



Practice  
Plus  
Group

# Knee replacement physiotherapy



**Physiotherapy is an essential aspect both in the preparation for your surgery and post-operatively to ensure you get the desired end result of your knee surgery.**

Members of the physiotherapy team will help you following your surgery, but the main person who can help you get the result you want is yourself.

Staff at our treatment centres work together as a team to ensure you, the patient, have the best experience possible following your surgery. However, you must remember that you are a big part of this team!

The physiotherapists will give you exercises and advice. It is then your responsibility to take this advice and put it into practice once you are at home.

Before you have your knee surgery you can prepare by starting your home exercise plan. This will not only help strengthen your muscles around your knee, but will also ensure you are aware of some of the exercises you will need to be doing during your hospital stay and when you go home.

# Before surgery

## Home exercise plan



### 1. Static quadriceps exercise

Tighten up the muscle at the front of your thigh by pressing the back of your knee into the bed. You should be able to see the large muscle at the front of your knee contract. Try not to tense up the buttock muscles or try too hard. Some times doing the exercise with both legs at the same time will give the affected leg the right idea. Hold the contraction for 5 seconds. **Relax and repeat 5 times**

### 2. Short arc quadriceps exercise

Sit with your operated leg bent over a rolled towel. Tighten up the knee muscles and lift your heel off the bed. Keep your knee firmly down on the roll. Hold for a few seconds, trying to get the heel as high as you can. **Relax and repeat 5 times**

### 3. Straight leg raise

Sit or lie with your leg out straight. Tighten the thigh muscles, straighten the knee and lift the whole leg, like a log, 6 inches (15cm) off the bed. Hold for 3 seconds, and then lower slowly. **Relax and repeat 5 times**

***Please ensure you lie flat when doing this exercise if you have had a total hip replacement on the same side.***



#### 4. Passive knee stretches

Sit or lie with your leg out in front of you. Put the heel up on a block or pillow so that the knee hangs in mid air. Let the knee stretch for 5 minutes, or less if it is too painful.



#### 5. Knee bend on the bed

You can use a board for this exercise, and at home you can use a tray. Keep the heel down on the board and slide the foot towards you, bending the knee. Hold it at the full bend for 3 seconds then release.

**Relax and repeat 5 times**



#### 6. Knee bends in the chair

Sit in a chair with your foot on the ground. Slide the foot firmly towards you then release. Hold for 3 seconds each time in the fully bent position. Do not allow your hips to move, just the foot. **Relax and repeat 5 times**

*As well as starting these exercises before your operation, it is important you carry on doing these exercises from the day after your surgery onwards.*

## Preparations you can make before you come into the hospital for surgery

### Home environment:

- Consider the space you have around your home. You may need to move furniture to make enough space to get through doorways and passages with a mobility aid which may be issued to you after your operation
- Remove any loose rugs and secure carpets in the home to prevent the risk of falls

### Kitchen:

- Stock up on easy to prepare meals. If you have a freezer, have a selection of ready prepared meals that you can heat in either a microwave or an oven
- Arrange your kitchen so that the most commonly used items are all at worktop level or higher, so that you do not have to bend or twist to reach items
- If you do not usually eat in the kitchen, consider having a stool or seat in the kitchen as you may be discharged home with walking aids which will have an influence on your ability to carry items when walking. An appropriately placed seat is also good for rests between tasks

### Lounge:

- If your chair at home is very low you may have a higher one you can borrow from family or friends, which will make getting out of your chair easier

### Household tasks:

- Arrange for family or friends to help you with heavier household tasks, like Hoovering, changing bed clothes etc.

### Personal care:

- Cut your toe nails, as this will be difficult for the first few weeks after surgery. Be careful not to cut the skin. If this happens then the surgery would need to be deferred till the wound has healed. This is to prevent any infection hindering your recovery process after the surgery
- Place clothes and toiletries in drawers and on shelves around waist height to avoid bending or twisting for these items

### Transport home:

- Think about who can collect you following your stay in hospital. It should be safe for you to travel home as a passenger in a car



## Improving blood circulation

Simple bed exercises, such as ankle pumps, quads sets, and gluteal sets, will help prevent circulation problems. Other exercises appropriate for you are reviewed later in this booklet. We advise you repeat these exercises every hour that you are lying in the bed.

### Ankle pumps

With your leg relaxed, gently bend and straighten your ankle. Move through full range of movement.

**Repeat this 10 times every half hour.**

### Static quadriceps

With your knees straight tense the muscle at the front of your thigh. Straighten your knee as if you are pushing the back of your knee down into the bed. Make sure your buttock muscles are not tense. In order to make sure that you are doing the exercise correctly, try the exercise on your good leg to understand how it should feel.

**Hold for 5 seconds. Relax. Repeat 10 times.**

### Static gluts

Lie flat on your back with your legs straight. Squeeze your buttocks together.

**Hold for 5 seconds. Relax. Repeat 10 times.**

## Additional pain management techniques

### Cold therapy

Cold therapy in the form of ice packs will be provided for you while you are an in-patient, as an intervention to reduce pain and swelling. Cold therapy produces an anaesthetic effect when placed on the surgical area.

Ice packs can be applied to the surgery site, throughout your stay, for 20 minutes every 2 to 4 hours as instructed by your doctor, nurse or physiotherapist. Do not hesitate to ask a member of staff for ice packs between various activities.

Cold therapy can be very helpful at home. If your leg feels heavy, stiff, swollen, or hot, we recommend that you rest on your bed with an ice pack applied to the tender or swollen area.

Making an ice pack can be as simple as wrapping ice cubes in a towel or using a bag of peas wrapped in a towel. There are commercial ice packs available which you can keep cold, ready to use, in your freezer.

## Breathing and relaxation exercises

Relaxation exercises, such as slow rhythmic breathing, can help you handle any pain you may be feeling, as well as providing overall comfort.

1. Breathe in slowly and deeply.
2. As you breathe out slowly, feel yourself beginning to relax and feel the tension leaving your body.
3. Now breathe in and out slowly and regularly, at whatever rate is comfortable for you. You may wish to try abdominal breathing (using your diaphragm). If you do not know how to do abdominal breathing, ask your nurse for assistance.
4. To help you focus on your breathing, breathe slowly and rhythmically. Breathe in and say silently to yourself “In, two, three,” then breathe out and say silently to yourself “Out, two three”.
5. It may help to imagine that you are doing this in a place that is very calming and relaxing for you, such as lying in the sun at the beach or in your own special place.
6. End with a slow, deep, breath.

**As you breathe out say to yourself**

*“I feel alert and relaxed”.*

Then concentrate on staying that way.





## Rehabilitation -

Members of the healthcare team will assist and guide you with your exercises and also help you out of bed for the first time.

Continue exercising regularly while you are in the bed (exercises shown earlier in this booklet).

Your physiotherapist will add to these exercises throughout your stay.

It is normal to experience some discomfort and pain when you walk and exercise. It is essential for you to know that you can not harm your new joint by doing this.

To improve knee function you must use and bear weight though your new joint as instructed by a physiotherapist.

*The emphasis in the early stages of your rehabilitation is to maintain movement of the knee replacement and ensure you can walk safely. The body reacts to surgery by making scar tissue. The normal movement in the knee may never recover if exercises are not done to bend and straighten the knee. Being able to fully straighten your knee as well as bend your knee is essential for walking, as well as normal activities of daily life.*

## Bed transfers

### Transferring out of bed

Following your surgery you will be helped out of bed by a member of the healthcare team. The physiotherapist is there to help you, but it is important to remember that you will be able to do most of the work yourself.

It is most likely that you will get out of bed the same side as your operated leg.

Use your hands on the bed to move your bottom closer to the edge of the bed. You can bend your non-operated leg to help you lift your bottom off the bed and move it across.

Once you are near the edge of the bed you can lower your operated leg over the edge of the bed.

Use your hands on the bed to guide your bottom round so you can place your feet down to the floor.

Once you are sitting on the edge of the bed you can rest there until you are ready to stand.



### Transferring back into bed

When you are ready to get back into the bed position yourself closer to the pillows near the head of the bed and try to ensure you guide your bottom back onto the bed as much as possible before you lift your legs up into bed. Keep your knee facing up to the ceiling to avoid twisting of the leg. Use your hands and the non-operated leg to manoeuvre yourself in the bed to make yourself comfortable. Please ensure you ask for assistance if needed.



### Walking with a frame

In standing, hold the frame with two hands. When you feel ready to walk, move the frame forward so that the feet are level with the back of the frame. Move the operated leg forward into the middle of the frame. Transfer your weight onto your operated leg and through the frame. Clench and tuck your bottom in and make sure your knee on the operated side is straight. Then step your good leg slightly ahead of your operated leg keeping a gap between your feet. Also make sure there is a gap between you and the front of the frame.

### Remember **FOG**

#### Frame, Operated leg, Good leg

While turning use the same leg pattern as walking forward. Frame, operated leg, good leg. Do small steps on the spot picking your feet up to avoid twisting your operated leg.

When walking backwards keep the walking frame in front of you. Step backwards with your good leg first, then your operated leg and then bring the frame back towards you.

### Sit to stand

Always use the arms of a chair or the surface that you are sitting on to push yourself into a standing position. Do not use the arms of a walking aid as this could tip or you could put unnecessary stress on shoulders and elbows that could cause damage.

## Stand to sit

Step backwards to the chair until you feel the chair with the back of your good leg. Keep your operated leg out in front of you. Reach back for the arms of the chair so you can lower yourself down gently into it.

It is important to be performing your exercises well and doing them regularly without the need for prompting by staff. These exercises are progressive and a physiotherapist will guide and progress the exercises appropriately to improve your knee function, posture and walking pattern throughout your stay.

You should also notice your mobility improves and you can walk to and from the bathroom using your walking frame without assistance once a member of the staff has advised you.

Continuing to use a walking frame is not always necessary and so a physiotherapist will assess you for using crutches as well as completing a stair assessment. Most patients continue to use the crutches and will take them home with them to use.

## Walking with crutches

Once standing, put your crutches on so the handles are pointing forwards. Move your two crutches forward first, ensuring they are far enough apart for you to step between them. Move your operated leg forward to the level of your crutches. Push down on the crutches with your arms and apply weight through your operated leg.

Step forwards with your good leg slightly ahead of the operated leg and the crutches.

### Remember **COG**

**C**rutches, **O**perated leg, **G**ood leg

As you progress you will be able to return to a normal walking pattern with one foot in front of the other. Continue to use your crutches. Make sure your heel strikes the floor first, followed by the sole of your foot and then the toes push off.



When you turn ensure your crutches are in a position that you can lean through them. Take small steps to turn moving your crutches first, then your operated leg, followed by your good leg. Make sure you pick your feet up. Do not twist and do not drag the operated leg.

### **Sit to stand when using crutches**

As when standing up using a frame, always use the arms of a chair or the surface that you are sitting on to push yourself into a standing position. **Do not use the arms of the crutches** as this is less steady and can put unnecessary stress on shoulders and elbows that could cause damage.

Stand up first using the arms of the chair with crutches in a 'H' position. Once you have gained your standing balance put your crutches on.

Before standing, put both crutches on while you are in the sitting position, with the handgrips facing backwards. Push up on the arm rest of the chair to stand up. Turn the hand grip of the crutches to point forward and position your hands comfortably.

### **Stand to sitting when using crutches**

Step backwards to the chair until you feel the chair with the back of your good leg. Keep your operated leg out in front of you. Once positioned put the crutches out in front of you and turn the hand grips of the crutches to face backwards. Reach back for the arms of the chair and gently lower yourself down into it.

Alternatively, once you are ready to sit down, take your crutches off and place them carefully resting nearby. Then reach back for the arms of the chair to lower yourself down gently.



## Negotiating stairs

### Walking upstairs



1. Move one step up with your good leg
2. Move your operated leg to the same step
3. Move your crutches on to the same step

### Walking downstairs



1. Move your crutches down one step
2. Move your operated leg on to the same step
3. Move your good leg on to the same step

If you have two banisters you can use both. If you have one banister, it is safer to use the banister and hold a walking aid in the other hand.

***Remember to keep your back straight maintaining the normal curvature of the spine.***

## Going home

By now you should be mobilising independently using the walking aid issued to you by the therapies team.

You should also be able to get in and out of bed yourself and get up to wash in the bathroom and dress.

The rest of your time in hospital should be spent exercising your knee and practicing walking until you are confident to use your walking aid alone. When you can do these things you are ready to go home.

It is better if someone can be at home with you for at least parts of each day to assist you with shopping, meal preparation etc.

## Patient self-assessment tool

Please use this “patient self-assessment tool” to monitor your progress once you are home after your knee replacement. Your physiotherapist will go through this with you before you are discharged home.

The key principles are to:

- Perform the exercises slowly, steadily and regularly
- Both range of motion and strengthening exercises help increase joint mobility
- Maintain passive range of motion to prevent internal adhesions and stiffness
- Increase active range of motion to stimulate muscle activity
- Know what complications to look out for and not be worried about asking questions

*The aim is to complete these targets within six weeks after your knee surgery.*



## 1. Bending your knee



**(A) Measure and record the gap between your crutch and knee**



**(B) Aim for no gap between the crutch and the knee**



**(C) Further improvement shows a gap between the toes and crutch**

### Take a tape measure and a stick/crutch.

**To assess:** Sit in a chair with the knees bent and work towards achieving maximum knee bend with your foot tucked right back underneath the chair.

Hold the stick in front of the knee vertically (plumb line) so the base of the stick rests on the floor directly in front of the toes (not on the foot). Measure and record the gap (A) between the stick and your knee. The gap should decrease the more you bend your knee. You are aiming for the stick to touch the knee (B).

If you have achieved this target you are doing well as far as movement is concerned. You should aim to improve further by achieving a 2-inch gap between the stick and the toes when this plumb line assessment is done (C). This will achieve 110 degrees knee bend. For a more active lifestyle you should aim to take your foot back even further as you should be able to achieve 120 degrees knee bend following a total knee replacement.



## 2. Straightening your knee

While resting on your back in bed, place a plank/board under the operated leg. **To assess:** The operated knee should rest on the board. Tighten the muscle in your thigh so that your knee flattens down and your heel rises up off the bed slightly. If there is a gap under the knee it means the knee has to straighten further.



## 3. Strengthening your knee to improve knee function

Continue doing all the exercises your physiotherapist has given you. Use this test to monitor your progress.

Place a chair of the same seat height in front of you about 10 to 12 inches away from the knees while seated with your knees bent.

***If you have had a total hip replacement on the same side as the knee do not try this test.***

### **To assess:**

- Lift your operated leg onto the chair in front by bending the knee. Place it onto the chair and then rest your leg
- Assess to see if your knee is totally flat so there is NO bend in the knee
- Then lift the leg again to return the leg to its starting position. The foot should now be tucked back underneath the chair so the knee is bent as much as possible

**If you can complete this you are progressing as expected in regards to joint range and strength. Always compare with your opposite leg or ask your friend or family member to clarify.**



## Additional exercises

*If you have had a total hip replacement on the same side that you have had your knee operation, then you must do these exercises lying flat.*

Do not attempt to carry out all of these exercises in one go. Split the exercises into bed exercises and chair exercises.

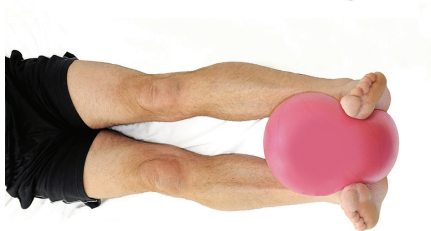
Also ensure you rest between exercises. It is important to build up from the number of repetitions recorded for each exercise gradually.



1. Push the front of your foot (toes) into the ball and aim to raise the heel and bend the knee slightly as you do this. This exercise is important for improving your walking pattern.



2. Place the ball between your knees. Keeping your knees straight gently squeeze the ball and hold for 5 seconds.



3. Place the ball between your feet. Keeping your knees straight gently squeeze the ball and hold for 5 seconds.



4. With the ball under your heel and your knee straight roll the ball side to side (left to right). Keep the whole leg straight like a log so it moves as a single unit from the hip joint.



5. With the ball under your knee straighten your knee so your heel rises off the bed. Hold for 3 seconds with your knee straight and then lower your heel back down to the bed slowly and controlled. With practice the ankle should raise higher than your knee.



6. Place the ball under your heel. Bend your knee by rolling the ball towards you. You can use the leg lifter initially to help you with this.



7. Place the ball under your knee. Bend your knee towards you, keeping the heel on the bed, to squeeze the ball between the back of your thigh and calf.



8. With the ball still under your heel, rest in this position for as long as you can tolerate, to stretch the back of your knee. Occasionally push your knee straight to add extra stretch.

*This exercise is very important to ensure you can maintain the ability to straighten your knee*



9. In sitting on a chair or on the edge of the bed, place the ball at the back of the knee, between the edge of the chair and your calf. Squeeze the ball against the chair to increase the bend in your knee. **Hold for 5 seconds.**



10. Place the ball underneath your foot. Roll the ball backwards and forwards to bend and straighten your knee 3 times. You can also circle the ball to improve the movement in your knee. This will also improve your circulation and therefore reduce the risk of blood clots.



- 12.** Place the ball between your knees. Very gently squeeze the ball and hold for 5 seconds. This will work your inner thighs.



- 13.** Place the ball between your feet whilst your feet are on the floor. Gently squeeze to hold the ball between your feet. Maintain this as you straighten your knees to lift the ball up off the floor in a slow and controlled manner. Hold your knees straight for 5 seconds as you continue to gently squeeze the ball. Lower your feet half way to the floor and hold again for 5 seconds.



- 14.** Place the ball between your knees. Very gently squeeze the ball and raise your operated leg to straighten your knee. **Hold for 5 seconds.** This helps the knee alignment and improves muscle balance and control.



- 15.** While sitting on a chair or on the edge of the bed, place the ball at the back of the knee, between the edge of the chair and your calf. Squeeze the ball against the chair to increase the bend in your knee and then raise your knee up towards you to bend at your hip.

**Hold for 5 seconds.**

***DO NOT raise the knee above the level of the hip if you have had a hip replacement on the side of your operated knee, unless instructed by a physiotherapist.***



- 16.** Place your operated leg onto a step. Lean onto your operated leg to bend your knee. Keep your back foot flat on the floor.

**Hold for 10 seconds.**

## Using an exercise bike

Using an exercise bike is an excellent activity to help regain muscle strength and knee mobility. At first, adjust the seat height so that the bottom of your foot just touches the pedal with your knee almost straight.

Peddle backwards first. Ride forwards only after a comfortable cycling motion is possible backwards.

As you become stronger (at about 6 weeks) slowly increase the tension on the bike.

Exercise for 10 to 15 minutes twice a day, gradually building up to 20 to 30 minutes, 3 to 4 times a week.

## Walking programme

It is important that you begin a walking programme once you get back home to build and maintain your muscle strength and your blood circulation system. You should aim to do this walking programme as well as your normal daily activities and your home exercise programme.

Aim to walk for a certain period of time rather than to walk a certain distance.

Gradually increase the time you walk, as you feel comfortable.

## Walking guideline

Days 1 to 4	5 minute walk - 2 times a day
Days 4 to 8	10 minute walk - 2 times a day
Days 8 to 12	15 minute walk - 2 times a day or 30 minute walk - once a day
After day 12	30 minute walk - once a day. You can increase the distance if your new joint feels comfortable

*Following knee surgery the exercises are your main priority. If you do too much walking you will find your knee swelling increases and it is harder to exercise.*

## Discharge advice

### Patient progress goals:

- Knee exercises to improve knee movement and strength
- Use the “Patient Self Assessment Tool” to monitor your progress
- Use ice and leg elevation to reduce pain and swelling
- Progress your mobility
- Balance your activities doing enough to feel you are improving, but not “over-doing” it. The swelling should gradually decrease as well as the pain.

### *Please remember*

*The body reacts to surgery by making scar tissue. The normal movement in the knee may never recover if exercises are not done to bend and straighten the knee. Being able to fully straighten your knee as well as bend your knee is essential for walking, as well as normal activities of daily life.*

## Car transfers

Ensure that the passenger seat is as far back as possible and is slightly reclined. Twisting to reach the seat belt is not advisable.

### To get into the car:

- Turn and back up to the car until the backs of your legs touch the car seat
- Give any walking aids to other person present
- Keep your operated leg extended, with your heel resting on the ground
- Hold onto the car frame or dashboard
- Bending on your un-operated leg, gently lower yourself onto the seat of the car
- Slide your bottom back towards the driver’s seat, without twisting from side to side (a cushion over the handbrake can be useful)
- Turn your body so that the sides of your legs rest against the side of the car footwell
- Lift your legs into the footwell, together if possible, leaning back slightly (recline seat if possible)
- Alternatively lift legs separately into the car, avoiding crossing the midline
- Reposition self on centre of car seat and adjust back rest without twisting
- Alternatively keep the back rest reclined slightly



### To get out of the car:

- Assistance is required to open the car door
- Recline the back rest
- Slide your bottom towards the driver's seat without twisting
- Turn body so that your outside leg rests against the inside of the car footwell
- Lean back slightly and lift legs over side of footwell
- Alternatively lift your legs separately out of the car, avoiding crossing the midline
- Slide forward to the edge of the seat, without twisting from side to side
- Keep operated leg extended with your heel resting on the ground
- Place un-operated foot on the ground and straighten the knee
- Push up from the seat/dashboard or pull up from door frame to a standing position
- Check your balance before taking any walking aids from the other person present

***Cars that are low to the ground are not advisable. 4x4/people carriers may need a temporary step to assist the transfer to prevent twisting or awkward movements.***



## Bathing/showering

### Getting into the bath using a bath board:

- Turn and back up to the bath until your legs are touching the side of the bath
- Put any walking aids down without bending or twisting
- Keep your operated leg extended with your heel resting on the floor
- Reach back for the board and gently lower yourself onto the board
- Slide back onto the board without twisting, keeping your hands behind your bottom
- Turn your body so that the sides of your legs rest against the side of the bath
- Lift your legs over the bath ledge and into the bath together if possible, making sure you lean backwards slightly
- Alternatively lift your legs separately into the bath, avoiding crossing over the midline
- Reposition yourself in the middle of the bath
- Use a long handled sponge to wash yourself from the water in the bath or use a shower attachment over the bath

## Swelling

It is normal to have leg swelling following your knee surgery. Swelling works with gravity so if you are standing or sitting for long periods with your feet on the floor the swelling may increase around the knee and ankle.

It is therefore important to elevate your feet regularly. The best way of doing this is lying on the bed for as long as necessary.

Whilst lying you could even do some bed exercises. Whilst resting on the bed you can use an ice pack on your knee. This will help further reduce swelling.

### **Ice packs**

Ice does help reduce swelling. If you have ice packs already at home then make sure they are ready in the freezer for when you get home. If you do not have ice packs then bags of peas are fine to use (just don't eat them afterwards!).

Never put ice packs directly onto your skin. Always use a clean tea towel or pillow case to wrap the ice pack in. Do not use the ice pack on your skin for more than 20 minutes. Always check the skin condition after using ice. Redness of the skin following the use of ice is expected.

### **From 6 to 8 weeks**

#### **After 8 weeks**

- It is usually okay to drive after 6 weeks. Please discuss this at your follow-up appointment
- Activities such as swimming are fine to return to as long as your wound is fully healed and you are confident to walk in the pool environment
- Stairs can be done with a normal pattern rather than one leg at a time

## Knee flexion progress chart

Please use this chart as instructed by your physiotherapist.

Patient name: \_\_\_\_\_

Recommended seat height: \_\_\_\_\_

Physiotherapist: \_\_\_\_\_

Date							
Gap measured AM							
Gap measured PM							
Date							
Gap measured AM							
Gap measured PM							

