

Montefiore Pediatric Orthopedic and Scoliosis Center
Children's Hospital at Montefiore
Norman Otsuka MD – Eric Fornari MD
Jacob Schulz MD – Jaime Gomez MD – Christine Moloney PA
3400 Bainbridge Avenue, 6th Fl, Bronx, NY 10467 phone 718 920 2060 / fax 718 920 7799
1250 Waters Place, 11th Fl, Bronx, NY 10461

ANKLE SPRAIN, ACUTE

Description

An acute ankle sprain involves the stretching and tearing of one or more ligaments in the ankle. A two-ligament sprain causes more disability than a single-ligament sprain. Sprains are classified into three grades: In a *first-degree* sprain, the ligament is not stretched or lengthened but is painful. With a *second-degree* sprain, the ligament is stretched but still functions. With a *third-degree* sprain, the ligament is torn and does not function.

- *Lateral ankle sprains:* There are three ligaments of the outer (lateral) ankle. These are the most common sprains.
- *Medial ankle sprains:* There is one large triangular ligament of the inner (medial) ankle, which is stronger and more compact than the outer ligaments, making injuries to it less likely.
- *Syndesmosis ("high ankle") sprains:* This is the ligament that connects the two leg bones just above the ankle. This ligament is usually injured when the sprain to the ankle is very severe.

Common Signs and Symptoms

- Pain, tenderness, and swelling in the ankle, starting at the side of injury, that may progress to the whole ankle and foot with time
- Pop or tearing sensation at the time of injury
- Bruising that may spread to the heel
- Impaired ability to walk soon after injury

Causes

- Stress on the ankle that temporarily forces or pries the ankle bone (talus) out of its normal socket
- Stretching or tearing of the ligaments that normally hold the joint in place (usually due to a twisting injury)

Risk Increases With

- Previous ankle sprain
- Activities in which the foot may land awkwardly (such as basketball, volleyball, and soccer) or walking or running on uneven or rough surfaces
- Shoes with inadequate support to prevent sideways motion when stress occurs
- Poor physical conditioning (strength and flexibility)
- Poor balance skills
- Contact sports

Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
- Ankle and leg flexibility, muscle strength, and endurance
- Balance training activities
- Use proper technique and have a coach correct improper technique.
- Taping, protective strapping, bracing, or high-top tennis shoes may help prevent injury. Initially, tape is best; however, it loses most of its support function within 10 to 15 minutes.
- Wear proper protective shoes. (High-top shoes with taping or bracing is more effective than either alone.)
- Provide the ankle with support during sports and practice activities for 12 months following injury.

Expected Outcome

- A first-degree sprain usually heals enough in 5 to 7 days to allow modified activity and requires an average of 6 weeks to heal completely.
- A second-degree sprain requires 6 to 10 weeks to heal completely.
- A third-degree sprain requires 12 to 16 weeks to heal.
- A syndesmosis sprain often takes more than 3 months to heal.

Possible Complications

- Frequent recurrence of symptoms can result in a chronic problem. Appropriately addressing the problem the first time decreases the frequency of recurrence and optimizes healing time. Severity of initial sprain does not predict the likelihood of later instability.
- Injury to other structures (bone, cartilage, or tendon) and a chronically unstable or arthritic ankle joint are possible with repeated sprains.

■ ■ ■ General Treatment Considerations

Initial treatment consists of medication and ice to relieve the pain and compressive elastic bandage and elevation to help reduce swelling and discomfort. A walking cast, walking boot, or brace may be recommended to provide support to the joint while trying to walk with crutches for varying lengths of time, depending on the severity of injury. Surgical treatment is rarely necessary. After the inflammation and pain are reduced, regaining motion, strength, and balance in the ankle is important to return to full capacity and to reduce recurrent injury.

Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), are used to reduce inflammation. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur. Other minor pain relievers, such as acetaminophen, may also be used.
- Topical ointments may be of benefit.
- Pain relievers may be prescribed as necessary by your physician. Use only as directed and only as much as you need.

Heat and Cold

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage. Cold compressive wrap may be used.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

Notify Our Office If

- Pain, swelling, or bruising worsens despite treatment
- You experience pain, numbness, discoloration, or coldness in the foot or toes
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

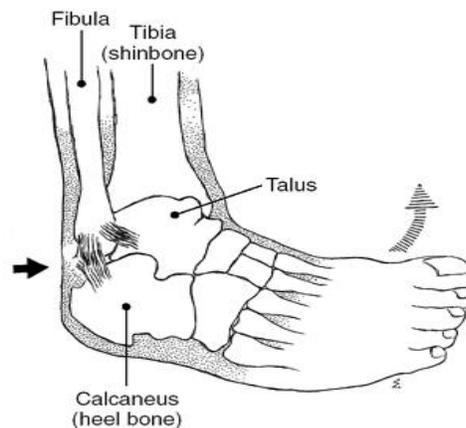
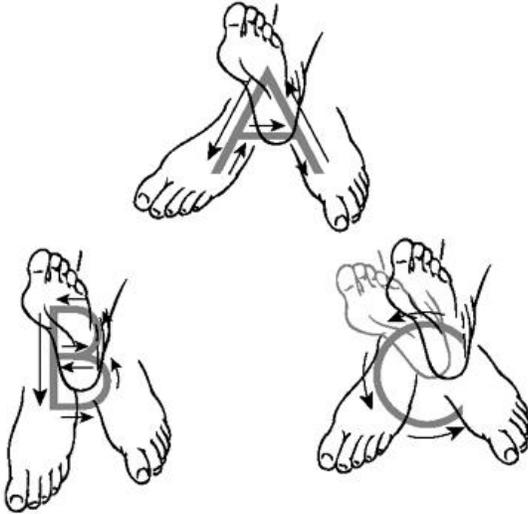


Figure 1

> **RANGE OF MOTION AND STRETCHING EXERCISES** • Ankle Sprain, Acute—Phase I, Weeks 1 to 2

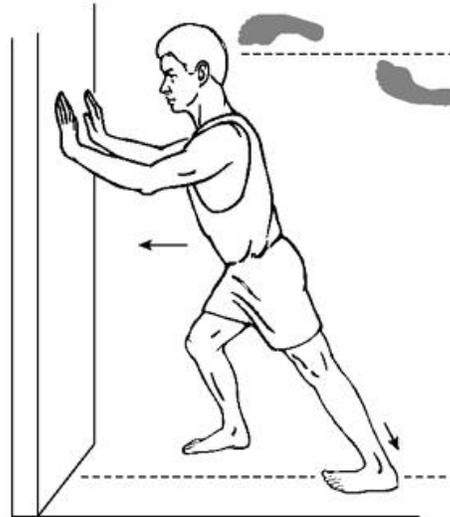
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. These exercises are usually used for the first 1 to 2 weeks after a sprain. The amount of time that they are used for will vary depending on the severity of the sprain. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation should be felt.



RANGE OF MOTION • Ankle Alphabet

1. Write all the capital letters of the alphabet with your foot and ankle. The motion should come from your foot and ankle, not your hip or knee.
2. Move the foot and ankle slowly, writing the letters as large as possible/comfortable for you.
3. Repeat exercise 2 times, 2 times per day.



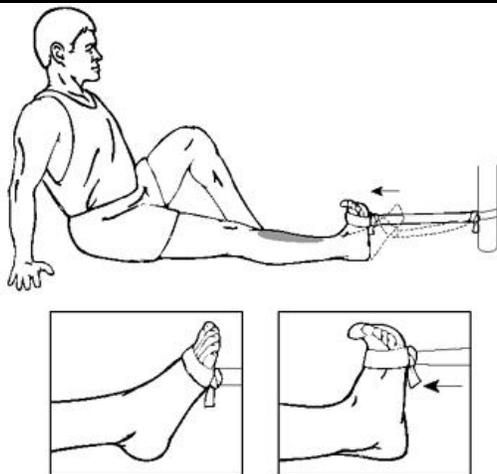
STRETCH • Gastrocnemius

1. Stand *one* arm length from the wall as shown. Place calf muscle to be stretched behind you as shown.
2. Turn the *toes in* and *heel out* of the leg to be stretched.
3. Lean toward wall leading with your waist, allowing your arms to bend. **Keep your heel on the floor.**
4. First do this exercise with the knee straight, then bend the knee slightly. Keep your heel on the floor at all times.
5. Hold this position for 30 seconds.
6. Repeat exercise 2 times, times per day.

➤ **STRENGTHENING EXERCISES • Ankle Sprain, Acute—Phase I, Weeks 1 to 2**

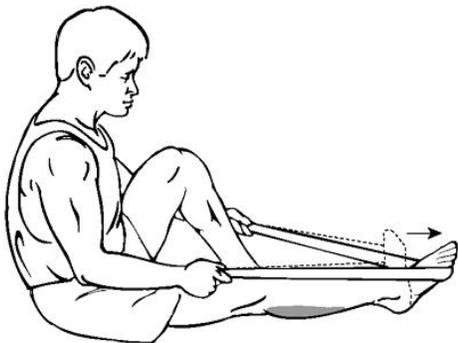
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. These exercises are usually used for the first 1 to 2 weeks after a sprain. The amount of time that they are used for will vary depending on the severity of the sprain. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.



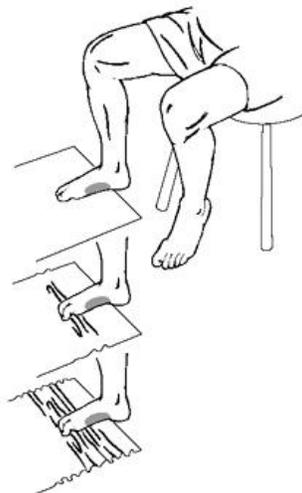
STRENGTH • Dorsiflexors

1. Attach one end of elastic band to fixed object or leg of table/desk. Loop the opposite end around your foot as shown.
2. Slowly pull the foot toward you. Hold this position for 2 seconds. Slowly return to starting position.
3. Repeat exercise 10 times, 2 times per day.



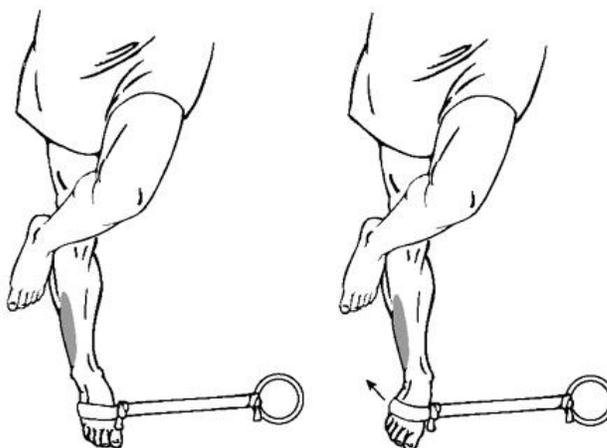
STRENGTH • Plantarflexors

1. Loop elastic band around foot as shown. Pull the band toward you with your hands.
2. Push your toes away from you slowly. Hold this position for 2 seconds. Slowly return to starting position.
3. Repeat exercise 10 times, 2 times per day.



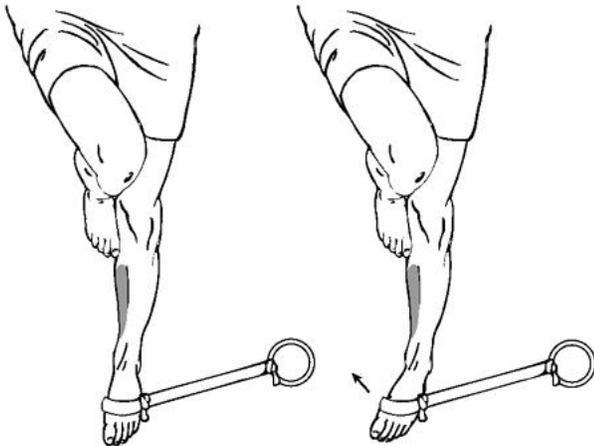
STRENGTH • Towel Curls

1. Sit in a chair and place a towel on a noncarpeted floor. Place your foot/toes on towel as shown. (You may also stand to do this exercise rather than sit.)
2. Curl/pull towel toward you with your toes while keeping your heel on the floor. Move towel with toes only. Do not move your knee or ankle.
3. If this is too easy, place a light weight (book, hand weight, etc.) at the far end of the towel.
4. Repeat exercise 5 times, 2 times per day.



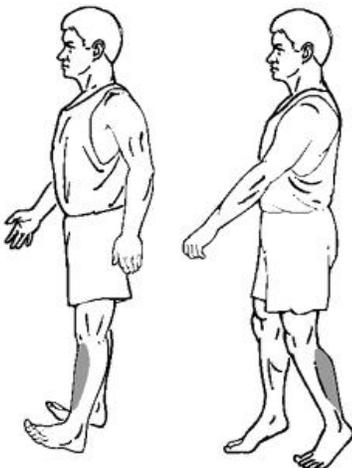
STRENGTH • Ankle Eversion

1. Attach one end of elastic band to fixed object or leg of table/desk. Loop the opposite end around your foot.
2. Turn your toes/foot outward as far as possible, attempting to pull your little toe up and outward. Hold this position for 2 seconds.
3. Slowly return to starting position.
4. Repeat exercise 10 times, 2 times per day.



STRENGTH • Ankle Inversion

1. Attach one end of elastic band to fixed object or leg of table/desk. Loop the opposite end around your foot.
2. Turn your toes/foot inward as far as possible, attempting to push your little toe down and in. Hold this position for 2 seconds.
3. Slowly return to starting position.
4. Repeat exercise 10 times, 2 times per day.



DORSI/PLANTAR FLEXION STRENGTH

1. Mark out 30 feet on soft ground (like grass or carpet) Walk on your heels and/or toes as shown.

2. When on your toes, walk slowly and concentrate on staying as high on your toes as possible.
3. When on your heels, concentrate on keeping the toes as far off the floor as possible.
4. Repeat exercise 10 times, 2 times per day.

Copyright © 2003, Elsevier Science (USA). All Rights Reserved.