

## Diagnosis

A wrist tendinopathy is an overuse injury of one of the tendons around the wrist. Usually it involves the extensor tendon, which is located at the ulnar side of the wrist (*figure 1*). Often, the injury occurs in the non-dominant wrist in players who use a double-handed backhand. The flexor tendon is also located lower down on the ulnar side of the wrist. This injury leads to complaints during serving and when hitting forehands and forehand volleys. The cause of the injury is the high loads that the tendons around the wrist have to deal with when the ball impacts with the racket. This results in overstretching and micro-tearing of these tendons. Women are more commonly affected than men, because they have looser and weaker wrists. The injury is characterised by pain, swelling, heat and redness at the insertion point of the tendon in the wrist. Usually, extension and flexion of the wrist against resistance is painful. Tendon injuries are slow to heal and may take six weeks or more.

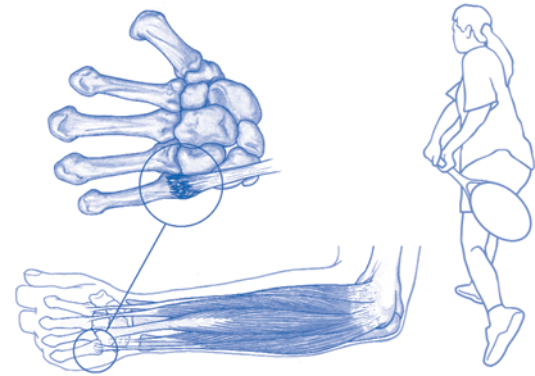


Figure 1. Wrist tendinopathy

## First Aid

- Activity modification (if you do not stop playing completely while the injury heals, hit mainly shots that do not hurt, such as double-handed backhands or only forehands and serves depending on the location of the injury).
- Cool the wrist with ice.
- Stabilise the wrist with a wristband or tape, so the ligaments and tendons can heal.

Fast and adequate first aid is very important to ensure good recovery. In severe cases, or when in doubt, the player should have the injury evaluated by a physician, who may make a referral for more detailed diagnosis and prescribe physiotherapy.

## How to Ensure the Best Recovery

The recovery process takes place in three stages, using exercises to enhance strength. These are described below, with several tips.

### Stage 1. Improvement of Normal Function

At this stage, special attention is paid to enhancing the strength of the muscles that are responsible for stabilising the wrist. Players with a double-handed forehand or a double-handed backhand need to make sure they strengthen both wrists.

- Wrist flexor muscles (*figure 2*). Start with a light weight (max. 1 kg) or elastic tubing. Support the forearm with a slightly flexed elbow on the knee, palm of the hand facing up. Move the wrist up and down, from a neutral position (2-3 sets of 10-20 repetitions).
- Wrist extensor muscles (*figure 3*). This exercise is the opposite of the exercise for the wrist flexor muscles. Support the forearm with a slightly bent elbow on the knee, but now with the palm of the hand facing down. Move the wrist up and down from a neutral position. This can be built up to 2-3 sets of 10-20 repetitions. When starting these exercises, it is sufficient to simply hold the weight, without moving the wrist.
- Once the wrist flexion/extension exercise is tolerated, progress to ulnar/radial deviation and pro/supination to further build strength in the wrist region.
  - Ulnar/radial deviation. Support the elbow on the knee, palm facing down and light weight in the hand. Move the hand to the left and right.
  - Pro/supination. From the same starting position, rotate the hand clockwise and counter clockwise.
- Improve grip strength. This is a general exercise that strengthens all the muscles of the forearm and hand. Use an older, softer ball (3 sets of 10-20 repetitions).

## Stage 2. Return to Play

In this phase it is important to build up the tennis-specific load. The increase of the load could take place in the following way.

- Mini tennis (i.e. half court within the service lines), both forehands and backhands
- Baseline tennis, with only forehands, slice backhands, or a single-handed backhand. Be careful of your technique if you use a double-handed backhand.
- A slow court (clay court) is preferable at first, since fast courts afford less time for a good stroke performance.
- Gradually introduce volleys. Do not practice these for too long. Stabilise the wrist well at the point of impact.
- Baseline tennis with all types of backhands. Limit the use of the short cross-court backhand, because this puts a high strain on the wrist.
- Service and overhead.
- Practice match
- Match play.

During stage 2 it is important to pay attention to timing and technique. The feel for the timing ensures that improvements in technique occur with a minimum use of strength. This is very important for the maintenance of a correct position of the wrist and a fluent stroke.

## Some Tips for the Backhand

- Try to hit the ball in front of the body, so it is easier to fully use the shoulder and trunk and to stabilise the wrist.
- Try to use the forearm for racket control only, and not for strength. Strength should be exerted mainly via the shoulder and trunk muscles instead of the forearm muscles.
- When hitting a one-handed backhand, try to use the other arm for balance. The function of the balancing arm is very important for a fluent stroke. It supports the racket in the starting position and enables an easy grip change when preparing for the backhand.
- If the injury is the non-dominant hand and persists during the double-handed backhand, the player could consider switching to a one-handed backhand. Since there are both advantages and disadvantages to the use of a single-handed backhand, the player should discuss this with his/her coach first before making the change.
- Since volleys may also provoke the pain, these should be gradually introduced into the training programme.



Figure 2. Strengthening the wrist flexor muscles



Figure 3. Strengthening the wrist extensor muscles

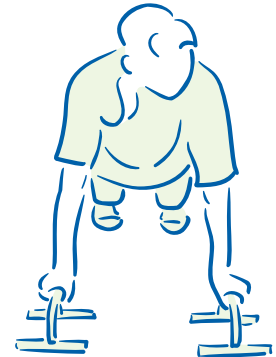


Figure 4. Push ups using handle bars

## Preventing Re-injury

- Perform a complete warm-up before play and a cool-down afterwards, for approximately 15 minutes each. This should be followed by mini-tennis.
- Make sure the build-up of the tennis training is gradual, so your body can adapt to the increased load.
- Alternate volley exercises with other strokes, so your wrists have enough time to recover.
- Avoid push-ups with a bent wrist, because this may worsen a wrist injury. If you do want to perform push-ups, use handlebars or support yourself on your knuckles (this straightens the wrists) (figure 4).
- Make sure to use the correct grip. If the grip is either too thick or too thin, you have to squeeze the racket to prevent it from twisting in the hand. The correct grip can be determined as follows: grip the racket lightly, as if you were shaking hands. The little finger should fit between the base of the thumb and the fingertips. Consult your coach for further details regarding the correct grip size.
- Continue to work on wrist strength to stabilise the wrist using the exercises and a low-resistance, high-repetition format.