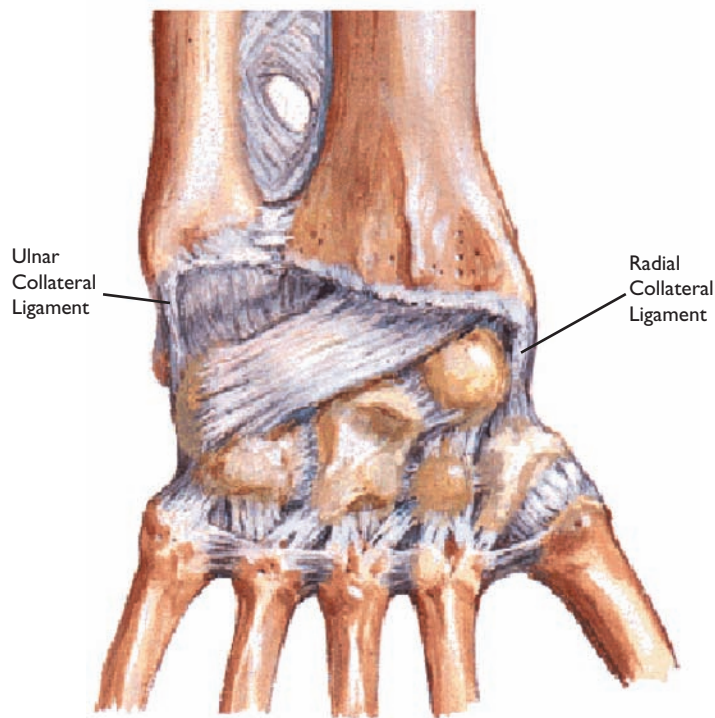


# Wrist Pain

## Radial and Ulnar Collateral Ligament Injuries

By Ben Benjamin





**Right wrist, posterior (dorsal) view. Netter Illustration.**

is called the proximal row. These bones are held to one another and to the radius and ulna by an intricate network of ligaments. The ligaments provide stability while allowing movements among the individual wrist bones and between the wrist and arm bones.

**Principle: The greater the range of motion possible at a joint, the greater the risk of injury.**

The multiple movements at the wrist joint, together with its supporting ligaments and the tendons that cross the joint, make the wrist vulnerable to many different injuries. The radial and ulnar collateral ligaments are frequently injured. The radial collateral ligament, located on the thumb side of the wrist, attaches the distal end of the radius to the trapezium bone as well as the scaphoid bone, which is deep inside what is referred to as the anatomical snuffbox of the wrist. This ligament restricts ulnar deviation (bending the wrist to the little finger side). The ulnar collateral ligament, located on the small finger side of the wrist, attaches the distal end of the ulna to the triquetrum bone and the pisiform bone and restricts radial deviation (bending the wrist to the thumb side).

### **How and Why?**

The most common cause of injury to either collateral ligament is sudden or repeated trauma. Sudden trauma to the wrist often occurs when trying to break a fall. Any job that requires using the wrist in repetitive actions for many hours each day (extended work on a computer, for example) makes the area vulnerable to injury. If done

**T**he wrist is a frequently injured joint. The complex structure of this joint enables it to perform numerous diverse movements. The wrist contains many small bones and ligaments, which hold the bones together. The true wrist joint consists of the union of the two long bones of the forearm, the radius and the ulna, with the first row of small wrist bones.

The radius and ulna rotate around one another. The small bones of the wrist are each shaped differently, and they fit together like a jigsaw puzzle in two rows of four bones each. The row closest to the fingertips is referred to as the distal row, and the row nearest to the forearm





## Injury Verification

These tests will indicate whether the client is suffering from a sprained radial or ulnar collateral ligament and/or traumatic arthritis of the wrist joint. Any client with severe wrist pain should see a physician immediately. If the pain is mild, you may proceed carefully with the verification tests.

### Normal range of motion

Extension: 90 degrees

Flexion: 90 degrees

Ulnar deviation: 50 to 60 degrees

Radial deviation: 20 to 30 degrees

### Passive Testing

When testing joints and ligaments of the wrist, the practitioner performs a series of passive tests, during which the damaged wrist remains limp and does not actively participate in the movements. Passive testing is done gently to avoid further damage to the wrist. If the client feels increased pain, stop that test immediately.

### Test 1 Passive Wrist Flexion

Support the client's elbow (which is bent at 90 degrees) with one hand and grasp her hand just above the wrist with the other. Bend the wrist gently into flexion. If there is no pain at the end of the range of motion, give a slight jerk or over-pressure at the end of the movement. The wrist should be able to bend to a 90-degree angle in relation to the forearm with no discomfort. If the client experiences pain, stop moving the wrist and note the degree to which the movement is limited.



Test photos by Melinda Bruno.

without adequate rest and recovery, the limited, repetitive motions involved in playing the violin or piano can also damage the collateral ligaments.

The wrist joint is designed to bend backward, forward, and to either side, and to rotate in a circular motion (circumduction). Many activities — tennis, golf, baseball, bowling, and mountain biking, to name a few — force the joint to the extremes of its range of motion and may damage it. The wrist may also be damaged in such simple, mundane activities as scrubbing a pot, pushing yourself up out of a chair, or lifting a small object in an awkward position. Mothers lifting young babies and toddlers frequently complain of wrist and hand pain.

When any ligament of the wrist is injured, the joint will frequently swell. This swelling is known as traumatic arthritis of the wrist joint. It is a natural protective mechanism limiting the person's use of the wrist while the healing process is underway. The swelling is often not visible to the naked eye, but is evidenced by a restriction of movement and/or pain in both passive flexion and passive extension of the wrist. These two movements are included in the ligament assessment process for the wrist.

### Test 2 Passive Wrist Extension

Support the elbow as described in Test 1, and stretch the wrist into extension. Take up the slack and give a slight jerk or over-pressure if there is no pain. If there is pain, note the degree of limitation of movement.



### Test 3 Passive Ulnar Deviation

Grasp the client's hand in the handshake position. Now raise the hand upward (with the thumb toward the ceiling). Be sure the client's hand is relaxed. Note whether this produces pain in the radial side of the wrist; if it does, note the degree to which the movement is limited.



### Test 4 Passive Radial Deviation

Grasp the back of the hand as indicated and move the client's hand downward (with the small finger toward the floor). Be sure the hand is relaxed. Note whether this produces pain in the ulna side of the wrist; if it does, note the degree to which the movement is limited.



## Understanding the Tests

**Principle: Specific patterns of movement limitation in a joint indicate that arthritis, or joint inflammation, is present. Ligaments that test positive on passive testing are injured.**

Significant limitation of movement along with pain in passive flexion or passive extension of the wrist generally indicates that traumatic inflammation is present. Pain on passive ulnar deviation, which stretches the radial collateral ligament (on the thumb side), indicates that the radial collateral ligament is injured. Pain on passive radial deviation, which stretches the ulnar collateral ligament, indicates that this ligament is injured. As mentioned earlier, joint swelling with a ligament injury is protective in nature. When the inflammation and scar tissue in the injured ligament are eliminated through treatment, the swelling usually abates by itself.

## Self-Treatment

If your client has a minor injury to the radial or ulnar collateral ligament that's causing mild pain or discomfort, resting the wrist for several days and taking over-the-counter anti-inflammatory medication for a day or so is often all that's needed. However, if this minor pain persists, assessment and treatment should be sought. Effective early therapeutic intervention may solve the problem and prevent a more serious condition from developing.

## Medical Treatment

Any client with severe wrist pain should see a physician to rule out a fracture or another serious condition. If no fracture is evident, the physician may want to immobilize the wrist with tape or a splint and may prescribe more powerful pain medication. Outlined below are several other treatment approaches.

## Friction Therapy and Deep Massage

Conservative friction therapy and massage are usually effective for radial and ulnar collateral ligament injuries. Both friction therapy and injection therapy, described later in this article, must be combined with therapeutic exercises to ensure that a full range of motion is maintained while the injury is healing. The hands-on therapy described below can break apart scar tissue and is usually followed by massage therapy to improve circulation.

## Friction Therapy for the Radial Collateral Ligament

Sit facing the injured wrist and grasp the hand in the handshake position. Now ulnar deviate the wrist, toward the little finger, to stretch the radial collateral ligament. Then place the thumb or index finger of your other hand at a right angle at the proximal or distal attachment of the injured ligament. Using firm palpation, test to determine precisely which aspects of the ligament are injured and →





hours as a result of the treatment, increase the total treatment time to 10 minutes.

## Injection Therapy

When traumatic arthritis is present in the wrist joint, an anti-inflammatory injection is sometimes necessary. Injection may also be needed when the radial or ulnar collateral ligament has been injured for a long period of time, causing intractable scar tissue that is difficult to remove with hands-on therapy. In other cases the collateral ligaments are overstretched and loosened through repeated trauma. In these instances proliferant injections are useful in tightening the ligaments of the wrist to reestablish the stability of the joint. Either type of injection

therapy must be accompanied by gentle exercises that put the wrist joint through a full range of motion.

## Exercises to Accompany Treatment

**Principle: True healing of an injured structure must take place in the presence of a full range of movement.**

The treatments described above must be accompanied by a series of exercises to ensure that healing occurs in the presence of a full range of motion. The exercises that follow should be performed many times throughout the day. Give your client these instructions:

First simply wave goodbye in an up-and-down motion to the fullest extent possible without pain. Then turn your hand sideways with the thumb facing upward. Move the hand up and down as if it were a hammer, staying within a pain-free range of motion.

Next, extend your arm in front of you with the elbow straight and the wrist pulled back as if you were a traffic cop saying "Stop." (See photo below.) Place your other



tender. Perform one or two sweeping friction motions at the distal and proximal ends of the ligament and then at various points along the midline where the ligament passes over the scaphoid bone.

Once you have identified the areas of tenderness and injury, friction the ligament in each tender area by pressing it firmly against the bone and snapping through the ligament. Use pressure in only one direction at a time in order to conserve your energy and avoid causing the client any undue discomfort. Friction should be applied so that it is slightly annoying, but not painful. In the first treatment, work only a minute or so on each tender section, not totaling more than 4 to 5 minutes. If the client is not very sore after 48 hours as a result of the treatment, increase the total treatment time to 10 minutes. Keep moving from section to section as you friction, using very small gentle movements.

## Friction Therapy for the Ulnar Collateral Ligament

Still facing the injured wrist, grasp the hand in the handshake position. Now radially deviate the wrist, toward the thumb, to stretch the ulnar collateral ligament. Then place the middle or index finger of your other hand at a right angle at the proximal or distal attachment of the injured ligament. Test through palpation to determine exactly which aspects of the ligament are injured and tender. Perform one or two sweeping friction motions at the distal and proximal ends of the ligament and then throughout the midline of the ligament.

Once you have identified the areas of tenderness and injury, friction the ligament in each tender area by pressing it firmly against the bone and snapping through the ligament. As described in the preceding section, use pressure in only one direction at a time and do not cause the client more than a slight amount of discomfort. As mentioned previously, in the first treatment work only a short amount of time on each tender section, not totaling more than 4 to 5 minutes. If the client is not very sore after 48



hand at the back of that wrist and apply pressure with your hand as you resist with the wrist. Then repeat the same exercise but with the wrist turned down in a flexed position, as demonstrated in the photograph below. Do both variations for 10 seconds each at 50 percent effort several times a day.



## Preventing Reinjury

When the client begins to feel better, vulnerability to re-injury is high unless the client is careful to avoid extension movements, which place great stress on the wrist ligaments and joint. Clients healing from wrist injuries must be careful of pushing off the floor or even getting up from a chair or couch by pushing down onto fully extended wrists. Suggest that clients make a fist and keep the wrist straight instead of placing the hand flat down to push up. Re-entering certain activities too quickly will also result in a relapse. For example, hammering or sawing, playing tennis or squash, or playing certain musical instruments such as guitars and violins will put stress on the

newly healed tissue. Clients should avoid vigorous activities of the wrist until they're fully well for three or four weeks.

## Conclusion

Injuries to the radial and ulnar collateral ligaments are fairly common, and they can cause significant pain and limitation of movement in the wrist. Hands-on treatments are very effective in ameliorating these conditions. Through simply learned, skillful assessment, appropriate friction therapy, and exercise, these wrist injuries generally heal in four to six weeks. Of course, long-standing wrist pain will take more time to treat successfully. As the ligament injuries heal, the traumatic inflammation in the joint will automatically diminish and the swelling will disappear, allowing for full flexion and extension of the wrist. **M&B**

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