Peninsula Hand Therapy
Hand and Upper Limb Rehabilitation

# OSTEOARTHRITIS

Osteoarthritis (OA) is a wear and tear arthritis affecting weight bearing joints in the body that are most commonly used. Such joints include the hips and knees in the lower limbs, and the thumb and fingers in the upper limbs. It more commonly affects women, with typical onset at 50-60 years of age.

OA is a two-part process. Firstly, the cartilage on the end of the bone wears down. Secondly, the bone starts growing around the margins of the joint, causing a lumpy enlarged appearance.

In the hand, this process can go on for years without any pain or stiffness. Then, at any given time, some people develop inflammation in the joints which can cause pain, stiffness, swelling and reddening of the skin. Therefore, the process of OA is painless; but rather the inflammation causes the pain experience.

This means that even though you cannot reverse the damage (e.g. restore the cartilage and remove the bony growths) you can treat and reduce the inflammation, which is usually the common complaint. Many people can live with lumps and bumps but, ultimately, the pain limits activity levels. This guide focuses on ways to reduce pain and inflammation so those with OA can minimise the need for medication and limit further joint deformity. The goal is to lead an active and productive life by continuing to engage in activities you enjoy.

## Thumb - Arthritis of the Basal Joint

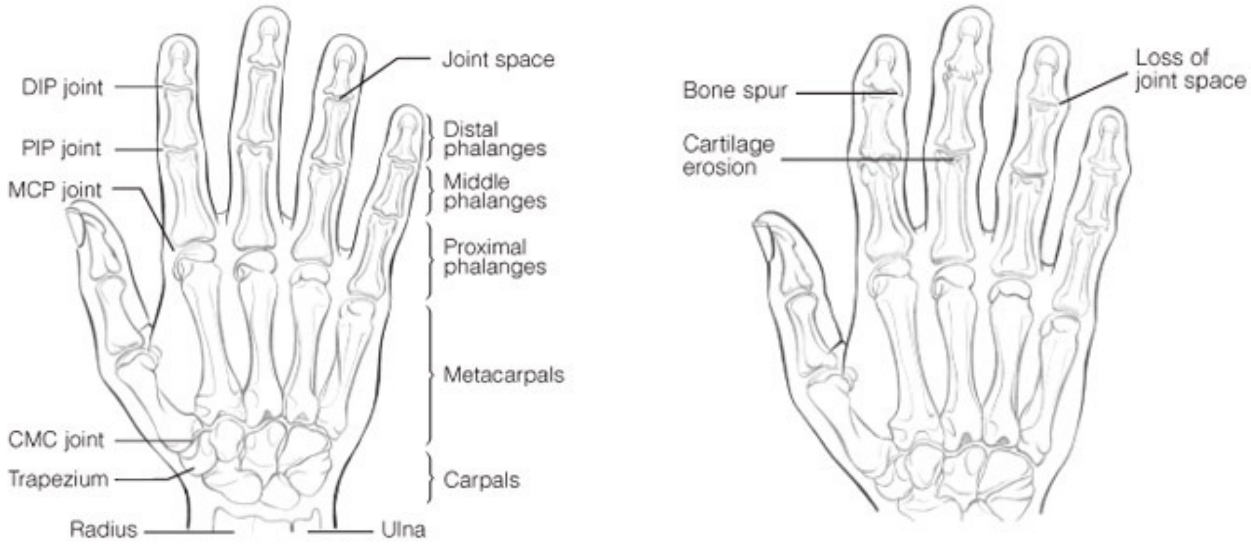
This joint is very commonly involved with arthritis as it is the most commonly used joint in the body (like the jaw). The cartilage surface of the two bones at the base of the thumb are worn away by our repeated pinching, causing pain and grating over this joint (first carpometacarpal joint). The bone moves out of the normal position, due to laxity of the supporting ligament leading to the thumb collapsing inwards to the palm. This then causes the next joint along the thumb (metacarpal joint) to bend backwards to compensate for the base of thumb joint. The thumb can then display a 'Z' like deformity, known as a 'Z-deformity'.

## Hierarchy of treatment

It is recommended to pursue conservative measures as the first step to managing OA in the base of the thumb. Good results can be achieved with surgery, when conservative (non-surgical) measures cease to be effective. Below is the hierarchy of treatment for managing OA. (It is always important to liaise with your GP regarding medications and creams):

1. Anti-inflammatory creams ("Arnica" or "Voltaren" gel).
2. Vitamin supplements including glucosamine 1500mg/day, and fish oil.

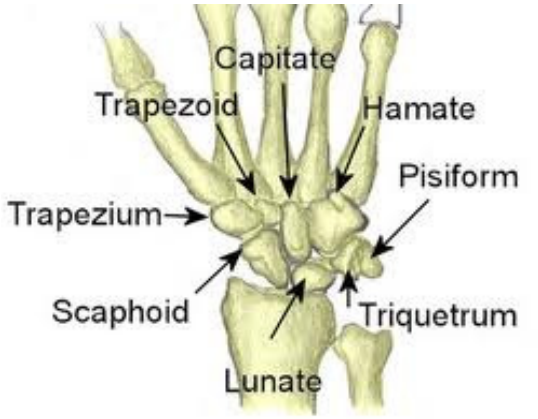
3. Anti-inflammatory tablets (NSAID's).
4. Splints to rest and support the joint position. Splints are also used to minimise the progression of the deformity, increase stability of the pinch grip and realign a lax joint.
5. Therapy is used to stretch out the contracted joint capsule and strengthen the muscles around the joint. Therapy also includes education regarding joint protection and provision of aid and appliances to minimise joint deforming forces on the hand (e.g. opening jars).
6. Steroid injections.
7. Surgery.




The diagram on the Left is the skeletal hand without arthritis, the diagram on the Right shows the common changes to the hand with osteoarthritis.

**<u>Symptoms and Problems</u>**

- Pain or aching around the base of the thumb which may radiate or travel down the thumb to the tip or up the forearm. The pain is usually made worse when the thumb is used to pinch something, especially a 'key pinch'.
- Tenderness over the CMC joint.
- The CMC joint may become stiff in the morning or after it has not been used for a while.
- There may be evidence of swelling, warmth or redness if the inflammation is severe.
- Over time, motion in the joint may become limited. It may be difficult to place the palm completely flat on a table or spread the web space between the thumb and index finger.
- Thickening of the bone around the margin of the joint gives the joint a protruding or squaring appearance.
- OA may develop in the joints adjacent to the CMC joint (STT arthritis). A special larger splint that immobilises the wrist, as well as the thumb and CMC joint is required for this condition.




**Fingers**

The DIP joint (the end joint) of the index finger and the MCP joint (the knuckles) are also commonly affected by wear and tear, especially pinching forces and, therefore, are also likely to show signs of OA.

This manifests as nodules on the side of the finger joints and joint enlargements at the knuckles. Sometimes the joint deviates sideways, as the forces of gripping and pinching stress the weakened ligaments.

These deformities cannot be reversed; however, joint integrity and future deformity can be preserved for as long as possible using techniques such as joint protection principals and splinting.

**What You Can Do**

- Incorporate joint protection techniques into your life.
- Consider non-operative treatments.
- Apply cold compresses as needed to reduce inflammation.
- Use heat for aches and pains in the absence of inflammation.

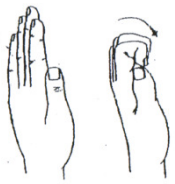
**Exercises for Osteoarthritis**

Hand exercises will maintain your hand mobility and strength which helps decrease pain and deformity.

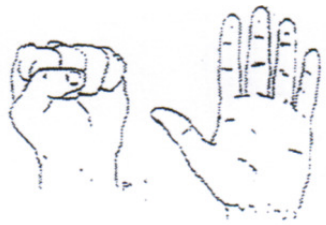
The following exercises should be done at least three times a day with each exercise repeated six to ten times. It is important to concentrate on the correct movement and to relax in between each exercise.

It is best to soak your hands in hot water or wax before or during some of the exercises.

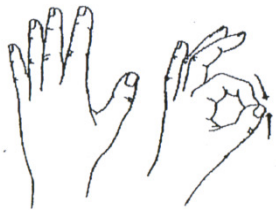
1. Curl the tips of your fingers down to touch the base of each finger and curl back up straight. Keep your knuckles straight.



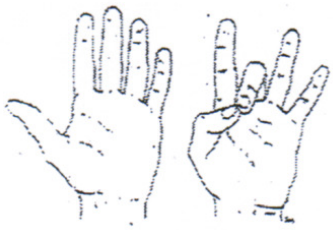
2. Make a gentle fist curling all your fingers, then slowly open your hand wide.



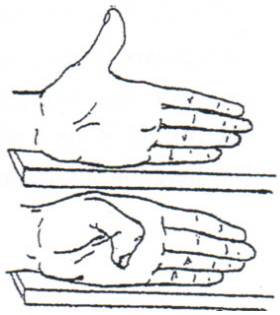
3. Touch the tip of your thumb to each finger, making a circle. Open your hand completely after each touch.



4. Slide the tip of your thumb down the side of each finger.



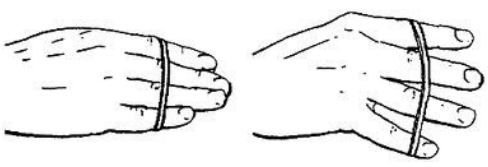
5. Turn your hand sideways with thumb up, little finger resting on table, and make large circles with your thumb. Reverse direction.



6. With hands flat down on the table, lift all fingers and thumbs up, keeping palms down.

7. Stretch your fingers by putting your hands together and then move your palms away from each other.

8. To strengthen the muscles down the back of your hands wrap an elastic band around your fingers, gently spread open your hand and hold for a count of six seconds.



## Joint Protection and Energy Conservation

Once the basic principles of joint protection are understood, the individual can then apply them to his or her own lifestyle.

Joints weakened by an arthritic condition are vulnerable to damage caused by stresses from activities of daily living. To protect the joints it is necessary to analyse work habits and tasks. Potentially deforming forces, which over a period of time could lead to pain or accelerate joint destruction or deformity, should be modified.

## Principles of Joint Protection

1. Respect pain.
2. Balance rest and work.
3. Maintain muscle strength and joint range of movement.
4. Reduce effort.
5. Be conscious of joint positioning.
6. Use the strongest or largest joint possible.
7. Change position frequently.
8. Stop activities if necessary.
9. Use aids and splints if prescribed.

## Use Aids and Splints if Prescribed

Aids and splints are sometimes prescribed to help protect the joints and to simplify work. They are not necessarily used with all arthritic patients. They are prescribed on the basis of the individual's particular condition and its associated problems.

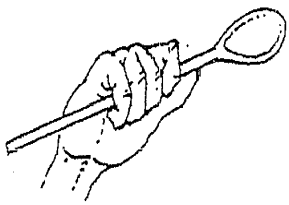
Aids to independence are numerous and are designed to fulfil a specific need (e.g. inability to turn on taps). They may be specifically designed for the individual or may be commercially available. If an aid is prescribed, the individual should be encouraged to make use of it and to keep it readily accessible.

Splints may be prescribed to support or rest a joint. They are generally custom made although there are some commercially available options. If they are prescribed, it is important that they be used. Splints should be checked periodically to ensure that they are fitting correctly, are still fulfilling a need, and are in good repair.

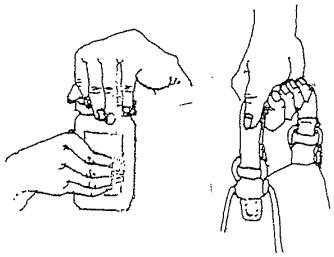
It should be emphasised that the use of splints and aids is not "giving in" to the disease but rather is a means of maintaining functional independence and minimising joint deformity for as long as possible.

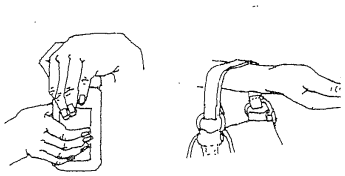
**What to Do and What Not to Do**

1. Avoid doing activities that require strong finger flexion. Gripping on small handles increases the stress on the finger joints.
   Use built-up handles and utensils to decrease the stress on the joints.

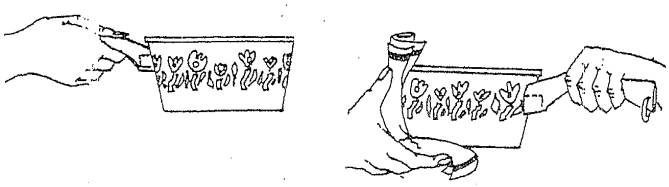


2. Avoid using smaller joints.
   se larger joints instead of small joints that are normally more susceptible to injury, e.g. use your palm rather than small finger joints.

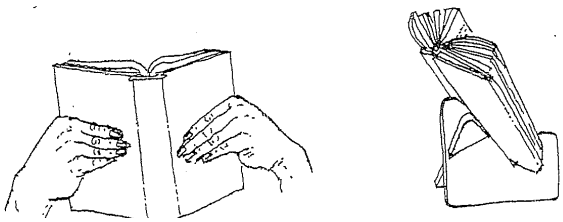




3. Avoid using one hand to lift a heavy object.
   Using two hands instead of one to divide the stress between both hands.
   Cooking vegetables in a steamer that can be lifted out of the pot will significantly reduce the need to lift the heavy pot.
   Use lightweight equipment, i.e. avoid cast-iron cookware.



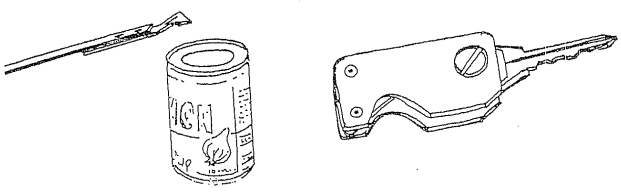
4. Don't allow your fingers to be pushed towards the little finger side of your hand.
   Use alternative methods or special equipment which reduce the ulnar forces.



5. Don’t do activities which cause pain if there is an easier alternative/technique.
   Use aids to increase leverage and friction to reduce the stress on your hand joints.

6. Avoid wringing out cloths which puts great stress on the finger joints.
   Twist the cloth around the water tap to wring out or use a sponge which you can squeeze out with the palm of your hand.

7. Avoid holding vegetables and using a peeler which requires a tight grip.
   Use a breadboard with a spike to support potato or carrot while peeling with a wide handled peeler or, alternatively, you can build up a handle with foam.



8. Avoid holding round doorknobs when wrists are painful and stiff.
   Use a door handle extension if necessary.

<u>Further reading:</u>
Please contact Arthritis Victoria on 1800 011 041 or visit Arthritis Australia on www.arthritisaustralia.com.au