

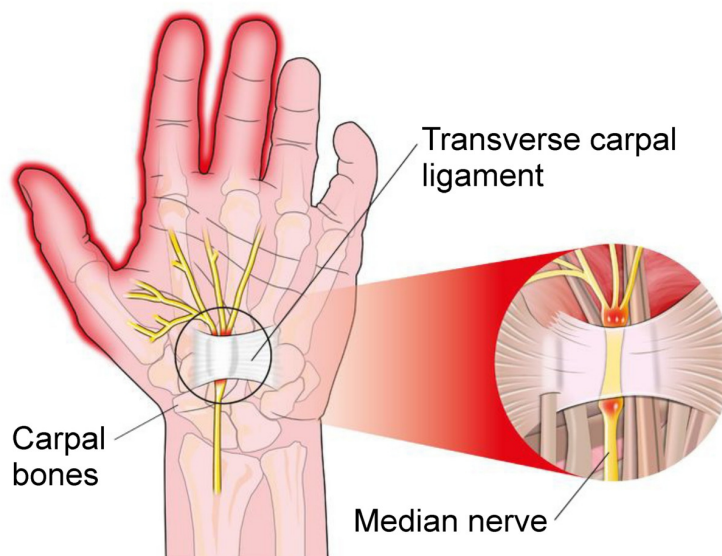
FUNCTIONAL DISORDERS: Carpal Tunnel Syndrome, De Quervain's Tenosynovitis, Tennis Elbow & Golfer's Elbow

CARPAL TUNNEL SYNDROME

What is Carpal Tunnel Syndrome?

The brachial plexus is a bundle of nerves formed from the lower four cervical spinal nerves and first thoracic spinal nerve. The plexus travels from the spinal cord through the neck, through the thoracic outlet, and into the armpit. The brachial plexus branches apart into nerves that provide sensation and muscular control to the chest, shoulder, arm, and hand. One of these nerves is the median nerve.

The median nerve passes between the carpal bones and the transverse carpal ligament of the wrist (see illustration below). When the median nerve is compressed at this point, we can experience the symptoms of carpal tunnel syndrome, which include pain, tingling, and numbness in the hand. However, it's important to remember that compression of this nerve can occur anywhere along its path: in the forearm, elbow, upper arm, thoracic outlet, and even where the nerves emerge from the spinal cord in between the vertebrae.



Carpal tunnel syndrome most commonly occurs in people who do repetitive movements with their hands and wrists. Repetitive movements and pressure on the wrist can cause inflammation in joints and connective tissues purely from overuse. And, doing repetitive movements with the hands and wrists mean that muscles in the area are probably tight; this tightness will compress the area where the median nerve passes under the transverse carpal ligament.

People who experience carpal tunnel syndrome also often have chronic muscle tension in their neck, shoulder, chest, waist, and back in addition to their arm, wrist, and hand. As the muscles in the torso become tight and immobile, they are forced to overuse their forearm, wrist, and hand to complete tasks.

The joints of the extremities, like the wrist joint, are designed to do less work than the joints closer to the center of the body. For example, in a reaching movement, most of the range of motion should come from a bending or twisting of the spine. Then the shoulder blade will slide to allow more movement, and lastly the joints of the arm and hand will articulate as needed in order to complete the task. When someone has a limited range of motion in the core of their body, they demand more movement from their wrist than the joint is equipped to do, and tightness irritation, inflammation, and pain occur as a result.

How to work with Carpal Tunnel Syndrome

Icing the wrist joint may help in reducing inflammation. Wearing a wrist brace can be helpful in limiting movement and preventing overuse of the wrist joint. But in order to make lasting progress, the student needs to:

1. **Address the repetitive activity** that caused the symptoms. This may mean reducing or stopping the activity altogether, if possible. If that is not possible, the student needs to address *how* they are doing the repetitive activity. Can they improve the ergonomics of their workstation? Can they improve how they are using their body when doing the activity, so as to use their wrist joint less? Can they alternate using their right and left hands?
2. **Release chronic muscle tension.** Help your student become aware of patterns of tension in the core of their body that might be limiting movement in their core and shoulder, requiring too much movement of their wrist joint. Teach them exercises that release tension in their neck, shoulder, chest, waist, and back in addition to their arm, wrist, and hand.

The exercise that addresses the carpal tunnel specifically is described in the Shoulder, Elbow, Wrist, & Hand Releases document, and it is called “Hand Pandiculation.” It is demonstrated in the exercise video in CEI Level 3, Section 4. The previous exercise “Elbow and Wrist Flexion & Extension” works with the wrist.

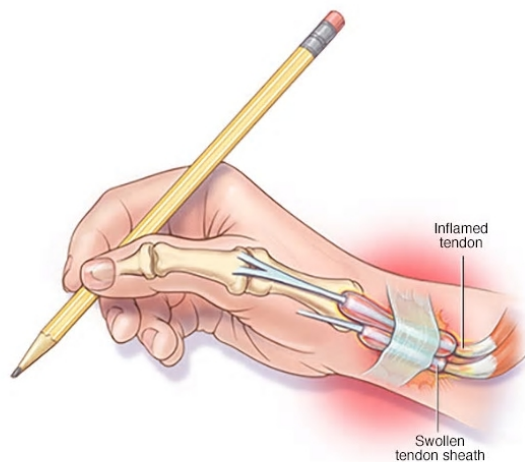
The following exercises work with the muscles of the core and shoulder that may be tight in people who have carpal tunnel syndrome:

Back Lift
Arch & Curl
Side Curl
Washcloth
Flowering Arch & Curl
Scapula Scoops Part 1
Scapula Scoops Part 2
Big X
Diagonal Curl
Shoulder Directions
Shoulder, Elbow, Wrist, & Hand Releases
Proprioceptive Exercise 2
Proprioceptive Exercise 3
Proprioceptive Exercise 4

DE QUERVAIN'S TENOSYNOVITIS

What is De Quervain's tenosynovitis?

De Quervain's tenosynovitis is a condition that involves painful inflammation of the tendons on the thumb side of the wrist. Repetitive movements involving the thumb can irritate the sheath around the two tendons that run from the lower thumb to the wrist. Symptoms of de Quervain's tenosynovitis include pain when turning the wrist, making a fist, or grasping anything.



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Activities that may cause or exacerbate de Quervain's tenosynovitis include:

- Gardening
- Playing golf
- Racket sports
- Texting
- Using a computer mouse

De Quervain's tenosynovitis may also be caused by injury to the wrist or tendons, or inflammatory arthritis.

How to work with De Quervain's tenosynovitis

Working with De Quervain's tenosynovitis is similar to working with carpal tunnel syndrome. Icing the wrist joint may help in reducing inflammation. Wearing a wrist brace can be helpful in limiting movement and preventing overuse of the wrist joint. Students also need to:

1. **Address the repetitive activity** that caused the symptoms. This may mean reducing or stopping the activity altogether, if possible. If that is not possible, the student needs to address *how* they are doing the repetitive activity. Can they improve the ergonomics of their workstation? Can they improve how they are using their body when doing the activity, so as to use their hand and wrist less? Can they keep their hand and wrist more relaxed when doing the activity? Can they alternate using their right and left hands?
2. **Release chronic muscle tension.** Help your student become aware of patterns of tension in the core of their body that might be limiting movement in their core and shoulder, requiring too much movement of their wrist joint. Teach them exercises that release tension in their neck, shoulder, chest, waist, and back in addition to their arm, wrist, and hand.

In addition to the exercises recommended for carpal tunnel syndrome in the previous section, you can teach your student this exercise:

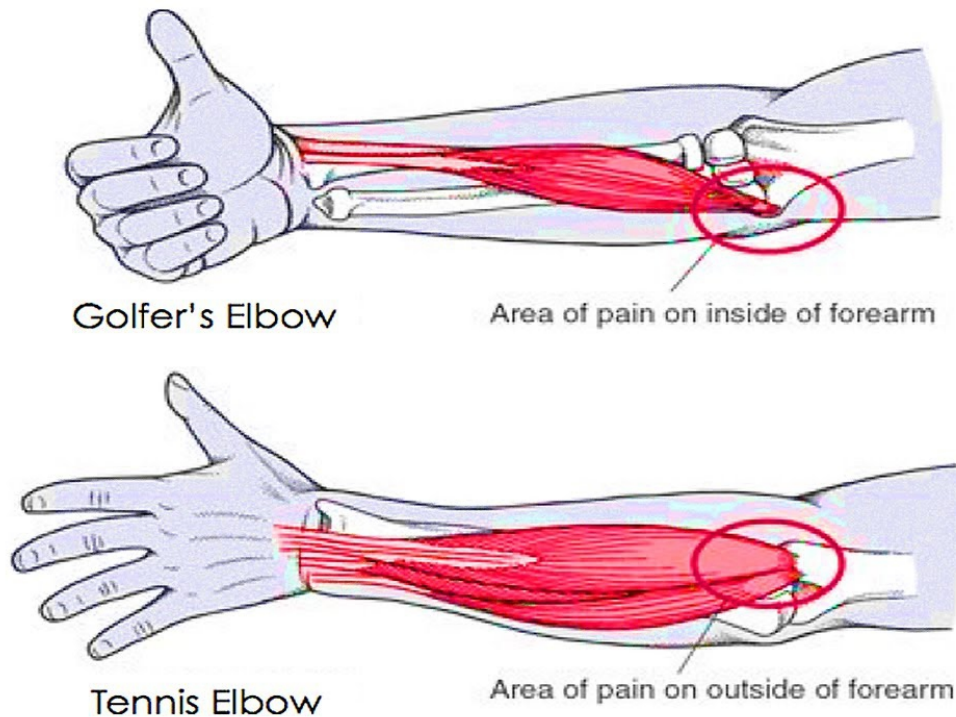
Sitting up, hold your elbow against your side with your forearm sticking out at 90 degrees, so that your forearm is parallel to the ground. Have your palm facing sideways, so that you are looking down at your thumb. Flex your wrist so that your thumb comes toward your elbow, contracting the area where the tendons are painful. Then, release as slowly as you can. This exercise can also be done using the opposite hand to apply resistance, similar to the Hand Pandiculation and the Foot Exercises.

It will also be helpful to do the Elbow and Wrist Flexion & Extension but with the palm facing the body instead of facing up.

TENNIS ELBOW & GOLFER'S ELBOW

What are tennis elbow and golfer's elbow?

Tennis elbow (lateral epicondylitis) and golfer's elbow (medial epicondylitis) are pain in the outside and inside of the forearm and elbow, respectively. They are caused by overuse and chronic tightness, and the conditions are not limited to tennis players and golfers. People who do repetitive work with their arms, like weightlifters, baseball players, painters, landscapers, plumbers, carpenters, and butchers, may also experience these conditions.



Repetitive force, like hitting a tennis ball, may aggravate the tendons at the elbow, causing pain and inflammation. Over time, the tendons can become degenerate. And as with all repetitive activities, muscle tension builds up over time, pulling on the attached tendons and creating friction and pain. As with all tendinopathies, it is important to address elbow and forearm pain in the early stages before structural damage is done.

How to work with Tennis Elbow and Golfer's Elbow

Working with overuse conditions of the elbow is similar to those of the wrist. Icing the elbow may help in reducing inflammation. Wearing an elbow brace can be helpful in limiting movement and preventing overuse of the elbow. But in order to make lasting progress, the student needs to:

1. **Address the repetitive activity** that caused the symptoms. This may mean reducing or stopping the activity altogether, if possible. If that is not possible, the student needs to address *how* they are doing the repetitive activity. Can they improve how they are using their body when doing the activity? Can they alternate using their right and left arms?
2. **Release chronic muscle tension.** Muscle tension in the core of their body might be limiting movement in their core and shoulder, making them move in such a way that they are requiring too much from their elbow. Imagine the strain put on the elbow when hitting a tennis ball or golf ball if the core and shoulder are being held tight. Teach your student exercises that release tension in their neck, shoulder, chest, waist, and back in addition to their arm.

The tightness involved in Tennis Elbow and Golfer's Elbow can be worked with directly using the "Elbow and Wrist Flexion & Extension" in the Shoulder, Elbow, Wrist, & Hand Releases document. As mentioned in the de Quervain's tenosynovitis section, you can also practice this exercise with the palm facing the body.

The following exercises work with the muscles of the core and shoulder that may be tight in people who have elbow pain:

Back Lift
Arch & Curl
Side Curl
Washcloth
Flowering Arch & Curl
Scapula Scoops Part 1
Scapula Scoops Part 2
Big X
Diagonal Curl
Shoulder Directions
Steeple Movement
Seated Twist
Shoulder, Elbow, Wrist, & Hand Releases
Proprioceptive Exercise 2
Proprioceptive Exercise 3
Proprioceptive Exercise 4