RADIAL TUNNEL SYNDROME
(Radial [Posterior Interosseous] Nerve)

Description

Radial tunnel syndrome is a nerve disorder in the elbow and upper arm that causes pain and hand and wrist weakness. It involves compression of the radial nerve (particularly the posterior interosseous branch) at the elbow or forearm by muscles or ligament-like tissues. It is a nerve that does not have any sensory component; thus there is no numbness associated with it. Because its symptoms are similar in type and location to lateral epicondylitis (tennis elbow), it is often known as "resistant tennis elbow." Posterior interosseous nerve dysfunction may decrease athletic performance in sports that require strong hand or wrist action.

Common Signs and Symptoms

- Vague, activity-related pain in the outer elbow that may shoot down the forearm
- Sharp pains that may shoot from the elbow to the wrist and hand
- Wrist and finger weakness
- Tenderness of the outer elbow
- Pain or weakness with gripping activities
- Pain with twisting motions of the wrist, such as when playing tennis, using a screwdriver, or opening a door or a jar; also, with resisted turning the palm up or passively turning the palm down.

Causes

- Pressure on the radial nerve at the elbow or in the forearm, caused by pressure under one of the forearm muscles or swollen, inflamed, or scarred tissue, ligament-like tissue, or an artery pressing on the nerve
- Direct blow to the nerve at the back of the upper arm

Risk Increases With

- Sports or occupations that require repetitive and strenuous rotation motions of the wrist
- Contact sports such as football, soccer, and rugby
- Poor physical conditioning (strength and flexibility)
- Inadequate warm-up before practice or play
- Diabetes mellitus
- Hypothyroidism (underactive thyroid gland)

Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
  - Cardiovascular fitness
  - Wrist, forearm, and elbow flexibility
  - Muscle strength and endurance
- Wear proper protective equipment, including elbow pads.

Expected Outcome

This condition is usually curable with appropriate treatment, and sometimes it heals spontaneously. Uncommonly, surgery is necessary. Surgery is usually needed if muscle wasting (atrophy) or nerve changes have developed.

Possible Complications

- Permanent paralysis or weakness of the muscles that extend the wrist; weak grip
- Permanent paralysis of some of the hand and finger muscles
- Prolonged healing time if usual activities are resumed too soon
- Prolonged disability (uncommon)

General Treatment Considerations

Initial treatment consists of rest from the offending activity and medications and ice to help reduce inflammation. Elbow splinting may be recommended. Stretching and strengthening exercises of the muscles of the forearm and elbow are important. Referral to physical therapy or an athletic trainer may be recommended for treatment. If this treatment is not successful within 3 to 6 months, surgery may be necessary to free the pinched nerve.

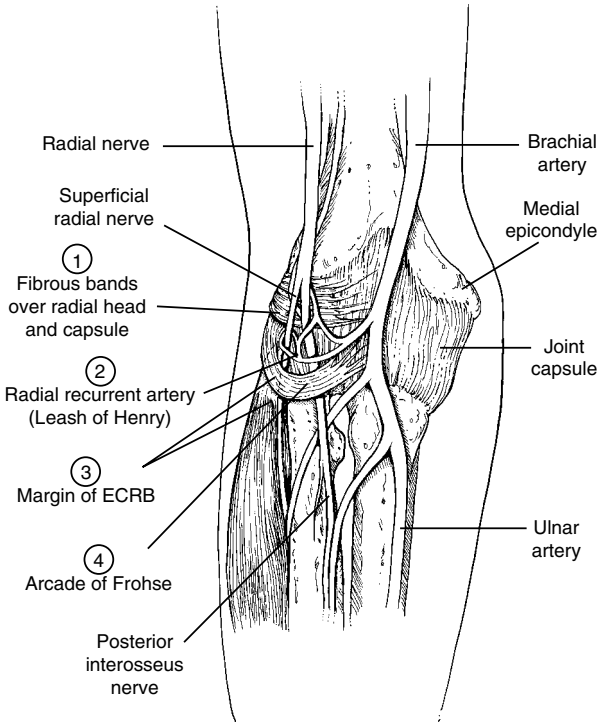


Figure 1
From Scuderi GR, McCann PD, Bruno PJ: Sports Medicine: Principles of Primary Care. St. Louis, Mosby, 1997, p. 253.

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
- You experience pain, numbness, or coldness in the hand
- Blue, gray, or dusky color appears in the fingernails
- Any of the following occur after surgery: increased pain, swelling, redness, drainage, or bleeding in the surgical area or signs of infection
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

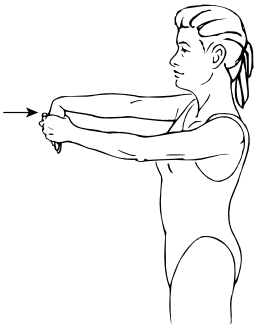
EXERCISES

➢ **RANGE OF MOTION AND STRETCHING EXERCISES** · Radial Tunnel Syndrome (Radial [Posterior Interosseous] Nerve)

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 · Wrist Flexion

1. Place the back of your _____ hand flat on the top of a table as shown. Your shoulder should be turned in and your fingers facing away from your body.
2. Press down, bending your wrist and straightening your elbow until your feel a stretch.
3. Hold this position for _____ seconds.
4. Repeat exercise _____ times, _____ times per day.



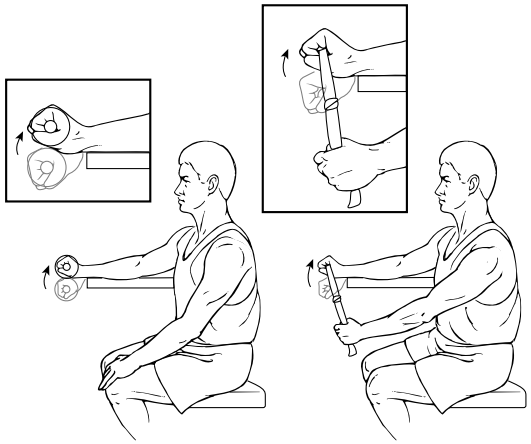
RANGE OF MOTION · Wrist Flexion

1. Hold your _____ wrist as shown with the fingers pointing down toward the floor.
2. Pull down on the wrist until you feel a stretch.
3. Hold this position for _____ seconds. Repeat exercise _____ times, _____ times per day.
4. This exercise should be done with the elbow ***bent to 90 degrees / straight.*** (Physician, physical therapist, or athletic trainer should circle one of these.)

➢ **STRENGTHENING EXERCISES** • Radial Tunnel Syndrome (Radial [Posterior Interosseous] Nerve)

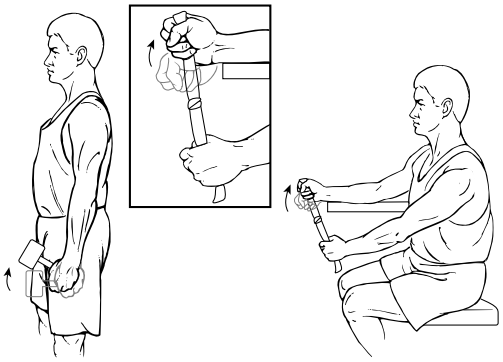
These are some of the ***initial*** exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- 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.



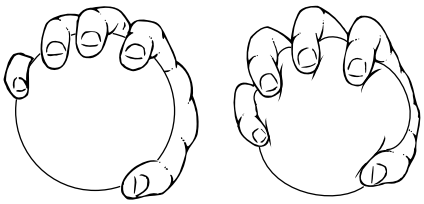
STRENGTH • Wrist Extensors

1. Sit or stand with your forearm supported as shown.
2. Using a _____ pound weight or a piece of rubber band/tubing, bend your wrist slowly upward toward you.
3. Hold this position for _____ seconds and then ***slowly*** lower the wrist back to the starting position.
4. Repeat exercise _____ times, _____ times per day.



STRENGTH • Wrist, Radial Deviation

1. Stand with a _____ oz. hammer in your hand as shown, or sit holding on to the rubber band/tubing with your arm supported as shown.
2. Raise your hand upward in front of you or pull up on the rubber tubing.
3. Hold this position for _____ seconds and then ***slowly*** lower the wrist back to the starting position.
4. Repeat exercise _____ times, _____ times per day.



STRENGTH • Grip

1. Hold a wad of putty, soft modeling clay, a large sponge, a soft rubber ball, or a soft tennis ball in your hand as shown.
2. Squeeze as hard as you can.
3. Hold this position for _____ seconds.
4. Repeat exercise _____ times, _____ times per day.

Notes: (Up to 4400 characters only)

Notes and suggestions