

# Ankle Sprain and Instability

## Introduction



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**Ankle Sprains** are a very common injury that can happen to anyone. Our ankles support our entire body weight and are vulnerable to instability. Walking on an uneven surface or wearing the wrong shoes can cause a sudden loss of balance that makes the ankle twist. If the ankle turns far enough, the ligaments that hold the bones together can overstretch or tear, resulting in a sprain. A major sprain or several minor sprains can lead to permanent ankle instability

## Anatomy

The bones in our leg and foot meet to form our ankle joint. The leg contains a large bone, called the Tibia and a small bone called the Fibula. These bones rest on the Talus bone in the foot. The Calcaneus bone, our heel, supports the Talus bone. Our heels bear 85% to 100% of our total body weight.

Strong tissues, called ligaments, connect our leg and foot bones together. One ligament, called the Lateral Collateral Ligament (LCL), is very susceptible to ankle sprains. The LCL is located on the outer side of our ankle. It contributes to balance and stability when we are standing or walking and moving. The LCL also protects the ankle joint from abnormal movements, such as extreme ranges of motion, twisting, and rolling.

The LCL is composed of three separate bands that are commonly referred to as separate ligaments. The Anterior Talofibular Ligament is the weakest and most commonly torn, followed by the Calcaneofibular Ligament. The Posterior Talofibular Ligament is the strongest and is rarely injured.

## Causes

Our ankles are susceptible to instability, especially when walking on uneven surfaces, stepping down at an angle, playing sports, or when wearing certain shoes, such as high heels. Everyone, even the fittest athlete, is vulnerable to a sudden loss of balance under these conditions. Our ankles support our entire body weight. When the foot is placed at an abnormal angle, the weight of our body places an abnormal amount of force on the ligaments causing them to stretch. When a ligament is forced to stretch beyond its limit, it may overstretch, tear, or disconnect from the bone.

## Symptoms

You may lose your balance and fall if your foot is placed at a poor angle on the ground. Some individuals may hear a “pop” noise when the injury takes place. You will probably have difficulty putting weight on your foot or walking. Pain is usually the first symptom of a Sprained Ankle. Swelling, stiffness, and skin discoloration from bruising may occur right away or take a few hours to develop.

## Diagnosis

Your doctor can diagnose a Sprained Ankle by conducting a physical examination and asking you what happened to cause the injury. Your doctor will move your ankle in various positions to determine which ligament was injured. Your ankle may be X-rayed to make sure that you do not have a broken bone in your ankle or foot. In severe cases, a Magnetic Resonance Imaging (MRI) scan may be ordered to view the ankle structures in more detail. The X-ray and the MRI scan are painless and require that you remain very still while the images are taken.

Ankle Sprains are categorized by the amount of injury to the ligaments. A **Grade 1 sprain** has minimal impairment. The ligament has sustained slight stretching and some damage to the fibers. A **Grade 2 sprain** is characterized by partial tearing of the ligament. The ankle joint is lax or looser than normal. A **Grade 3 sprain** describes a complete tear of the ligament. The ankle joint is completely unstable

## Surgery

Ankle Sprains rarely require surgery; however, it is an option when non-surgical treatments and rehabilitation fail. Each case of Ankle Sprain is evaluated on an individual basis. Your physician will discuss surgical options and help you determine the most appropriate choice for you.

One type of surgery, termed Ligament Tightening, is performed to tighten the overstretched ligaments. This usually involves the Anterior Talofibular Ligament (ATFL) and the Calcaneofibular Ligament (CFL). The surgeon will make an opening over the ligaments and separate the ATFL and the CFL in half. The ends of these two ligaments are surgically attached to the Fibula. The surgeon will further reinforce the ligaments by also attaching the top edge of the Ankle Retinaculum. The Ankle Retinaculum is a large band of connective tissue located at the front of the ankle.

If the ligaments are severely damaged or not appropriate for a Ligament Tightening procedure, the surgeon may perform a Tendon Graft. For this procedure, the surgeon will use a portion of a nearby tendon for a tendon graft. The tendon from the Peroneus Brevis muscle in the foot is most commonly used. The tendon graft is surgically attached to the Fibula and the Talus, near the attachment sites of the original tendon.

In some cases of chronic pain, an Arthroscopic Surgery may be performed to remove bone fragments, scar tissue, and damaged cartilage. Arthroscopic surgery uses a small camera, called an arthroscope, to guide the surgery. Only small incisions need to be made and the joint does not have to be opened up fully. This can shorten the recovery time.

## **Treatment**

The majority of Ankle Sprains heal without surgery. It is imperative that you seek evaluation and treatment for any ankle injury, as sometimes fractures are mistaken for sprains.

The treatment of an Ankle Sprain depends on its Grade. Grade 1 sprains are treated with the **RICE** method - **R**est, **I**ce, **C**ompression, and **E**levation. You should initially rest your ankle. You may use crutches to help you walk. Applying ice packs to your ankle can help keep the swelling down and reduce pain. You should apply ice immediately after spraining your ankle. Your doctor will provide you with a continued icing schedule. Your doctor may recommend over-the-counter or prescription pain medication. Compression bandages, such as elastic wraps, are helpful to immobilize and support the ankle. You should also elevate your ankle at a level above your heart for 48 hours to help reduce swelling.

Care for Grade 2 sprains includes applying the RICE method of treatment and in most cases your doctor will prescribe an ankle air cast or soft splint for positioning and stability. As healing takes place, your doctor will gradually increase your activities. Your doctor may recommend that you wear an ankle brace for stability as your healing continues.

In addition to the primary care, your doctor may recommend a short leg cast or a cast-brace system for a Grade 3 sprain. The cast is typically worn for two or three weeks and followed by physical therapy. Your physical therapist will initially help you move and stretch your foot. The movement can be helpful to improve circulation, reduce swelling, and improve range of motion. As you progress in physical therapy, you will participate in exercises to strengthen your muscles. Physical therapy is helpful to decrease pain and swelling and to increase movement, coordination, endurance, and strength. Your physical therapist will help you walk again. You may need to wear a customized insert for your shoe or special shoes to help you maintain proper ankle positioning.

## **Recovery**

Depending on the grade of the injury and what surgical or non-surgical methods are applied to repair the ankle, will determine the rate of recovery.

**Grade 1 sprains** should only experience slight limits to range of motion, and the recovery process is approximately six weeks.

**Grade 2 sprains** experience moderate impairment and recovery may take a few months.

**Grade 3 sprains** have severe impairment and may take several months to fully recover. Even after a full recovery, some patients find that swelling still might occur. In most cases, rehabilitation will help restore strength, mobility, and range of motion.

Recovery from surgery differs and depends on the extent of your injury and the type of surgery that was performed. Your physician will let you know what to expect. Individuals usually wear a cast for up to two months following surgery. Your doctor will instruct you to carefully increase the amount of weight that you put on your foot. Rehabilitation following surgery is a

slow process. Individuals typically participate in physical therapy for two to three months. Physical therapy helps to strengthen the ankle muscles and increase movement. Success rates are high for both surgical procedures. The majority of individuals achieve an excellent recovery in about six months.

### **Prevention**

Individuals that experience one ankle sprain are at an increased risk to experience another. It may be helpful to wear shoes that provide extra ankle support and stability. Shoes with low heels and flared heels may feel steadier. In some cases, doctors recommend a heel wedge or prescribe an orthosis, a plastic brace, to help position the foot inside of the shoe.

This information is intended for educational and informational purposes only. It should not be used in place of an individual consultation or examination or replace the advice of your health care professional and should not be relied upon to determine diagnosis or course of treatment.