

# Osteoarthritis of the knee

Information for patients and carers

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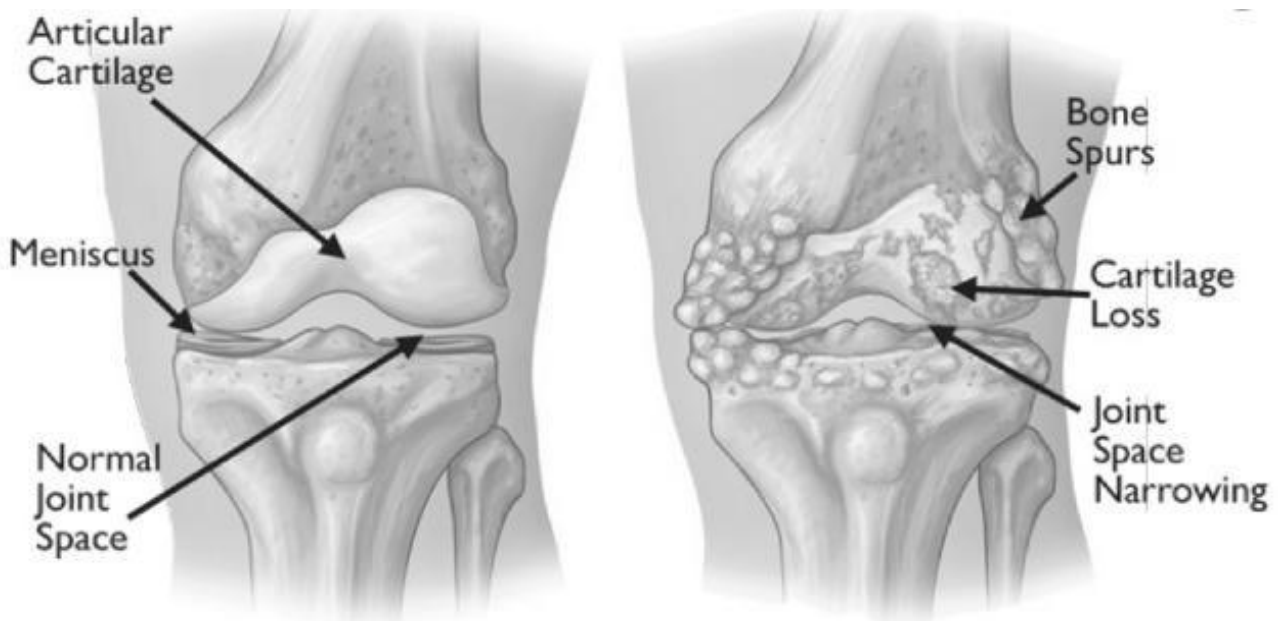


**Department of Trauma and Orthopaedics**

## What is osteoarthritis?

Osteoarthritis (OA) is a condition that affects the joints, causing pain and stiffness. The knee is one of the more commonly affected joints. It is sometimes referred to as 'degenerative joint disease' or 'wear and tear'.

**The drawing on the left hand shows the typical appearance of a healthy knee joint, and the right is the arthritic knee joint**



## What causes osteoarthritis?

All normal joints and joint tissues are constantly undergoing some form of repair because of the wear and tear that our daily activities place on them.

However, in some people, it seems that this repair process becomes faulty in some way (perhaps because of severe wear and tear to the joints or a problem with the repair process) and OA develops. A certain amount of wear and tear is normal as we age.

In joints with OA, the joint cartilage (otherwise known as articular cartilage) becomes damaged and worn. The bone tissue next to the cartilage can also be affected and bony spurs can develop around the joint edges. Those spurs are called osteophytes and we can sometime see these on X-rays. The joints and the surrounding tissues can also become inflamed. This inflammation is called synovitis.

Some of the many factors that may play a role in the development of osteoarthritis include:

- **Age:** OA becomes more common with increasing age. By the age of 65 at least half of the people will have some OA in one or more of their joints.
- **Autoimmune disease:** Such as rheumatoid arthritis.
- **Previous joint damage or deformity:** This may be from a previous fracture or injury around the knee joint that has caused damage to the joint surfaces.
- **Obesity:** Knee OA is more likely to develop if you are overweight. This is because there is an increased load on the joints and a potential for more damage
- **Gender:** Women are more likely to develop OA than men.
- **Genetics:** There may be some inherited tendency for OA to develop in some people if your parents, brothers or sisters have had OA.

However, in the majority of people, the exact cause of OA is unknown. It is probably a combination of the above factors.

## What are the symptoms of knee osteoarthritis?

- Pain, stiffness, and limitation in full movement of the joint are typical. The stiffness tends to be worse first thing in the morning but tends to loosen up after half an hour or so. The pain tends to be worse while you are using the joint, however sometimes the pain can wake you at night even when the joint is being rested.
- Swelling and inflammation of the knee can sometimes occur.
- An affected joint tends to look a little larger or more knobbly than usual.
- A grating or cracking sound or sensation at your knee is fairly common.
- Weakness and muscle wasting around the knee joint can make it difficult to fully straighten the knee.
- Reduced function, such as problems with climbing stairs, walking for long distances, and kneeling.

You may experience all or some of those symptoms. Your symptoms may vary for no apparent reason with bad spells of a few weeks or months broken by better periods.

## How is osteoarthritis diagnosed?

We usually diagnose OA based on your symptoms and the physical signs that we found when your knee was examined. There are no blood tests for osteoarthritis. X-rays are often not needed to diagnose osteoarthritis.

However, sometimes your doctor may suggest X-rays or other tests if they are uncertain about the diagnosis and want to rule out other problems.

## What you can do to help yourself

There is no cure for OA. However OA may not necessarily get worse and there are many things you can do to manage the symptoms to maintain an active lifestyle.

### Reduce stress on the joint

- Keep to your ideal weight. Extra weight on the joint can make symptoms worse. Even a modest weight loss can make a difference
- Avoid high heels. Wear appropriate footwear with cushioned soles or insoles
- Try not to overstress your joint by doing too much all in the one day (e.g. spread household chores throughout the week)
- Avoid being in one position for too long when possible to help prevent stiffness and pain (e.g. keeping your knee bent for long periods while working or driving can increase your knee stiffness and pain)
- Use a walking stick if you have one. However, ensure this is used in the other hand to where the pain is (e.g. if you have pain in the left knee your stick should be used in the right hand).

### Regular exercise

Osteoarthritis in the knee can weaken the thigh muscles (quadriceps). This can increase your knee pain and you may feel as if your knee has a tendency to give way perhaps even causing you to stumble or fall.

Regular exercise is important and one of the main things you can do to improve your symptoms. However, it is important to find the right exercise that works for you. Doing the exercises at the back of this leaflet everyday should help to strengthen your muscles. Generally exercises that allow you to work on your thigh muscles while not putting too much stress through your knee joint are the best type. These are termed “low impact exercises”.

Types of low impact exercises we recommend include: Cycling, swimming, and walking. High impact exercises (such as running or jumping) should be avoided.

A physiotherapist in your local hospital or health centre can give you more advice on exercise and managing with osteoarthritis. Some physiotherapy departments have special classes for patients with osteoarthritis of the knee.

Swimming can be a very good way of exercising and keeping fit. The water supports the body's weight so that little force goes through your joints as you exercise and causes very little pain.

Leisure centres also run a variety of exercise classes that may be suitable and enjoyable. These classes can help to introduce you to exercise, especially if you have not done it for quite some time.

### Other treatments

Some people find that they can also get some pain relief from using hot or cold packs. Try wrapping crushed ice in a damp towel and hold it for five to ten minutes against the part of the knee that hurts. You can do this every two to three hours. Make sure you use a damp towel between the ice and the skin to avoid an ice burn.

Or you could use a heat pad or a hot water bottle with an insulated cover on it. Make sure this is not too hot and not directly touching your skin. You can apply this for 10 to 15 minutes three to four times a day.

### Medication

If you still have pain after trying the above you can speak to your doctor to discuss medication for pain relief.

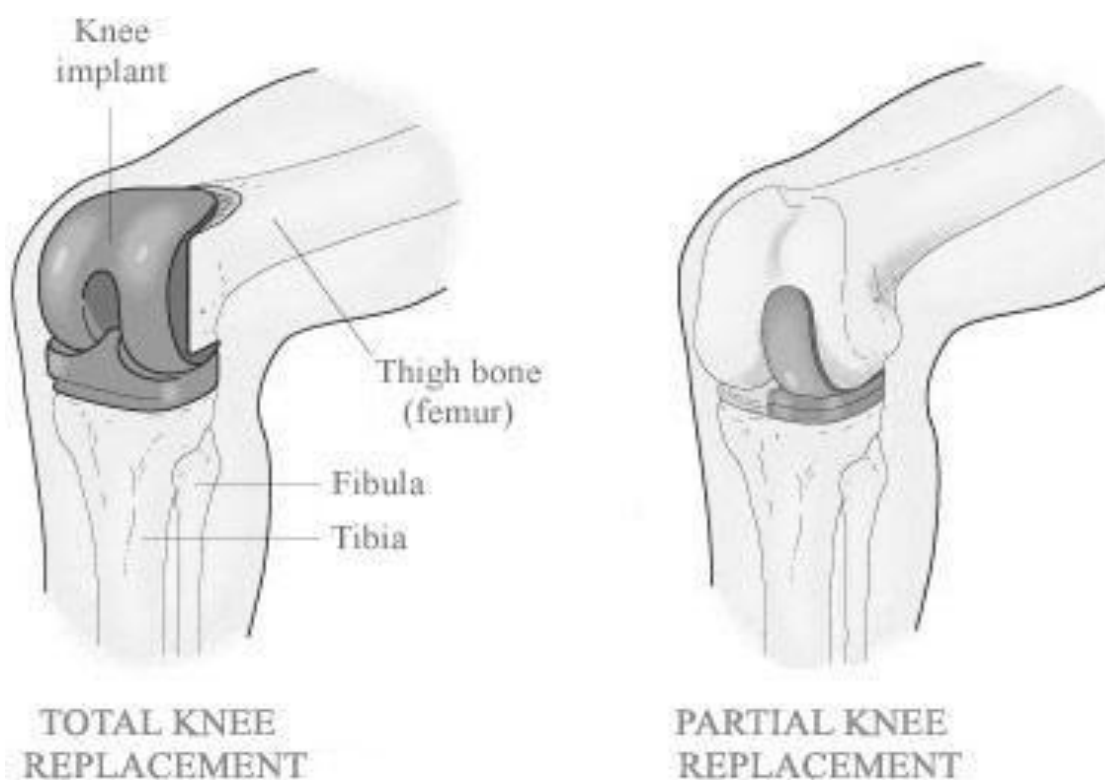
## Surgery

You won't necessarily need a knee replacement if you have osteoarthritis of your knee. Your healthcare team will always try non-surgical measures first before suggesting a knee replacement. If your symptoms are still manageable and your pain medication is effective then you may prefer to **wait and continue without surgery**. Most people who have a knee replacement are over 55. One of the reasons for this is that the earlier you have a knee replacement the greater the chances that you'll eventually need further surgery on the same knee because the implant wears out and needs to be replaced again. There is also evidence that younger patients are more likely to be unhappy with their knee replacement. This "re-do" procedure is called revision knee surgery and it is more complex than doing your knee replacement the first time. As a result revision knee surgery comes with potentially higher risks and complications.

## What is a knee replacement?

If your knee is damaged by arthritis and the pain, stiffness and disability are having a serious impact on your everyday activities and you have tried all the self help advice, we may offer you a knee replacement. Knee replacement surgery is performed in ultra-clean theatres by a highly trained team of surgeons, anaesthetists, and nurses. It is generally a very successful operation resulting in good pain relief and improved mobility. During the surgery a part of the knee or the total knee joint is replaced with an artificial joint.

### Schematic drawing of a total knee replacement and a partial knee replacement



## Are there any reasons why I can't have a knee replacement?

Unfortunately, some people may not be able to have a knee replacement even though their arthritis is very bad. This may be because:

- You have a medical condition that puts you at too high a risk for either surgery or anaesthesia
- Your thigh muscles (quadriceps) are very weak and may not be able to support your new knee joint
- You have deep or long-lasting open sores (ulcers) in the skin below your knee or your leg circulation is poor. Both increase your risk of infection and wound problems.

## Surgical procedure

The knee is the largest weight bearing joint in the human body and as such it can be prone to 'wearing out'. Arthritis is painful and disabling and you and your surgeon may have decided that a knee replacement may be your best option if all other measures have failed.

A knee replacement is a surgical procedure, in which the injured or damaged weight-bearing surfaces of the knee are replaced with artificial parts, which are secured to the bone.

You will see the surgeon before your operation. They will take this opportunity to draw (mark with a pen) on your leg. This is to make sure they operate on the correct leg. If you have any questions, this might be a good time to ask them.

Staff will give you an anaesthetic in the theatre. This may be a general anaesthetic (where you will be asleep) or a local block (e.g. where you are awake but the area to be operated on is completely numbed). The anaesthetist will discuss this with you.

Staff may place a tight inflatable band (a tourniquet) across the top of the thigh to limit the bleeding. We will clean your skin with antiseptic solution and cover the area with clean towels (drapes). The surgeon will make an incision (a cut) down the front of your knee. The knee capsule (the tough, gristle-like tissue around the knee), which is then visible, can be cut and the knee cap (patella) pushed to one side. From here, the surgeon can trim the ends of the thigh bone (femur) and shin bone (tibia) using a special bone saw. Some surgeons also remove the underside of the knee cap.

Using measuring devices, the new artificial knee joints are fitted into position. Your new artificial knee joint will be made from a combination of very high- grade metal alloy fixed to the femur and tibia and a very high-grade plastic (polyethylene) bearing sandwiched in between the metal parts. Sometimes, the surgeon places a polyethylene button on the underside of the knee cap.

When the surgeon is happy with the position and movements of the knee, they will close the tissue and skin. They may use stitches (sutures) or metal clips (skin staples). The clips and stitches will need to be removed around 10- 12 days after your operation.

Drains may be used, and if so these can be pulled out easily on the ward in a day or two.

When you wake up, you may have a bandage around your knee. If you are in pain, please ask for pain killers. If you have pain, it is important that you tell the ward staff.

You will go for an X-ray the day after the operation and we will encourage you to stand and take a few steps either on the day of surgery or, at the latest, the next day after your operation.

You will be in hospital for as long as it takes for your pain to be under control and for you to be safe walking with crutches. This should only be a day or two at most and **may even be the same day** as you have your operation. Occasionally patients stay in hospital longer than this.

The physiotherapy team will visit you, and suggest exercises for you. It is important to do these (as your pain allows).

Please be aware that the surgeon who carries out your operation may either be your consultant or another surgeon who is well trained and/or supervised to perform your knee replacement.

## Risks of surgery

As with all surgical procedures, knee replacement carries some risks and complications.

- **Pain:** Your knee will usually be sore for a few days/weeks after the operation. If you are in pain, it's important to tell ward staff so they can give you medicines. Pain will improve with time. Rarely, pain will be a chronic or long-term problem and may be due to any of the other complications listed below, or, for no obvious reason.
- **Dissatisfaction:** Although the majority of patients are happy following knee replacement surgery up to 15-20% of patients may experience some discomfort in their knee and may not be entirely satisfied with their knee replacement and up to 5% may feel that they are worse off.
- **Kneeling:** Even though it is safe to kneel on your replaced knee (once the wound has fully healed) around half of patients find it uncomfortable to kneel after having their knee replaced.

### Other common risks: (2-5%)

- **Bleeding:** Some patients may occasionally need a blood transfusion or iron tablets. Rarely the bleeding may form a blood clot or large bruise within the knee, which may become painful and may require an operation to remove it.
- **DVT:** Deep vein thrombosis (DVT) is a blood clot in a vein. The risks of developing a DVT are greater after any operation (and especially a bone operation). DVT can pass in the blood stream and be deposited in the lungs (a pulmonary embolism – PE) or in your brain (a stroke). These are less common but very serious conditions. Your surgeon may give you medication to try and limit the risk of DVTs from forming. Some hospitals will also ask you to wear stockings on your legs, while others may use foot pumps to keep blood circulating around your leg. Starting to walk and moving about as soon as possible after your operation is one of the best ways to prevent blood clots from forming.

The risks of DVT are increased in certain types of patients such as those with a family history of clots, and those with other serious diseases (such as kidney or liver disease and obesity). The biggest risk factors that you can do something about are obesity and smoking. You should try and address these before you even consider a knee joint replacement if you are overweight or smoke. This will significantly reduce your risk of clots.

- **Knee stiffness:** May occur after the operation, especially if the knee is stiff before the operation. Manipulation of the joint (under general anaesthetic) may be necessary.
- **Prosthesis wear:** With modern operating techniques and new implants, knee replacements last many years. However, in some cases, they may fail earlier. The reason is often unknown. The plastic bearing is the most commonly worn away part, when the replacement wears out or loosens it will become painful again and more surgery may be needed. With newer designs of replacements however, wear is becoming less of a problem than it was in the past. Overall around 96% of total knee replacements and 87% of partial knee replacements will last 10 years.



### Less common risks: (1-2%)

- **Infection:** We will give you antibiotics at the time of the operation and the procedure will also be performed in sterile conditions (theatre) with sterile equipment. Despite all these preventative measures, infection can still occur (up to 1 to 2%). The wound site may become red, hot and painful. There may also be a discharge of fluid or pus. We usually treat this with antibiotics and an operation to washout the joint may be necessary. In rare cases, the prosthesis (new knee) may be removed and replaced at a later date. The infection can sometimes lead to sepsis (blood infection) and strong antibiotics are needed in addition to further surgery.

Illnesses (such as diabetes or rheumatoid arthritis), medication that weakens the immune system (immunosuppressant drugs), or obesity increase the risk of infection.

The biggest risk factors that you can do something about are obesity and smoking. You should try and address these before you even consider a knee joint replacement if you are overweight or smoke. This will significantly reduce your risk of infection.

If you are diabetic then having good control of your sugar levels (HbA1c levels are less than 7% or less than 53mmol/mol) will again significantly reduce your risk of developing an infection following surgery.

The risks of infection after a unicompartmental or partial knee replacement are around half that of a total knee replacement.

### Rare risks: (less than 1%)

- **PE:** A Pulmonary Embolism (PE) is the spread of a blood clot to the lungs and can affect your breathing. This can be fatal.
- **Altered wound healing:** The wound may become red, thickened and painful (keloid scar), this is especially prevalent if your ethnicity is African or Caribbean.
- **Joint dislocation:** If this occurs, the joint can usually be put back into place without an operation. Sometimes this is not possible, and an operation is needed, followed by application of a knee brace. If your knee replacement remains unstable, further revision surgery may be needed.

Occasionally knee replacements with mobile or floating bearings are used and rarely these bearings can dislocate and require surgery to put back in place.

- **Nerve damage:** Efforts are made to prevent this; however there is a risk of damage to the small nerves of the knee. This may cause temporary or permanent altered sensation around the knee. There may also be damage to the peroneal nerve, this may cause temporary or permanent weakness or altered sensation of the lower leg. Changed sensation or numbness to the outer half of the knee next to the incision is very common and usually improves, at least partially, over time.
- **Bone damage:** Bone may be broken when the prosthesis (artificial joint) is inserted. This may need fixing either during the operation or at a later date.
- **Blood vessel damage:** The vessels at the back of the knee may rarely be damaged, this may need another operation. Your risks of permanent and serious damage to the vessels behind the knee are increased if you already have circulation problems or have had previous surgery to this area.
- **Death:** This very rare complication may occur after any major operation and from any of the above. Overall the risk of dying after a knee replacement is very low, but death does occur in around 1:1000 patients.

The risks of dying after a unicompartmental or partial knee replacement are around half that of a total knee replacement.



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To access, use the following username and password:

Username: **RIEKnee**

Password: **JointPathwaysTV**

**We do not routinely provide a hospital appointment for osteoarthritis of the knee.**

If you have tried the measures outlined in this booklet without success and you require to be considered by the Orthopaedic Service please call **01506 522 125** at which point you will be added to the waiting list for an outpatient appointment.

## Physiotherapy exercises for knee osteoarthritis

The following exercises have been provided for knee osteoarthritis. If these exercises make your pain worse, **stop**.



### Quadriceps sets

Lie on your back with your legs straight.

Tighten the muscles of your thigh above your painful knee and push your knees down firmly against the bed and hold for 5 seconds.

Repeat 10 times for 3 sets, once daily.

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### Quadriceps sets

Sit on a chair.

Put your toes up, tighten your front thigh muscles on your painful leg and straighten your knee.

Hold for 5 seconds and slowly relax your leg. You can increase the difficulty by adding an ankle weight.

Repeat 10 times for 2 sets, once daily

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### Hamstring stretch

Sit on a chair, with your painful leg out in front of you. Place your hands on your thigh just above the knee cap.

Lean forward from the hips keeping your back straight. Straighten your knee assisting the stretch with your hands and hold for 5 seconds.

Repeat 5 times for 1 set, once daily



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### Knee flexion

Stand. Hold on to a support if needed.

Bend the knee and lift your foot off the floor and hold for 5 seconds.

Repeat 10 times for 1 set, once daily

If your symptoms do not improve within 6 weeks of doing these exercises you may want to get advice from a physiotherapist. You can self refer to Physiotherapy.