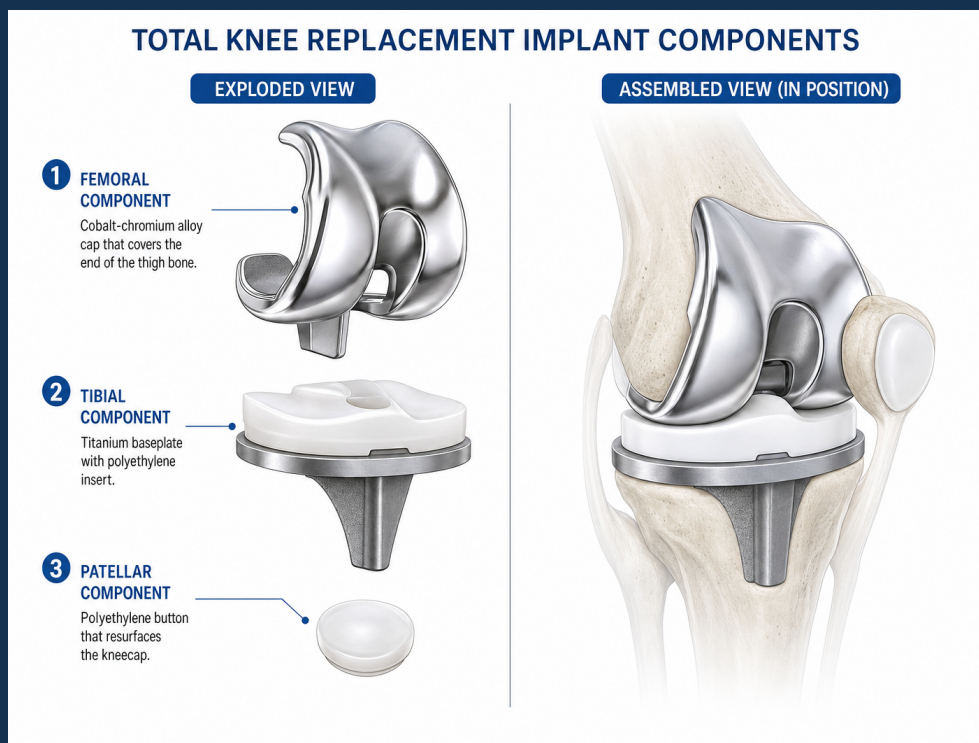


Total Knee Replacement Surgery

Your Complete Patient Information Guide

Including the JointClinics Fast Recovery Programme



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1. Introduction

This booklet has been prepared by Mr Kenan Dehne to provide you with comprehensive information about total knee replacement surgery (also known as total knee arthroplasty, or TKA). It explains what the operation involves, how the JointClinics Fast Recovery Programme works, and what you can expect during your rehabilitation.

Total knee replacement is one of the most successful operations in modern medicine. It reliably reduces pain, restores function, and improves quality of life for patients with severe knee arthritis. Over 100,000 knee replacements are performed each year in the United Kingdom, and the vast majority of patients report significant improvement in their symptoms.

At JointClinics, we use an Enhanced Recovery After Surgery (ERAS) programme - our "Fast Recovery Programme" - which is designed to get you moving quickly, reduce your hospital stay, and help you return to your normal activities as soon as safely possible. Research consistently demonstrates that patients who follow enhanced recovery protocols experience fewer complications, shorter hospital stays, and better functional outcomes compared with traditional care pathways.

2. Understanding Your Knee

The knee is the largest joint in the body and one of the most complex. It is formed by three bones: the femur (thigh bone), the tibia (shin bone), and the patella (kneecap).

The knee joint has three compartments: the medial (inner) compartment, the lateral (outer) compartment, and the patellofemoral (kneecap) compartment. In a healthy knee, the bone surfaces within each compartment are covered with smooth articular cartilage (approximately 3-4 mm thick) that allows the joint to glide with minimal friction.

The knee is stabilised by four main ligaments (the anterior cruciate ligament, posterior cruciate ligament, medial collateral ligament, and lateral collateral ligament) and is surrounded by a joint capsule lined with synovial membrane. Two crescent-shaped menisci sit between the femur and tibia, acting as shock absorbers.

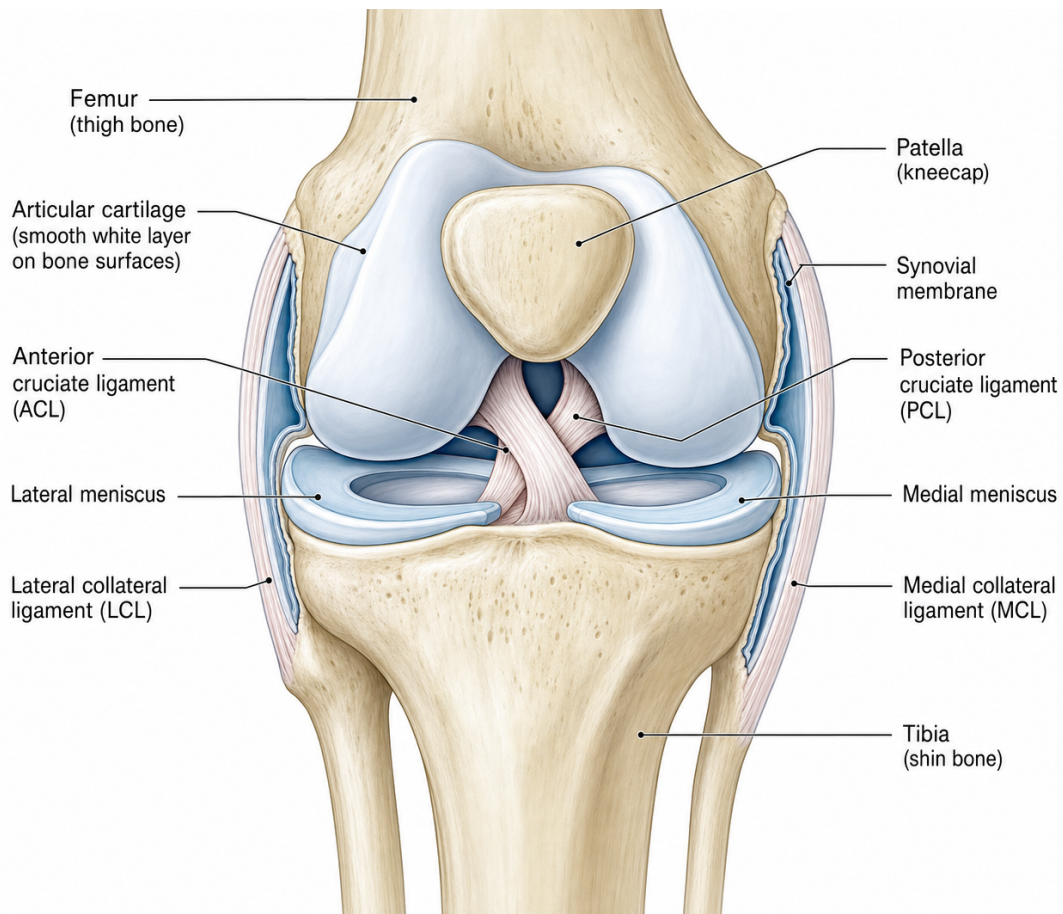


Figure 1: Anatomy of the knee joint showing key structures

3. Why You May Need a Knee Replacement

Total knee replacement is considered when the articular cartilage has worn away significantly, causing bone to rub against bone. This results in pain, stiffness, swelling, and difficulty with everyday activities such as walking, climbing stairs, and getting in and out of chairs.

Common Causes

- **Osteoarthritis:** The most common cause - gradual "wear and tear" degeneration of the cartilage, typically affecting patients over 55 years of age.
- **Rheumatoid arthritis:** An autoimmune condition causing inflammation and destruction of the joint lining and cartilage.
- **Post-traumatic arthritis:** Arthritis developing after a significant knee injury (fracture, ligament injury, or meniscal damage).
- **Avascular necrosis:** Loss of blood supply to a section of bone, causing collapse of the joint surface.

Knee replacement is generally recommended when non-operative treatments - including physiotherapy, weight management, anti-inflammatory medications, and injections - have failed to provide adequate relief, and your quality of life is significantly affected.

4. The Decision to Operate

The decision to proceed with knee replacement is made together between you and Mr Dehne. There is no single test that determines when surgery is "needed" - it is based on your symptoms, functional limitations, examination findings, and imaging results.

You may be a good candidate if:

- You have significant daily pain that limits your activities
- Your pain disturbs your sleep
- You have tried and failed non-operative treatments for at least 3-6 months
- Your X-rays show moderate to severe arthritis
- Your knee is becoming increasingly stiff or deformed
- You are otherwise fit enough for surgery

Important Considerations

- Knee replacement is an elective procedure - the timing is your choice
- The operation is designed to relieve pain and improve function, not to create a "normal" knee
- Most patients achieve 0-120 degrees of knee flexion after surgery
- The implant is expected to last 20-25 years in the majority of patients
- Realistic expectations are essential for satisfaction after surgery

5. Your New Knee - Implant Components

A total knee replacement resurfaces the worn joint surfaces with precision-engineered artificial components. The implant has three main parts:

- **Femoral component:** Made of cobalt-chromium alloy, this covers the end of the thigh bone and is shaped to replicate the natural curve of the femur.
- **Tibial component:** A titanium baseplate with a polyethylene (plastic) insert that covers the top of the shin bone and provides a smooth gliding surface.
- **Patellar component:** A polyethylene button that resurfaces the underside of the kneecap (used in some patients).

The components are typically fixed to the bone using polymethylmethacrylate (PMMA) bone cement, which sets within minutes and provides immediate stability. Modern knee implants are designed to replicate the natural kinematics of the knee, and survival rates exceed 95% at 15 years based on national joint registry data.

TOTAL KNEE REPLACEMENT IMPLANT COMPONENTS

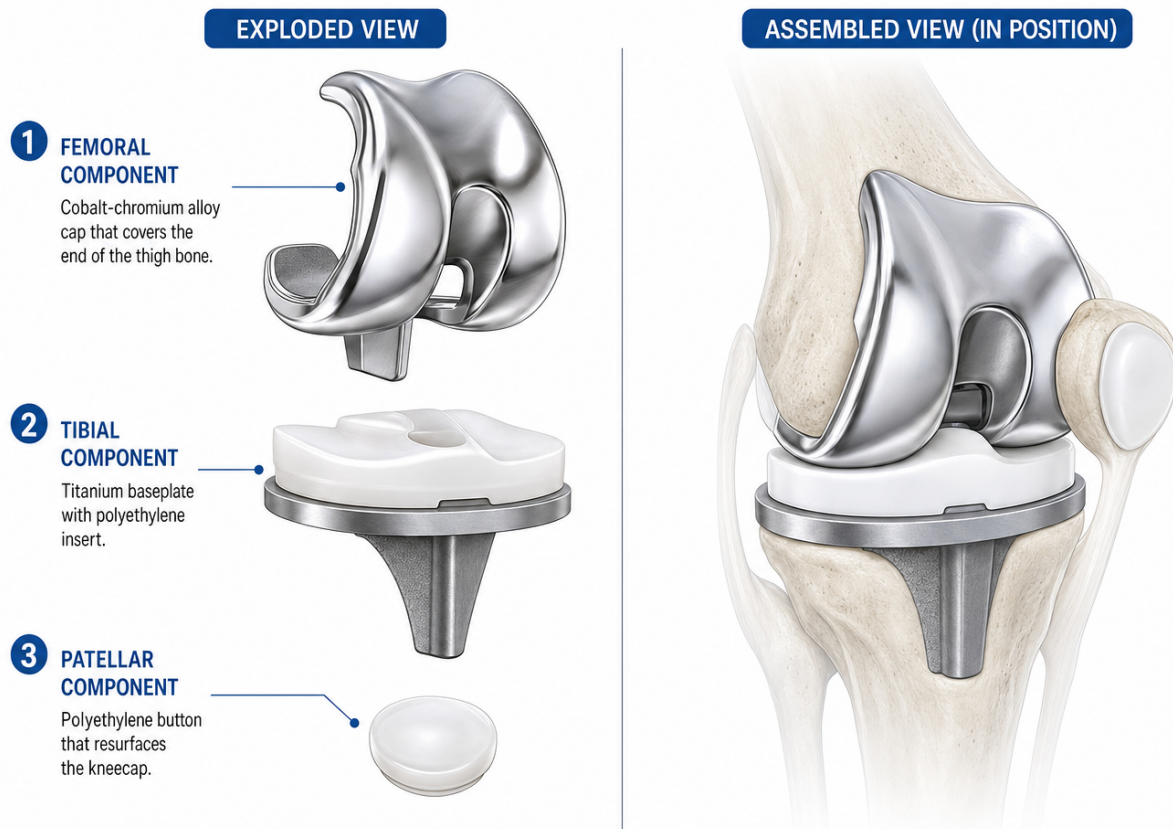


Figure 2: Total knee replacement implant components - exploded and assembled views

6. The Surgical Procedure

Total knee replacement is performed under anaesthesia - typically a spinal anaesthetic (which numbs you from the waist down) combined with sedation. General anaesthesia is also available if preferred. The operation takes approximately 60-90 minutes.

Steps of the Operation

- **1. Approach:** A midline incision (approximately 15-20 cm) is made over the front of the knee. The joint is accessed through a medial parapatellar approach.
- **2. Bone preparation:** Precision cutting guides are used to remove the worn cartilage and a thin layer of bone from the femur, tibia, and patella.
- **3. Trial components:** Temporary implants are inserted to check fit, alignment, stability, and range of motion.
- **4. Final implantation:** The definitive implants are cemented into place. The polyethylene insert is locked into the tibial baseplate.
- **5. Closure:** The joint capsule and skin are closed in layers. A local anaesthetic cocktail is injected around the knee.
- **6. Dressing:** A sterile dressing and compression bandage are applied. No drain is typically required.

7. The JointClinics Fast Recovery Programme

At JointClinics, we follow an Enhanced Recovery After Surgery (ERAS) programme - our "Fast Recovery Programme" - which represents the gold standard in perioperative care for joint replacement surgery. This evidence-based approach has been shown to reduce hospital stay, decrease complications, improve pain control, and accelerate return to normal function.

Key Principles

- **Minimise surgical stress:** Spinal anaesthesia, tranexamic acid to reduce bleeding, local anaesthetic infiltration, meticulous soft-tissue handling.
- **Multimodal pain control:** Combination of paracetamol, anti-inflammatories, nerve blocks, and local infiltration - minimising opioid use.
- **Early mobilisation:** Standing and walking on the day of surgery (Day 0) with physiotherapy support.
- **Optimised nutrition:** No prolonged fasting; clear fluids up to 2 hours before surgery; early eating after surgery.
- **Prevention of complications:** DVT prophylaxis, early mobilisation, infection prevention bundle, blood conservation.
- **Patient empowerment:** Comprehensive education, clear expectations, active patient participation in recovery.

What the Evidence Shows

- Reduced hospital stay: from 5-7 days (traditional) to 1-2 days (ERAS pathway)
- Fewer complications: reduced rates of blood transfusion, infection, and thromboembolic events
- Better pain control with fewer opioid-related side effects
- Faster functional recovery - patients achieve mobility milestones earlier
- No increase in 30-day readmission rates
- Higher patient satisfaction scores

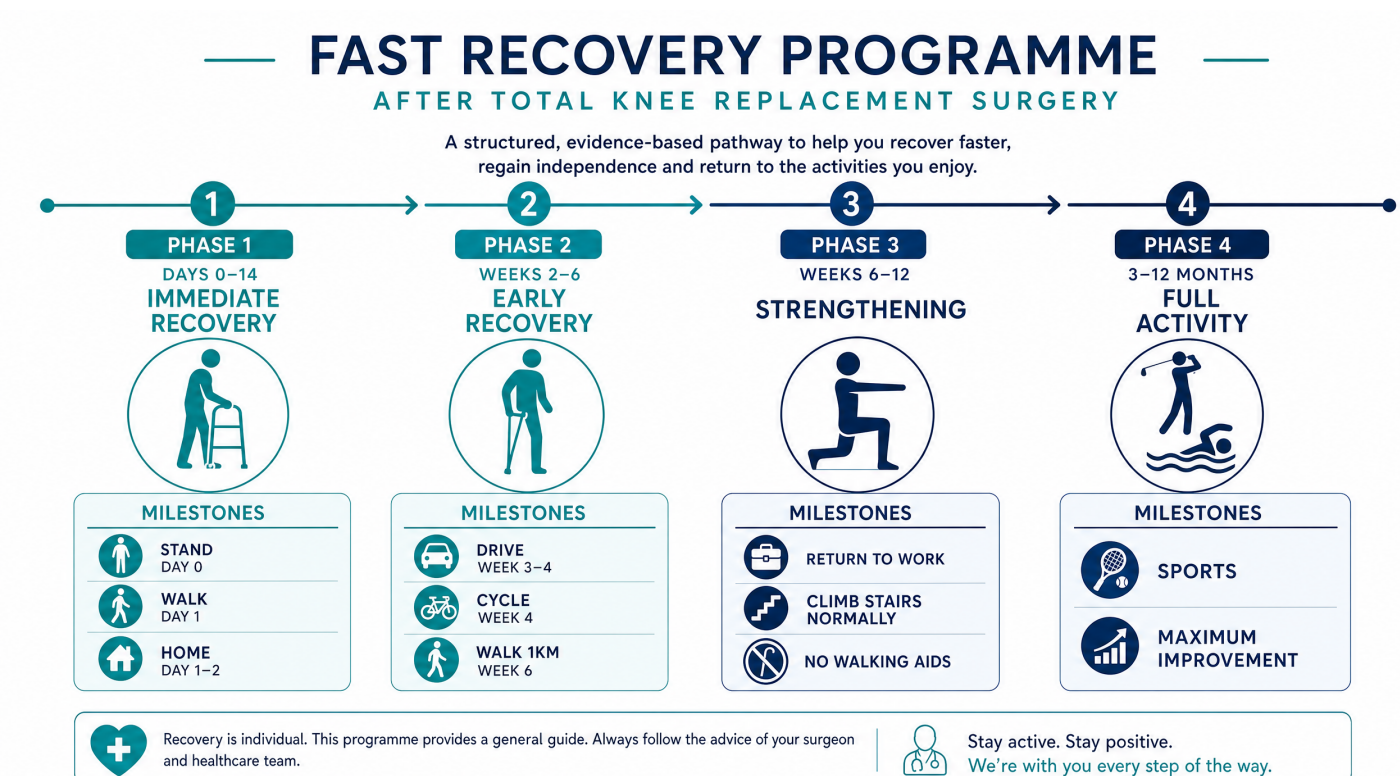


Figure 3: The Fast Recovery Programme - 4-phase timeline from surgery to full activity

8. Preparing for Surgery (Prehabilitation)

Preparation before surgery - "prehabilitation" - is a critical component of the Fast Recovery Programme. Research shows that patients who are physically and mentally prepared before surgery recover faster and have better outcomes.

4-6 Weeks Before Surgery - Physical Preparation

- Begin daily quadriceps strengthening exercises (straight leg raises, wall squats)
- Walk for 20-30 minutes daily to maintain cardiovascular fitness
- Practice using crutches or a walking frame
- Achieve the best possible range of motion in your knee

Medical Optimisation

- Stop smoking at least 4 weeks before surgery - significantly reduces wound complications
- Reduce alcohol intake - excess alcohol impairs healing
- Optimise diabetes control (HbA1c below 69 mmol/mol)
- Treat anaemia if haemoglobin is low
- Review medications with your surgical team

Practical Preparation

- Arrange transport home from hospital
- Prepare your home: remove trip hazards, consider raised toilet seat and shower stool
- Stock your freezer with easy-to-prepare meals
- Arrange help for the first 1-2 weeks
- Pack a hospital bag with loose-fitting clothing and comfortable shoes

The Week Before Surgery

- Attend pre-operative assessment (blood tests, ECG, health screening)
- Begin skin preparation as instructed (antiseptic wash)
- No food for 6 hours before surgery; clear fluids permitted up to 2 hours before

9. What to Expect on the Day of Surgery

Arrival and Preparation

You will arrive at the hospital on the morning of your surgery. The nursing team will confirm your details, mark your surgical site, and prepare you for theatre. You will meet your anaesthetist to discuss your anaesthetic plan.

In the Operating Theatre

The operation typically takes 60-90 minutes. You will have a spinal anaesthetic (with sedation if desired) or a general anaesthetic.

In the Recovery Room

After surgery, you will spend approximately 1 hour in the recovery room while the nursing team monitors your observations and ensures your pain is well controlled.

The Afternoon/Evening of Surgery (Day 0)

As part of the Fast Recovery Programme, our physiotherapy team will visit you on the afternoon or evening of your surgery. The goals for Day 0 are:

- Sit on the edge of the bed
- Stand with assistance
- Take your first steps with a walking frame
- Begin ankle pump exercises to promote circulation

Important:

This early mobilisation is safe and is one of the most important factors in reducing complications and accelerating recovery.

10. Your Hospital Stay

Under the Fast Recovery Programme, most patients stay in hospital for 1-2 nights. Some patients who meet specific criteria may be suitable for same-day discharge.

Discharge Criteria

You will be discharged when you can safely:

- Walk independently with crutches or a frame (approximately 30 metres)
- Climb stairs safely (if needed at home)
- Get in and out of bed independently
- Bend your knee to at least 70-80 degrees
- Manage your pain with oral medications
- Pass urine normally
- Have no signs of complications

Before You Leave

- You will receive a discharge pack with written instructions and exercises
- Your wound dressing will be checked
- Blood-thinning medication will be prescribed (usually for 14 days)
- Follow-up appointments arranged (wound check at 2 weeks, clinic at 6 weeks)

11. Pain Management

Good pain control is essential for early mobilisation and recovery. The Fast Recovery Programme uses a "multimodal" approach - combining several different types of pain relief to provide maximum effect with minimum side effects.

Pain Relief Methods

- **Local anaesthetic infiltration:** Injected around the knee during surgery for immediate post-operative relief.
- **Paracetamol:** Take regularly (4 times daily) - safe, effective baseline pain relief.
- **Anti-inflammatory (ibuprofen/naproxen):** Take regularly with food to reduce inflammation.
- **Gabapentin/pregabalin:** Reduces nerve-related pain and improves sleep.
- **Opioids (codeine/tramadol):** For breakthrough pain only; aim to stop within 2-4 weeks.
- **Ice therapy:** 20 minutes, 3-4 times daily to reduce swelling.

Important Principles

- Take regular painkillers ON SCHEDULE for the first 2 weeks
- Pain typically peaks at days 2-3, then gradually improves
- Swelling is normal and may persist for 3-6 months
- Aim to reduce and stop opioid painkillers within 2-4 weeks
- Ice, elevation, and gentle movement are powerful pain-relieving tools

12. Rehabilitation Programme

Rehabilitation is the most important factor in determining your outcome after knee replacement. The programme is progressive, building on each stage as your knee heals and strengthens.

Phase 1: Immediate Post-Operative (Days 0-14)

Goals: Control pain and swelling, protect the wound, achieve early mobility milestones.

- Ankle pumps: 20 reps every hour while awake
- Static quadriceps contractions: 10 x 5-second holds, 4 times daily
- Straight leg raises: 3 x 10 reps, 3 times daily
- Heel slides (knee bending): 3 x 10 reps, 4 times daily
- Knee extension stretch: 5 minutes, 4 times daily

Milestones

- Day 0: Stand and take first steps with frame
- Day 1: Walk 30+ metres; climb stairs
- Day 7: Walk 100+ metres; knee bending to 70-80 degrees
- Day 14: Walk short distances without crutches; knee bending to 90 degrees

Phase 2: Early Recovery (Weeks 2-6)

Goals: Restore range of motion (target 0-110 degrees), build muscle strength, increase walking distance.

- Heel slides progressing range, mini squats, step-ups
- Stationary cycling (high seat): 10-20 minutes daily
- Straight leg raises in all directions
- Resistance band exercises

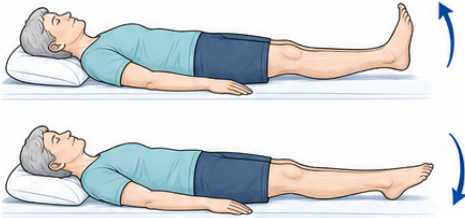
Milestones

- Week 3: Walk outdoors with one crutch; drive short distances (automatic, left knee)
- Week 4: Walk 500+ metres; begin stationary cycling
- Week 6: Walk 1 km+; knee bending to 100-110 degrees; wean off crutches

Key Rehabilitation Exercises

6 KEY REHABILITATION EXERCISES AFTER TOTAL KNEE REPLACEMENT SURGERY

1 ANKLE PUMPS



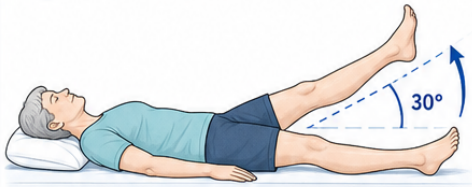
Point your toes up toward you, then point them down.

2 STATIC QUAD CONTRACTION



Tighten your thigh muscle and push the back of your knee down into the bed.

3 STRAIGHT LEG RAISE



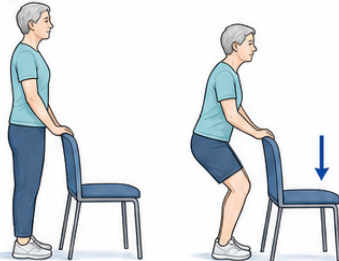
Tighten your thigh and lift your leg straight up about 30 degrees. Lower slowly.

4 HEEL SLIDES



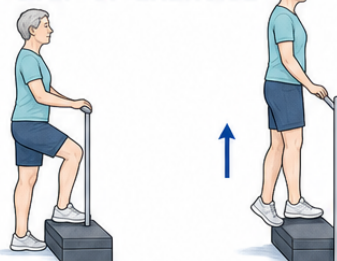
Slide your heel toward your buttock, bending your knee. Slide back down.

5 MINI SQUAT



Bend your knees slightly and lower your body. Keep your back straight. Return to standing.

6 STEP-UP EXERCISE



Step up onto a low step with your operated leg. Step down and repeat.



Perform these exercises as directed by your healthcare professional.
Stop if you feel pain and contact your healthcare provider if you have concerns.
CONSISTENCY IS KEY TO YOUR RECOVERY.

Figure 4: Six key exercises for knee replacement rehabilitation

Phase 3: Strengthening (Weeks 6-12)

Goals: Restore full strength, improve balance and proprioception, return to most daily activities.

- Squats and lunges (progressing depth)
- Leg press and step-ups (increasing height)
- Balance exercises (single leg stand)
- Swimming/aqua exercises: 20-30 minutes, 2-3 times per week
- Outdoor cycling: 20-30 minutes, 3-4 times per week

Milestones

- Week 8: Walk 2+ km without aids; return to light work
- Week 10: Climb stairs normally (step over step)
- Week 12: Knee bending to 115-120 degrees; return to driving (right knee)

Phase 4: Return to Full Activity (3-12 Months)

Goals: Maximise strength and endurance, return to recreational activities.

- Continue strengthening exercises 2-3 times per week indefinitely
- Gradually return to recreational sports (golf, swimming, cycling, walking)
- Maximum improvement typically achieved by 12 months
- Some patients continue to improve up to 2 years after surgery

13. Returning to Activities

The following timelines are general guides. Your individual recovery may be faster or slower depending on your fitness, the complexity of your surgery, and your progress with rehabilitation.

Activity	Timeline	Notes
Driving (automatic, left knee)	3-4 weeks	When safe to emergency stop
Driving (right knee/manual)	6-8 weeks	Must brake firmly without pain
Return to desk work	4-6 weeks	Elevate leg; take regular breaks
Return to manual work	8-12 weeks	Depends on physical demands
Sexual activity	4-6 weeks	When comfortable
Swimming	6 weeks	Once wound fully healed
Stationary cycling	4-6 weeks	Start with high seat position
Outdoor cycling	8-12 weeks	Flat terrain initially
Golf	12 weeks	Start with putting/chipping
Walking holidays	3-6 months	Build distance gradually
Kneeling	Variable	May be uncomfortable; use cushion
Running/high-impact	Not recommended	Increases implant wear

14. Risks and Complications

Total knee replacement is a safe and well-established procedure, but like all surgery, it carries risks. Mr Dehne will discuss these with you in detail before you consent to surgery.

Common (more than 1 in 20 patients)

- **Pain and swelling:** Expected after surgery; gradually improves over weeks to months.
- **Stiffness:** Some limitation of movement is normal; physiotherapy is essential.
- **Bruising:** May extend down the leg; resolves over 2-4 weeks.
- **Numbness:** A patch of numbness on the outer side of the knee is common and usually permanent but not troublesome.

Uncommon (1 in 20 to 1 in 100 patients)

- **Infection (1-2%):** We use antibiotics, laminar flow theatres, and strict sterile technique. If infection occurs, further surgery may be needed.
- **Blood clots - DVT/PE (1-2%):** Blood-thinning medication and early mobilisation reduce this risk.
- **Stiffness requiring manipulation (3-5%):** If adequate movement is not achieved by 6-8 weeks, manipulation under anaesthesia may be recommended.
- **Wound healing problems (5-7%):** Prolonged drainage, skin edge necrosis, or delayed healing.

Rare (fewer than 1 in 100 patients)

- **Nerve or blood vessel injury:** Damage to the peroneal nerve or popliteal artery is rare but serious.
- **Fracture:** A crack in the bone around the implant during or after surgery.
- **Implant loosening:** Typically a long-term problem (10-20 years); may require revision surgery.
- **Instability:** Feeling of the knee "giving way"; may require further surgery.

Long-Term Considerations

Modern implants last 20-25 years in the majority of patients. Younger, more active patients may wear out their implant sooner. If the implant fails, a revision operation can be performed. You should inform your dentist and any doctor performing invasive procedures that you have a knee replacement.

15. Frequently Asked Questions

How long does the operation take?

The operation typically takes 60-90 minutes. You will be in the operating theatre for approximately 90-120 minutes in total including anaesthetic preparation.

How long will I stay in hospital?

Under the Fast Recovery Programme, most patients stay 1-2 nights. Some patients are suitable for same-day discharge depending on individual progress and home circumstances.

How long will it take to recover?

Most patients return to daily activities within 6-12 weeks. Maximum improvement is typically achieved by 12 months, although some patients continue to improve for up to 2 years.

Will my knee feel normal?

A replaced knee will not feel identical to a natural knee. Most patients describe it as feeling "different but much better." The vast majority report significant pain relief and improved function.

Can I kneel after knee replacement?

Many patients can kneel, although it may feel uncomfortable. Using a cushion helps. Kneeling will not damage the implant.

How long will the implant last?

Over 95% of modern knee implants are still functioning well at 15 years, and approximately 85% at 25 years, based on national joint registry data.

Can I have an MRI after knee replacement?

Yes. Modern knee implants are MRI-compatible. Inform the radiographer about your implant before any MRI scan.

When can I fly after surgery?

Short-haul flights (under 4 hours) are generally safe from 6 weeks. For long-haul flights, wait at least 12 weeks and wear compression stockings.

16. Warning Signs - When to Seek Help

While complications are uncommon, it is important to know when to seek urgent medical attention. Contact JointClinics, your GP, or attend A&E if you experience any of the following:

Possible Infection

- Increasing redness, warmth, or swelling around the wound
- Wound discharge (especially if cloudy, green, or foul-smelling)
- Fever (temperature above 38 degrees C)
- Feeling generally unwell, shivery, or flu-like

Possible Blood Clot (DVT/PE)

- Sudden calf pain, swelling, or tenderness (especially if one-sided)
- Sudden shortness of breath or chest pain
- Coughing up blood

Other Concerns

- Sudden severe pain not relieved by your usual painkillers
- Inability to bear weight on the operated leg
- Sudden numbness or weakness in the foot
- Heavy bleeding from the wound that does not stop with pressure

EMERGENCY:

If you experience chest pain, sudden breathlessness, or coughing up blood, call 999 immediately.

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*This booklet is intended as a guide only and does not replace individual medical advice.
Please discuss any specific concerns with Mr Dehne or his team.*

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