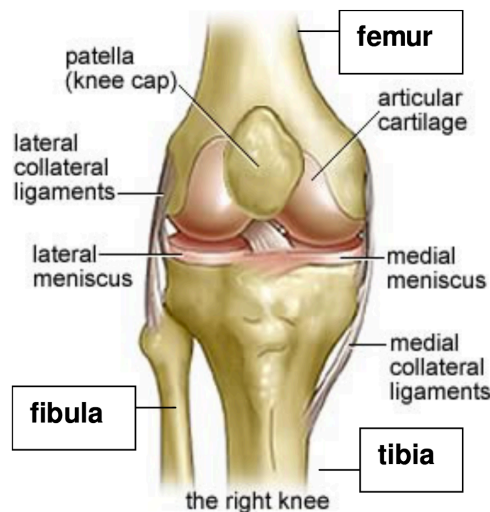


Patient Information And Rehabilitation Guidelines Following Personalised Total Knee Replacement Surgery

This booklet aims to improve your understanding of your personalised total knee replacement and the rehabilitation process.

Anatomy

Osteoarthritis can affect any joint in the body but is more common in joints in the lower limb weight-bearing joints, eg hip and knee.



A joint is formed where two bones meet. The ends of the bones, which form the joint, are covered in articular cartilage.

This provides a smooth, slippery and low friction surface that also cushions the joint. Healthy cartilage absorbs stress and allows the bones to glide across each other smoothly.

Osteoarthritis

The word arthritis means joint inflammation. Also known as 'degeneration' or 'wear and tear' arthritis, osteoarthritis is the most common type of arthritis and develops over a long period of time.

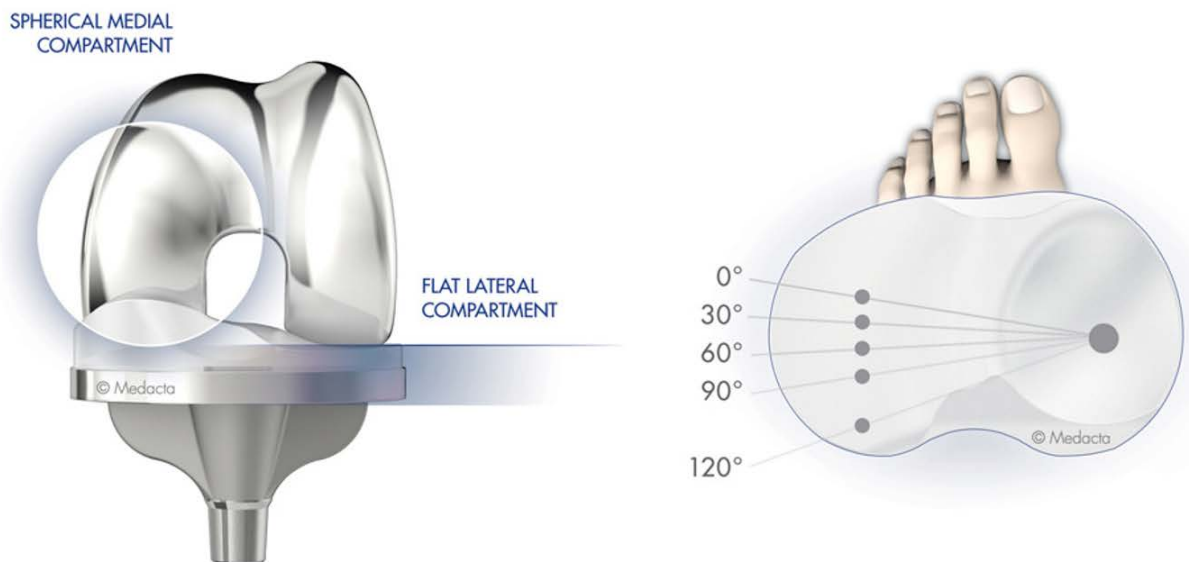
It affects the articular cartilage, which can start to wear away. Sometimes this affects one side of the knee joint more than the other.

What is a total knee replacement?

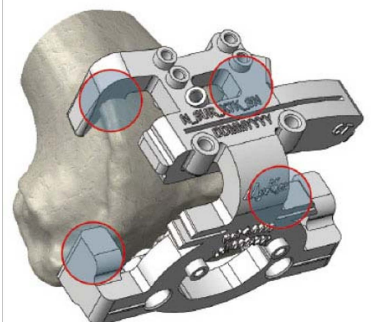
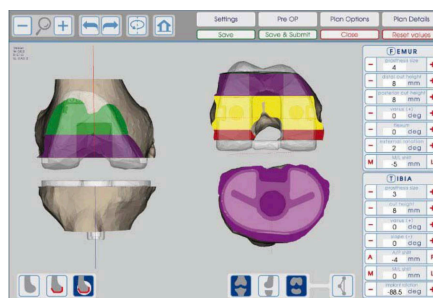
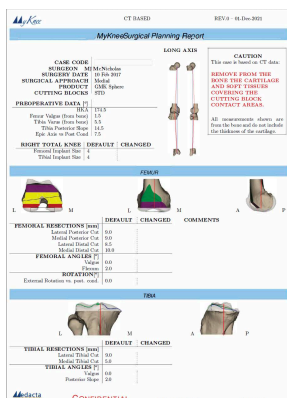
This is an operation that replaces your knee joint with an artificial prosthesis.

Each prosthesis is made up of three main parts:

1. The tibial component (bottom portion) replaces the top surface of the lower bone the tibia, and is made of titanium.
2. The femoral component (top portion) replaces the bottom surface of the upper bone (the femur) and the groove where the patella fits, and is made of cobalt chrome. A high-density polyethylene spacer sits between them.
3. A plastic patellar component (kneecap portion) is rarely used to replace the surface of the patella where it glides in the groove on the femur.



Mr McNicholas uses the Medacta GMK Sphere "My Knee" replacement. This implant uses a CT scan of the whole of your lower limb and computer technology to perfectly align the knee replacement, providing a more custom fit for the long tried and tested prosthesis for your knee. This method can take 4-6 weeks for your personalised cutting jigs to be ready. If you cannot wait that long, the conventional method of replacing a knee joint can be used. For further information please visit: <https://media.medacta.com/media/patient-knee-2016>



Unlike hip replacement surgery, knee replacement requires a lot more physiotherapy treatment after the operation and a lot more effort by you, the patient, to regain bending, straightening and strength of your knee.

Benefits of surgery

Once your new joint has healed properly, you should look forward to some or all of the following benefits:

- Greatly reduced joint pain.
- Increased leg strength. Without knee pain you will be able to exercise more and this will help to build up the muscles around the knee.
- Improved quality of life by allowing you to do daily tasks and low-impact activities in greater comfort.
- Correction of angular leg deformity i.e. knock-knee or bow-legs.

Alternatives to knee replacement surgery

Not everyone wishes to have, or requires, knee joint replacement when they have damage to their articular cartilage. Some people will have different pain tolerances, and others may not wish to undertake the risks this surgery carries.

Alternatives to surgery include:

- Regular pain medication
- Using walking aids to reduce stress on the joint
- Weight loss to reduce stress on the joint
- Special shoe inserts that help to cushion the joint
- Exercises to maintain joint movement, muscle strength and help with pain relief
- Activity modification

Other alternatives for some patients if arthritis is limited to one part of the knee:

- High tibial osteotomy: shinbone can be cut and bent to change the weight bearing forces.
- Unicompartmental knee surgery: replacing half the knee joint

Only when these measures fail to give acceptable pain relief, is a total knee replacement offered.

Satisfaction after surgery

It is important that you should be satisfied with the result of your knee replacement. It is said that a knee replacement that works well can give you the knee of a sixty year old.

Satisfied patients with realistic expectations:

- Follow instructions better
- Recover quicker
- Their replacement lasts longer

Satisfaction has been shown to depend on these three factors:

1. Severity of preoperative pain and stiffness. The more pain you have before the operation, the greater the relief the surgery may give.
2. Outcome of the operation. The less the operation relieves the pain the lesser the satisfaction will be.
3. Expectations before the operation.

Very high expectations usually are not satisfied by knee replacement. It is important to realise that not all your knee pain may be abolished after your surgery. Immediately after surgery, the gnawing severe pain will have gone and be replaced by surgical pain. This may last up to 6- 18 months but should lessen over time. Pain medication may still be needed because of this.

You may experience occasional pain in your new knee after walking and other activities. The relief of this type of pain is individual, depending on the severity of preoperative deformity in your knee, on the state of your muscles, and so on.

Remember your surgeon replaced only the damaged joint surfaces but could do nothing to the muscles, ligaments and other soft tissues equally damaged by the "joint" disease.

The procedure

To begin the procedure, your surgeon makes an incision on the front of the knee to allow access to the joint. Once the knee joint is opened, a special positioning device (cutting guide) is placed on the end of the femur. This cutting guide is used to ensure that the bone is cut in the proper alignment to the leg's original angles (even if the arthritis has made you bow-legged or knock-kneed). With the help of the cutting guide, your surgeon cuts several pieces of bone from the end of the femur.

The artificial knee will replace these worn surfaces with a metal surface. Next, the surface of the tibia is prepared. Another type of cutting guide is used to cut the tibia in the correct alignment. The patella would rarely be replaced.

PMMA cement is used to sit between the bone and your implant, acting like a grout, to fill in the small spaces between the bone and metal back surface of the new knee replacement rather than a glue. The metal femoral component is then placed on the femur and secured. The metal tray that holds the plastic spacer is then attached to the top of the tibia. The plastic spacer is then attached to the metal tray of the tibial component. Finally the soft tissues are sewn back together and staples or sutures are used to hold the skin incision together.

Complications

Complications do occur. Some are minor and some require further surgery. It is important you understand this before proceeding with surgery, they include:.

Complication	Recorded in literature
Anaesthetic risks	Anaesthetist will discuss
Numbness on the outer side of the scar	100%
Infection	1%
Deep vein thrombosis (clot in the calf)	50-70%
Proximal deep vein thrombosis	0.1 - 4%
Pulmonary embolism (clot to the lung)	0.1 - 3%
Damage to artery	0.02 – 2%
Nerve injury	0.3-2%
Stiffness requiring a manipulation or operation	1.3 – 12%
Painful knee	1%
Fractures	0.05 – 2.5%
ligament damage causing instability	0.02%
Loosening requiring removal of the implant	2% by 10 years
Wound and skin problems	1-5%
Knee arthrodesis (permanent stiffening)	0.001 %
Above knee amputation	0.003 %
Death	0.4 to 1%

Before surgery

An assessment of your fitness to undergo surgery including a detailed medical history, height, weight, blood pressure and pulse will be performed before surgery. Blood tests and a heart trace (ECG) may also be needed.

If you have any tooth or gum problems before surgery ensure you get this treated as you do not want germs entering the blood stream and infecting the joint replacement.

For 72 hours prior to your admission, avoid alcoholic drinks and drink 3-4 litres of fluid e.g. tea, water every day.

If you smoke, try to stop prior to your admission to hospital.

Follow the advice given by the pre-operative assessment nurse about your medicines, including herbal remedies.

If you live alone, it is advisable to stock up your freezer with easy to cook meals for when you return home. See if you can make arrangements for someone to help with buying fresh food and help with cleaning and laundry.

Get a neighbour, friend or relative to look after your house. If you develop a cough, cold, chest or skin infection, or a infected in-growing toenail, please let us know, as it may be necessary to postpone surgery until you have recovered.

You can always change your mind regarding surgery, it is not a problem. All we ask is that you inform Mr McNicholas so that the slot can be given to someone else.

The day of the operation

You are asked not to drink or eat anything for at least 6 hours before your operation.

You will be seen by Mr McNicholas and your Anaesthetist before your operation.

In the anaesthetic room, you will have a needle put into your arm and will be placed on an anaesthetic machine.

Surgery usually takes around 1 hour.

You will wake-up in the theatre recovery room. On return to the ward you will have the following:

- Dressings – wool and crepe bandage on the knee.
- Drips and drains – there may be small tubes in the back of your hand. You might also have a tube into your bladder (catheter).
- Analgesia – this may be oral medication or patient controlled analgesia (PCA), which looks similar to a drip.

After surgery

Day one

You will be assisted with a full bed bath. You will have a blood test. The drip will be taken down if you are drinking well, not feeling sick and do not need a blood transfusion. The drains and dressings will be removed.

You will be able to start some exercise, under the supervision of the physiotherapist. The exercises are shown later in the booklet. You will be given breathing exercises to help your chest after the anaesthetic, and they also help circulation.

Moving both your feet and ankles up and down and in circles quite vigorously also helps circulation.

If you feel well enough, you will be able to sit out of bed, with assistance. You may feel tired so take it slowly.

When lying in bed, or sat in the chair, keep moving feet and ankles up and down to help with your circulation. The physiotherapist or assistant will see you 1 or 2 times a day.

We aim to have you up and walking the day of the operation.

Use the advice and exercises in this booklet to help you treat yourself regularly.

Day two

The bandages will be removed. A splint may rarely be used when walking, but will be removed for exercise.

You will start to walk, usually with a Zimmer frame at first, and gradually progress to crutches.

The physiotherapist will instruct you on exercises to get your knee bending. Should this prove difficult, then a continuous passive motion (CPM) machine may be used. This bends the knee for you and can be left on for long periods. The

aim is to get the knee to bend to at least 90 degrees. It does not replace the need for you to continue with your own exercises

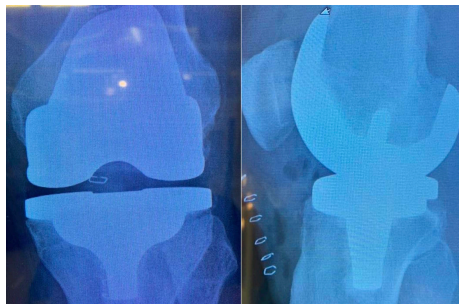
The knee will feel tight and sore to bend but will get easier with time. The knee will still be sore, so keep taking pain relief medication as needed.

If the knee is swollen, a cryocuff will be offered, which may be worn constantly. You may ask for ice at anytime, as the cooling water in the cuff warms up.

Elevating the leg on a stool or bed will also help reduce swelling.

Many patients are now well enough to go home the day after their knee replacement, once they are safely mobile and comfortable with painkillers they can take at home.

Day three and onwards



You will have a check x-ray taken, when it is comfortable to do so. Your walking will continue to improve as you become more confident. The catheter in your bladder, if you have needed one, will be removed when you are able to walk to the toilet, and you will be given an intramuscular injection of antibiotics.

Knee exercises will continue and, when you are able to lift your leg without help, the knee splint will be discarded.

An occupational therapist may see you to give advice on washing and dressing. If you live alone, they may check that you can manage to get your meals safely. They can also advise you if you need help with shopping or cleaning. Some people can have problems sitting, if chairs and toilets are too low. The occupational therapist can arrange any necessary equipment to alter the height of these things.

When you are safe on your crutches, the physiotherapists will show you the correct way to negotiate stairs (if appropriate).

When can I go home?

You will be allowed to go home when your knee is bending well, and Mr McNicholas is happy with your progress. You will also need to be safe on your crutches, be able to negotiate stairs, manage to get off a chair, toilet and bed, and generally be able to look after yourself at home if necessary.

Most people leave hospital 2 - 4 days following their surgery. If there are any postoperative complications, then you may need to stay longer. You can travel home in a car. An ambulance is only arranged in special circumstances.

Follow-up

You will be seen in clinic 2 weeks after your operation to remove your clips.

After that you will be seen, 3, 6, 12 weeks and 3, 6, 9, 12 months, 2, 5, 10 years annually after that.

General Advice

Return to work will depend greatly on the job that you do (desk-based jobs 2-4 weeks; manual jobs 6-12 weeks; jobs requiring ladders etc. 3-4 months).

Return to driving at 6 weeks for manual geared cars and automatic cars if it is the right leg that has been operated on. If it is the left leg that has been operated on, you may drive an automatic car once the wounds are healed at 2 weeks.

You should notify your insurance company of the procedure that has been undertaken to ensure that your cover is valid. For further information follow this web link: <https://www.gov.uk/driving-medical-conditions>

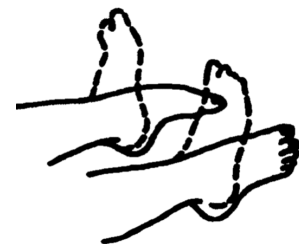
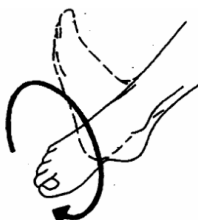
Flying is not permitted for 8 weeks following surgery due to a higher risk of developing a blood clot. For further information follow the web link below: <http://www.nhs.uk/chq/Pages/2615.aspx?C%20ategoryID=69>

Rehabilitation (Physiotherapy) Programme

The success of this operation depends on the surgery, and also your rehabilitation afterwards. It is important you are aware of this and willing to put lots of effort in yourself. You may need to exercise your knee for 6 months following your surgery, or longer if necessary.

The following exercises will be taught to you during the first few days of your hospital stay. They should be performed 3-4 times daily, with 5-10 repetitions of each.

1. Bend and straighten your ankles briskly.



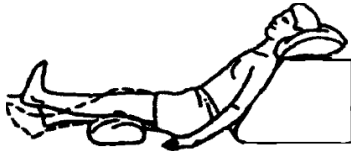
2. Lying on your back or sitting rotate your ankles. Change directions.

3. Lying on your back or sitting with legs straight. Pull your toes up towards you and push your knee down firmly against the bed. Hold 5 seconds.



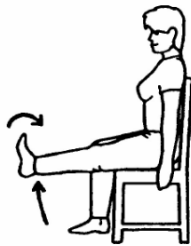
4. In lying/sitting with leg straight. Lift your leg 2-3 inches only keeping knee straight. Hold 5 seconds.

5. Lying on your back. Squeeze buttocks firmly together. Hold 5 seconds.



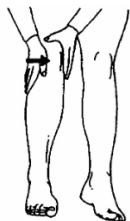
6. Sitting with back supported. Place a rolled towel under your knee. Pull your toes up towards you, straighten your knee and push it down against the towel. You can add a small weight over the ankle to make the muscle stronger. Hold 5 seconds.

7. Sitting on a chair or bed with the leg to be exercised supported as shown. Use a rolled towel under the heel if sitting on a bed. Let your knee straighten in this position.



8. Sit on a chair. Pull your toes towards you, tighten your thigh muscle and straighten your knee. Hold 5 seconds.

9. Sit with leg straight. Push your kneecap outwards. Hold 5 seconds.

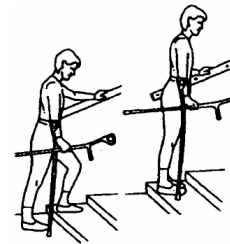


10. Sit with leg straight. Push your kneecap towards your opposite leg. Hold 5 seconds.

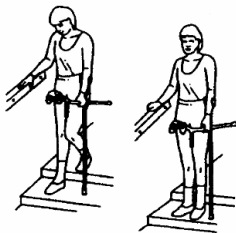
11. Sitting on the bed place a sock on your foot. Place a slippery board/tray under your foot and a band around it. Bend your knee as far as possible. Gently pull the band to bend a little more. Hold 5 seconds.



12. Sit on a chair with your feet on the floor. Bend your knee as much as possible. You can cross ankles and use opposite foot to pull the operated leg further under.



13. First take a step up with your healthy leg. Then take a step with your affected leg. Then bring your crutch up onto the step. Always go one step at a time.



14. First put your crutch one step down. Then take a step with your affected leg. Then take a step down with your healthy leg, onto the same step as your affected leg. Always go one step at a time.

Exercises you may do in hospital, or when you are at home.

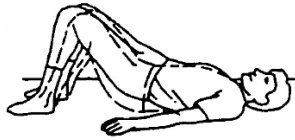
15. Stand with support. Push up on your toes.



16. Stand with support. Bend your operated knee behind you and lift your foot off the floor.

Exercises you will do in the physiotherapy outpatient department.

17. Sit on a chair, with a cushion under your knee and a weight around your ankle. Pull your toes up towards you, tighten your thigh muscle and straighten your knee. Hold 5 seconds.



18. Lying on your back with knees bent. Squeeze your buttocks together and lift your bottom off the floor. Return to starting position.

19. Stand in front of a 20-40 cm step. Step up with one leg leading and then repeat with the other leg leading.



20. Sitting with your arms crossed. Stand up and then sit down slowly on a chair. (This can be made easier or more difficult by changing the height of the chair).

21. Stand with/without support. Lift one leg and balance.



General Information

When you return home, keep your leg elevated for the majority of the time when you are resting, to help with the reduction of swelling. It is very normal for your leg to swell and this can take many weeks to get better.

If your knee becomes more swollen and warm, or you lose your cryocuff, it may be worth using ice to reduce your symptoms. To do this, make sure the ice is in a sealed bag, and then wrapped in a damp towel. Alternatively a bag of frozen peas wrapped in a damp towel may be used. Apply the ice for no longer than 10 minutes at any one time. You can use ice every hour if necessary.

Make sure you continue to do your exercises at least 2-3 times a day. Gradually increase the distance you walk over the coming days and weeks.

Avoid standing for long periods, as this will be uncomfortable and lead to more swelling in the knee joint.

Do not twist your knee, as can happen when you turn your body without moving your feet

Skin care

Once the wound has healed, you can massage the scar and surrounding area with a non-perfumed moisturising cream or oil.

This helps to keep the skin supple and mobile, which can make the knee easier to bend. Please ask your therapist if you are unsure when or how to do this. If you expose your knee to the sun, make sure you apply a sun block or high factor sun cream to the scar, as initially it is very sensitive and can burn easily.

Remember to let your dentist know that you have had a joint replacement. The dentist may need to give you antibiotics following certain dental procedures to prevent infection.

Please seek advice if you experience any of the following:

- The wound bleeds or discharges continuously.
- You feel feverish, shivery, have a temperature or feel sick.
- Your knee becomes very hot and red (It is normal for the wound to feel warm to touch).
- Increased pain not helped by medication or rest.
- Increased painful swelling not helped by ice and elevation.
- Increased pain in the calf muscle.
- Sudden onset of shortness of breath and pain when you take a breath in.

Goals to aim for:

The following are general goals. You may find you achieve most or none of these, but it is important to remember every person is an individual and you will progress at your own rate. Everyone's joint and surrounding tissues are also different at the time of surgery so try and avoid comparing your progress to that of others you see during your rehabilitation.

- To regain 90 degrees of knee bend by 1 week post operatively – ideally prior to discharge from hospital.
- To be able to get the knee fully straight within 2 weeks.
- Be able to walk without walking aids between 6-12 weeks
- Back to driving at the earliest 6 weeks.
- Be able to climb stairs normally 3-4 months.

- If your knee is your only painful joint, you should be able to stop your pain relief by 6-12 weeks.

VTE (blood clots)

VTE is a collective term for two conditions:

- **DVT** (deep vein thrombosis) – this is a blood clot most commonly found in a deep vein that blocks the flow of blood.
- **PE** (pulmonary embolism) – a potential fatal complication where a blood clot breaks free and travels to the lungs.

Whilst you are less mobile, especially during the first few weeks following your procedure, the risk of VTE is higher because of your immobility.

Mr McNicholas will prescribe you a daily injection of low molecular weight heparin to help thin your blood and these should last approximately six weeks. You will be shown how to inject this drug yourself.

Symptoms:

- Swelling – you will have some swelling due to your surgery but if you have any concerns please call for advice
- Pain – any new pain we want to know about
- Calf tenderness
- Heat and redness compared with the other leg
- Shortness of breath
- Chest pain when breathing in

Things you can do to prevent VTE

- Move around as much as possible. Be sensible though, short and regular movement is best
- Drink plenty of water to keep yourself hydrated
- We strongly advise you not to smoke – this will have been discussed in pre op but we can also refer you to our smoking cessation team within the Hospital.
- Move your ankle around as much as possible to keep your calf muscle pumping

Small preventative measures can have a huge impact on your recovery.

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