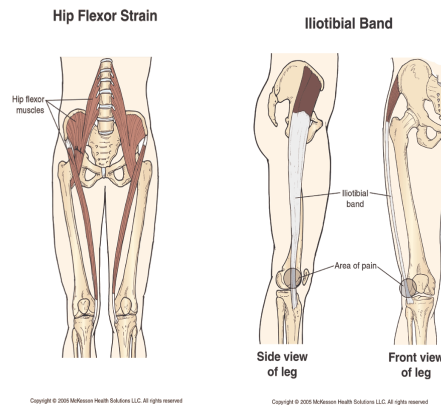
learning and doing stretching exercises of the piriformis muscle.

How long will the effects last?

The length of recovery depends on many factors such as your age, health, and if you have had a previous piriformis injury. Recovery time also depends on the severity of the injury. A mild injury may recover within a few weeks, whereas a severe injury may take 6 weeks or longer to recover. You need to stop doing the activities that cause pain until your muscle has healed. If you continue doing activities that cause pain, your symptoms will return and it will take longer to recover.

Hip Injuries, cont.

- 1 Hip Flexor Strain
- 1 IT Band Injury
- 1 Bursitis



What is a hip flexor strain?

A strain is a stretch or tear of a muscle or tendon, a band of tissue that connects muscle to bone. The tendon may be inflamed. Inflammation of a tendon is called tendonitis. The hip flexor muscles allow you to lift your knee and bend at the waist.

How is it treated?

Treatment may include:

putting ice packs on the injured area for 20 to 30 minutes every 3 to 4 hours for 2 to 3 days or until the pain goes away

taking anti-inflammatory medicines prescribed by your health care provider

doing rehabilitation exercises to help you return to your activity.

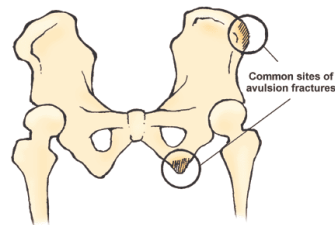
While you are recovering from your injury, you will need to change your sport or activity to one that does not make your condition worse. For example, you may need to swim instead of bicycling or running.

How long will the effects last?

The length of recovery depends on many factors such as your age, health, and if you have had a previous hip flexor injury. Recovery time also depends on the severity of the injury. A mild hip flexor strain may recover within a few weeks, whereas a severe injury may take 6 weeks or longer to recover. You need to stop doing the activities that cause pain until the hip has healed. If you continue doing activities that cause pain, your symptoms will return and it will take longer to recover.

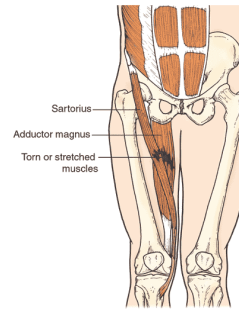
Hip Avulsion & Groin Strain

Pelvic Avulsion Fractures



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Groin Strain



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What is a pelvic avulsion fracture?

There are several muscles in the thigh that attach to various parts of the pelvis. An avulsion is the tearing away of a body part from its point of attachment. An avulsion fracture occurs when a tendon that attaches a muscle to a bone pulls part of the bone away.

How does it occur?

An avulsion fracture may occur after sudden, forceful contraction of the muscle. It is often seen in athletes with tight muscles. Common sites for avulsion fractures include where the sartorius muscle attaches to the top front of the pelvis; where the rectus femoris muscle attaches to the front of the pelvis; where the hamstring muscle group attaches to the part of the pelvis called the ischial tuberosity (the part of your pelvis that you sit on).

How is it treated?

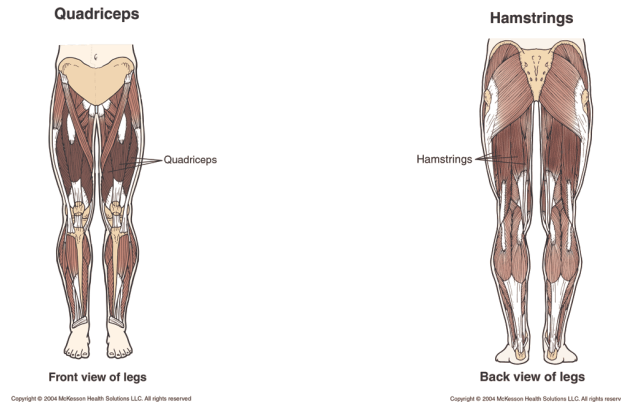
These avulsion fractures require rest. In general, they will heal with 4 to 6 weeks of rest. You may need to use crutches for most of this time. If the bony fragment is large or is torn away from its original site by a significant distance, surgery may be required.

At the time of the initial injury you should apply ice to the area for 20 to 30 minutes every 3 to 4 hours for 2 to 3 days or until the pain goes away. Your health care provider may prescribe anti-inflammatory medicines.

How long will the effects last?

Pain from a pelvic avulsion fracture may take 1 to 3 months to go away. Ask your health care provider when you will be able to return to your normal activities.

Thigh Problems – Quads & Hamstrings



How is it treated?

Right after your injury your health care provider may wrap your leg in a bent-knee position and place ice over your thigh. This will put a maximum stretch on the thigh muscles, keeping them from becoming too tight or stiff during healing.

Other treatment may include:

putting ice packs on your thigh for 20 to 30 minutes every 3 to 4 hours for 2 or 3 days or until the pain goes away

lying down and elevating your thigh by putting a pillow under it

taking an anti-inflammatory medicine prescribed by your health care provider

wearing an elastic thigh wrap when you return to sports

having prescribed physical therapy, which would include rehabilitation exercises and deep tissue treatments such as ultrasound or electrical stimulation.

While you are recovering from your injury you will need to change your sport or activity to one that does not make your condition worse. For example, you may need to swim instead of run.

When can I return to my normal activities?

Everyone recovers from an injury at a different rate. Return to your activities will be determined by how soon your thigh recovers, not by how many days or weeks it has been since your injury has occurred. In general, the longer you have symptoms before you start treatment, the longer it will take to get better. The goal of rehabilitation is to return you to your normal activities as soon as is safely possible. If you return too soon you may worsen your injury.

You may safely return to your activities when, starting from the top of the list and progressing to the end, each of the following is true:

You have full range of motion in the injured leg compared to the uninjured leg.

You have full strength of the injured leg compared to the uninjured leg.

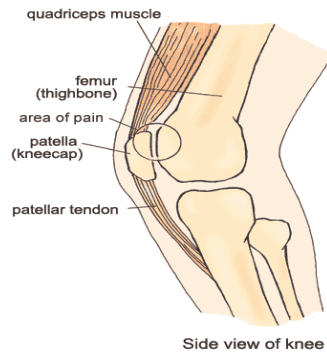
You can walk straight ahead without pain or limping.

How can I prevent a thigh bruise or strain?

A thigh bruise usually occurs from a direct blow to the thigh, which may not be preventable. However, in contact sports such as football be sure to wear the proper protective equipment. Strains are best prevented by warming up and stretching properly before your activity.

Runner's Knee

Patellofemoral Pain Syndrome (Runner's Knee)



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- 1 Patellofemoral Pain Syndrome
- 1 Chondromalacia
- 1 Ruptures

What is patellofemoral pain syndrome?

Patellofemoral pain syndrome is pain behind the kneecap. It has been given many names, including patellofemoral disorder, patellar malalignment, runner's knee, and chondromalacia.

How does it occur?

Patellofemoral pain syndrome can occur from overuse of the knee in sports and activities such as running, walking, jumping, or bicycling.

The kneecap (patella) is attached to the large group of muscles in the thigh called the quadriceps. It is also attached to the shin bone by the patellar tendon. The kneecap fits into grooves in the end of the thigh bone (femur) called the femoral condyle. With repeated bending and straightening of the knee, you can irritate the inside surface of the kneecap and cause pain.

Patellofemoral pain syndrome also may result from the way your hips, legs, knees, or feet are aligned. This alignment problem can be caused by your having wide hips or underdeveloped thigh muscles, being knock-kneed, or having feet with arches that collapse when walking or running (a condition called over-pronation).

What are the symptoms?

The main symptom is pain behind the kneecap. You may have pain when you walk, run, or sit for a long time. The pain is generally worse when walking downhill or down stairs. Your knee may swell at times. You may feel or hear snapping, popping, or grinding in the knee.

How is it diagnosed?

Your health care provider will review your symptoms, examine your knee, and may order knee x-rays.

How is it treated?

Treatment includes the following:

Place an ice pack on your knee for 20 to 30 minutes every 3 to 4 hours for the first 2 to 3 days or until the pain goes away

Elevate your knee by placing a pillow underneath your leg when your knee hurts.

Take anti-inflammatory pain medicine, such as ibuprofen, as prescribed by your health care provider.

Do the exercises recommended by your health care provider or physical therapist.

Your health care provider may recommend that you:

Wear shoe inserts (called orthotics) for over-pronation. You can buy orthotics at a pharmacy or athletic shoe store or they can be custom-made.

Use an infrapatellar strap, a strap placed beneath the kneecap over the patellar tendon.

Wear a neoprene knee sleeve, which will give support to your knee and patella.

While you are recovering from your injury, you will need to change your sport or activity to one that does not make your condition worse. For example, you may need to bicycle or swim instead of run. In cases of severe patellofemoral pain syndrome, surgery may be recommended. Your health care provider will show you exercises to help decrease the pain behind your kneecap.

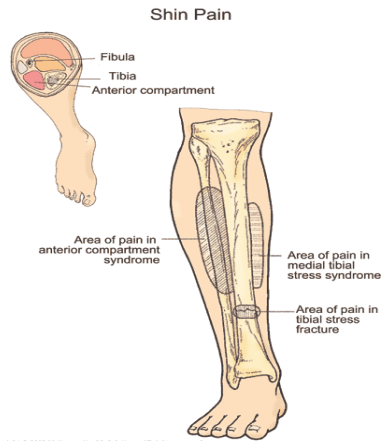
How long will the effects last?

Patellofemoral pain is often chronic and recurrent. Treatment requires proper rehabilitation exercises that are done regularly.

When can I return to my normal activities?

Everyone recovers from an injury at a different rate. Return to your activities will be determined by how soon your knee

Lower Leg – Shin & Calf Pains

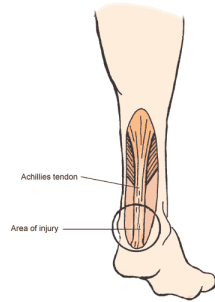


- 1 Stress Fractures
- 1 Overuse pains
- 1 Compartment

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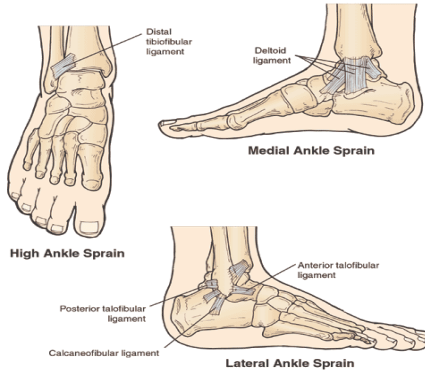
Injuries of the Foot

Achilles Tendonitis



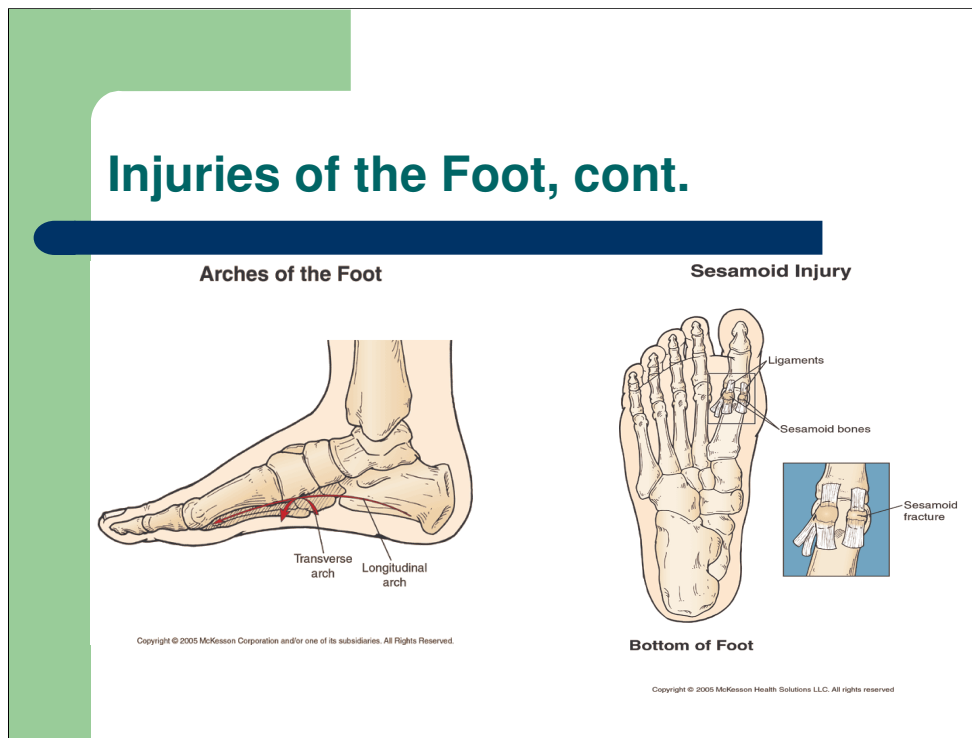
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Ankle Sprain



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Injuries of the Foot, cont.



What is a sesamoid injury?

A sesamoid bone is a bone found inside a tendon where it passes over a joint. A tendon is a strong band of connective tissue which attaches a muscle to a bone. Your body has several sesamoid bones. The largest sesamoid bone is your patella, or kneecap. The ball of your foot contains two small sesamoid bones, the medial (inner side) and lateral (outer side) sesamoids. These sesamoids act as pulleys for the tendons and help flex or curl your big toe. When you run and jump these sesamoid bones absorb much of your body weight.

An injury to a sesamoid bone is one of three types:

Sesamoiditis: An irritation or inflammation.

Sesamoid fracture: A break from an injury.

Sesamoid stress fracture: A break that develops slowly over time.

How do sesamoid injuries occur?

Sesamoiditis can occur when a person has repeated stress to the ball of their foot. This is seen in running and jumping sports. It is common in dancers, who are constantly on the balls of their feet. Wearing high-heeled shoes can contribute to sesamoiditis. Sometimes tight calf muscles, high-arched feet, or feet that over-pronate (flatten out when you walk) can cause the inflammation. Some people have a "bipartite" sesamoid. This is a sesamoid bone that is in 2 pieces (without being broken). Although it is not broken the edges of the 2 pieces may rub against each other and cause irritation.

A break, or fracture, usually occurs from an injury such as landing too hard on the foot after a jump or fall. A sesamoid stress fracture occurs from overuse and wear and tear on the foot over time. **How is it treated?**

Treating a sesamoid injury means protecting it from overuse. This can be done in several ways:

You may be given a special pad to wear that supports the bones.

You may be given a shoe insert that limits the motion of your big toe.

You may have custom-made shoe inserts made for you (orthotics).

You may need to tape your big toe to provide support and limit movement.

You may be given a removable walking cast to wear until the pain is gone.

The pain may be treated with an anti-inflammatory medicine or other pain medicine. While you are having acute pain you may need crutches. You should keep your foot elevated and use ice for 20 to 30 minutes 3 to 4 times a day.

Your provider may recommend a cortisone shot in the foot to help reduce the inflammation. In some cases the painful sesamoid bone needs to be surgically removed.

How long do the effects last?

Sesamoid fractures and stress fractures may take 4 to 8 weeks to heal. The pain from sesamoiditis may last weeks to months, depending on the amount of overuse.

Questions?

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"notes" section come from
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