

# TARSAL TUNNEL SYNDROME

## (Posterior Tibial Nerve Compression)



### ■ ■ ■ Description

Tarsal tunnel syndrome is a nerve disorder of the foot and ankle that causes pain and occasionally loss of feeling in the bottom of the front of the foot (by the ball of the foot). It involves compression of the posterior tibial nerve at the inner ankle by ligament-like tissues (retinaculum), bony prominences, cysts, or benign or malignant tumors (rare).

### ■ ■ ■ Common Signs and Symptoms

- Tingling, numbness, or burning from the arch of the foot and traveling to the bottom of the forefoot
- Diffuse, poorly localized pain and tenderness that may be felt behind the inner ankle and the bottom of the foot; worse with activity and better with rest
- Occasionally, pain at night in bed
- A feeling of the ankle giving way

### ■ ■ ■ Causes

- Pressure on the posterior tibial nerve behind the inner ankle caused by ligament-like tissue (retinaculum) that covers and does not stretch when the nerve is pushed on by bony prominences, inflamed tendons, cysts, or benign or malignant (very rare) tumors, resulting in compression of the nerve

### ■ ■ ■ Risk Increases With

- Looseness of the joints of the foot and flat feet
- Arthritis of the ankle
- Tendinitis of the foot and ankle muscles
- Previous foot or ankle injury including sprains and fractures

### ■ ■ ■ Preventive Measures

- Maintain appropriate conditioning:
  - Foot and ankle flexibility
  - Muscle strength and endurance
  - Cardiovascular fitness
- Wear proper shoes and arch supports (orthotic).
- Taping, protective strapping, bracing, or high-top tennis shoes may help prevent ankle sprains and nerve stretching injury.

### ■ ■ ■ Expected Outcome

This condition is usually curable with appropriate treatment, and sometimes it heals spontaneously. Occasionally, surgery is necessary.

### ■ ■ ■ Possible Complications

- Permanent numbness, persistent pain in the foot or ankle, and 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 pain and inflammation. Arch supports and heel wedges for the inner heel may provide relief. Cross-training may be of benefit. A short period of casting or bracing may also help reduce inflammation around the nerve. Stretching and strengthening exercises of the muscles of the foot and ankle may be useful. If this treatment is not successful, and particularly if a cyst or tumor-like mass is pressing on the nerve, surgery may be required to free the pinched nerve. This often provides almost complete relief, with full return to sporting activities.

### ■ ■ ■ 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.

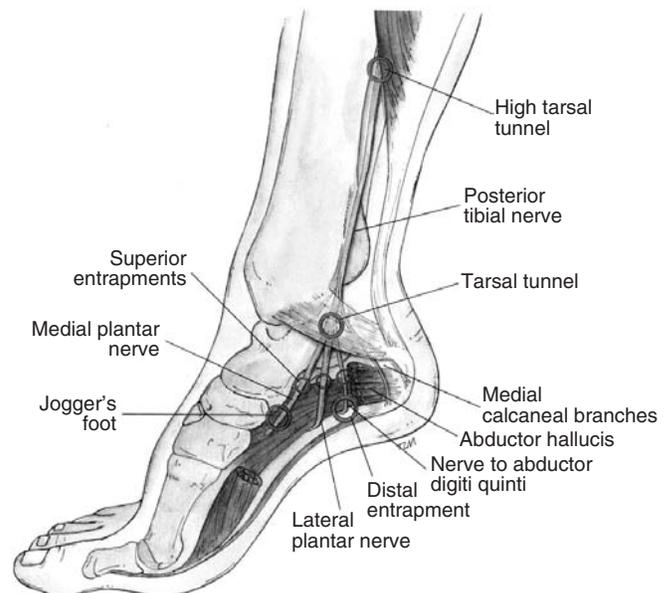


Figure 1

From Baxter DE: *The Foot and Ankle in Sport*. St. Louis, Mosby Year Book, 1995, p. 11.

### ■ ■ ■ 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

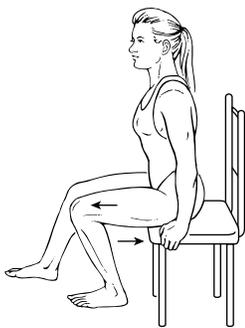
- Symptoms get worse or do not improve in 6 weeks despite treatment
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

## EXERCISES

### > RANGE OF MOTION AND STRETCHING EXERCISES • Tarsal Tunnel Syndrome (Posterior Tibial Nerve Compression)

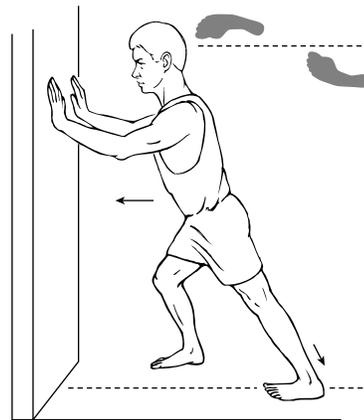
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Some of these stretches are quite powerful and may aggravate your symptoms. If they do, please contact 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.



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

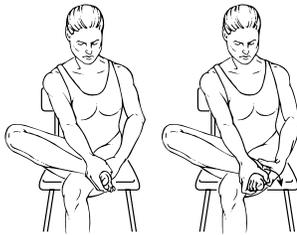


### STRETCH • Gastrocnemius

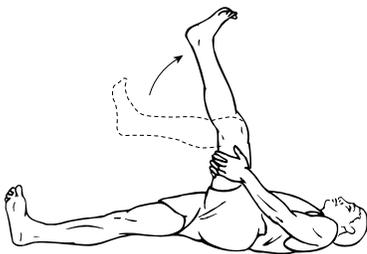
1. Stand *one* arm length from the wall as shown. Place calf muscle to be stretched behind you as shown.
2. Turn the *toes in* and *heel out* of the leg to be stretched.
3. Lean toward wall leading with your waist, allowing your arms to bend. **Keep your heel on the floor.**
4. First do this exercise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

**RANGE OF MOTION • Toe Extension**

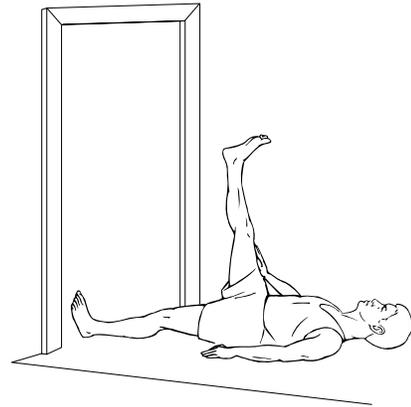
1. Grip your toe(s) as shown in the drawing.
2. Pull the toe(s) up toward your body as shown. Repeat this exercise by pulling the toe down.
3. Hold this position for \_\_\_\_\_ seconds.
4. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

**RANGE OF MOTION • Ankle Eversion**

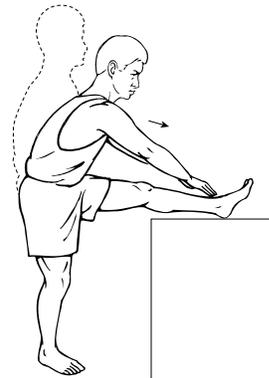
1. Sit with your \_\_\_\_\_ leg crossed over the other.
2. Grip the foot with your hands as shown and turn the sole of your foot upward and out so that you feel a stretch on the inside of the ankle.
3. Hold this position for \_\_\_\_\_ seconds.
4. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per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

**FLEXIBILITY • Hamstrings**

1. Lie on your back with your leg bent and both hands holding on to it behind the thigh as shown.
2. Your hip should be bent to **90 degrees** and the thigh pointing straight at the ceiling.
3. Straighten out your knee as far as you can. Keep your thigh pointing straight toward the ceiling.
4. Keep the other leg flat on the floor.
5. Hold this position for \_\_\_\_\_ seconds.
6. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

**FLEXIBILITY • Hamstrings, Doorway**

1. Lie on your back near the edge of a doorway as shown.
2. Place the leg your are stretching up the wall keeping your knee straight.
3. Your buttock should be as close to the wall as possible and the other leg should be kept flat on the floor.
4. You should feel a stretch in the back of your thigh.
5. Hold this position for \_\_\_\_\_ seconds.
6. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

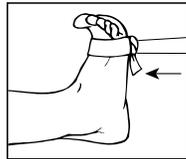
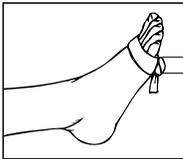
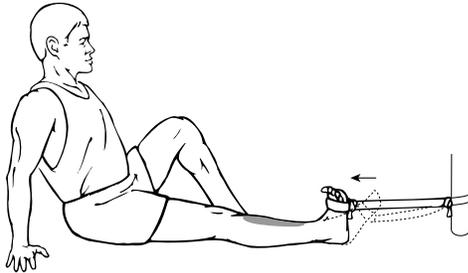
**FLEXIBILITY • Hamstrings, Ballet**

1. Stand and prop the leg you are stretching on a chair, table, or other stable object.
2. Place both hands on the outside of the leg you are stretching.
3. Make sure that your hips/pelvis are also facing the leg you are stretching.
4. Slide your hands down the outside of your leg.
5. Lead with your chest/breast bone. Keep your chest upright and back straight. Do not hunch over at the shoulders. Keep your toes pointing up.
6. You should feel a stretch in the back of your thigh.
7. Hold this position for \_\_\_\_\_ seconds.
8. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

➤ **STRENGTHENING EXERCISES** • Tarsal Tunnel Syndrome (Posterior Tibial Nerve Compression)

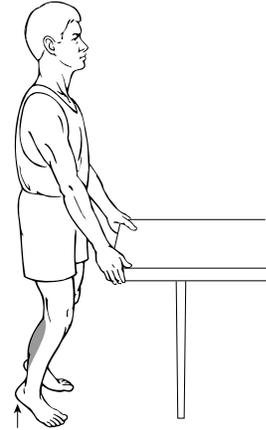
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- 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.



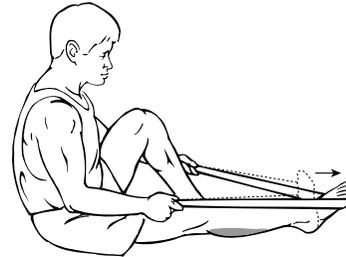
**STRENGTH** • Dorsiflexors

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



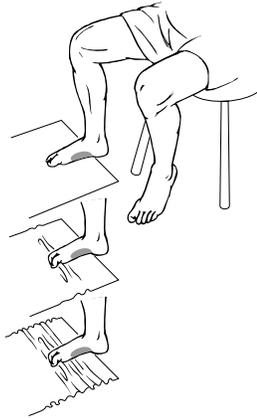
**STRENGTH** • Plantarflexors

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.



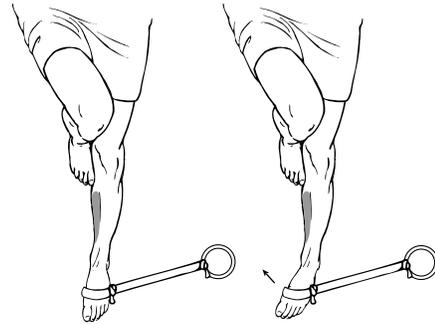
**STRENGTH** • Plantarflexors

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



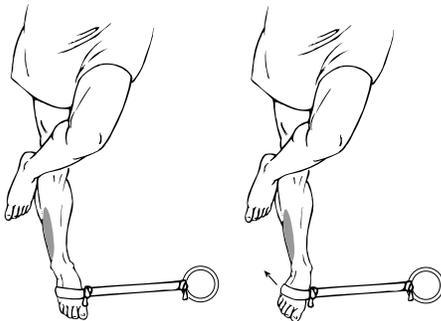
**STRENGTH • Towel Curls**

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 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 • 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