

# ANTERIOR TARSAL TUNNEL SYNDROME (Deep Peroneal Nerve Compression)



## ■ ■ ■ Description

Anterior tarsal tunnel syndrome is a nerve disorder in the foot and ankle that causes pain and loss of feeling, often in the foot between the first and second toes or the upper outer foot by the ankle. It involves compression of the deep peroneal nerve at the front of the ankle by ligament-like tissues (retinaculum) or other structures.

## ■ ■ ■ Common Signs and Symptoms

- Tingling, numbness, or burning in the foot between the first and second toes and occasionally in the upper outer foot by the ankle
- Pain and discomfort at the ankle and top of the foot, occasionally radiating to the upper outer foot (near the ankle), and between the first and second toes
- Pain, usually with sports activities, and often felt at night; relieved by removing shoes and resting
- Possibly, weakness in extending the toes

## ■ ■ ■ Causes

Pressure on the deep peroneal nerve at the ankle caused by ligament-like tissue that covers and pinches the nerve or by bone spurs, ganglion cysts, inflammation, or direct injury (from kicking or even from keys placed in the laces of jogging shoes)

## ■ ■ ■ Risk Increases With

- Recurrent ankle sprains
- Sports that involve kicking (soccer)
- Direct pressure on the nerve, such as with tight-fitting shoes or ski boots, tying a key in the lacing of shoes, doing sit-ups with a foot hooked under a bar
- Poor physical conditioning (strength and flexibility)
- Arthritis or bone spurs of the ankle

## ■ ■ ■ Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
  - Foot and ankle flexibility
  - Muscle strength and endurance
  - Cardiovascular fitness
- Ensure proper equipment (shoe) fit
- Taping, protective strapping, bracing, or high-top tennis shoes may help prevent ankle sprains and nerve-stretching injury.
- Do not tie keys to shoelaces.

## ■ ■ ■ Expected Outcome

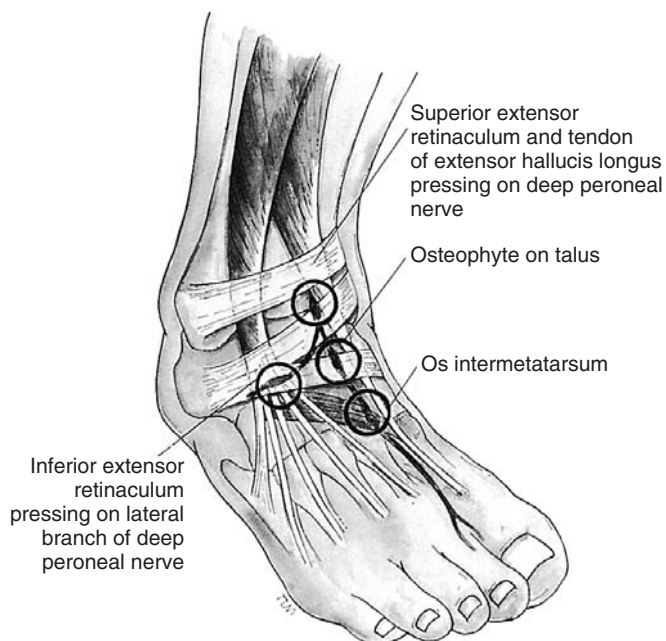
Usually curable with appropriate treatment, although resolution may occur spontaneously. Occasionally, surgery is necessary.

## ■ ■ ■ Possible Complications

- Permanent numbness and weak toes in the affected foot
- Persistent pain in the foot or ankle
- Inability to compete due to pain

## ■ ■ ■ General Treatment Considerations

Initial treatment consists of rest from the offending activity and medications and ice to help reduce inflammation and pain. Padding (moleskin) in the shoe to reduce pressure on the nerve may be beneficial. Changing the lacing pattern of the shoe may also alleviate the symptoms. Stretching and strengthening exercises of the muscles of the foot and ankle can be useful. Chronic cases often require referral to a physical therapist or an athletic trainer. If this treatment is not successful, surgery may be necessary to free the pinched nerve. Surgery may be performed as an outpatient procedure (you go home the same day) to remove the source of compression (bone spurs, ganglion cysts, inflamed retinacular tissue). This provides almost complete relief in most patients.



**Figure 1**

From Baxter DE: *The Foot and Ankle in Sport*. St. Louis, Mosby Year Book, 1995, p. 17.

■ ■ ■ **Medication**

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Pain relievers may be prescribed as necessary by your physician, usually only after surgery. 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.

- 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**

- Symptoms get worse or do not improve in 2 weeks despite treatment
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

➤ **RANGE OF MOTION AND STRETCHING EXERCISES** • Anterior Tarsal Tunnel Syndrome

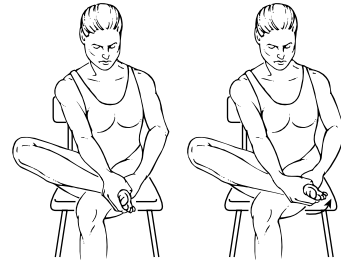
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- 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.



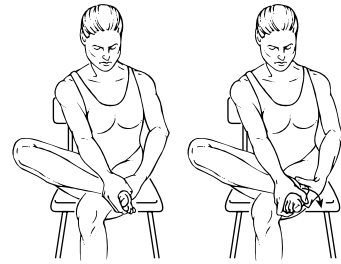
**RANGE OF MOTION** • Ankle Plantar Flexion

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 exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



**RANGE OF MOTION** • Ankle Inversion

1. Sit with your \_\_\_\_\_ leg crossed over the other.
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 exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



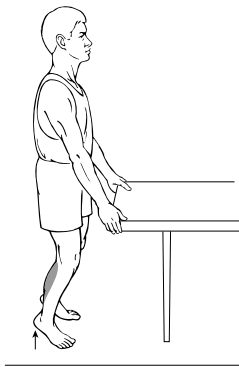
**RANGE OF MOTION** • Ankle Eversion

1. Sit with your \_\_\_\_\_ leg crossed over the other.
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 exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

**> STRENGTHENING EXERCISES:** • Anterior Tarsal Tunnel Syndrome

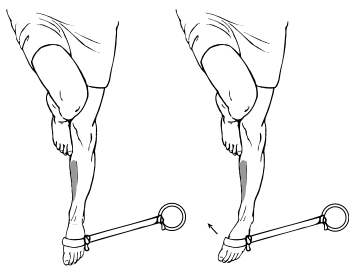
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- 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.



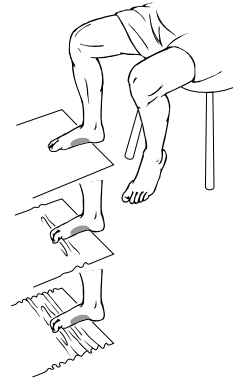
**STRENGTH • Plantarflexors**

1. Stand with feet shoulder-width apart. Hold on to 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 exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



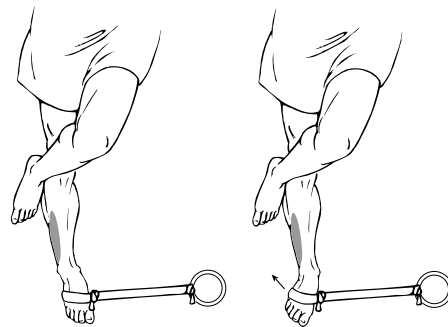
**STRENGTH • Ankle Inversion**

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 \_\_\_\_\_ seconds.
3. Slowly return to starting position.
4. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ 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 \_\_\_\_\_ times, \_\_\_\_\_ 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 \_\_\_\_\_ seconds.
3. Slowly return to starting position.
4. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

Notes:

(Up to 4400 characters only)

Notes and suggestions