

## Osteoarthritis

Osteoarthritis is a degenerative joint disease that causes pain and stiffness in joints. Symptoms may be helped by exercises, some physical devices and treatments and by losing weight if you are overweight. Anti-inflammatory painkillers and other medicines are sometimes advised. Joint replacement surgery is an option for severe cases.

### What is osteoarthritis?

Arthritis means inflammation of the joints. Osteoarthritis (OA) is the most common type of arthritis in the UK. Osteoarthritis affects the joint cartilage and the bone tissue next to the cartilage.

[See the separate article called What's the difference between osteoarthritis and rheumatoid arthritis? for more information.](#)

### What causes osteoarthritis?

All normal joints and joint tissues are constantly undergoing some form of repair. This is because of the wear and tear that is placed on them through our daily activities. However, in some people, it seems that this repair process becomes faulty in some way. This occurs perhaps because of severe wear and tear to the joints or a problem with the repair process, and osteoarthritis develops.

In joints with osteoarthritis, the joint cartilage becomes damaged and worn. The bone tissue next to the cartilage can also be affected and bony growths can develop around the joint edges. These growths are called osteophytes and may be seen on X-rays. The joints and the tissues around the joints can also become inflamed. This inflammation is called synovitis.

**Factors that may play a role in the development of osteoarthritis include:**

#### **Age**

Osteoarthritis becomes more common with increasing age. It may be that the state of the blood supply to the joint and the state of the natural repair mechanisms become less efficient in some people as they age.

## **Genetics**

There may be some inherited tendency for osteoarthritis to develop in some people.

Obesity. Knee and hip osteoarthritis are more likely to develop, or be more severe, in people with obesity. This is because there is an increased stress on the joints and a potential for more joint damage.

## **Your sex**

Women are more likely than men to develop osteoarthritis.

## **Previous joint injury, damage or deformity**

For example, this may include previous joint infection, a previous break (fracture) in the bone around a joint, or a previous ligament injury that caused a joint instability.

## **Occupational overuse of a joint**

For example, osteoarthritis of the knee may be more common in elite athletes and elbow osteoarthritis may be more common in people working with pneumatic drills.

## **How common is osteoarthritis?**

OA causes joint pain in around 8.75 million people in the UK. Around 32.5 million adults in the United States have OA, according to the Centers for Disease Control and Prevention (CDC).

- **Primary OA** develops in previously healthy joints. Most cases develop in people aged over 50 years. By the age of 65 years, at least half of people end up developing osteoarthritis in some joint(s). It is mild in many cases; however, about 1 in 10 people aged over 65 years have a major disability due to OA. This is mainly due to OA of one or both hips or knees.
- **Secondary OA** develops in joints already affected by previous injury, damage or deformity. This can occur in younger people.

# Osteoarthritis symptoms

## Joint pain, stiffness, and limitation

These are typical symptoms with osteoarthritis. Osteoarthritis pain typically comes on during activities that use the joint; for example, walking or running. The joints feel painful and stiff, which tends to be worse first thing in the morning. It then tends to loosen up after half an hour or so.

## Pain, swelling and inflammation

This can sometimes occur in the joints affected with osteoarthritis. However it is not very common for them to be swollen, red or warm. Tell your doctor if a joint suddenly swells up or becomes red or hot. This is a symptom of osteoarthritis that more commonly occurs with other types of arthritis.

## Flare-ups

People with osteoarthritis often experience 'flares' of symptoms - where pain, stiffness and sometimes joint swelling become worse for several days. This usually settles within a week or two. During a flare, people with osteoarthritis may need to take more pain relief than usual.

A joint affected by osteoarthritis tends to look a little larger than normal. This is due to overgrowth of the bone next to damaged cartilage.

## Joint deformities

Deformities of joints due to osteoarthritis are uncommon but can sometimes develop. You may have poor mobility and problems walking if a knee or hip is badly affected with osteoarthritis. This may make you more likely to have a fall and cause joint injuries. If you have bad osteoarthritis that affects your hip, you may have difficulty in putting on shoes and socks and getting in and out of a car and doing physical activities. In women, restricted movement of the hip can make having sex difficult and painful.

## No symptoms

No symptoms may occur. Quite a number of people have X-ray changes that indicate some degree of osteoarthritis but have no, or only very mild, symptoms. The opposite can also be true. That is, you may have quite severe symptoms that affect your quality of life but with only minor changes seen on the X-ray.

## Secondary symptoms

Some people with OA may develop other problems because of their symptoms. For example, pain can affect sleep for some people. Mobility problems may affect your ability to work and carry out family duties. Some people may get down or even depressed because of their pain and other symptoms.

## Which joints are affected most by osteoarthritis?

Any joint can be affected by osteoarthritis (OA) but joints in the hips, knees, fingers, thumbs and lower spine are most commonly affected. The shoulders, elbows, wrists, ankles, and toe joints are less commonly affected by osteoarthritis. In many cases, just a few joints develop symptoms with one or two becoming the most troublesome. In some people, osteoarthritis develops in many joints.

## How is osteoarthritis diagnosed?

Your doctor can often diagnose osteoarthritis based on your age, your typical symptoms and examination of your affected joints. Tests such as X-rays or blood tests are usually not needed. However, sometimes your doctor [may suggest X-rays](#) or other tests if they are uncertain about the diagnosis and want to exclude other problems.

## Osteoarthritis treatment

There is no cure for osteoarthritis but there are a number of things that can be done to ease symptoms and reduce pain. For anyone with osteoarthritis, the aims of treatment should be:

- To help you to understand the condition and how to manage it.
- To reduce any pain and stiffness.
- To maintain or improve the mobility of your affected joint or joints.
- To limit any joint damage.
- To minimise any disability that may result from your OA.
- To minimise any side-effects from medicines used as treatment.

Remember, something can usually be done to help. Osteoarthritis is more common as you become older but it isn't just part of getting older. You don't have to live with pain or disability. Various treatments may help and are discussed below.

### **Exercise**

If possible, [exercise regularly](#). This helps to strengthen the muscles around the joints affected by osteoarthritis, to keep you fit and to maintain a good range of joint movement. Exercise can reduce joint pain, swelling, and stiffness from osteoarthritis. Swimming is ideal for most joints; other good low-impact exercises include walking, cycling, rowing, and using elliptical trainers. However, any exercise is better than none. Many people can manage a regular walk.

### **Weight control**

If you are overweight, try to [lose some weight](#), as the extra burden placed on back, hips and knees can increase your risk of osteoarthritis or make symptoms of osteoarthritis worse. Even a modest weight loss can make quite a difference.

### **Shoe insoles and other devices**

Some research trials have shown that the following may help to ease symptoms from osteoarthritis of the knee in some cases:

- Wearing a knee brace.
- Using shoe insoles.
- The use of a special sticky tape which pulls the kneecap inwards.

These measures slightly alter the distribution of weight and pressure on the knee joint. This is why they are thought to ease symptoms in some cases. A person qualified to diagnose and treat foot disorders (a podiatrist) or a physiotherapist can advise exactly how to use them.

Braces or supports may also be helpful for other weight-bearing joints affected by osteoarthritis – for example, a support around the thumb for painful thumb osteoarthritis.

The goal of using these devices should be to help improve your symptoms to the point that they are not preventing you from exercising.

## Walking aids

If you have osteoarthritis of your hip or knee, when walking try using a walking stick. Hold it in the hand on the opposite side of the body to the affected joint. This takes some pressure off the affected joint and helps to ease symptoms in some cases.

## Physiotherapy

Sometimes advice or treatment from a physiotherapist is helpful for osteoarthritis – for example:

- For advice on which exercises to do to strengthen the muscles above the knee (quadriceps muscles) if you have osteoarthritis of the knee. Strengthening the quadriceps muscles has been shown to improve symptoms caused by OA of the knee.
- For advice on how to keep active and fit.
- For advice on shoes, insoles, knee braces, taping to the knee, and how to use walking aids properly (to make sure you have one of the correct height).

## Occupational therapy

An occupational therapist may be able to help if you need aids or modifications to your home to cope with any disability caused by osteoarthritis. Special devices, such as tap turners to help with turning on a tap, may mean you can carry out tasks around the house more easily.

## Other therapies

Some people have found that [transcutaneous electrical nerve stimulator \(TENS\) machines](#) help to ease pain from osteoarthritis. A TENS machine delivers small electrical pulses to the body via electrodes placed on the skin.

Some people have some pain relief from using hot or cold packs on the affected joint(s). This is also called thermotherapy. You can use a hot water bottle filled with either hot or cold water and apply it to the affected area. Or, special hot and cold packs that can either be cooled in the freezer, or heated in a microwave, are also available.

## Osteoarthritis Management Options

Each treatment option for Osteoarthritis has various benefits, risks and consequences. In collaboration with [health.org.uk](https://www.health.org.uk), we've put together a summary decision aid that encourages patients and doctors to discuss and assess what's available.

## Medicines used to treat osteoarthritis

### Paracetamol

[Paracetamol](#) is commonly used to treat osteoarthritis (OA). However, recent research suggests that paracetamol is probably not very effective at treating pain from osteoarthritis. Paracetamol – if taken at the recommended dose – is a safe medicine with few side-effects. It may be worth trying, especially for short-term pain relief and where other pain relief options are not suitable.

### Anti-inflammatory painkillers (NSAIDs)

You may find that a [topical preparation of an anti-inflammatory painkiller](#) that you rub on to the skin over osteoarthritis affected joints is helpful. These are known as "non-steroidal anti-inflammatory drugs" (NSAIDs). This can be instead of, or in addition to, paracetamol tablets. This may be particularly helpful if you have knee or hand osteoarthritis. Examples include [ibuprofen gel](#) and [diclofenac \(topical\)](#).

Compared to anti-inflammatory tablets, the amount of the medicine that gets into the bloodstream is much less with topical preparations. There is also less risk of side-effects (see below).

[Anti-inflammatory painkillers that are taken by mouth](#) are not used as often as paracetamol. This is because there is a risk of serious side-effects, particularly in older people who take them regularly. However, one of these medicines is an option if paracetamol or topical anti-inflammatories do not help.

Some people take an anti-inflammatory painkiller for short spells, perhaps for a week or two when symptoms flare up. They then return to paracetamol or topical anti-inflammatories when symptoms are not too bad. There are many different brands of anti-inflammatory painkillers. If one does not suit, another may be fine. A commonly used anti-inflammatory medicine is [ibuprofen](#).

## Side-effects

Side-effects may occur in some people who take anti-inflammatory painkillers:

- Bleeding from the stomach is the most serious possible side-effect:
  - This is more of a risk if you are aged over 65 years, or have had a duodenal or stomach ulcer, or if you are also taking low-dose aspirin.
  - Stop the medicine and see a doctor urgently if you develop [indigestion](#), upper tummy (abdominal) pain, or if you are sick (vomit) or pass blood.
  - Anti-inflammatory painkillers are often taken together with another medicine that protects the lining of the stomach, such as [omeprazole](#) or [lansoprazole](#).
- Some people with [asthma](#), [high blood pressure](#), kidney failure and [heart failure](#) may not be able to take anti-inflammatory painkillers.
- Read the leaflet that comes with the medicine for a list of other possible side-effects.

## Codeine

[Opioid medicines](#) such as [codeine](#) are sometimes used as a pain reliever for osteoarthritis if paracetamol or topical anti-inflammatory medicines are not sufficient. However the risks as well as benefits of opioid medicines need to be carefully considered, especially for elderly patients.

## An injection of steroid medicine

[An injection directly into a joint](#) may be an option if a joint becomes badly swollen (inflamed) due to osteoarthritis. However, there is evidence that steroid injections may be either completely ineffective or effective for just a relatively short period of time - usually between two and ten weeks.



## **Herbal creams and gels**

There is not a great deal of evidence from studies to show that herbal remedies are effective:

- Arnica gel probably improves symptoms as effectively as a gel containing non-steroidal anti-inflammatory drugs (NSAIDs).
- Comfrey extract gel probably improves pain.
- There has been no strong evidence for capsicum extract gel.

However, capsaicin gels and creams have been recommended as being effective for reducing osteoarthritis (OA) pain, especially for knee or hand osteoarthritis. Capsaicin is a herbal medicine extracted from chilli peppers.

## **Food supplements as a treatment of osteoarthritis**

Various food supplements that you can buy from health food shops and pharmacies have been recommended (advocated) to help in the treatment of osteoarthritis. In particular, glucosamine and chondroitin supplements have become popular in recent years. Glucosamine and chondroitin are chemicals that are part of the make-up of normal cartilage. The theory is that taking one or both of these supplements may help to improve and repair damaged cartilage.

However, the usefulness of glucosamine and chondroitin is controversial. For example, a large study published in 2007 concluded that chondroitin has little, or minimal, effect on reducing symptoms in people with osteoarthritis. The National Institute for Health and Care Excellence (NICE) does not recommend the use of chondroitin for the treatment of osteoarthritis. This is because they could find no clear evidence from studies to show that it is an effective treatment.

Another large study was published in the British Medical Journal (BMJ) in 2010. This analysed 10 research trials of glucosamine and chondroitin supplements, involving over 3,800 patients with knee and hip osteoarthritis. The conclusion of the study was that the supplements appeared to be no better than a dummy (placebo) tablet at relieving pain.

However, there was considerable correspondence that followed the BMJ study. Some writers were critical of the study's design and conclusions. Some cited other studies and individual cases that seemed to show some benefit from glucosamine and chondroitin.

So, it is difficult to give firm advice. What seems clear is that glucosamine and chondroitin are no wonder cures. One or both may possibly help in some cases. It may be worth discussing these supplements with your doctor. If you do try a food supplement you should assess your level of pain before you start taking it, and then again after three months. If there is no improvement, it would seem reasonable to conclude that it is unlikely to be effective and there is no point in carrying on with it.

**Note:** you should not take glucosamine if you are allergic to shellfish. Glucosamine may also interact with warfarin. You should talk with your doctor or pharmacist before you take glucosamine if you are on warfarin treatment.

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## **Surgery for osteoarthritis**

Most people with osteoarthritis do not have it badly enough to need surgery. However, OA of a joint may become severe in some cases. Some joints can be replaced with artificial joints. Hip and knee replacement surgery has become a standard treatment for severe osteoarthritis of these joints. Some other joints can also be replaced.

Joint replacement surgery has a high success rate. However, like any operation, joint replacement surgery has risks.

## **Other treatments that are not normally recommended**

Some treatments have become fashionable or popular for osteoarthritis but are not normally recommended by mainstream doctors. For example:

### **Hyaluronic acid**

Regular injections of hyaluronic acid directly into a joint are a relatively new treatment which has been tried for osteoarthritis. The theory is that it may help with lubrication and shock absorption in a damaged joint. It may produce a small beneficial effect in some people. However, NICE has looked at hyaluronic acid as a possible treatment for osteoarthritis and does not recommend its use. This is because there is little evidence that it is effective and there may be a risk of problems after the treatment.

### **Heat rubs (topical rubefacients)**

Although widely used, NICE does not recommend their use for osteoarthritis. This is because there is little scientific evidence to say that they work.

### **Arthroscopic lavage and debridement**

This is an operation to wash out a joint and trim cartilage from a joint. NICE recommends that this should not be offered as part of treatment for osteoarthritis.

### **Magnetic resonance therapy**

This is a new treatment which uses a device with magnets to try to improve pain and healing in the joint. NICE in the UK looked at the evidence for this in 2021 and concluded that, although there is no evidence of this being harmful, there is also not enough evidence that it works for osteoarthritis. NICE recommends that this treatment should only be given as part of a research study.

### **Geniculate artery embolism**

This treatment aims to reduce blood flow to the damaged part of the knee joint, aiming to reduce further damage and pain. NICE looked at the evidence in 2021, concluding that although there were no short-term safety concerns, there was not enough evidence on long-term safety, and insufficient evidence to show that it works. NICE recommends that this treatment should only be given as part of a research study.

## **Can osteoarthritis spread?**

A common wrong belief is that osteoarthritis is always a progressive and serious disease. The severity of symptoms varies. In many people, osteoarthritis is mild. It does not become worse and does not make you any more disabled than expected for your age. However, in some people, the severity of OA and the disability it causes are out of proportion with their age. One or more joints may become particularly badly affected.

Symptoms often wax and wane. Flare-ups of symptoms for days to weeks are common. Sometimes this is related to things such as the weather. Symptoms often improve in warmer months. A bad spell of symptoms may be followed by a relatively good period.

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## Further reading

- [Wandel S, Juni P, Tendal B, et al](#); Effects of glucosamine, chondroitin, or placebo in patients with osteoarthritis of hip or knee: network meta-analysis. *BMJ*. 2010 Sep 16;341:c4675. doi: 10.1136/bmj.c4675.
- [EULAR recommendations for the non-pharmacological core management of hip and knee osteoarthritis](#); *Annals of Rheumatic Disease* (April 2013)
- [Cameron M, Chrubasik S](#); Topical herbal therapies for treating osteoarthritis. *Cochrane Database Syst Rev*. 2013 May 31;5:CD010538. doi: 10.1002/14651858.CD010538.
- [Osteoarthritis](#); NICE CKS, August 2022 (UK access only)
- [Magnetic resonance therapy for knee osteoarthritis](#); NICE Interventional procedures guidance, August 2021
- [Genicular artery embolisation for pain from knee osteoarthritis](#); NICE Interventional procedures guidance, October 2021
- [Osteoarthritis in over 16s: diagnosis and management](#); NICE guideline (October 2022)
- [Kolasinski SL, Neogi T, Hochberg MC, et al](#); 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee. *Arthritis Care Res (Hoboken)*. 2020 Feb;72(2):149–162. doi: 10.1002/acr.24131. Epub 2020 Jan 6.

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Authored by:	Peer Reviewed by: Dr Hayley Willacy, FRCGP	
Originally Published: 19/11/2023	Next review date: 21/11/2022	Document ID: doc_4304

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