



YOUR GUIDE TO

# HAND & WRIST INJURIES

MUSCULOSKELETAL

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## Introduction

**Please take note of the following before starting any of the exercises in this guide:**

- The information contained in this guide is intended to assist in managing your recovery.
- This guide is based on the latest medical research in the field and contains the best advice available to the best of our knowledge.
- This guide is complimentary to other medical services and is not intended as a substitute for a health care provider's consultation. Never disregard medical advice or delay in seeking advice because of something you have read in this guide.

● Many people have found quick and lasting relief from their pain by acting upon the information provided, but everyone decides for themselves what to do with this information. Should you doubt a particular exercise in your situation, please consult your health professional.

**When consulting your health professional, it is wise to take this guide with you to show them.**

# The Hand and Wrist

The wrist is the region that connects the forearm to the hand. The hand enables us to grasp and move objects, whilst also acting as a sensory organ to provide information on the temperature, texture and shape of objects. It also allows us to communicate expressively. Both the hand and wrist are complicated in structure, consisting of many joints, bones and muscles. The combined motion of all these structures allows the wrist to co-ordinate the movements of your hand, forearm and elbow. The hand and wrist are the most intricate and active joints in the arm. As a result of this, they are vulnerable to different injuries and often do not respond well to trauma.

## BONES

There are 27 bones that make up the wrist and hand. The wrist joint is not a single joint but comprises of connections between the carpal bones (intercarpal and midcarpal joints) and the connection with the forearm between the front row of carpal bones and the radius (radiocarpal joint). Functionally, the eight carpal bones are arranged and move as two rows of bones. The longer bones the metacarpals, and phalanges (fingers), make up the hand. Your knuckle joints are where the metacarpals and phalanges meet and these form a hinge to bend and straighten your fingers. Each finger has three joints; the knuckle, the proximal interphalangeal joint

(PIP)(middle joint of the finger) and the distal interphalangeal joint (DIP) (joint at the tip of the finger). The thumb only has two joints.

## LIGAMENTS, TENDONS AND MUSCLES

Ligaments are strong bands of connective tissue linking bone to bone, and tendons link muscle to bone. There are ligaments running down the side and over the top of our fingers, to prevent abnormal sideways or overextending movements of the fingers and thumb.

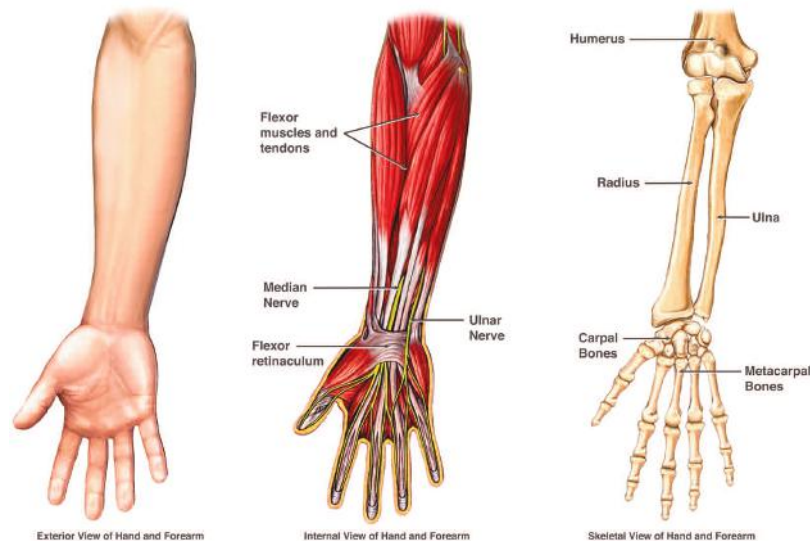
The extensor tendons enable the fingers to straighten, and are attached to the bigger muscles of the

forearm to allow movement.

The bigger muscles that control the hand and wrist run down the forearm, and influence both bending and straightening of the wrist, as well as the smaller movements of the fingers and thumb. There are smaller muscles within the hand that allow holding objects and the finer motions of the fingers.

## NERVES

The main nerves of the hand are the radial, median and ulnar nerves, and these begin at the shoulder and run down the arm to the hand. These nerves send impulses and messages to the brain to create sensation and movement.



# Types of pain

**Acute Pain** is a sudden onset of pain that can range from mild to severe, and last anything from a couple of days to a few months. The pain will subside once the injury has healed.

**Chronic Pain** occurs when nerves continue to send pain messages, even when healing has occurred and there is no continuing tissue damage. This pain continues due to a variety of reasons, including nerve damage, disease, or psychological factors.

**Inflammation** (swelling) is the body's protective reaction to injury, irritation, or disease. After initial injury or infection, the body triggers chemicals from its white blood cells to protect

the tissues against foreign substances. The increased blood flow causes redness and warmth in the area and inflammation can often be painful due to compression or irritation of the nerve endings. An affected joint is therefore often swollen, tender, red, and warm, and sometimes involves joint stiffness. Inflammation, although often painful and sometimes harmful, is in fact a crucial response to tissue damage. It kick starts tissue repair, while protecting the area from infection and further injury. It is however, important to control inflammation in the injured area to prevent increased tissue damage.

# What causes Hand or Wrist Pain?

## OVERUSE INJURIES

Overuse injuries occur when too much stress is placed on a joint or tissue, either by "overdoing" an activity or repeating the same activity many times. Movement of the hand and wrist increases the pressure within the joints, and requires performance of the surrounding muscles. Doing an activity repetitively may instil or exacerbate pain. Overusing the joint can result in excessive friction and tension within the muscles, tendons or ligaments, which eventually leads to micro-tears within the tissues, resulting in pain, swelling and inflammation.

## SUDDEN (ACUTE) INJURY

An acute injury may occur from a direct blow, a traumatic injury, a fall, or from sudden actions that are outside of the hand's normal range of movement. Wrist injuries usually occur from a fall onto an outstretched arm. Pain may be sudden and severe and bruising and swelling may develop soon after the injury. Acute injuries may include bruises, injury to the soft tissues (such as the muscles and ligaments), dislocations or in severe cases, broken bones.

# Common Conditions and injuries

## Tendonopathies

Tendon pain is actually a symptom of tendonopathy which is a series of very small tears (micro tears) of the tissue in or around the tendon. In addition to pain and tenderness, common symptoms of tendon injuries include decreased strength and movement in the affected area. Pain usually worsens with activity, and eases with rest in these types of injuries

## Fractures

Fractures of the radius and ulna bones are common in both sports people and the elderly. Carpal bone fractures can also occur, the most common of these is a fracture to the scaphoid bone. Fractures of the phalanges (finger bones) and metacarpal (hand

bones are also relatively common.

A fracture usually results from a blow to the hand or a traumatic injury and can be seen on an X-ray.

## Sprains and Dislocations

Finger or wrist sprains are fairly common, and will occur from overstretching the ligaments, usually from a fall or bending the joint in an unusual range. Dislocations in the joints normally occur between the small bones in the centre of the hand, and of the finger joints themselves.

## Skier's Thumb

This is a name given to a particular dislocation. It results from a fall on an outstretched arm, and landing in such a way that the thumb is forced upwards and outwards.

## Impingement Syndromes

A number of impingement syndromes can occur. These are normally the result of overusing the joint. Activities that may aggravate this condition include twisting motions of the wrist while holding an object in the hand (e.g. using a screwdriver, weight lifting etc).

## Carpal Tunnel Syndrome

This is caused by the compression of the median nerve on the thumb side of the hand. The symptoms include tingling, numbness, weakness, or pain in the fingers and hand. People who spend a lot of time typing at a computer with an incorrect posture are usually at increased risk, and it can also be associated with cycling (the gripping angle on the handle bars).

## Tenosynovitis/ De Quervain's disease

This is an inflammatory injury of the tendons where they cross the wrist joint on the side of the thumb. It is usually caused by overuse or excessive wrist movements and repetitive forceful gripping.

## Trigger Finger

This occurs when the tendons of the fingers are affected due to thickening at the opening of the tendon sheath. This can be due to factors such as diabetes or rheumatoid arthritis, but in many cases the cause is unknown. Because of this thickening, the tendon gets caught when the finger is bent and gives a painful click when straightened (like a trigger). This generally affects the movement of the finger.

## Mallet Finger

This involves an injury to the tendon

that straightens the finger at the DIP joint (i.e. the finger tip), and is the most common closed tendon injury of the finger. This injury is usually caused by an object (e.g. a ball) hitting the finger whilst it is straight and forcing it to bend. This tendon can be stretched, partially torn, completely ruptured or seperated by an avulsion fracture (tendon pulling away some of the bone). If you have mallet finger you will be unable to actively straighten the tip of your finger and will have pain in this region. If you are also unable to fully straighten the finger using your other hand, this may indicate that bone or tissue is trapped and will require surgical intervention

## Jersey Finger

This injury involves the disruption of the tendon that bends the tip of your finger, and commonly occurs when an athlete's finger catches another player's shirt e.g when tackling in football or rugby. The injury results in forced straightening of the finger whilst it is bending. The ring finger accounts for the majority of jersey finger injuries as it is the weakest. The injury can occur if the force occurs at either middle or end finger joints.

## Osteoarthritis

Osteoarthritis (OA) is a degenerative condition where the joint cartilage gradually wears away, causing pain and swelling. OA usually affects joints such as the knee, hips, and fingers. It is common to experience stiffness in the joint in the morning, which eases as you begin to move. Feelings of locking, grinding or clicking within the joint may be experienced.

# What treatment can I receive?

**The treatment that you will receive for your wrist or hand injury will depend on the location and severity of the injury. Most treatments are aimed at reducing pain and inflammation and ensuring that you return to full function.**

**REST:** It is important to allow any inflammation that may be present to settle. Sometimes a splint, firm bandage or brace is put on the wrist or finger to enable this to happen. This forces the hand and wrist to stay in the same position for a time to allow rest of the affected area. With some finger injuries, 24 hour splinting is required to ensure complete healing and return to normal function. Night splinting for carpal tunnel syndrome may also be advised to ensure that the wrist remains in a neutral position to reduce the pressure on the nerve.

**ICE:** Ice packs over the affected area will help speed up the recovery process by reducing the inflammation and can also reduce pain. With any acute injury, ice should be applied immediately as this will help to control the inflammatory process and enable quicker recovery.

## **ANTI-INFLAMMATORY**

**MEDICATIONS:** These are often prescribed (for example, ibuprofen) to reduce pain and inflammation. It is important that you consult with your doctor or pharmacist before starting a course of anti-inflammatory medication to ensure that you have no contraindications to their use.

**PHYSIOTHERAPY:** This may be advised, especially if the condition is not settling with the above measures. The physiotherapist will perform a full assessment of your wrist or hand and provide you with the appropriate treatment for the cause of your symptoms. They may also use other treatment techniques such as: deep massage, electrotherapy (e.g. ultrasound) and acupuncture to facilitate the healing process and help you to return to full functional activities as soon as possible.

**OCCUPATIONAL THERAPY:** With many wrist and hand injuries, occupational therapy may be required to provide you with the appropriate splints/supports and to give you exercises that will focus on ensuring that the fine motor control of your fingers return. Physiotherapist and occupational therapists often work closely together when treating patients with hand and finger injuries.

**CORTICOSTEROIDS:** These may be required and can be administered either orally or via injection directly into the site of inflammation if the above measures do not work. Corticosteroids work by reducing inflammation and are usually effective, but can have other side effects and will therefore be prescribed and administered by your Doctor. Corticosteroids may not always be suitable for people with diabetes, and long-term use is not recommended as side-effects can develop. It is also often important that you rest the injury site after it has been injected as cortisone can weaken the tendons which could result in further damage if sufficient rest is not taken.

**SURGERY:** This may be required for some wrist and hand injuries either immediately or after conservative treatment has been attempted and failed to reduce your pain or return you to full function. Effective rehabilitation after surgery is essential to ensure that the appropriate muscles are strengthened, full range of motion returned and function restored.

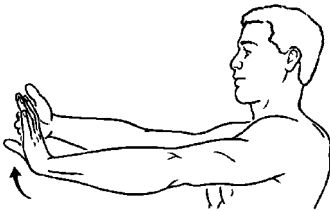
**ANTIBIOTIC:** In some rare occasions where the cause of the inflammation is infection, anti-biotic treatment may be required

# What exercises can I do?

## Wrist exercises

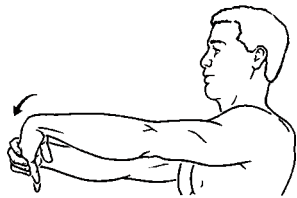
### STRETCHING EXERCISES

- Repeat each of these stretches 2 times for at least 20 seconds
- Hold a steady stretch, do not bounce
- Control the movement until you feel a stretch, and hold it there, do not continue to stretch into the pain threshold



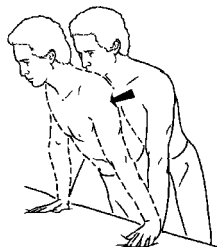
#### FLEXOR STRETCH

Keep the elbow straight, and using the other hand, slowly bend the wrist back until a stretch is felt.



#### EXTENSOR STRETCH

Keeping the elbow straight, use the other hand to grasp the hand. Slowly bend the wrist down until a stretch is felt.

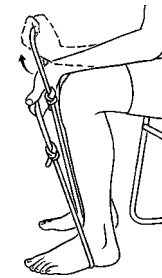


#### WRIST FLEXOR STRETCH

Rest your palms comfortably on a table. Slowly move your body over your hands until a gentle stretch is felt in the forearms.

### STRENGTHENING EXERCISES

- Do 3 sets of 10 to 20 repetitions (on both sides if necessary)
- Do each exercise within your pain free zone



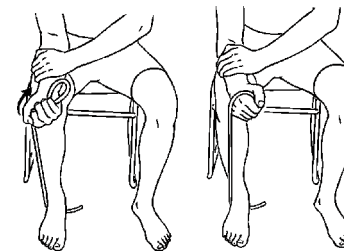
#### WRIST FLEXION WITH BAND

With a piece of tubing (or an old stocking) wrapped around the fist and the opposite end secured under your foot, bend the wrist upwards as far as possible. Slowly relax your wrist to the starting position. Be sure to keep the palm facing **upwards** and the forearm on your thigh.



#### WRIST EXTENSION WITH BAND

With a piece of tubing (or an old stocking) wrapped around the fist and the opposite end secured under your foot, bend the wrist downwards as far as possible. Slowly relax your wrist to the starting position. Be sure to keep the palm facing **downwards** and the forearm on your thigh.



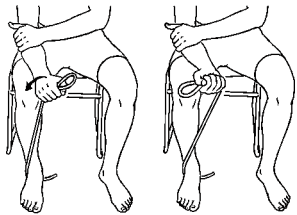
#### FOREARM PRONATION WITH BAND

With your palm facing upwards, stabilise your forearm on your thigh with the opposite hand. Keep the tubing (or an old stocking) to the outside of your hand and roll the palm of the hand as far down as possible. Slowly relax your wrist to the starting position.

## STRENGTHENING EXERCISES cont.

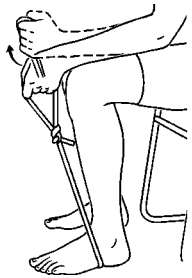
- Do 3 sets of 10 to 20 repetitions (on both sides if necessary)

- Do each exercise within your pain free zone



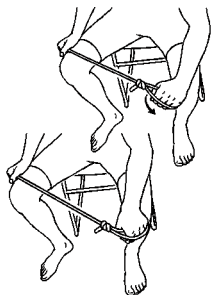
### FOREARM SUPINATION WITH BAND

With your palm facing upwards, stabilise your forearm on your thigh with the opposite hand. Keep the tubing (or an old stocking) to the inside of your hand and roll the palm of the hand as far up as possible. Slowly relax your wrist to the starting position.



### RADIAL DEVIATION

With tubing wrapped around your fist and the opposite end secured under foot, bend your wrist up (thumb side up) as far as possible. Lower slowly, keeping forearm on thigh.



### ULNAR DEVIATION

With tubing wrapped around your fist and opposite end secured by the other hand. With palms facing, bend wrist away from the other hand. Slowly return to the starting position keeping your forearm on your thigh.

## Hand exercises

### MOBILITY EXERCISES

- Do 3 sets of 10 (on both sides if necessary)

- Do each exercise within your pain free zone



### FINGER OPPOSITION

Touch the thumb to the finger tip of each finger. Proceed from the little finger to the index finger. Increase the speed at which you do the exercise as you get better.



### FINGER CURLING

Apply a moderate to maximal resistance with the opposite hand as you try to curl the fingers of one hand.



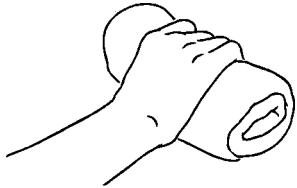
### FINGER STRAIGHTENING

Apply a moderate to maximal resistance with the opposite hand as you try to straighten the fingers of one hand.

## MOBILITY EXERCISES cont.

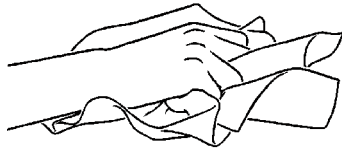
● Do 3 sets of 10  
(on both sides if necessary)

● Do each exercise within your pain  
free zone



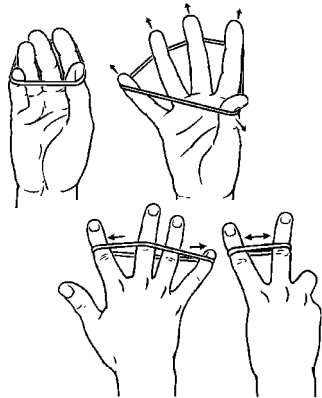
### TOWEL ROLL SQUEEZE

With your forearm resting on the surface, squeeze a towel. The pressure that you apply can increase as you get better.



### PAPER CRUMBLING EXERCISE

Begin with palm down on a piece of paper. Maintaining contact to surface with heel of hand, crumple paper into a ball.



### FINGER STRENGTHENING WITH ELASTIC

Place an elastic band around all fingers, or just one or two fingers. Try to spread the fingers as wide as the resistance of the band will allow.

## Contact us

This guide is designed to assist you in the self-management of your injury/condition.

We are here to assist your recovery in the shortest but safest possible time. If you have any uncertainties or queries regarding the information, please do

not hesitate to contact us on:

Phone 017890400999 / 07870166861  
[www.mdphysiotherapy.co.uk](http://www.mdphysiotherapy.co.uk)