

Osteoarthritis of the knee

This booklet provides information
and answers to your questions
about this condition.

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What is osteoarthritis of the knee?



Osteoarthritis is the most common form of joint disease, and the knee is one of the most commonly affected joints. In this booklet we'll explain how osteoarthritis of the knee develops, what causes it and how it can be treated. We'll also give some hints and tips to help you manage your arthritis and suggest where you can find out more.

At the back of this booklet you'll find a brief glossary of medical words – we've underlined these when they're first used.

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Osteoarthritis is a condition that affects the joints, causing pain and stiffness. It's by far the most common form of joint disease, and the knee is one of the most commonly affected joints.

At a glance

Osteoarthritis of the knee

What are the symptoms of osteoarthritis?

The symptoms of osteoarthritis can include:

- pain
- stiffness
- a grating or grinding sensation when the joint moves (crepitus)
- swelling (either hard or soft).

Sometimes the knee may either lock or give way when you put weight on it.

Who gets it?

Almost anyone can get osteoarthritis, but it's most likely if:

- you're in your late 40s or older
- you're overweight
- you're a woman
- your parents, brothers or sisters have had osteoarthritis
- you've previously had a severe knee injury
- your joints have been damaged by another disease, for example rheumatoid arthritis or gout.

Osteoarthritis affects approximately 8 million people in the UK.

What can I do to help myself?

There are several ways you can help yourself, including:

- losing weight if you're overweight
- exercising regularly (both muscle-strengthening and general aerobic exercise)
- reducing stress on the affected joint (for example by pacing activities, using a walking stick or wearing appropriate footwear)
- using painkillers (analgesics) or anti-inflammatory creams, gels and tablets.

What treatments are there?

If you still have pain after trying self-help measures, your doctor may recommend the following treatments:

- capsaicin cream
- stronger painkillers, for example tramadol
- steroid injections into the painful joint
- surgery, including joint replacement.

How does a normal joint work?

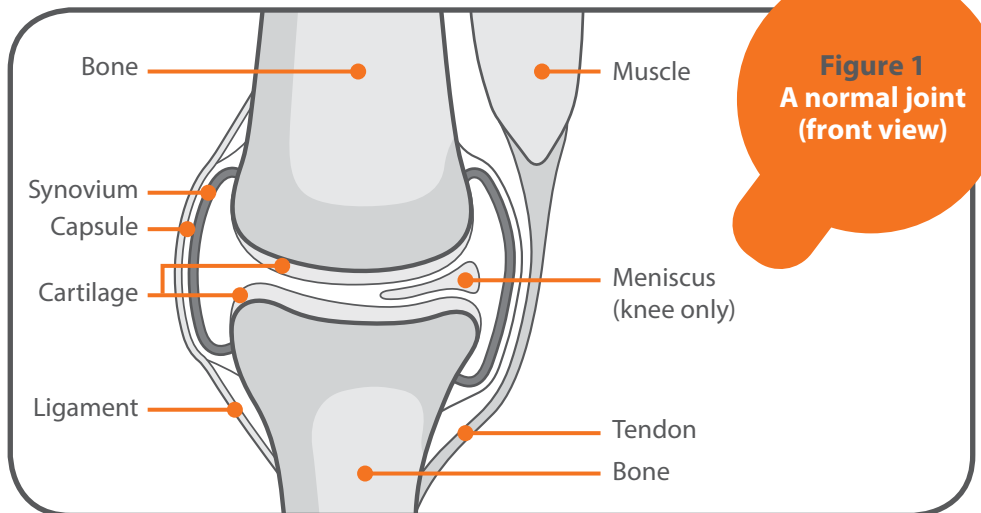
A joint is where two or more bones meet (see Figure 1). The joint allows the bones to move freely but within limits. The knee is the largest joint in the body and also one of the most complicated. It needs to be strong enough to take our weight and must lock into position so we can stand upright. But it also has to act as a hinge so we can walk and must withstand extreme stresses, twists and turns, such as when we run or play sports.

The knee joint is where your thigh bone (femur) and shin bone (tibia) meet. The end of each bone is covered with cartilage which has a smooth, slippery surface that allows the ends of the bones to move against each other almost without friction. Your knees have two additional rings of cartilage between the bones.

These are called menisci, which act a bit like shock absorbers to spread the load more evenly across the joint.

Your knee joint is held in place by four large ligaments. These are thick, strong bands which run within or just outside the joint capsule. Together with the capsule, the ligaments prevent the bones moving in the wrong directions or dislocating. The thigh muscles also help to hold the knee joint in place.

Your muscles are attached to your bones by strong connecting tissues called tendons. These tendons run on either side of the joint, which they also help to keep in place. When your muscles contract they shorten, and this pulls on the tendon attached to the bone and makes the joint move.



Your kneecap (patella) is fixed firmly in the middle of the large tendon that attaches your thigh muscles (quadriceps) to the bone just below your knee joint at the front of your shin bones. The underside of your kneecap is also covered with cartilage.

The joint is surrounded by a membrane (the synovium) that produces a small amount of synovial fluid, which helps to nourish the cartilage and lubricate the joint. The synovium has a tough outer layer called the capsule, which helps hold your knee in place.

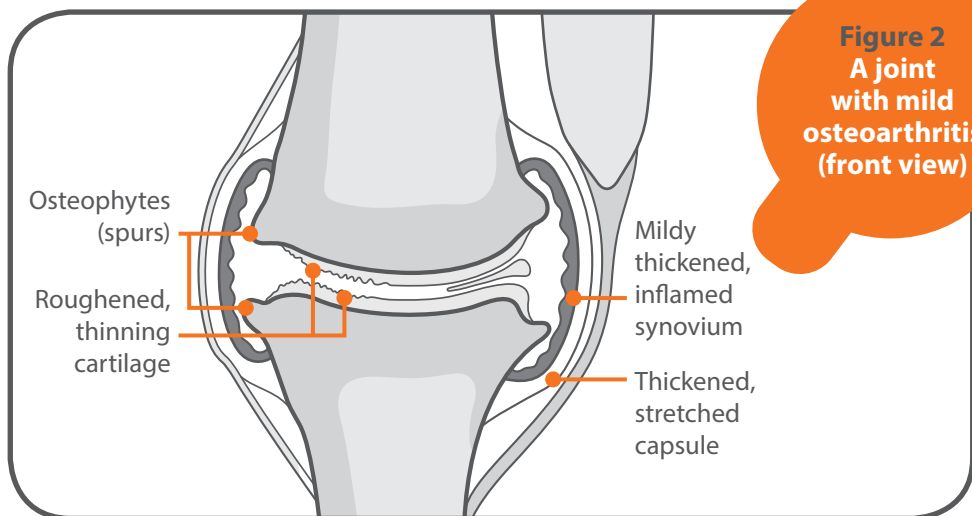
What is osteoarthritis?

Osteoarthritis is a disease that affects your joints. The surfaces within your joints become damaged so the joint doesn't move as smoothly as it should (see Figure 2). The condition is sometimes

called arthrosis, osteoarthrosis, degenerative joint disease or wear and tear.

When a joint develops osteoarthritis, some of the cartilage covering the ends of the bones gradually roughens and becomes thin. This can happen over the main surface of your knee joint and in the cartilage underneath your kneecap. The bone underneath the cartilage reacts by growing thicker and becoming broader. All the tissues within the joint become more active than normal – as if your body is trying to repair the damage.

- The bone at the edge of the joint grows outwards, forming bony spurs called osteophytes. This can affect your thigh bone, shin bone or kneecap.



- The synovium may swell and produce extra fluid, which then causes the joint to swell. This is called an effusion or sometimes water on the knee.
- The capsule and ligaments slowly thicken and contract as if they were trying to stabilise the joint.

These changes in and around the joint are partly the result of the inflammatory process and partly your body's attempt to repair the damage. In many cases, the repairs are quite successful and the changes inside the joint don't cause much pain or, if there is pain, it's mild and may come and go. However, in other cases, the repair doesn't work as well and your knee becomes damaged. This leads to instability and more weight being put onto other parts of the joint, which can cause symptoms to become gradually worse and more persistent over time.

What are the symptoms of osteoarthritis?

The main symptoms of osteoarthritis are pain and sometimes stiffness, which can affect one or both knees. The pain tends to be worse when you move the joint or at the end of the day. You may have pain all around your knee or just in a particular place, most likely at the front and sides, and it may be worse after a particular movement, such as going up or down stairs. The pain is usually better when you rest.

It's unusual, but some people have pain that wakes them up at night. This generally only happens with severe osteoarthritis. You'll probably find that your pain will vary and that you have good days and bad days, sometimes depending on how active you've been but sometimes for no obvious reason.

Your knee may feel stiff at certain times, often in the mornings or after a period of rest. Walking for a few minutes will usually ease it. However, many people don't have any stiffness at all, even with quite severe osteoarthritis.

You may not be able to move your knee as freely or as far as normal, and it may creak or crunch as you move. If your osteoarthritis is severe, your knee may become bent and bowed. Sometimes the joint gives way, either because the muscles have become weak or because the joint structure has become less stable.

You may notice that your knee looks swollen. The swelling may be hard (caused by osteophytes around the sides of the joint) or soft (caused by extra fluid in the joint). The muscles at the front of your thigh that help straighten your knee may look thin and wasted.

What causes osteoarthritis?

There are many factors that can increase the risk of osteoarthritis, and it's often a combination of these that leads to the condition (see Figure 3).

Age – Osteoarthritis usually starts from the late 40s onwards. We don't fully understand why it's more common in older people, but it might be due to factors like weakening of the muscles, the body being less able to heal itself or gradual wearing out of the joint with time.

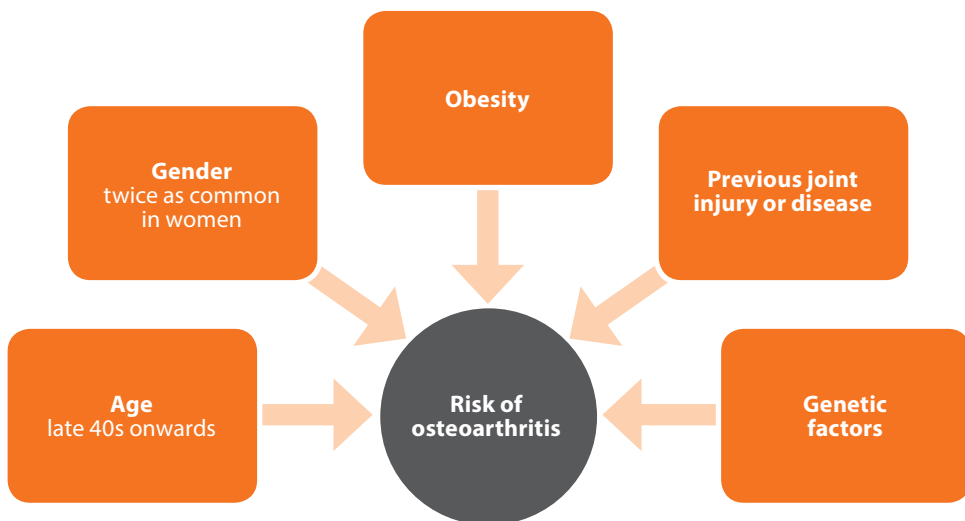
Gender – Osteoarthritis of the knee is twice as common in women as in men. It's most common in women over the age of 50, although there's no strong evidence

that it's directly linked to the menopause. It's often associated with mild arthritis of the joints at the ends of the fingers (nodal osteoarthritis), which is also more common in women.

Obesity – Being overweight is an important factor in causing osteoarthritis, especially in the knee. It also increases the chances of osteoarthritis becoming progressively worse.

Joint injury – Normal activity and exercise don't cause osteoarthritis, but very hard, repetitive activity or physically demanding jobs can increase the risk. Injuries to the knee often lead to osteoarthritis in later life. A common cause is a torn meniscus or ligament, which can result from a twisting injury.

Figure 3 Risk factors for osteoarthritis





A torn meniscus is a common injury in footballers, and an operation to remove the damaged cartilage (meniscectomy) or repair cruciate ligaments also increases the risk of osteoarthritis in later life.

Genetic factors – Genetic factors play a major part in osteoarthritis of the knee. If you have a parent, brother or sister with knee osteoarthritis then you'll have a greater chance of developing it yourself. We don't know a lot about the genes that cause the increased risk, but we do know that a number of genes will have a small effect rather than one particular gene being responsible.

Other types of joint disease – Sometimes osteoarthritis is a result of damage from different kinds of rarer joint disease, such as gout, that occurred in earlier years.

! Although there's no evidence that different conditions such as cold or wet weather actually cause or worsen osteoarthritis, many people find that their pain and stiffness may vary with the weather. This may be because nerve fibres in the capsule of affected joints are sensitive to changes in atmospheric pressure.

What is the outlook?

It's impossible to predict how osteoarthritis will develop for any one person. It can sometimes develop over just a year or two and cause a lot of damage to a joint, which may cause some deformity or disability.

But more often osteoarthritis is a slow process that develops over many years and results in fairly small changes in just part of the joint. This doesn't mean it won't be painful, but it's less likely to cause severe deformity or disability.

In severe osteoarthritis the cartilage can become so thin that it no longer covers the ends of the bones. The bones start to rub against each other and eventually wear away. The loss of cartilage, the wearing of bone and the bony spurs can alter the shape of the joint, forcing the bones out of their normal alignment.

In addition, the muscles that move the joint gradually weaken and become thin or wasted. This can make the joint unstable so that the knee gives way when weight is put on it.

Changes in lifestyle can greatly reduce the risk of osteoarthritis of the knee progressing. Regular exercise, protecting the joint from further injury and keeping to a healthy weight will all help.

Osteoarthritis doesn't lead to rheumatoid arthritis or other types of joint disease and won't spread through the body like an infection might. However, deformity caused by osteoarthritis in one joint may lead to uneven loading of other joints. This could result in osteoarthritis in those joints. Because there's little, if any inflammation in osteoarthritic joints, osteoarthritis doesn't make you feverish or unwell. However, some people with osteoarthritis will develop other illnesses purely by chance.

What are the possible complications of osteoarthritis?

There can sometimes be rarer complications with osteoarthritis of the knee:

Osteoarthritis with crystals

Osteoarthritis with crystals occurs when chalky deposits of calcium crystals form in the cartilage. This is called calcification or chondrocalcinosis. It can happen in any joint, with or without osteoarthritis, but it's most likely to occur in a knee that's already affected by osteoarthritis, especially in older people. It can cause sudden pain and noticeable swelling of the joint. The crystals may show up on x-rays and they can also be seen under a microscope in samples of fluid taken from the joint.

Osteoarthritis tends to become more severe more quickly when there are crystals present. Sometimes the crystals can shake loose from the cartilage, causing a sudden attack of very painful swelling called acute calcium pyrophosphate crystal arthritis (acute CPP crystal arthritis), which was sometimes previously called 'pseudogout'.

i See Arthritis Research UK booklet
Calcium crystal diseases including acute CPP crystal arthritis (pseudogout) and acute calcific tendinitis.

Although there's no cure for osteoarthritis yet, a lot can be done to improve your symptoms.

Baker's cysts (popliteal cysts)

Baker's cysts can form when extra synovial fluid is produced and it becomes trapped in a pouch (hernia) sticking out of the joint lining. They're often painless, but you may be able to feel a soft-to-firm lump at the back of your knee. Sometimes a cyst can cause aching or tenderness when you exercise.

Occasionally a cyst can press on a blood vessel, which can lead to swelling in your leg, or the cyst may burst (rupture) and release joint fluid into your calf muscle, which can be very painful.

A cyst may not need treatment, but if it does it can generally be treated by drawing off the extra fluid from your knee using a syringe (this is called aspiration) and injecting a steroid solution.

How is osteoarthritis diagnosed?

It's very important to get an accurate diagnosis if you think you might have arthritis. There are many different types of arthritis and some, such as rheumatoid arthritis, need very different treatments.

Osteoarthritis is usually diagnosed based on your symptoms and the physical signs that your doctor finds when examining your joint, for example:

- tenderness over the joint
- creaking or grating of the joint (crepitus)
- bony swelling
- excess fluid
- restricted movement
- joint instability
- weakness and thinning of your thigh muscle.

What tests are there?

There's no blood test for osteoarthritis, although your doctor may suggest them to help rule out other types of arthritis.

X-rays are taken to assess the severity of the changes caused by osteoarthritis, although often they won't be needed. They may show changes such as bony spurs or narrowing of the space between the bones where the cartilage has worn thin. They may also show whether there are any calcium deposits within the joint. However, x-rays aren't a good indicator of how much pain or disability you're likely to have. Some

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people have a lot of pain from fairly minor joint damage, while others have little pain from more severe damage.

Rarely, a magnetic resonance imaging (MRI) scan of your knee can be helpful. This will show the soft tissues (for example cartilage, tendons, muscles) and changes in the bone that can't be seen on a standard x-ray.

What can I do to help myself?

There's no cure for osteoarthritis as yet, but there's a lot that you can do to improve your symptoms. Self-help measures play a very important part in relieving the pain and stiffness, and reducing the chances of your arthritis becoming worse.

Weight management

There's a great deal of evidence that being overweight increases the strain on your joints, especially your knees. Research shows that being overweight or obese not only increases your risk of developing osteoarthritis but also makes it more likely that your arthritis will get worse over time.

Because of the way the joints work, the force put through your knees when you walk, run or go up and down stairs can be up to five to six times your body weight. Losing even a small amount of weight can make a big difference to the strain on weight-bearing joints such as the knees.



No special diet has shown to help specifically with osteoarthritis, but if you need to lose some weight you should follow a balanced, reduced-calorie diet combined with regular exercise.

i See **Arthritis Research UK booklet** *Diet and arthritis*.

Exercise

Even if you don't need to lose weight it's very important to keep moving if you have osteoarthritis of the knee. You'll need to find the right balance between rest and exercise – most people with osteoarthritis find that too much activity increases their pain while too little makes their joints stiffen up. Little and often is usually the best approach to exercise if you have osteoarthritis.

There are two types of exercise that you'll need to do:

Strengthening exercises will improve the strength and tone of the muscles that control the affected joint. Osteoarthritis of the knee can weaken your thigh muscles (quadriceps), so regular exercising of the muscles, such as straight-leg raises, helps to stabilise and protect the joint. It's also been shown to reduce pain and is particularly helpful in preventing your knee giving way, reducing the tendency to stumble or fall.

Aerobic exercise is any exercise that increases your pulse rate and makes you a bit short of breath. Regular aerobic exercise should help you sleep better, is good for your general health and well-being and can reduce pain by stimulating the release of pain-relieving hormones called endorphins.



A physiotherapist can advise you on the best exercises to do, but you'll need to build them into your daily routine to get the most benefit from them. The pull-out section at the back of this booklet will give you some simple exercises to try at home. You can also talk to your GP about the Exercise on Prescription scheme that's available in some areas.

Swimming can be very good for osteoarthritis. Because the water supports the weight of your body, you won't be putting a lot of strain on your joints as you exercise. Your physiotherapist may also recommend special exercises in a hydrotherapy pool. This can help get muscles and joints working better and, because the water is warmer than in a typical swimming pool, it can be very soothing and relaxing.

If you know you're going to be more active than usual, try taking a painkiller before you start to avoid increased pain later.

i See Arthritis Research UK booklets
Hydrotherapy and arthritis; Keep moving; Physiotherapy and arthritis.

Tablets and creams

There are a number of tablets and creams that can help the symptoms of osteoarthritis, and because they work in different ways you can combine different treatments if you need to. Your chemist can advise you and supply paracetamol and some low-dose tablets and creams without a prescription.

Painkillers (analgesics) and non-steroidal anti-inflammatory drugs (NSAIDs)

Painkillers often help with the pain and stiffness, although they don't affect the arthritis itself and won't repair the damage to the joint. They're best used occasionally when the pain is very bad or when you're likely to be exercising. Paracetamol is usually the best and most well tolerated painkiller to try first, but make sure you take the right dose as most people take too little. You should try taking 1 g (usually two tablets) three or four times per day. It's best to take them before the pain becomes very bad but you shouldn't take them more often than every four hours.

Combined painkillers (for example co-codamol) contain paracetamol and codeine and may be helpful for more severe pain. They're stronger than paracetamol on its own, but codeine can cause side-effects such as constipation or dizziness.

Over-the counter non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, can also help. You can use these for a short course of treatment (about 5–10

Anti-inflammatory gels and creams are especially helpful for osteoarthritis of the knee.

days), but if they've not helped within this time then they're unlikely to. If the pain returns when you stop taking the tablets, try another short course.

! You shouldn't take ibuprofen or aspirin if you're pregnant, or if you have asthma, indigestion or a stomach (gastrointestinal) ulcer, until you've spoken with your doctor or pharmacist.

i See Arthritis Research UK drug leaflets *Non-steroidal anti-inflammatory drugs; Painkillers*.

Anti-inflammatory creams and gels

You can apply anti-inflammatory creams and gels directly onto painful joints three times a day. There's no need to rub them in – they absorb through the skin on their own. They're especially helpful for osteoarthritis of the knee, and they're extremely well tolerated as very little is absorbed into the bloodstream. If you have trouble taking tablets then anti-inflammatory creams are a particularly good option to try. You can decide if they help your pain within the first few days of trying them.

If you're already taking NSAID tablets, speak to your doctor about non-NSAID creams (for example capsaicin cream) to avoid taking too much of one type of drug.

Reducing the strain on your knees

Apart from keeping an eye on your weight, there are a number of other ways you can reduce the strain on your knees.

- Pace your activities through the day – don't tackle all the physical jobs at once. Break the harder jobs up into chunks and do something more gentle in between. Keep using your knee, but rest it when it becomes painful.
- Wear low-heeled shoes with soft, thick soles (trainers are ideal). Thicker soles will act as shock absorbers. High heels will alter the angle of your hip, knee and big toe joints and put additional strain on them.

- Use a walking stick to reduce the weight and stress on a painful knee. A therapist or doctor can advise on the correct length and the best way to use the stick.
- Use the handrail for support when going up or down stairs. Go up stairs one at a time with your good leg first.
- Don't keep your knee still in a bent position for too long as this will eventually affect the muscles.
- Think about modifying your home, car or workplace to reduce unnecessary strain. An [occupational therapist](#) can advise you on special equipment that will make your daily tasks easier.
- Learn to relax your muscles and get the tension out of your body. A physiotherapist can advise you on relaxation techniques.

i See Arthritis Research UK booklets
Feet, footwear and arthritis; Looking after your joints when you have arthritis; Occupational therapy and arthritis.

Applying warmth to a painful knee often relieves the pain and stiffness of osteoarthritis. Heat lamps are popular, but a hot-water bottle or reheatable pad are just as effective. This can be helpful if you have a flare-up of pain when you've done a bit too much. An ice pack can also help. Don't apply ice/heat packs or hot-water bottles directly to your skin.

More evidence to support the use of knee braces for osteoarthritis is becoming available. There are several types that

can help to stabilise the kneecap and make it move correctly. You can buy knee braces from sports shops and chemists, but you should speak to your doctor or physiotherapist first. They may also be able to provide braces or recommend the best ones for you.

Complementary medicine

There are many different complementary and herbal remedies that claim to help with arthritis, and some people do feel better when they use them. However, on the whole these treatments aren't recommended for use on the NHS because there's no conclusive evidence that they're effective.

Glucosamine and chondroitin

Many people try glucosamine and chondroitin tablets. These are compounds that are normally present in joint cartilage, and some studies suggest that taking supplements may improve the health of damaged cartilage. Glucosamine and chondroitin, which are similar to each other, are available from your chemist or health food store. You'll need to take a dose of 1.5 g of glucosamine sulphate a day, possibly for several weeks before you can tell whether they're making a difference. Glucosamine hydrochloride doesn't appear to be effective, so always check that you're taking the sulphate.

Most brands of glucosamine are made from shellfish. If you're allergic to shellfish, make sure you take a vegetarian or shellfish-free variety. Glucosamine can

affect the level of sugar in your blood, so if you have diabetes you should keep an eye on your blood sugar levels and see your doctor if they increase. You should also see your doctor for regular blood checks if you're taking the blood-thinning drug warfarin.

Homeopathy

Many people are interested in homeopathic remedies, and a number are used for osteoarthritis. However, there's no conclusive scientific evidence that they're effective.

Acupuncture

There's some research showing that acupuncture can sometimes provide relief from arthritis pain, although the effect may be short-lived. For longer-lasting

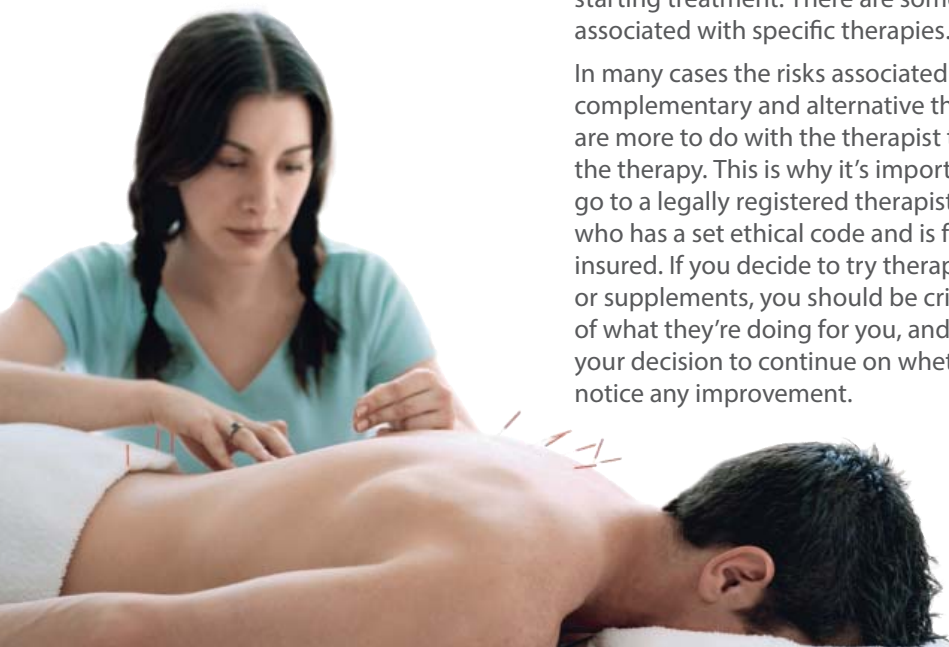
benefits, you may need to have regular sessions of acupuncture. There's also some evidence that electro-acupuncture may be effective for pain associated with osteoarthritis of the knee. This technique is similar to conventional acupuncture except that an electrical impulse is applied via the needles.

Chiropractic and osteopathy

Although manipulation by a chiropractor or osteopath may be helpful for back or neck pain, the use of manipulation for osteoarthritis in other joints is limited. If you do want to try it, make sure you choose a practitioner who is registered with the appropriate regulatory body.

Generally speaking complementary and alternative therapies are relatively well tolerated, although you should always discuss their use with your doctor before starting treatment. There are some risks associated with specific therapies.

In many cases the risks associated with complementary and alternative therapies are more to do with the therapist than the therapy. This is why it's important to go to a legally registered therapist, or one who has a set ethical code and is fully insured. If you decide to try therapies or supplements, you should be critical of what they're doing for you, and base your decision to continue on whether you notice any improvement.



i See Arthritis Research UK booklet and special reports

Complementary and alternative medicine for arthritis; Complementary and alternative medicines for the treatment of rheumatoid arthritis, osteoarthritis and fibromyalgia; Practitioner-based complementary and alternative therapies for the treatment of rheumatoid arthritis, osteoarthritis, fibromyalgia and low back pain.

What treatments are there for osteoarthritis?

Many people find that self-help measures, such as those listed above, are enough to help them manage their symptoms, but your healthcare team will be able to suggest other treatments if you need them.

Capsaicin cream

Capsaicin cream is made from the pepper plant (capsicum) and is an effective and very well-tolerated painkiller. It's only available on prescription. It needs to be applied three times a day to be effective and, like NSAID creams and gels, it's particularly useful for osteoarthritis of the knee.

Most people feel a warming or burning sensation when they first use capsaicin, but this generally wears off after several days. The pain-relieving effect starts after several days of regular use and you should try it for at least two weeks before deciding if it has helped.

Drugs

Painkillers

If you have severe pain, for example while you're waiting for a knee replacement operation, and other medications aren't giving enough relief, your doctor may recommend stronger painkillers (or opioids) such as tramadol, nefopam or meptazinol. Stronger painkillers are more likely to have side-effects – especially nausea, dizziness and confusion – so you'll need to see your doctor regularly and report any problems you have with these drugs.

Some opioids can be given as a plaster patch that you wear on the skin. These can give pain relief for a number of days.

Non-steroidal anti-inflammatory drugs (NSAIDs)

If inflammation in the joint is contributing to your pain and stiffness, a short course of NSAID tablets (for example ibuprofen, naproxen) may be useful.

Like all drugs, NSAIDs can sometimes have side-effects, but your doctor will take precautions to reduce the risk of these – for example, by prescribing the lowest effective dose for the shortest possible period of time.

NSAIDs can cause digestive problems (stomach upsets, indigestion or damage to the lining of the stomach) so in most cases they'll be prescribed along with a drug called a proton pump inhibitor (PPI), which will help to protect your stomach.

Because a lot of drug treatments for osteoarthritis work in different ways, they can be combined to help ease your symptoms.

Self-help methods like looking after your joints will also help to prevent further damage.

NSAIDs also carry an increased risk of heart attack or stroke. Although the increased risk is small, your doctor will be cautious about prescribing them if there are other factors that may increase your overall risk – for example, smoking, circulation problems, high blood pressure, high cholesterol or diabetes.

! If you have trouble opening childproof containers, your pharmacist will put them in a more suitable container for you. Contact us for our special request card which you can hand to your pharmacist with your prescription.

Steroid injections

Steroid injections are sometimes given directly into a particularly painful knee joint. The injection can start to work within a day or so, and it may improve pain for several weeks or even months. This is mainly used for very painful osteoarthritis where the knee is swollen, for sudden painful attacks caused by the shedding of calcium pyrophosphate crystals or to help people through an important event (such as a holiday or family wedding). However, it's important to remember that steroid injections can't be given frequently or indefinitely. If you need repeated steroid injections into an osteoarthritic knee then you may need to consider surgery.

Hyaluronic acid injections

When steroid injections don't work, some doctors give injections of this lubricating substance into the knee joint, either as a single injection or as a course of several injections. However, this form of treatment isn't approved by the National Institute for

Health and Clinical Excellence (NICE) and isn't widely used because the evidence that it works isn't convincing.

Transcutaneous electrical nerve stimulation (TENS)

Some people find that transcutaneous electrical nerve stimulation (TENS) can help to relieve pain, although research evidence on its effectiveness is mixed. A TENS machine is a small electronic device that sends pulses to the nerve endings via pads placed on your skin. It produces a tingling sensation and is thought to modify pain messages transmitted to your brain. TENS machines are available from pharmacies and other major stores, but a physiotherapist may be able to loan you one to try before you decide whether to buy one.

Surgery

Surgery may be recommended if pain is very severe or you have mobility problems. Many thousands of knee replacements are performed each year for osteoarthritis, and the operation can give substantial pain relief in cases where other treatments haven't helped enough. Surgical techniques are improving all the time and replacements now last on average over 15 years.

Sometimes keyhole surgery techniques may be used to wash out loose fragments of bone and other tissue from your knee. This is called arthroscopic lavage, and it's not recommended unless your knee locks.

i See Arthritis Research UK booklet *Knee replacement surgery*.

Self-help and daily living

Sleep

If pain is a problem at night, heat may help. Try a hot bath before going to bed, or use a hot-water bottle, wheat bag (which you can heat in a microwave) or electric blanket. Taking a painkiller before going to bed can ease night-time pain so you can get to sleep more easily. Placing a pillow between your knees can also help to ease pain.

i See Arthritis Research UK booklet *Sleep and arthritis*.

Work

Most people with osteoarthritis are able to continue in their jobs, although you may need to make some alterations to your working environments, especially if you have a physically demanding job. Speak to your employer's occupational health service if they have one, or your local Jobcentre Plus can put you in touch with Disability Employment Advisors who can arrange work assessments. They can advise you on changing the way you work and on equipment that may help you to do your job more easily. If necessary, they can also help with retraining for more suitable work.

i See Arthritis Research UK booklet *Work and arthritis*.

Dealing with stress

Living with a long-term condition like osteoarthritis can lower your morale and may affect your sleep. It's important to tackle problems like these as they could lead to depression and will certainly make the osteoarthritis itself more difficult to cope with.

It often helps to talk about negative feelings, so it could be useful to speak to your healthcare team, or your family and friends. Support groups are also available – your doctor may be able to tell you about organisations in your area.

i See Arthritis Research UK booklets and guide *Fatigue and arthritis; Pain and arthritis; Living with long-term pain: a guide to self-management*.

Research and new developments

Research has already shown the importance of exercise and weight management in reducing the pain of osteoarthritis, particularly of the knee. There are many studies going on around the world to find and test new treatments for osteoarthritis. These include studies funded by Arthritis Research UK looking into the benefits of vitamin D (the VIDEO study) and a large national study to find the genes responsible for causing osteoarthritis (the arcOGEN study), which could lead to new therapies.

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Osteoarthritis of the knee

Arthritis Research UK is also funding early trials of stem cell research, which aims to regenerate cartilage using the body's own cells.

Researchers are looking into ways to help GPs make a quicker diagnosis of osteoarthritis. A new technique, dGEMRIC (delayed gadolinium-enhanced MRI of cartilage), which aims to diagnose osteoarthritis at an earlier stage, is currently being investigated by Swedish scientists. Arthritis Research UK researchers are also looking into improved methods of diagnosis, which could help to delay the condition's progression.

Noisy knees

Researchers funded by Arthritis Research UK have developed a prototype device that could help detect the onset of osteoarthritis in the knee by measuring the sounds it makes, which could help GPs to make a quicker diagnosis of the condition. It works by scanning the knees for sounds that indicate a deterioration in the knee joint. The device is still being developed and is undergoing extensive tests, so it's not widely available yet.



Patient story

John is a 68-year-old retired salesman.

When I was 25 I injured my knee playing football. It locked and was very painful for several weeks. My doctor sent me to see an orthopaedic surgeon, and he removed some damaged cartilage (meniscus) from my knee. I was still in quite a lot of pain and had to have another operation on the same knee a few years later, when I was 30. After that, I didn't really have any problems for some years. My knee used to ache occasionally and it was sometimes stiff, but it didn't stop me doing the things I wanted to.

Then, about 10 years ago, the discomfort and stiffness started getting worse. As time went by the knee got quite painful when I was exercising and it also started to swell a little. By the time I was 64, and coming up to retirement, it was getting difficult to get up and down stairs, and if I walked more than about half a mile I'd be in a lot of pain afterwards.

My doctor examined my knee and sent me for an x-ray. She told me I'd got osteoarthritis, and I'd also got some calcium crystals in the joint. She said it was probably because of my old injury and the operations I'd had. She gave me some paracetamol for the pain and some NSAID cream to put on, which helped. I've also had some physiotherapy to help strengthen my thigh muscles. The physio said these muscles often get weak when you've got arthritis in your knee. The exercises certainly made walking and climbing stairs a lot easier.

Now I'm retired I don't have to rush around so much, and I'm finding things easier. I like gardening and do some home decorating, which is fine as long as I take it gently. I use the tablets and the cream most days, and I've kept on with the exercises I was shown. I get more pain some days than others. It usually seems worse when the weather's damp. And my knee does tend to stiffen up if I sit still for too long.



Glossary

Acupuncture – a method of obtaining pain relief which originated in China. Very fine needles are inserted, virtually painlessly, at a number of sites (called meridians) but not necessarily at the painful area. Pain relief is obtained by interfering with pain signals to the brain and by causing the release of natural painkillers (called endorphins).

Aerobic exercise – any exercise that increases your pulse rate and makes you a bit short of breath.

Analgesics – painkillers. As well as dulling pain they lower raised body temperature, and most of them reduce inflammation.

Cartilage – a layer of tough, slippery tissue that covers the ends of the bones in a joint. It acts as a shock absorber and allows smooth movement between bones.

Chiropractor – a specialist who treats mechanical disorders of the musculoskeletal system, often through spine manipulation or adjustment. The General Chiropractic Council regulates the practice of chiropractic in the UK.

Gout – an inflammatory arthritis caused by a reaction to the formation of urate crystals in the joint. Gout comes and goes in several flare-ups at first, but if not treated it can eventually lead to joint damage. It often affects the big toe.

Hydrotherapy – exercises that take place in water (usually a warm, shallow swimming pool or a special hydrotherapy bath) which can improve mobility, help relieve discomfort and promote recovery from injury.

Inflammation – a normal reaction to injury or infection of living tissues. The flow of blood increases, resulting in heat and redness in the affected tissues, and fluid and cells leak into the tissue, causing swelling.

Ligaments – tough, fibrous bands anchoring the bones on either side of a joint and holding the joint together. In the spine they're attached to the vertebrae and restrict spinal movements, therefore giving stability to the back.

Magnetic resonance imaging (MRI) scan – a type of scan that uses high-frequency radio waves in a strong magnetic field to build up pictures of the inside of the body. It works by detecting water molecules in the body's tissue that give out a characteristic signal in the magnetic field. An MRI scan can show up soft-tissue structures as well as bones.

Manipulation – a type of manual therapy used to adjust parts of the body, joints and muscles to treat stiffness and deformity. It's commonly used in physiotherapy, chiropractic, osteopathy and orthopaedics.

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Menisci (singular **meniscus**) – rings of cartilage, like washers, lying between the cartilage-covered bones in the knee. They act as shock absorbers and help the movement of the joint. Each knee has an inside (medial) and an outside (lateral) meniscus.

Menopause – the time when menstruation ends, usually when a woman is in her 50s. This means the ovaries stop releasing eggs every four weeks, and it's no longer possible to have children. If this happens before the age of 45, it's known as premature menopause.

Non-steroidal anti-inflammatory drugs (NSAIDs) – a large family of drugs prescribed for different kinds of arthritis that reduce inflammation and control pain, swelling and stiffness. Common examples include ibuprofen, naproxen and diclofenac.

Occupational therapist – a trained specialist who uses a range of strategies and specialist equipment to help people to reach their goals and maintain their independence by giving practical advice on equipment, adaptations or by changing the way you do things (such as learning to dress using one handed methods following hand surgery).

Osteopath – a trained specialist who treats spinal and other joint problems by manipulating the muscles and joints in order to reduce tension and stiffness, and so helps the spine to move more

freely. The General Osteopathic Council regulates the practice of osteopathy in the UK.

Osteophytes – an overgrowth of new bone around the edges of osteoarthritic joints. Spurs of new bone can alter the shape of the joint and may press on nearby nerves.

Physiotherapist – a trained specialist who helps to keep your joints and muscles moving, helps ease pain and keeps you mobile.

Proton pump inhibitor (PPI) – a drug that acts on an enzyme in the cells of the stomach to reduce the secretion of gastric acid. They're often prescribed along with non-steroidal anti-inflammatory drugs (NSAIDs) to reduce the side-effects of those drugs.

Rheumatoid arthritis – a common inflammatory disease affecting the joints, particularly the lining of the joint. It most commonly starts in the smaller joints in a symmetrical pattern – that is, for example, in both hands or both wrists at once.

Synovium – the inner membrane of the joint capsule that produces synovial fluid.

Transcutaneous electrical nerve stimulation (TENS) – a small battery-driven machine which can help to relieve pain. Small pads are applied over the painful area and low-voltage electrical stimulation produces a pleasant tingling sensation, which relieves pain by interfering with pain signals to the brain.

Where can I find out more?

If you've found this information useful you might be interested in these other titles from our range:

Conditions

- *Calcium crystal diseases including acute CPP crystal arthritis (pseudogout) and acute calcific tendinitis*
- *Osteoarthritis*

Therapies

- *Hydrotherapy and arthritis*
- *Occupational therapy and arthritis*
- *Physiotherapy and arthritis*

Surgeries

- *Knee replacement surgery*

Self-help and daily living

- *Complementary and alternative medicine for arthritis*
- *Complementary and alternative medicines for the treatment of rheumatoid arthritis, osteoarthritis and fibromyalgia (63-page special report)*
- *Diet and arthritis*
- *Fatigue and arthritis*
- *Gardening and arthritis*
- *Keep moving*
- *Living with long-term pain: a guide to self-management*
- *Looking after your joints when you have arthritis*

- *Pain and arthritis*
- *Practitioner-based complementary and alternative therapies for the treatment of rheumatoid arthritis, osteoarthritis, fibromyalgia and low back pain (66-page special report)*
- *Sex and arthritis*
- *Sleep and arthritis*
- *Work and arthritis*

Drug leaflets

- *Local steroid injections*
- *Non-steroidal anti-inflammatory drugs*
- *Painkillers*

You can download all of our booklets and leaflets from our website or order them by contacting:

Arthritis Research UK

Copeman House
St Mary's Court
St Mary's Gate
Chesterfield
Derbyshire S41 7TD.
Phone: 0300 790 0400
www.arthritisresearchuk.org

The National Institute for Health and Clinical Excellence (NICE) issued guidelines to GPs in 2008 on how best to treat osteoarthritis based on available evidence.

The NICE guidance is available at www.NICE.org.uk/CG59. Printed copies of the NICE osteoarthritis patient guide

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Osteoarthritis of the knee

can be ordered from 0845 003 7783 or at emailpublications@nice.org.uk quoting reference N1460.

Related organisations

The following organisations may be able to provide additional advice and information:

Arthritis Care

Floor 4, Linen Court
10 East Road
London N1 6AD
Phone: 020 7380 6500
Helpline: 0808 800 4050
Email: info@arthritiscare.org.uk
www.arthritiscare.org.uk

DIAL Network (formerly Disability Information and Advice Line or Dial UK)

Phone: 01302 310 123
www.scope.org.uk/dial
An independent network of local disability information and advice services run by and for disabled people, part of Scope.

Disabled Living Foundation

380–384 Harrow Road
London W9 2HU
Phone: 020 7289 6111
Helpline: 0845 130 9177
Email: helpline@dlf.org.uk
www.dlf.org.uk

General Chiropractic Council

44 Wicklow Street
London WC1X 9HL
Phone: 020 7713 5155
www.gcc-uk.org

General Osteopathic Council

176 Tower Bridge Road
London SE1 3LU
Phone: 020 7357 6655
www.osteopathy.org.uk

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Get involved

You can help to take the pain away from millions of people in the UK by:

- volunteering
- supporting our campaigns
- taking part in a fundraising event
- making a donation
- asking your company to support us
- buying products from our online and high-street shops.

To get more **actively involved**, please call us on **0300 790 0400**, email us at **enquiries@arthritisresearchuk.org** or go to **www.arthritisresearchuk.org**

Exercises for osteoarthritis of the knee

This handy section contains exercises that are designed to stretch, strengthen and stabilise the structures that support your knee.

Simple exercises

The following exercises are designed to stretch, strengthen and stabilise the structures that support your knee.



1

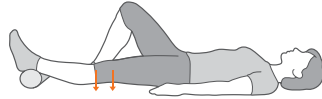
Straight-leg raise (sitting): Get into the habit of doing this every time you sit down. Sit well back in the chair with a good posture. Straighten one leg, hold for a slow count to 10 and then slowly lower your leg. Repeat this at least 10 times with each leg. If you find you can do this easily, straighten and raise one leg, before holding for a count of 10. As you improve, try the exercise with light weights on your ankles and with your toes pointing towards you.



2

Straight-leg raise (lying): Get into the habit of doing this in the morning and at night while lying in bed. Bend one leg at the knee. Hold your other leg straight and lift your foot just off the bed. Hold for a slow count of five, then lower. Repeat five times with each leg every morning and evening.

3



Muscle stretch: Do this at least once a day when lying down. Place a rolled-up towel under the ankle of the leg to be exercised. Bend the other leg at the knee. Use the muscles of your straight leg to push the back of your knee firmly towards the bed or the floor. Hold for a slow count of five. Repeat at least five times with each leg. This exercise helps to strengthen your quadriceps and prevents your knee from becoming permanently bent.

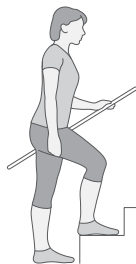


4



Leg stretch: Sit on the floor with your legs stretched out in front. Keeping your foot to the floor, slowly bend one knee until you feel it being comfortably stretched. Hold for five seconds. Straighten your leg as far as you can and hold for five seconds. Repeat 10 times with each leg. If you can't get down to the floor, sit on a sofa and use a board or tea tray as a surface to slide your foot along.

5



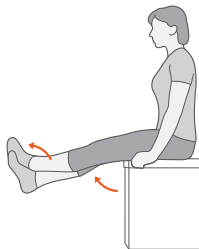
Step ups: Step onto the bottom step of stairs with your right foot. Bring up your left foot, then step down with your right foot, followed by your left foot. Repeat with each leg until you get short of breath. Hold on to the bannister if necessary. As you improve, try to increase the number of steps you can do in one minute and the height of the step.

6



Knee squats: Hold onto a chair or work surface for support. Squat down until your kneecap covers your big toe. Return to standing. Repeat at least 10 times. As you improve, try to squat a little further. Don't bend your knees beyond a right angle.

7



Leg cross: Sit on the edge of a table or bed. Cross your ankles over. Push your front leg backwards and back leg forwards against each other until your thigh muscles become tense. Hold for 10 seconds, then relax. Switch legs and repeat. Do four sets with each leg.

8



Sit/stands: Sit on a chair. Without using your hands for support, stand up and then sit back down. Make sure each movement is slow and controlled. Repeat for one minute. If the chair is too low, start with rising from a cushion on the seat and remove when you don't need it any more. As you improve, try to increase the number of sit/stands you can do in one minute and try the exercise from lower chairs or the bottom two steps of a staircase.

Keeping active

It's important to keep active – you should try to do the exercises that are suitable for you every day. Try to repeat each exercise between five to ten times and perform the exercises two to three times each day.

Start by exercising gradually and build up over time, and remember to carry on if your symptoms ease to prevent them returning. If you have any questions about exercising, ask your doctor or physiotherapist.



We're here to help

Arthritis Research UK is the charity leading the fight against arthritis.

We're the UK's fourth largest medical research charity and fund scientific and medical research into all types of arthritis and musculoskeletal conditions.

We're working to take the pain away for sufferers with all forms of arthritis and helping people to remain active. We'll do this by funding high-quality research, providing information and campaigning.

Everything we do is underpinned by research.

We publish over 60 information booklets which help people affected by arthritis to understand more about the condition, its treatment, therapies and how to help themselves.

We also produce a range of separate leaflets on many of the drugs used for arthritis and related conditions. We recommend that you read the relevant leaflet for more detailed information about your medication.

Please also let us know if you'd like to receive our quarterly magazine, *Arthritis Today*, which keeps you up to date with current research and education news, highlighting key

projects that we're funding and giving insight into the latest treatment and self-help available.

We often feature case studies and have regular columns for questions and answers, as well as readers' hints and tips for managing arthritis.

Tell us what you think

Please send your views to:
feedback@arthritisresearchuk.org

or write to us at:

Arthritis Research UK, Copeman House, St Mary's Court, St Mary's Gate, Chesterfield, Derbyshire S41 7TD.

A team of people contributed to this booklet. The original text was written by consultant rheumatologist Prof. Tim Spector who has expertise in the subject. It was assessed at draft stage by clinic champion for osteoarthritis Dr Mark Porcheret, GPwSI (MSK disorders) Dr Chandu Prasannan, physiotherapist Ros Teweleit. An **Arthritis Research UK** editor revised the text to make it easy to read, and a non-medical panel, including interested societies, checked it for understanding. An **Arthritis Research UK** medical advisor, Prof. Anisur Rahman, is responsible for the content overall.



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