



Osteoarthritis of the knee

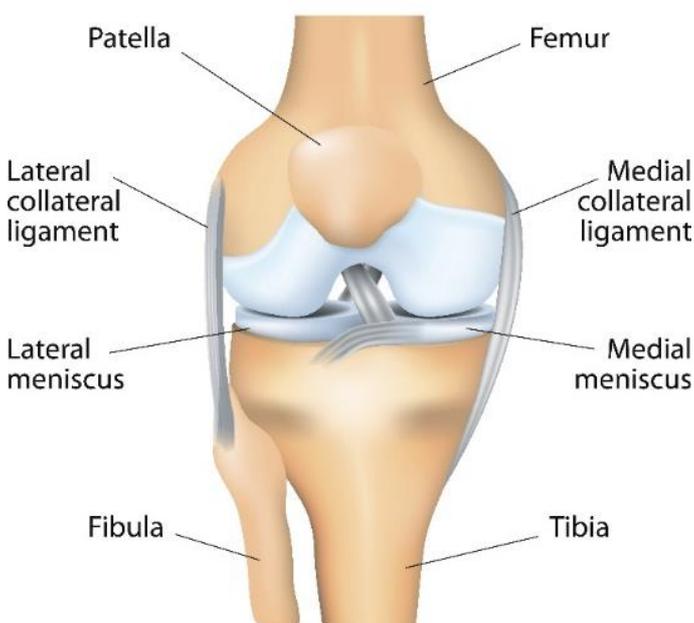
- The knee is the largest joint in the human body
- Osteoarthritis (OA) of the knee occurs when the structure of the joint becomes damaged
- People over 45 are more at risk, but younger people can be affected too
- Exercise and weight loss are two of the best ways to manage your knee OA

Your knee joint

Your knee is a complex weight-bearing joint. It consists of 3 main parts - the end of your thigh bone (femur), the top of your shin bone (tibia) and your kneecap (patella). The end of each of these 3 bones is covered with a slippery surface (called cartilage) which allows your knee to move smoothly.

In between your thigh bone and your shin bone there's a thickened pad of cartilage called the meniscus. This acts as a 'shock absorber' to cushion the two bones and keep the joint stable.

The knee joint is wrapped inside a tough capsule filled with synovial fluid. This fluid lubricates and nourishes the cartilage and other structures in the joint.



Symptoms

The symptoms of knee osteoarthritis usually happen gradually and can include any of the following:

- pain in the knee joint - often worse after vigorous activity and at the end of the day
- pain may radiate up (into the thigh) or down (into the shin) from the affected knee
- stiffness of the knee joint - mainly in the morning or after rest, and which eases in less than 30 minutes or with walking
- swelling of the knee joint - swelling may be soft (caused by additional joint fluid) or hard (caused by bony growths called osteophytes)
- muscle weakness of the thigh or calf
- grinding, creaking or crunching sound when moving the knee
- the knee may feel like it 'locks', 'sticks' or gives way during periods of activity
- pain is usually eased when resting.

Causes

Your risk of developing osteoarthritis of the knee may be influenced by many factors including:

- age – OA occurs more often in people over 45
- being overweight or obese – extra weight on your knees can increase strain and may lead to premature or increased joint damage
- gender – OA is much more common in women than in men
- previous injury and/or disease of the joint – heavy physical or repetitive activity (e.g. heavy lifting in farming or construction), traumatic injuries (e.g. car accident, sporting injury) or the presence of other diseases (e.g. rheumatoid arthritis, gout) may increase your risk of knee OA

- genetic factors – a family history of knee OA means that you're at greater risk of developing it yourself.

Diagnosis

Osteoarthritis of the knee can be diagnosed by your doctor without the need for joint imaging such as x-rays or MRI. A diagnosis is normally based on your signs and symptoms such as:

- knee pain during activity
- bony swelling of the knee
- excess fluid around the knee
- restricted movement
- instability of the knee
- joint grating, or creaking/crunching sounds
- weakening of the affected thigh muscle
- stiffness of the joint after rest – less than 30 minutes.

X-rays are not needed for the diagnosis of knee OA but they may be used to assess how much joint damage has occurred. An x-ray can show possible narrowing of the joint space, as well as any bony growths, dislodged bone fragments or calcium deposits. However x-rays are not a good guide as to how much pain you might be in. For some people x-rays show severe joint damage but they have low levels of pain. Others may report high levels of pain with only minor x-ray changes.

Magnetic resonance imaging (MRI) is only required when there is a need to rule out an alternative diagnosis or to assess the health or condition of the soft tissues (cartilage, tendons, muscles) of your knee. MRIs are not recommended in the management of knee OA.

Weight management

Being overweight or obese is known to be directly related to the risk of developing knee OA. It's also highly likely to speed up how quickly your OA develops or progresses. Evidence shows that there's a relationship between weight loss and relief of symptoms such as pain and stiffness; even a small amount of weight loss (5% of body weight) can improve your symptoms.

Exercise

Exercise is key in the management of knee OA. Professionally tailored exercises by a physiotherapist or exercise physiologist can help reduce your knee pain as well as improve your knee function. Evidence suggests that while there's no one particular type of exercise that is better than another, a combination of certain exercises are likely to be the most effective.

These exercises include:

- strength training specifically targeting your legs
- aerobic exercise – these are exercises that get you moving and increase your heart rate (e.g. brisk walking, swimming, cycling) and will help improve the health of your heart and lungs (cardiovascular system)
- balance training
- exercises that move your joint through its full range (range of motion exercises).

When it comes to choosing a type of exercise for yourself think about what you enjoy and what you're likely to keep doing. The best results occur when you do some sort of exercise at least three times per week.

Exercise can be:

- land based (e.g. brisk walking, riding a bike)
- water based (e.g. water aerobics, swimming)
- done in the community (e.g. local exercise class, fitness centre)
- done at home.

If pain is preventing you from exercising, you may find that warm water exercise is a good starting point. Hydrotherapy pools offer the comfort of warmth, as well as the buoyancy of the water to ease the load on your joints. For those that are able, cycling can also provide a good option for non-weight bearing exercise.

Medicines

For some people medicines are an important part of managing their OA. Tablets, creams, gels or injections may help to reduce pain and improve function.

There are a variety of medications used in the management of knee OA and each come with varying degrees of evidence to support them. These include:

Non-steroidal anti-inflammatory medicines or NSAIDs (e.g. Nurofen, Celebrex, Voltaren)

NSAIDs are available over-the-counter and with a prescription, depending on their dosage and any other ingredients. They may be taken by mouth (orally) as a tablet or capsule or applied directly to the skin (topical) in the form of gels and rubs.

Oral NSAIDs are considered the preferred first-line drug treatment for OA and have been shown to reduce pain and symptoms in knee OA.

Although there's no solid evidence either for or against topical NSAIDs it may be worth giving them a short trial to see if they help.

It's important to note that NSAIDs are designed to be taken at low doses for short periods of time. Always talk to your doctor before starting NSAIDs as they can cause harmful side effects in some people.

Paracetamol

Research has shown that paracetamol (e.g. Panadol, Panamax) provides only low-level pain relief and in some cases no pain relief at all compared to a placebo in knee OA. However some people do report that it helps to reduce or take the edge off their pain so that they can be more active. For this reason, it's worth discussing a trial of paracetamol with your GP to see if it's appropriate for you.

Corticosteroid injections

If you have persistent knee pain and haven't had relief from oral medication or other treatments (e.g. exercise, weight loss) your doctor may suggest a corticosteroid (steroid) injection. Corticosteroid injections into the knee joint can provide short term pain relief for some people with knee OA. However the duration of pain relief can vary from a few days to a few weeks, and the number of injections you can have is limited due to potential harm. It's important that you discuss the benefits and risks of steroid injections with your doctor so that you have all the information you need to make an informed decision.

Hyaluronic acid injections

The benefits of hyaluronic acid joint injections (also known as viscosupplementation or hyaluronan injections) are uncertain. Research findings have been inconsistent and although some people do find the treatment helpful, it can be expensive and is not generally recommended.

Opioids

Opioids are powerful pain relieving medications. They're effective at reducing acute pain (or the pain resulting from an injury or surgery) but evidence shows that they have little effect on OA pain. Opioids also have many potentially serious side effects. That's why they're not recommended in the management of knee OA.

Capsaicin

Capsaicin is the active ingredient in chilli peppers – it makes them 'hot'. Capsaicin in creams and lotions has been used in osteoarthritis to help reduce pain and some people do report beneficial effects. However the evidence for its effectiveness in knee OA is low and it's not generally recommended. It also has side effects when applied such as a burning sensation which may take several uses to wear off.

Complementary medicines or alternative therapies *Transcutaneous electrical nerve stimulation (TENS)*

A TENS machine is a small battery powered device with leads that connect to sticky pads on your body. It delivers very small electrical currents to your skin that stimulate nerves to relieve pain. Some people find it helpful in relieving pain while others do not. The quality of evidence showing it helps with knee OA is very low. If you're thinking of using a TENS machine speak with your doctor to see if it's a suitable option for you. You can often hire one from your physiotherapist, local pharmacy or local hospital.

Electrotherapy

Electrotherapy treatments (e.g. shockwave, laser) are thought to minimise inflammation, promote cell growth and modify pain. While some trials have shown short-term benefits with electrotherapy, the evidence for its use in knee OA is low to very low. For this reason it's not generally recommended.

Acupuncture

The use of traditional (needle), laser and/or electro acupuncture for knee OA is not supported by current clinical evidence. While some improvements in knee pain and function have been identified in low-quality studies, the benefits are considered so small that they're not clinically relevant. Also to see any benefits from treatment, it's likely that you will need multiple sessions of acupuncture which could become quite costly.

Ultrasound

Therapeutic ultrasound involves a health professional applying high-frequency sound waves to the surface of the skin in order to reach the soft tissues below. There's moderate quality evidence to suggest that this treatment can reduce pain and improve function in knee OA. However evidence also suggests that you would need three to five treatments a week to see any benefits. For this financial reason, it's often not recommended.

Glucosamine and chondroitin

Studies have found that there is no benefit from taking glucosamine for osteoarthritis. The Australian Rheumatology Association and the Royal Australian College of General Practitioners recommend against taking glucosamine.

Glucosamine supplements are usually made of shellfish so if you have a shellfish allergy do not take glucosamine. Glucosamine can also affect your blood sugar levels and may adversely affect diabetic, cholesterol, chemotherapy and blood thinning medications.

Much like glucosamine, the effects of chondroitin are unclear. Some studies have found an effect while others did not.

If you're thinking of trying glucosamine or chondroitin, make sure you speak with your doctor first.

Platelet-rich plasma (PRP) injections

The evidence for PRP is still uncertain. There are large variations in the design of PRP trials and no real standard recommendations for their preparation or use. Until further robust research is undertaken PRP is not recommended for knee OA.

Stem cell injections

Currently there's no evidence to support the use of stem cell injections in the treatment of knee OA despite it being commercially available. The International Society for Stem Cell Research and the Australian Rheumatology Association are strongly against their current use for osteoarthritis. It's recommended that stem cell administration should only take place under a rigorously designed clinical study that prioritises individual health and safety.

Surgery

If you've exhausted all non-surgical treatment options and are still experiencing severe pain and reduced knee function, you may want to talk with your doctor about surgery.

A **total joint replacement** of the knee is the most common type of surgery for knee OA and can provide significant pain relief and improved function. However it's important to remember that a total knee replacement is major surgery and requires you to commit to months of rehabilitation.

Having an artificial knee means that there will still be some limitations. An artificial knee won't have the same sideways movement as a natural knee, and it won't bend fully which means that it's more likely to be difficult to get down and up from a kneeling position. Eventually an artificial knee will have to be replaced. The length of time it lasts will depend on many factors including how it's treated, but it can range from 10 to 20 years.

Arthroscopy is a surgical technique that involves the insertion of small surgical instruments, including a camera, into the knee. This allows the surgeon to examine the inside of the joint, and cut, shave and remove material from the inside of the knee joint.

The Australian Orthopaedic Society does not recommend knee arthroscopies due to the lack of evidence showing any benefit. As an invasive procedure, arthroscopies also have the potential to cause more harm and pain.

Where to get help

- Your doctor
- Your physiotherapist
- Musculoskeletal Australia
MSK Help Line 1800 263 265
- GLA:D Australia treatment for hip and knee osteoarthritis <https://gladaustralia.com.au/>

How we can help

Call our MSK Help Line and speak to our nurses. Phone 1800 263 265 or email helpline@msk.org.au.

We can help you find out more about:

- arthritis and musculoskeletal conditions
- ways to live well with these conditions
- managing your pain
- upcoming webinars, seminars and other events.

More to explore

- Better Health Channel
www.betterhealth.vic.gov.au
- Australian Physiotherapy Association
<https://australian.physio/>
- Exercise and Sports Science Australia essa.org.au
- Australian Podiatry Association
<https://podiatry.org.au>
- Occupational Therapy Australia otaus.com.au
- Dietitians Association of Australia
<http://daa.asn.au>

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