



Ankle Sprain, Acute

DESCRIPTION

Acute ankle sprain is the stretching or 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: With a *first-degree* sprain, the ligament is not stretched or lengthened, but it is painful. With a *second-degree* sprain, the ligament is stretched but still functions. A *third-degree* sprain is where the ligament is torn and does not function.

- *Lateral ankle sprains:* The ligaments of the outer (lateral) ankle are most commonly sprained.
- *Medial ankle sprains:* There is one large, triangular ligament of the inner (medial) ankle that is stronger and more compact, making injuries to it less likely.
- *Syndesmosis, or high ankle sprains:* This affects 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.

FREQUENT SIGNS AND SYMPTOMS

- Pain, tenderness, and swelling in the ankle starts at the injured side and may progress to the whole ankle and foot with time.
- A popping or tearing sensation may occur at the time of injury.
- Some bruising may appear and spread to the heel.
- Ability to walk is impaired soon after injury.

CAUSES

Acute ankle strain is caused by stress to the ankle that temporarily forces or pries the ankle bone (talus) out of its normal socket. The ligaments that normally hold the joint in place are stretched and/or torn, usually resulting from a twisting injury.

FACTORS THAT INCREASE RISK

- 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, flexibility)
- Poor balance
- Contact sports

PREVENTIVE MEASURES

- Warm up and stretch before practice or competition.
- Appropriate conditioning includes ankle and leg flexibility, muscle strength and endurance, as well as balance-training activities.
- Coaching on proper technique is important.
- Taping, protective strapping, bracing, and/or high-top shoes may help prevent injury. Initially, tape is best, but it loses most of its supportive function in 15 minutes.
- Proper protective shoes may be helpful; high-top shoes with taping or bracing are 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, and 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 may result in a chronic, repetitive problem. Appropriately addressing the problem the first time decreases the frequency of recurrence and optimizes healing time. Severity of the 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 with repeated sprains may be a problem.

GENERAL TREATMENT CONSIDERATIONS

Initial treatment consists of medication and ice to relieve the pain, a compressive elastic bandage, and elevation to help reduce swelling and discomfort. A 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 the injury. Surgical treatment is rarely necessary. After the inflammation and pain are reduced, regaining motion, strength, and balance are important to return to full capacity and reduce the likelihood of recurrent injury.

MEDICATION

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

HEAT AND COLD

- Cold is used to relieve pain and reduce inflammation for acute and chronic injuries. Cold should be applied for 20 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 wraps may also be used.
- Heat may be used prior to performing prescribed stretching activities. Use a heat pack or a warm soak.

WHEN TO CALL YOUR DOCTOR

- 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.

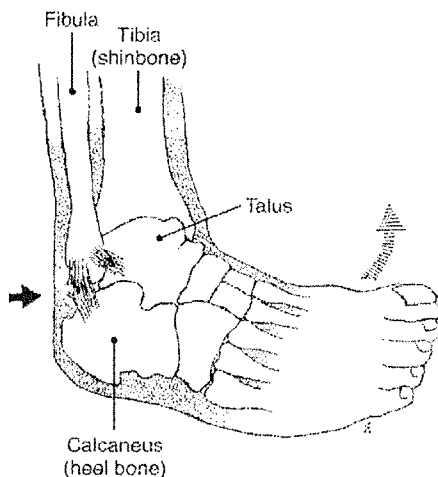


FIGURE 1 From Economou SG, Economou TS: *Instructions for surgery patients*, Philadelphia, 1998, W.B. Saunders, p. 41.

RANGE OF MOTION AND STRETCHING EXERCISES

Acute Ankle Sprain: Phase I, Weeks 1 to 2

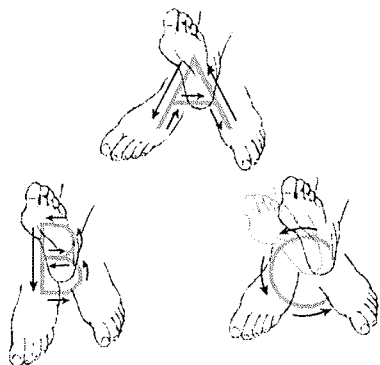
These are some of the *initial* exercises you may use to start your rehabilitation program, until you see your physician, physical therapist, or athletic trainer again, or until your symptoms resolve. These exercises are usually used for the first 1 to 2 weeks after a sprain. The duration will vary depending 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 • Active Dorsiflexion/Plantarflexion

1. Pull your toes and foot toward your body as far as possible, then point the foot and toes away from your body as far as possible.
2. Perform this exercise with the knee straight and then with the knee bent.
3. Hold this position for _____ seconds.
4. Repeat this exercise _____ times, _____ times per day.



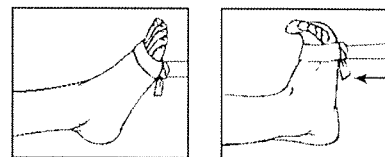
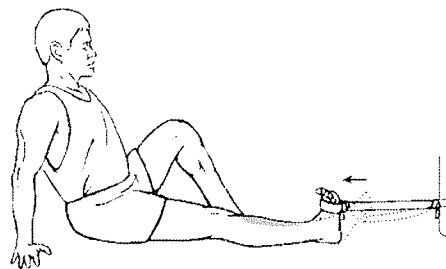
RANGE OF MOTION • Ankle Alphabet

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 your foot and ankle *slowly*, writing the letters as large as comfortably possible.
3. Repeat this exercise _____ times, _____ times per day.

STRENGTHENING EXERCISES Acute Ankle Sprain: Phase I, Weeks 1 to 2

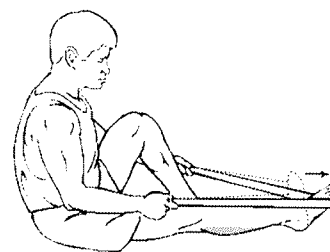
These are some of the *initial* exercises you may use to start your rehabilitation program, until you see your physician, physical therapist, or athletic trainer again, or until your symptoms resolve. These exercises are usually used for the first 1 to 2 weeks after a sprain. The duration will vary depending 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 under their guidance, gradually increasing the number of repetitions and weight used.



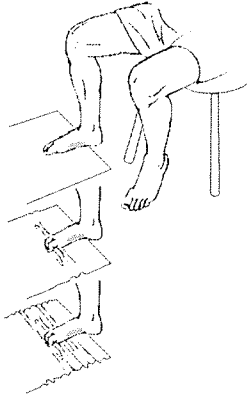
STRENGTH • Dorsiflexion

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

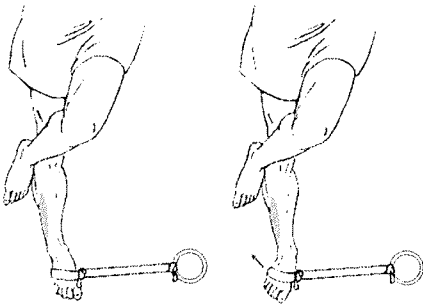


STRENGTH • Plantarflexion

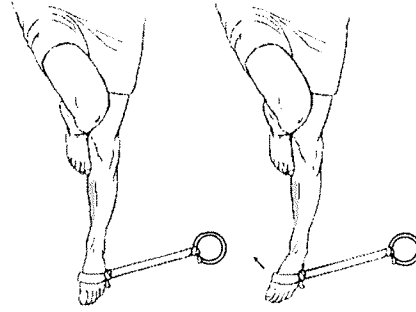
1. Loop an elastic band around your foot as shown. Pull the band toward you with your hands.
2. Push your toes away from you slowly. Hold this position for _____ seconds.
3. *Slowly* return to starting position.
4. Repeat this exercise _____ times, _____ times per day.

**STRENGTH • Towel Curls**

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

**STRENGTH • Ankle Eversion**

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

**STRENGTH • Ankle Inversion**

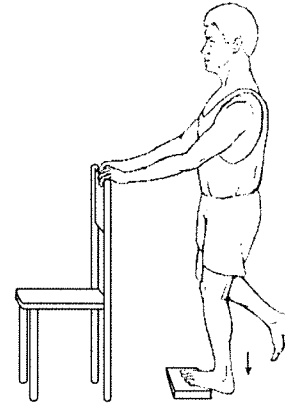
1. Attach one end of an elastic band to a fixed object, such as the leg of a table or desk. Loop the opposite end around your foot.
2. Turn your foot inward as far as possible, attempting to push your little toe down and in. Hold this position for _____ seconds.
3. *Slowly* return to starting position.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

RANGE OF MOTION AND STRETCHING EXERCISES

Acute Ankle Sprain: Phase II, Weeks 3 to 4

These are some of the exercises you may *progress to* during your rehabilitation program. These exercises are usually used between the third and fourth weeks after a sprain. The duration of use will vary, depending on the severity of the sprain. *Do not progress to these exercises without instruction from your physician, physical therapist, or athletic trainer.* Please remember:

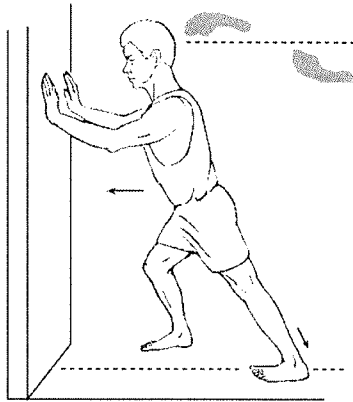
- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation should be felt.



FLEXIBILITY • Gastrocsoleus Stretch

Note: This exercise can place considerable stress on your foot and ankle and should only be done after specifically checking with your physician, physical therapist, or athletic trainer.

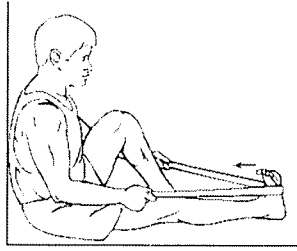
1. Place your toes and the ball of your foot on a stack of books or on the edge of a step. Your heel should be off the ground.
2. Hold on to a chair or handrail for balance.
3. Allow your body weight to stretch your calf.
4. First do this exercise with the knee straight, then bend the knee slightly.
5. Hold this position for _____ seconds.
6. Repeat this exercise _____ times, _____ times per day.



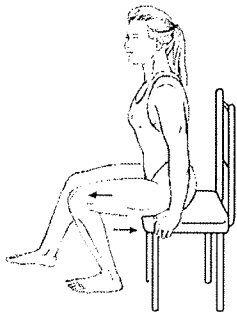
FLEXIBILITY • Gastrocsoleus Stretch

1. Stand one arm's length from the wall as shown with the calf muscle to be stretched behind you as shown.
2. Turn the *toes in* and the *heel out* of the leg to be stretched.
3. Lean toward the wall, leading with your waist and 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 _____ seconds.
6. Repeat this exercise _____ times, _____ times per day.

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**FLEXIBILITY • Gastrocsoleus Stretch**

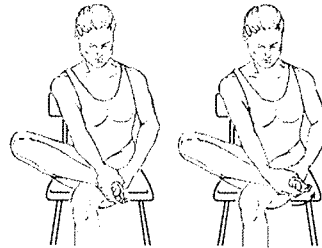
1. Sit with your leg straight out in front of you, and loop a towel around the ball of your foot as shown in the diagram.
2. Pull your foot and ankle toward you using the towel.
3. Keep your knee straight while doing this. Do not let your knee bend.
4. Hold this position for _____ seconds.
5. Repeat this exercise _____ times, _____ times per day.

**RANGE OF MOTION • Ankle Dorsiflexion**

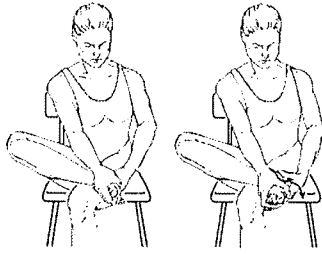
1. Sit on the edge of a chair as shown.
2. Place your _____ foot closest to the chair.
3. Keep your foot flat on the floor, and move your knee forward over the foot.
4. Hold this position for _____ seconds.
5. Repeat this exercise _____ times, _____ times per day.

**RANGE OF MOTION • Ankle Plantarflexion**

1. Sit in the position shown.
2. Using your hand, pull your toes and ankle down as shown so that you feel a gentle stretch.
3. Hold this position for _____ seconds.
4. Repeat this exercise _____ times, _____ times per day.

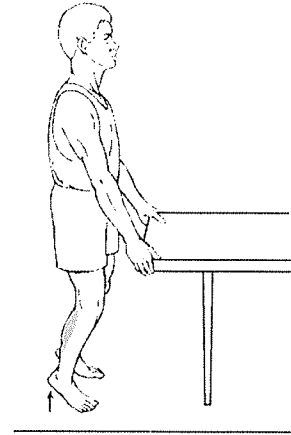
**RANGE OF MOTION • Ankle Inversion**

1. Sit with your _____ leg crossed over the other leg.
2. Grip the foot with your hands as shown, and turn the sole of your foot upward and in so that you feel a stretch on the outside of the ankle.
3. Hold this position for _____ seconds.
4. Repeat this exercise _____ times, _____ times per day.



RANGE OF MOTION • Ankle Eversion

1. Sit with your _____ leg crossed over the other leg.
2. Grip the foot with your hands as shown, and turn the sole of your foot upward and out so that you feel a stretch on the inside of the ankle.
3. Hold this position for _____ seconds.
4. Repeat this exercise _____ times, _____ times per day.



STRENGTH • Plantarflexion

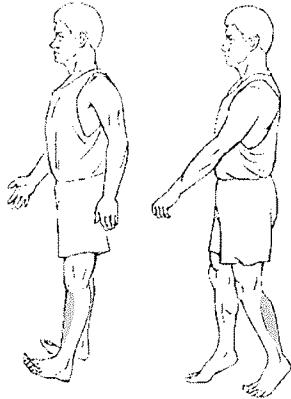
1. Stand with feet shoulder width apart. Hold on to a counter or chair if necessary for balance.
2. Rise up on your toes as far as you can. Hold this position for _____ seconds.
3. Complete this exercise using only one leg if it is too easy using both legs.
4. Repeat this exercise _____ times, _____ times per day.

STRENGTHENING EXERCISES Acute Ankle Sprain: Phase II

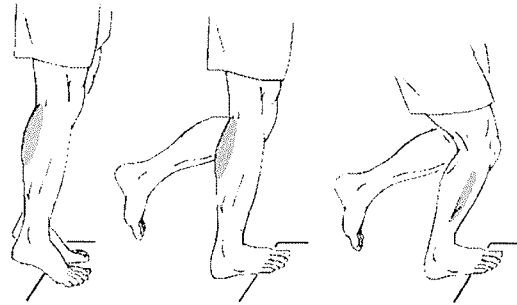
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100 ANKLE SPRAIN, ACUTE

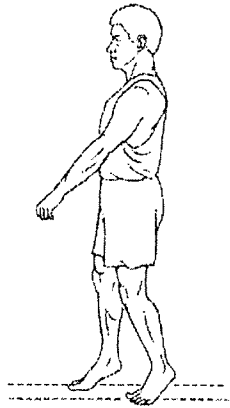
**BALANCE • Dorsiflexion/Plantarflexion**

1. 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 your toes as far off the floor as possible.
4. Repeat this exercise _____ times, _____ times per day.

**STRENGTH • Plantarflexion**

Note: This exercise can place considerable stress on your foot and ankle and should only be done after specifically checking with your physician, physical therapist, or athletic trainer.

1. Stand on the edge of a step as shown with your body weight on the front of both feet. Use both legs to rise up on your toes.
2. From the toe, raise yourself with your knee straight. *Using your injured leg*, lower the heel of the injured side below the level of the step. Use the uninjured leg to rise back to the starting position (the first figure). Work up to 3 sets of 15 repetitions.
3. Repeat by lowering the heel of the injured side below the level of the step with the knee slightly bent. Work up to 3 sets of 15 repetitions.
4. When you can perform the exercises above with minimal discomfort, increase the workload by adding a backpack with weights. You may increase the weight in the backpack in increments as tolerated.



BALANCE • Heel-Toe Walking

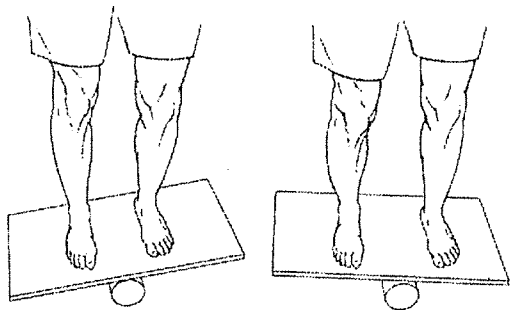
1. Stand with your uninjured foot on a line as shown.
2. Slowly rise up onto your toes and back down onto your heel. Keep your balance at all times.
3. Place the injured foot in front of the uninjured leg, heel to toe.
4. Repeat as above. *Slowly* rise up on your toes as far as you can without pain, keeping your balance.
5. Return to the starting position.
6. Remember, do this slowly and maintain your balance.



BALANCE • Standing on a Foam Block

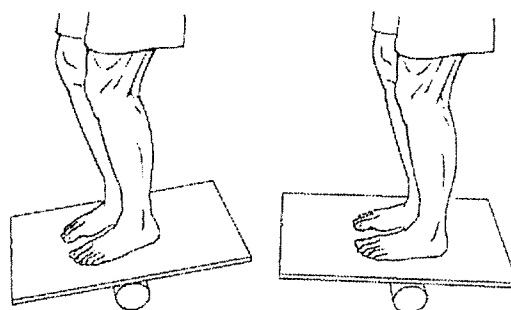
1. Stand on a foam pillow or cushion 5 to 7 inches thick (from a chair or couch).
2. Balance on your injured foot or leg.
3. To make this exercise more difficult, move your opposite leg or arms in different directions to challenge your balance.
4. Repeat this exercise _____ times, _____ times per day. Each repetition should be held for _____ seconds.

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**BALANCE • Inversion/Eversion**

1. Place a board approximately 18 inches long and 15 inches wide on top of a 1.5 inch round piece of wood or metal as shown. (A dowel or cut-off broom handle works well.)
2. Stand with your feet spaced evenly across the board near a stable object such as a counter.
3. Keep your feet flat on the board, and try the following exercises. Make sure the motions you use to keep your balance come from your ankles, not your hips or knees:
 - a. Rock the board slowly from side to side.
 - b. Keep the edges of the board off the floor and at an equal distance from it.
4. Repeat this exercise using just one foot positioned directly over the center of the board.
5. Be very careful and stay within arm's reach of a stable object to assist with balance.

These are advanced level exercises.

**BALANCE • Plantarflexion/Dorsiflexion**

1. Place a board approximately 18 inches long and 15 inches wide on top of a 1.5 inch round piece of wood or metal as shown. (A dowel or cut-off broom handle works well.)
2. Stand with your feet spaced evenly across the board near a stable object such as a counter.
3. Keep your feet flat on the board, and try the following exercises. Make sure the motions you use to keep your balance come from your ankles, not your hips or knees:
 - a. Rock the board slowly from front to back.
 - b. Keep the edges of the board off the floor and at an equal distance from it.
4. Repeat this exercise using just one foot positioned directly over the center of the board.
5. Be very careful and stay within arm's reach of a stable object to assist with balance.

These are advanced level exercises.