



YOUR GUIDE TO KNEE REPLACEMENT

Contents

The knee and the development of osteoarthritis	3
What is a knee replacement?	4
What are the other options if I have osteoarthritis of the knee?	5
Why would I need a knee replacement?	7
Am I too young for a knee replacement?	8
What can I do before my knee replacement?	8
What can I expect after the operation?	9
What are the possible complications?	10
What exercises can I do?	11
Exercises	11
Phase 1	12
Phase 2	17

Introduction

Please take note of the following before starting any of the exercises in this guide:

- The information contained in this guide is intended to assist in managing your recovery.
- This guide is based on the latest medical research in the field and contains the best advice available to the best of our knowledge.
- This guide is complimentary to other medical services and is not intended as a substitute for a health care provider's consultation.
- Never disregard medical advice or delay in seeking it because of something you have read in this guide.

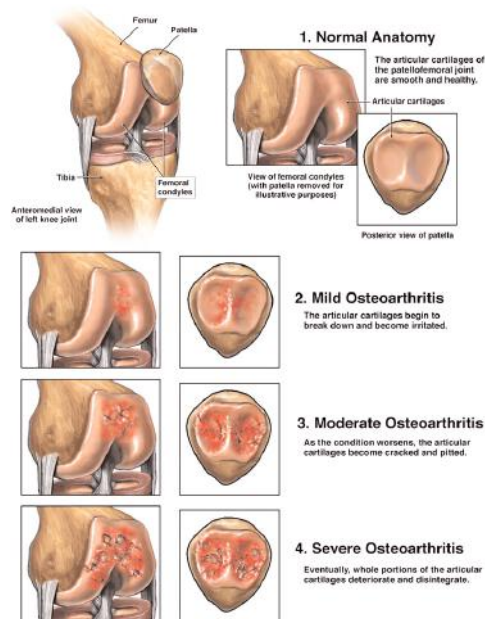
● Many people have found quick and lasting relief from their pain by acting upon the information provided, but everyone decides for themselves what to do with this information. Should you doubt a particular exercise in your situation, please consult your health professional.

When consulting your health professional, it is wise to take this guide with you to show them.

The knee and the development of osteoarthritis

Your knee joint is made up of three parts; your thigh bone (femur), shin bone (tibia) and your knee cap (patella). The bones involved in the knee joint are all covered in a hard, slippery, shock absorbing material called articular cartilage. The whole joint is held together by a joint capsule which is strengthened by ligaments on either side. This joint capsule is also lined with a membrane (synovium) that produces fluid in the joint which serves to nourish and lubricate the joint.

The cartilage surrounding the bones of the knee joint helps them slide over each other smoothly, but if there is damage to this cartilage, movement of the joint becomes painful and stiff as the surfaces are no longer smooth and the bone starts to become exposed. One of the causes of cartilage damage is the onset of osteoarthritis. Osteoarthritis is a slow process that develops over many years, and which results in the gradual roughening and thinning of the cartilage at the end of the femur and tibia bones and/or behind the patella.



As the cartilage thins, the bone reacts by thickening and the bone at the edge of the joint can grow outwards resulting in the formation of bony spurs (osteophytes). Other changes that may occur to the joint include, swelling of the synovium, increased production of fluid by the synovium, thickened and smaller ligaments, weakened muscles and general instability of the joint due to the changes that occur to the structures around it.

In many cases of osteoarthritis only small changes occur and these may also only affect one side of the joint. Sometimes however osteoarthritis may be more severe, affecting the whole joint and can result in pain, deformity, instability and general reduction in function. There are a number of factors which can increase the risk of osteoarthritis developing in the knee joint namely, ethnicity, obesity, previous injury of the knee and it is also more common in woman over the age of 50 than it is in men.

What is a knee replacement?

A knee replacement is an operation which involves the removal and replacement of the damaged or worn parts of the knee joint with a prosthesis that is made up of both metal and plastic parts. A knee replacement is performed on patients who have a lot of damage to their knee joint that is mostly caused by arthritis. Although there are a number of different types of arthritis, the most common type requiring a knee replacement is osteoarthritis.

of your whole knee, which can include the femur and tibia only, or the femur, tibia and patella. A partial knee replacement involves the resurfacing of one half of your knee i.e. the surface of the femur and tibia on the inner or outer side of the knee joint, and not the whole knee joint. Partial knee replacements will only be performed on people who have arthritis on one side of the knee joint. The operation can be done through a smaller cut, and usually movement will be regained quicker than with a total knee replacement.

There are two main types of knee replacements that can be performed, a total knee replacement and a partial (half) knee replacement. A total knee replacement involves the resurfacing

What are the other options if I have Osteoarthritis of the knee?

1. CONSERVATIVE TREATMENT

There are a number of things that you can try to help manage your pain before deciding whether to have a knee replacement. These will not take your osteoarthritis away, but may help to reduce the pain and improve your functional independence.

- **Physical Aids:** There are a number of devices that you can try that may help you move around with more ease and confidence. These include; walking aids, shock-absorbing shoes, braces, splints and knee tape. Your Doctor or allied health professional will be able to advise you on the benefit of these aids according to the severity of your condition.

- **Physiotherapy:** A physiotherapist or other allied health professional can teach and provide you with an exercise programme which will aim to strengthen the muscles that support the knee joint and help to keep you more mobile. They may also perform other treatment techniques which research has shown to be beneficial for improving pain and function such as; TENS and acupuncture.

- **Staying Active:** Performing regular exercise will help you to maintain the range of movement in your knee and could also help to reduce the pain. Swimming, walking and cycling have all been shown to have a beneficial effect on maintaining functional independence with osteoarthritis.

- **Medications:** Paracetamol and/or non steroidal anti-inflammatory medications may be suggested by your doctor and can be beneficial in reducing the pain and inflammation in your knee. Your doctor will probably suggest paracetamol first as they have fewer side effects. Other natural medications which research has shown to be beneficial is glucosamine and chondroitin, which both occur naturally in the body and can be purchased from a health shop or pharmacist.

- **Injections:** The two most common drugs that are injected into the knee joint are steroids and hyaluronic acid, which occurs naturally in the joint. Both can help to reduce the pain in your knee; however the effects may only last a few months.

2. SURGERY

There are a number of other operations which your surgeon may choose over a total knee replacement which can be performed on patients who have osteoarthritis of their knee and include:

- **Arthroscopy:** If conservative treatment has not helped, some surgeons may try putting a small camera into your knee, to clean out the joint and maybe even remove some of the damaged tissue which could be increasing your pain.

- **An Osteotomy:** This is an operation that is often used to realign the joint when there is arthritic damage on the one side of the knee. It involves the removal of a wedge of bone from the shinbone (tibia), from underneath the healthy side of the knee, and helps to transfer the weight bearing surface from the injured region to a non injured region of your knee. The success of this operation does however depend on a number of factors such as; selection of patient, the severity of the arthritis and post surgical maintenance. It is often used as an alternative to total knee replacement in younger and active

patients as it will allow them to use the healthy part of their knee and delay the need for a total knee replacement by about 10 years. It is however not recommended or effective for everyone who has osteoarthritis of their knee.

- **New interventions:** There are a number of new interventions being developed. Research on these newer methods is however still limited and they are mostly considered for younger individuals.

Why would I need a knee replacement?

Many people suffer from arthritis in their knees, but not everyone will need a knee replacement. Some may find that conservative treatment is sufficient and may not require a total knee replacement. Only a small percentage of people who have knee osteoarthritis will need a knee replacement, and this will be considered by your doctor under the following conditions:

- You have tried other conservative treatments as mentioned above, but the pain has not improved or is getting worse and your knee hurts most of the time
- The pain in your knee keeps you awake at night
- The pain in your knee is limiting your activities of daily living such as work, gardening, walking etc.

- You are depressed or anxious because of the pain in your knee.
- Your knee keeps giving way or locking
- X-rays show that your knee is severely damaged by arthritis and you are experiencing severe symptoms
- You are fit enough to go through a big operation

A knee replacement should help to relieve the pain in your knee as the damaged parts of the joint are removed. You should also have a greatly improved range of motion in your knee and will find activities of daily living a lot more manageable.

Am I too young for a knee replacement?

There is no specific limit to the age of a patient who can have a knee replacement, but surgery will be carefully considered by your surgeon if you are younger than 60 years of age. Because the materials that are used for a knee replacement currently only last for about 10-15 years (depending on how active you are), the probability of you requiring a second knee replacement is a lot higher, the younger you have the operation. If your knee replacement

wears out, a revision knee replacement will be performed, which is currently not as successful as the first knee replacement, and the rehabilitation after the operation is usually a lot more difficult. Therefore if you are younger and considering having a knee replacement, it is important that you are aware of these potential problems that you may have later in life, and should be sure that you have exhausted all other conservative treatments available.

What can I do before my knee replacement?

If you have been told that you need to have a knee replacement, there are a number of things that you can do before your operation which can help to improve your post op recovery and reduce your risk of having an operation.

Lose weight: Surgery is harder on people who are over weight, and excess weight will put excess pressure on your new knee reducing its longevity. There is also some research which suggests that overweight people are more likely to have problems after surgery.

Exercise: You can ask your doctor or allied health professional for strengthening exercises that you can do, which will help to strengthen your leg muscles without putting stress on your painful knee. This will help to improve your muscle strength before the operation which has been shown to have a significant positive impact on your post-operative rehabilitation.

What should I expect after the operation?

In Hospital

You may have a few tubes coming out of your knee which are drains that will help prevent fluid collecting under your scar. These will probably be removed 1 to 2 days after the operation. If you have had an epidural anaesthetic, you may not be able to feel or move your legs for several hours after the operation. Once this has worn off however your knee may feel stiff and sore, but should not be painful. If you experience pain, it is important to tell the nurse so that your medication can be adjusted appropriately. Your physiotherapy sessions will start on the day after your operation, and will continue throughout your hospital stay. They will help to get your knee moving, get you mobile and walking within about 3-4 days (initially with the use of a walking aid), and will ensure that you are fully functional and independent in your required daily tasks before discharging you home. You may be required to wear compression stockings on your legs to help prevent a DVT (blood clot).

At home

Initially you will need to continue using the walking aids you were provided with in the hospital but may be able to progress to reducing the amount of aid required with walking. It is important on returning home that you continue with the exercises that you were shown in the hospital. You should be able to start driving again after about 6 weeks, but it is important that before returning to driving that you consult with your doctor first. Continuing with physiotherapy post operatively is advised as the physiotherapist will be able to help you progress your exercise programme, as well as ensure that you continue to regain as much range of movement in your knee as possible to enable you to return to independent activities of daily living.

What are the possible complications?

There are a few problems that could occur during or after the procedure, but most people are not affected at all. The main complications of any operation are bleeding during or soon after the procedure, infection and an abnormal reaction to the anaesthetic. Some of the complications which are specific to a knee replacement are:

- Getting an infection in the wound or joint. Antibiotics are given during surgery as a preventative measure against this.
- There is a possibility that the new knee will not be fully stable which may require a further operation to rectify this.
- The kneecap may become dislocated after surgery.
- If there has been a lot of damage to the bones of the knee joint, the operated leg may be a slightly different length after the operation. This can be rectified with a small raise in the shoe of the shorter side if necessary.

- The build up of scar tissue in the knee may restrict movement, however this can be addressed by your physiotherapist who can try and break down this scar tissue. In severe cases a further operation may be required to break down the scar tissue to improve range of movement.

- After any big operation it is possible to develop a blood clot in the veins of the legs (DVT) which may break off and form a blockage in the lungs. It is usually treatable, and many measures will be taken before during and after your operation to help prevent this from happening (i.e. wearing a compression stocking).

It is important to remember however that risks for any operation will differ for every individual and therefore it is important to discuss these with your surgeon, to determine how these risks may relate to you. It is also important to identify with your surgeon if there are any measures that you can take to reduce the risks before the operation.

What exercises can I do?

It is important that you are aware that this is a general exercise programme for patients who have had a knee replacement, but should not replace anything that you have been told by your doctor or allied health professional. It is important before starting any of the exercises that you consult with your doctor or allied health professional to ensure that

they are right for you at your stage and level of post operative recovery. The main objective after a knee replacement operation is to regain as much range of movement in the knee as possible, and to maintain adequate strength and flexibility to help prolong the life of your new knee, and to help you to be as strong and independent as possible.

Exercises

- Keep all exercises in your pain free limits. **Trying to work in painful ranges will only prolong your recovery.**
- If you experience pain during any of the exercises, decrease the intensity of the exercises by:
 - decreasing the number of sets
 - decreasing the number of repetitions
 - decreasing the range of movement
 - decreasing the resistance
- Do all exercises slowly and breathe normally.
- Progress gradually according to your own level of comfort.
- Following exercise, stiffness or fatigue may result but should not last longer than 24 hrs. The symptoms of your injury should not be aggravated.

Exercises phase 1

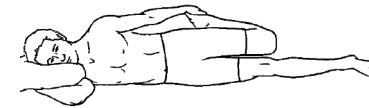
All exercises should be performed with control and in a pain free range of movement

STRETCHING

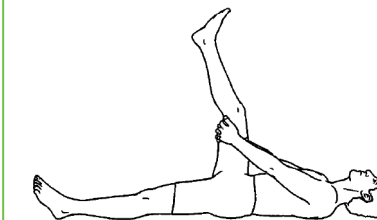
- Repeat each of these stretches **3 times** (on both sides if necessary).
- Hold each stretch for at least **30 seconds**.
- Hold a steady stretch, **do not bounce**.

QUADRICEPS STRETCH

Lying on your right side, your right arm extended up to cushion your head, use your left hand to grasp your left ankle as you bend your left



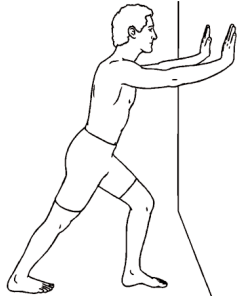
knee backwards. You should feel the stretch along the front of your thigh. Repeat this twice. It is important to keep the other leg bent at both the hip and the knee, so as not to hyperextend your back. You can use a towel to help with the stretch if you are unable to bend your knee too far, by wrapping it around your ankle and holding the other end.



HAMSTRING STRETCH

Lying on back with one leg straight, raise the bent knee towards you and hold behind your knee. Now slowly straighten your knee until a stretch is felt in the back of the thigh. You can also use a towel to help with this stretch if needed

Exercises phase 1 (continued)

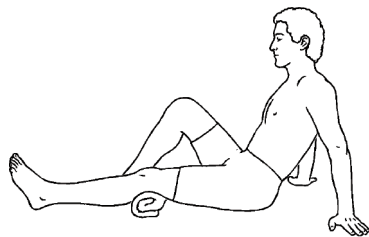


CALF STRETCH

Keeping back leg straight, with heel on floor and turned slightly outward, lean into wall until a stretch is felt in calf.

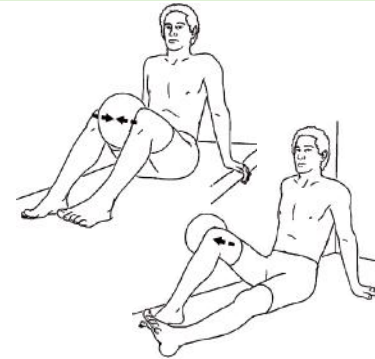
STRENGTH EXERCISES

- Repeat **2 sets** of **10-15 repetitions** on each side (unless otherwise stated in the exercise)
- Perform each exercise in a controlled manner and within a pain free range of movement
- If you are experiencing pain with any of these exercises and have already reduced your range of movement, it is important that you consult with a physiotherapist or allied health professional.



TERMINAL LEG EXTENSIONS:

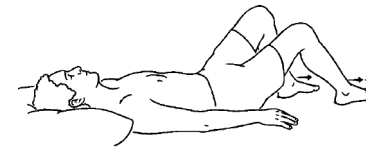
Sitting on the floor with one leg outstretched in front of you and a pillow/ rolled up towel under the knee. Push your knee into the pillow, straightening it as much as you can. Your foot should lift off the floor as you do this. It is important however that you concentrate on contracting your quadriceps muscle (thigh muscle) and straightening your knee, not necessarily being able to lift your foot off the floor as this will happen as your knee gets straighter and stronger



BALL SQUEEZING AND PUSHING

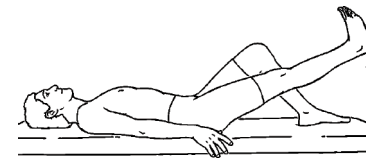
(a pillow can be used)

Lying on your back with your knees bent, firstly place the ball between your knees and squeeze. Hold for 10 seconds and repeat 10 times. Now place the ball between your knee and the wall, push out for 10 seconds and repeat 10 times on each leg



HEEL SLIDE

Start lying on your back with one knee bent and the other straight. Now contract your quadriceps on the straight leg, as above, and keeping your heel dug into the floor, slowly slide this leg up, bending it as much as you can pain free. Only work in your pain free range and therefore gradually increase the range of your bend as you are able.

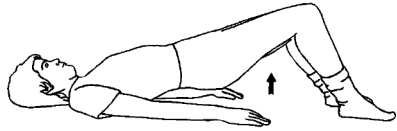


STRAIGHT LEG RAISES:

Lying on your back with your arms next to your side and one leg out stretched in front of you. Keep one leg bent, foot flat on the floor, and now raise the other leg to the height of the bent knee, keeping the leg straight. Repeat 10 times on each leg in each foot position

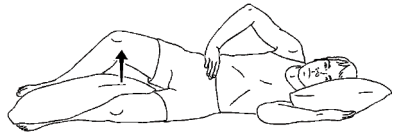
1. Toes pointing straight upwards
2. Toes pointing outwards.

Exercises phase 1 (continued)



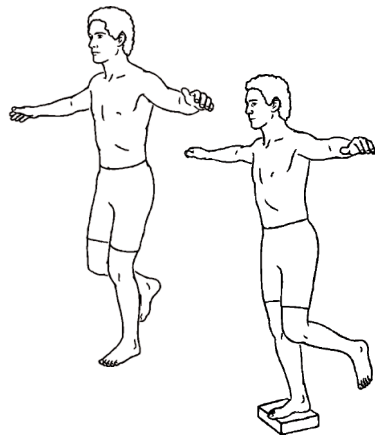
BRIDGING

With your pelvis in neutral (hip bones facing towards the ceiling) and TA contracted (pull belly button to spine), slowly raise buttocks from floor, keeping your pelvis stable and body in a straight line. Hold for 10 seconds and repeat 10 times



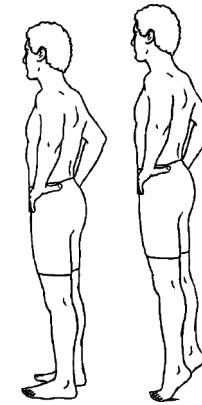
OYSTER EXERCISE

Assume a side lying position with the knees bent and a black theraband tied around both knees. Keeping the feet together, lift the top knee up against the band as high as possible without the hips opening out, i.e. hips stay square and forward. Hold for 10 seconds. Repeat 10 times on each side.



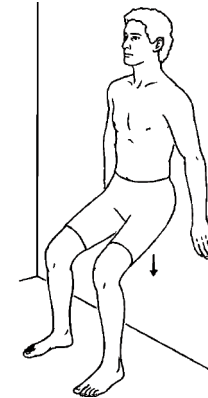
STORK STANDING

- Balance on one leg for 30 seconds and repeat with the other leg.
 - Repeat the above with your eyes closed.
- Progress the above to standing on an unsteady surface, e.g. a cushion or a narrow piece of wood.



CALF RAISES

Supporting yourself against a wall, raise up onto your toes in the following manner: First onto your big toe, then onto the middle of your foot and then onto your little toe. Repeat this sequence 10 times.



WALL SLIDES

Stand leaning up against a wall, your feet a little away from the wall with your toes pointing forwards. Push your back against the wall. Slowly lower your body into a seated position and hold this position for 10 seconds. Complete 10 repetitions. Make sure that you work in a pain free range of movement, that you don't go down further than 90° in your knees, and that your feet are far enough forwards that your knees do not go over your toes

Exercises phase 2

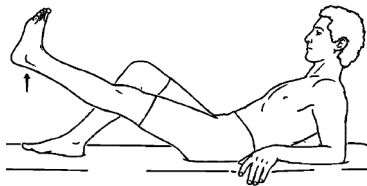
Phase 2 exercises can be started when you are able to do all the Stretching and Strengthening exercises in Phase 1 with no adverse effects and good control. Continue to

work in a pain free range of motion, and continue to do the stretching exercises of phase 1 with each exercise session

STRENGTH

● Repeat **2 sets** of **10-15 reps** on each side (unless otherwise stated in the exercise)

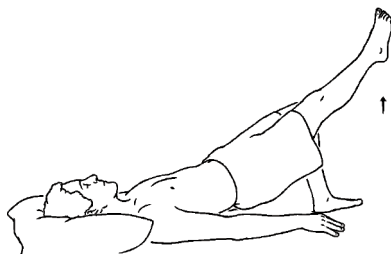
● Maintain good control and form throughout the exercise i.e. in both directions of movement



STRAIGHT LEG RAISE

Rest on your forearms, and lift your leg to the height of your bent knee. Keep your leg straight and don't let it rest on the floor on the return down. Repeat 10 times on each leg in each foot position

1. Toes pointing straight upwards
2. Toes pointing outwards.



BRIDGING WITH ONE LEG EXTENDED

Lying on your back, bend both knees to 90° with your feet flat on the floor. Tighten T.A. and lift your pelvis and lower back off the floor. Now lift one foot off the floor, hold for 10 sec, put it back down, repeat with the other foot, and then relax completely. Begin again. Keep the T.A. and Glutes tight throughout the movement to keep the pelvis stable and without dropping to the one side. Repeat 10 times per leg.

PRONE LYING HAMSTING CURLS

Lying on your stomach with one end of the band tied around your ankle and the other end tied to the top of a

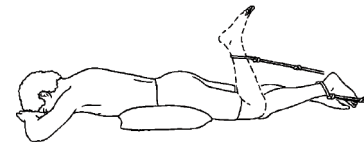
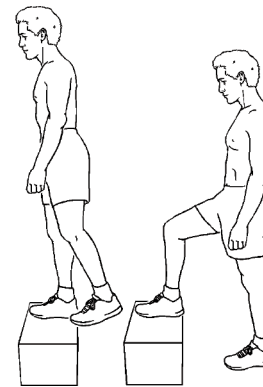


table leg. Start with your knee straight and, whilst keeping your hips on the floor and stable, bend your knee pulling against the band. Attempt to bring your foot down towards your buttocks without allowing your knee or hips to lift off the floor. You can get theraband from a local sport store or



STEP-UPS

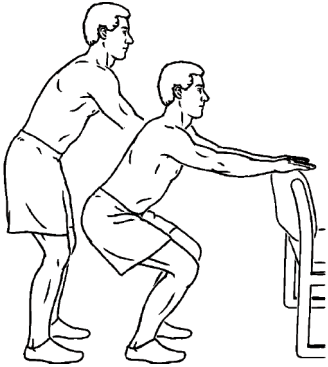
Stand on one leg on a step facing up the stairs. Slowly lower yourself by bending your knee. Return to starting position without pushing off with the opposite leg. Have your weight on your heel more than your toe, but foot flat, and your knee should be in line with your second toe when bending it i.e. be aware that your knee and foot do not roll inwards. Perform 2 sets of 10 reps per leg.



STEP-DOWNS

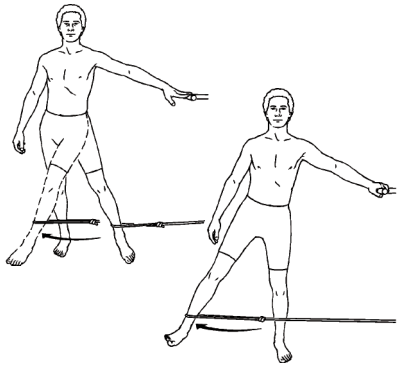
Stand on one leg on a step facing down the stairs. Slowly lower yourself by bending your knee. Return to starting position without pushing off with the opposite leg. Be aware that your knee and foot do not roll inwards, that your weight is mostly on your heel with your foot flat, and that your knee goes down in line with your second toe.

Exercises phase 2 (continued)



MINI SQUATS

Stand with your feet hip width apart and hold your hands out in front of you (you can hold on to a chair if you need). Now bend the knees keeping your feet flat on the floor, and ensure that your knees do not go past a 90° angle. Return to the starting position. Make sure that both movements are slow and controlled and that your knees go straight down (no rolling inwards)



HIP ABDUCTION AND ADDUCTION

Attach a theraband around the table leg ensuring it is secure. Place the furthest leg in the loop of the band and raise it out to the side away from your body. Keep your knee straight and pelvis stable. Now turn around and bring your leg away from the table towards your midline (the other leg). Make sure you keep your body stable and just use your leg

Contact us

This guide is designed to assist you in the self-management of your injury/condition.

We are here to assist your recovery in the shortest but safest possible time. If you have any uncertainties or queries regarding the information, please do not hesitate to contact us on:

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