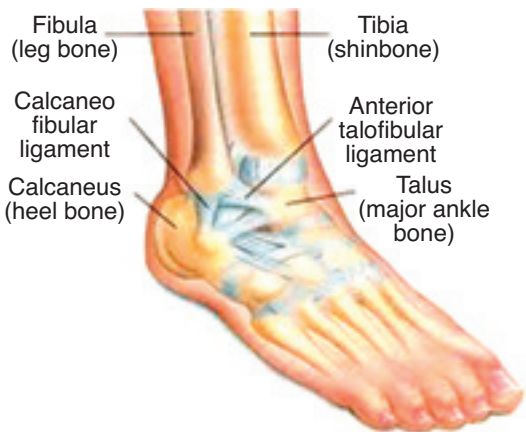


Ankle Sprain



How It Happens

Ankle sprains happen when the foot twists, rolls or turns beyond its normal motions. A great force is transmitted upon landing. You can sprain your ankle if the foot is planted unevenly on a surface, beyond the normal force of stepping. This causes the ligaments to stretch beyond their normal range in an abnormal position.

Mechanism of Injury

If there is a severe in-turning or out-turning of the foot relative to the ankle, the forces cause the ligaments to stretch beyond their normal length. If the force is too strong, the ligaments can tear. You may lose your balance when your foot is placed unevenly on the ground. You may fall and be unable to stand on that foot. When excessive force is applied to the ankle's soft tissue structures, you may even hear a "pop". Pain and swelling result.

The amount of force determines the grade of the sprain. A mild sprain is a Grade 1. A moderate sprain is a Grade 2. A severe strain is a Grade 3 (see Table).

A sprained ankle is a very common injury. Approximately 25,000 people experience it each day. A sprained ankle can happen to athletes and non-athletes, children and adults. It can happen when you take part in sports and physical fitness activities. It can also happen when you simply step on an uneven surface, or step down at an angle.

The ligaments of the ankle hold the ankle bones and joint in position. They protect the ankle joint from abnormal movements-especially twisting, turning, and rolling of the foot.

Severity	Physical Examination Findings	Impairment	Pathophysiology	Typical Treatment*
Grade 1	Minimal tenderness and swelling	Minimal	Microscopic tearing of collagen fibers	<ul style="list-style-type: none"> • Weight bearing as tolerated • No splinting/casting • Isometric exercises • Full range-of-motion and stretching/strengthening exercises as tolerated
Grade 2	Moderated tenderness and swelling; decreased range of motion; Possible instability	Moderated	Complete tears of some but not all collagen fibers in the ligament	<ul style="list-style-type: none"> • Immobilization with air splint • Physical therapy with range-of-motion and stretching/strengthening exercises
Grade 3	Significant swelling	Severe	Complete tear rupture of ligament	<ul style="list-style-type: none"> • Immobilization • Physical therapy similar to that for grade 2 sprains but over a longer period • Possible surgical reconstruction

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Diagnosis

Your doctor may order X-rays to make sure you don't have a broken bone in the ankle or foot. A broken bone can have similar symptoms of pain and swelling.

If there is a complete tear of the ligaments, the ankle may become unstable after the initial injury phase passes. If this occurs, it is possible that the injury may also cause damage to the ankle joint surface itself.

Most of the time an MRI is not necessary. However, if your doctor suspects a very severe injury to the ligaments, injury to the joint surface, a small bone chip or other problem, an MRI may be ordered.

Symptoms

The amount of pain depends on the amount of stretching and tearing of the ligament. Instability occurs when there has been complete tearing of the ligament or a complete dislocation of the ankle joint.

Nonsurgical Treatment

Walking may be difficult because of the swelling and pain. You may need to use crutches if walking causes pain. Depending upon the grade of injury, the doctor may tell you to use re-movable plastic devices such as castboots or air splints.

Most ankle sprains need only a period of protection to heal. The healing process takes about four weeks to six weeks. The doctor may tell you to incorporate motion early in the healing process to prevent stiffness. Motion may also aid in being able to sense position, location, orientation and movement of the ankle (proprioception). Even a complete ligament tear can heal without surgical repair if it is immobilized appropriately. Even if an ankle has a chronic tear, it can still be highly functional because overlying tendons help with stability and motion.

For a Grade 1 sprain, use R.I.C.E (rest, ice, compression and elevation):

- Rest your ankle by not walking on it.
- Ice should be immediately applied. It keeps the swelling down. It can be used for 20 minutes to 30 minutes, three or four times daily. Combine ice with wrapping to decrease swelling, pain and dysfunction.
- Compression dressings, bandages or ace-wraps immobilize and support the injured ankle.
- Elevate your ankle above your heart level for 48 hours.

For a Grade 2 sprain, the RICE guidelines can also be used. Allow more time for healing to occur. The doctor may also use a device to immobilize or splint the ankle.

A Grade 3 sprain can be associated with permanent instability. Surgery is rarely needed. A short leg cast or a cast-brace may be used for two weeks to three weeks.

Rehabilitation is used to help to decrease pain and swelling and to prevent chronic ankle problems. Rehabilitation exercises may involve active range of motion or controlled movements of the ankle joint without resistance. Lower extremity exercises and endurance activities are added as tolerated. Proprioception training is very important, as poor proprioception is a major cause of repeat sprain and an unstable ankle joint. The goal is to increase strength and range of motion as balance improves over time.

Medication

Non-steroidal anti-inflammatory drugs (NSAIDs) may be used to control pain and inflammation.

Long-term outcome

If an ankle sprain is not recognized, and is not treated with the necessary attention and care, chronic problems of pain and instability may result.

Surgical Treatment

Surgical treatment for ankle sprains is rare. Surgery is reserved for injuries that fail to respond to nonsurgical treatment, and for persistent instability after months of rehabilitation and non-surgical treatment.

Adapted from American Academy of Orthopaedic Surgeons. For more information, see orthoinfo.aaos.org

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Stretching Exercises

- Repeat each exercise 20-30 times (2-3 sets of 10 repetitions per set) per session.
- Do 2-3 exercise sessions per day (a minimum of one session)

Isometric Exercises: Hold each position for 10 seconds. Repeat 20-30 times. Do not hold your breath.



With rolled pillow between feet, squeeze feet together.



With rolled pillow against wall, press foot into pillow.



With rolled pillow between feet, press inner borders of feet into pillow.

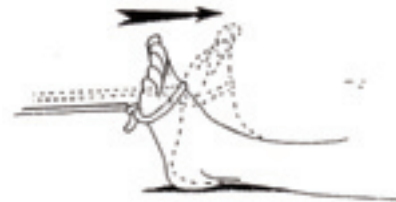


With rolled pillow against wall, press outer border of foot into pillow.

Isometric Strengthening Exercises: Do very slowly. Hold each position for 5 seconds.



With tubing around foot, press foot down.



With tubing anchored in door jamb, pull foot toward face. Return slowly to starting position. Relax.



Cross legs with involved ankle underneath. With tubing anchored around involved foot, slowly turn involved foot.



With tubing anchored around involved foot, slowly turn involved foot outward.