

# Innovation in knee arthroplasty

## Personalised instrumentation meets optimised stability



# IMPROVE YOUR QUALI



# TY OF LIFE

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This brochure has been produced to help you feel safe and confident about your operation. Questions you may have regarding the surgery and post-operative recovery, are addressed.



# IMPROVE YOUR QUALI



## INTRODUCTION

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**The knee** is the largest and most complex joint of our body. It **has a very difficult job; carrying the weight of our body with every step we take!** Therefore, it is not surprising that knees are the joints in our body that are most vulnerable to injuries or developing degenerative joint diseases, such as arthritis.

One of the consequences of any joint disease is **pain**.

Statistics show that roughly one third of the American population over the age of 45 suffers from knee pain. Knee pain may limit your daily activities, affect your fitness level, emotional health, and your **general well-being!**

## Can you get rid of the pain?

There are a variety of surgical and non surgical solutions to treat your disease. Your doctor will prescribe the most suitable treatment, according to your age, activity level and expectations.

Knee pain and stiffness caused by advanced arthritis is severely limiting and your physician may suggest you undergo a total knee replacement.

# 1 - THE KNEE AND THE





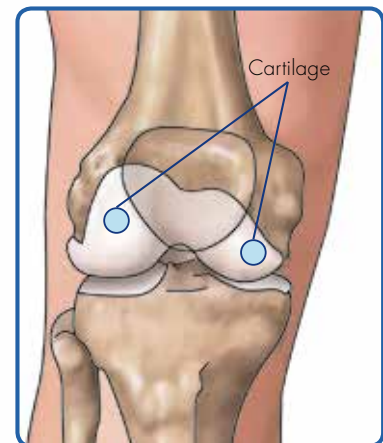
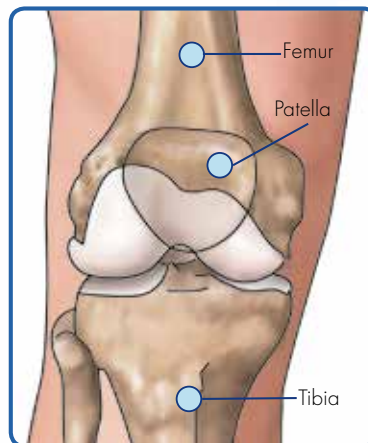
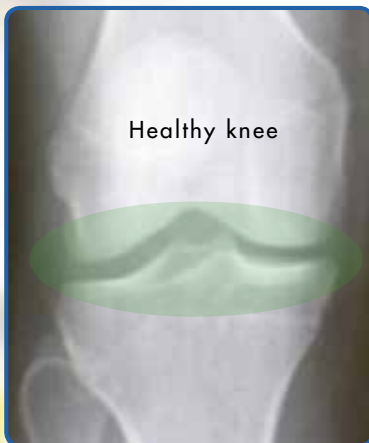
# ARTHRITIS

## ANATOMY OF THE KNEE

The knee joint is comprised of three bones: the thigh bone (femur), the shin bone (tibia) and the kneecap (patella). When you flex, or straighten your leg, the thigh bone turns on the shin bone, while the kneecap runs along the end of the thigh bone. The leg movement is driven by the thigh muscles, the biggest one being the quadriceps, located in the front of the thigh.

The thigh and shin bones are connected by ligaments, which give stability to the knee joint.

The surface of the kneecap, thigh bone and shin bone, where the bones come in contact, is coated with a smooth tissue called "articular cartilage". The cartilage, together with a substance called synovial fluid, prevents the bones from rubbing against each other and causing damage.

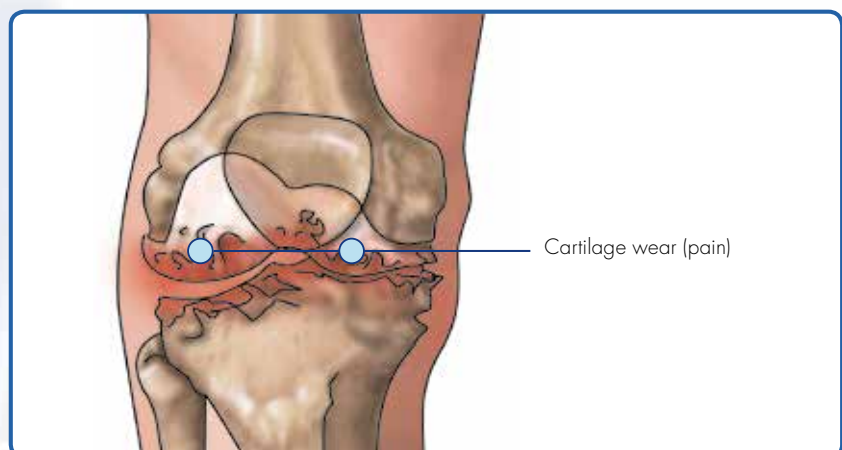
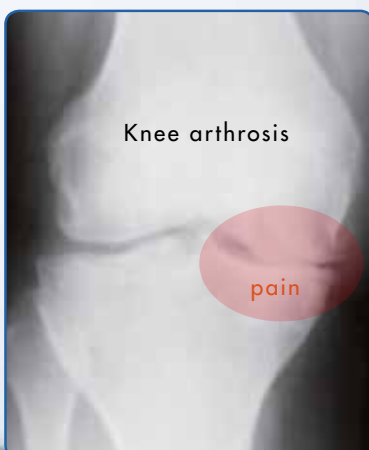


## ARTHRITIS OF THE KNEE

With arthritis, the cartilage deteriorates and the bones start rubbing directly against each other. The result is joint **pain**, which can become worse over time, and limits motion.

Knee replacement is a common treatment for severe arthritis.

**Successful knee replacement surgery can result in dramatic pain relief and improvement in knee joint function.**



# 2 - GETTING READY FOR



## MEDICAL EXAM

Before undergoing your total knee replacement, your doctor will prescribe a complete physical examination to assess your condition and to evaluate factors that could potentially interfere with your surgery.



# R YOUR OPERATION

## TESTS

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Your doctor may ask you for blood and urine tests and possibly a cardiogram, prior to your surgery.

## CHECK YOURSELF

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### 1 Check your skin

If your knee and leg have any skin infections or irritation, contact your orthopaedic surgeon prior to surgery: he or she will tell you how best to prepare your skin for surgery.

### 2 Check your teeth

The incidence of infection after knee replacement is very low, but even an infection far from the knee joint can spread through the bloodstream to the new knee. Prevention is the best way to avoid early problems. Therefore, you should contact your dentist to have your teeth checked before your Total Knee Arthroplasty surgery.

## MEDICATION

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Prior to surgery, provide your surgeon with a complete list of any medication you are taking including the dosage and time(s) taken. He or she will inform you if you need to stop or change any medication.

## SPECIAL EQUIPMENT

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After the surgery, special equipment, such as support stockings and crutches, may be needed. Your doctor and therapist can assist you with obtaining these aids.

# 3 - TOTAL KNEE REPLA

## WHAT IS A TOTAL KNEE REPLACEMENT?

Total knee replacement surgery aims to substitute the bone and cartilage of the joint damaged by arthritis with metallic and plastic implants.

The surfaces of the thigh and shin bones are replaced with high-resistant metallic components, called the **femoral component** and **tibial baseplate**.

Between the femoral component and the tibial baseplate, a **plastic tibial insert** is implanted. It replaces the cartilage function allowing the thigh and shin bone to slide on each other. All materials used in a total knee replacement are highly biocompatible.



**FEMORAL COMPONENT**  
Metal



**PLASTIC TIBIAL INSERT**  
Polyethylene



**TIBIAL BASEPLATE**  
Metal



# CEMENT

## WHY TOTAL KNEE REPLACEMENT?

With almost 50 years of history, total knee replacement surgery is a very common and safe procedure for the treatment of severe arthritis. Approximately 1,000,000 knee replacements are performed annually worldwide.

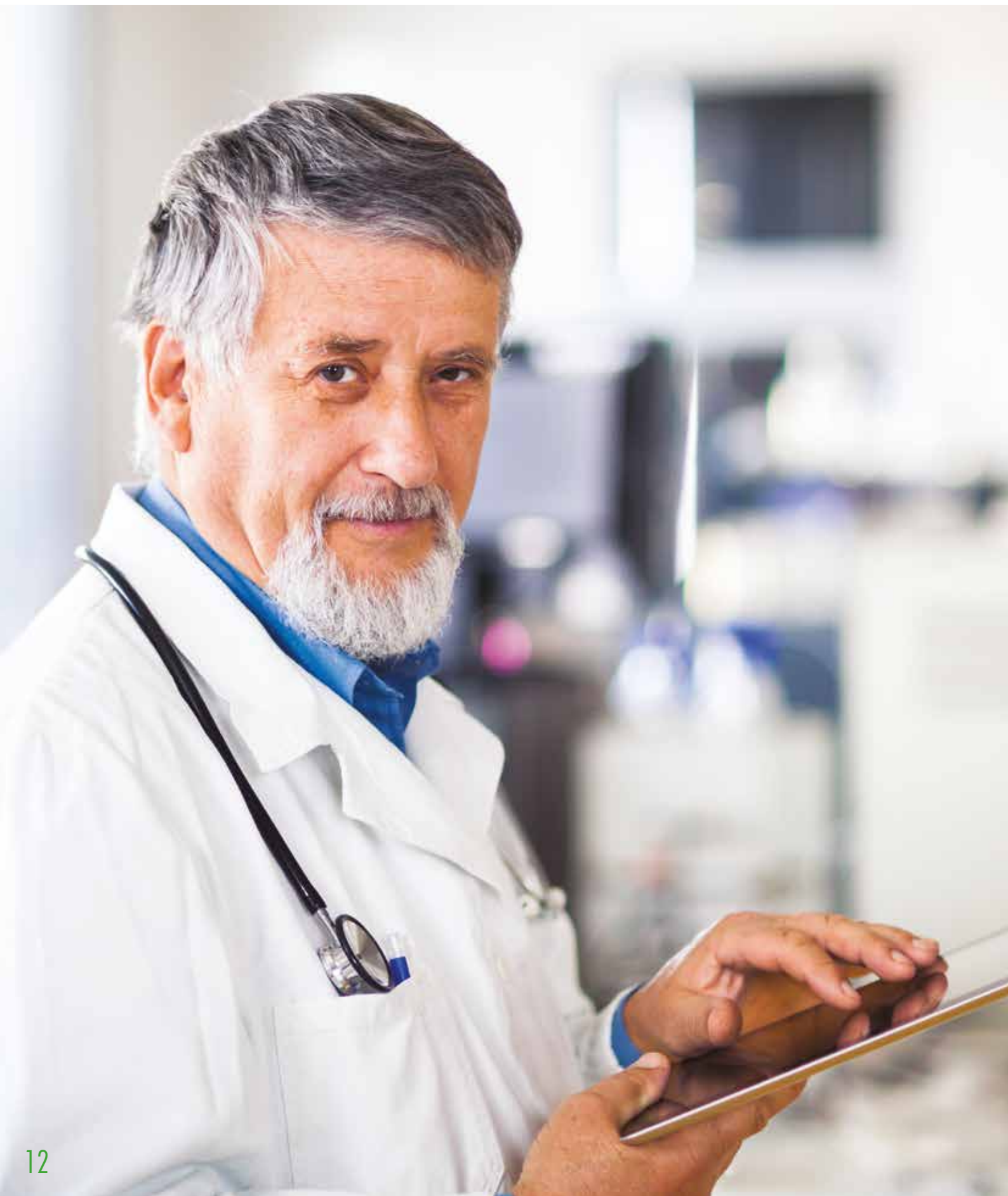
The main benefits of a successful total knee replacement are:

- 1 Reduction of knee pain**  
Pain may be rapidly and dramatically reduced, potentially eliminated!
- 2 Recovery of mobility**  
You may dramatically improve the mobility of your knee.
- 3 Improvement in quality of life**  
Your everyday activities may no longer be limited by pain and reduced mobility!





# 4 - CONVENTIONAL PRO



# PROCEDURES AND MYKNEE

The positioning of a knee prosthesis is achieved using surgical instruments which prepare the bone for implanting the prosthesis.

## CONVENTIONAL PROCEDURES

In conventional procedures  
**the surgical instruments are  
the same for all patients.**

Conventional instrumentation doesn't allow the surgeon to tailor the surgical procedure to the patient.

## MYKNEE: INNOVATION

MyKnee is a surgical instrument which  
**fits your knee accurately,  
because it is created for you.**

Medacta, analyzing a diagnostic image of your leg, provides your surgeon with an instrument created specifically for your knee.

MyKnee technology allows preparation of the bones for implanting the prosthesis,  
**respecting your natural anatomy.**



**DESIGNED FOR YOU, BY YOU**

# 5 - WHY CHOOSE A MY





# KNEE?

MyKnee is an **instrument created for every patient**

beginning with an image of the knee.

## MYKNEE TECHNOLOGY POTENTIALLY ASSURES THE FOLLOWING RESULTS:

### 1 More accurate positioning of the prosthesis

MyKnee fits the shape of the knee accurately, allowing precise preparation of the bone for implanting the prosthesis<sup>[1,2]</sup>. Each phase of the operation is planned by the surgeon prior to the operation. The surgeon analyzes a tridimensional model of the patient's knee and is able to create a plan specifically for that patient. It has been proven clinically that accurate positioning of the implant results in increased survivorship of the prosthesis<sup>[14]</sup>.

### 2 Less traumatic procedure

Conventional procedures require damaging anatomic structures (e.g. medullary canal) in order to position the surgical instruments used to implant the prosthesis. MyKnee preserves these structures, allowing a dramatic decrease of blood loss and risk of embolism<sup>[15,16]</sup>.

### 3 Faster operation

The use of the MyKnee technology is very simple and straightforward. It potentially allows the surgeon to reduce operative time, thus decreasing the time under anesthesia and potentially reducing the risk of infection<sup>[17]</sup>.

## Benefits of MyKnee

MyKnee technology allows for a **more accurate, faster and less traumatic** total knee replacement, by the use of a **surgical instrument tailored for the patient**.

# 6 - THE MYKNEE ADVE



MyKnee is a surgical instrument designed to **fit your knee with unmatched precision.**

## 1 Get an image of your knee

The surgeon will ask you to have a diagnostic scan (CT or MRI) of your leg.

## 2 Replication of your knee

Medacta will create a plastic 3D model of your knee using the image from the diagnostic scan in order to select the best implant for you.

## 3 Creation of MyKnee

Using the model of your knee, Medacta, together with your surgeon, will create your personalized surgical instruments.



## 4 Preparation for surgery

Prior to the surgery, your surgeon will receive the MyKnee instruments and a plastic replica of your knee. This will be analyzed by the surgeon in order to prepare accurately for your knee operation.



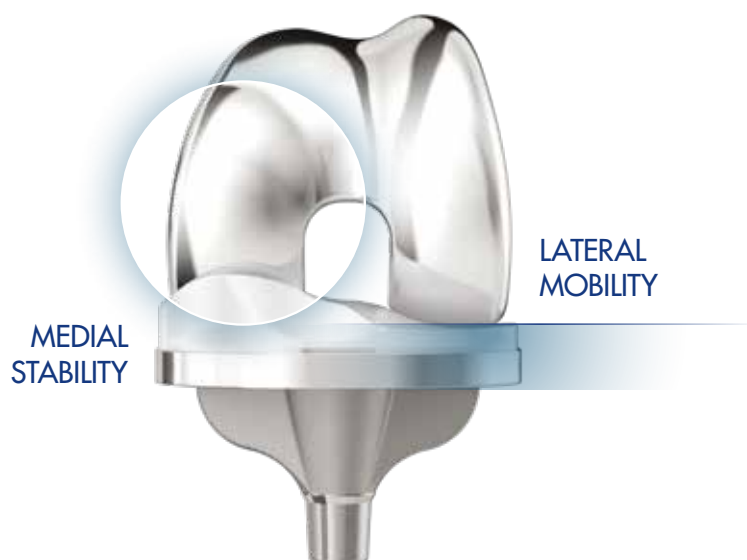


# 7 - GMK SPHERE: STA

## GMK SPHERE: THE MEDIALLY STABILIZED KNEE

A normal knee is a complex structure: when it bends, the lateral (outer) side rolls back while the medial (inner) side remains stable.

The GMK Sphere knee is designed to provide a more natural motion that replicates the movement of the healthy knee: it allows **stability** in the **medial side** through a ball-in-socket mechanism and accommodates the **natural movement** of the **lateral side** without imposing any constrained motion.



## STABILITY IS IMPORTANT FOR PATIENTS

The GMK Sphere medial ball-in-socket mechanism can replicate the function and the stability provided by the natural stabilisers of the knee, most of which are removed during total knee replacement.

Stability is important for common activities such as ascending and descending stairs, standing up from a seated position, getting into a car as well as more demanding activities like shopping and gardening.

Published studies\* actually confirm that **patients prefer knees with a medial ball-in-socket** compared to other conventional knee designs, as they feel more natural, more stable and stronger during daily activities.

\* Pritchett JVV, "Patients Prefer A Bicruciate-Retaining or the Medial Pivot Total Knee Prosthesis", J. Arth 2011.

# BILITY FOR LIFE



## A TAILORED SOLUTION FOR EVERY PATIENT

The innovative design of the GMK Sphere has been validated via a database containing more than 15,000 CT and MRI knee scans. The GMK Sphere is available in a variety of sizes to offer a tailored solution for every patient.

In addition, the implant was created with an anatomically designed patello-femoral joint, which, potentially helps to **decrease post-operative knee pain** during normal daily activities.

# 8 - WHILE YOU ARE IN



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TAKE WITH YOU



# THE HOSPITAL

## THE SURGICAL PROCEDURE

When the surgical team is ready, you will be taken to the operating room. The surgery may be performed through a mid-vastus (through the front) or a vastus (off to the side) approach to the knee joint. The damaged bone is removed from the articulating surfaces of both the femur (thigh bone) and tibia (shin bone) so that the new metal prosthesis can be fitted. After the new joint is in place, skin incisions are closed with staples, stitches, or surgical glue.

## THE DAY OF YOUR OPERATION

**The surgical procedure usually takes 1 to 2 hours.**

Surgery will begin with pre-surgical preparation followed by monitoring in the recovery room. The time away from your room will be longer than the operation due to time needed for your preparation for surgery, administration of anaesthesia and monitoring as you recover from the anaesthesia. Care is taken to relieve pain that may occur after surgery and regular checks will be made by the nurses.

## AFTER THE OPERATION

Doctors, nurses and therapists will take care of your recovery by defining the most suitable rehabilitation programme for you and accompanying you through the gradual recovery process.

Rehabilitation may begin the day of the operation, subject to your doctor's recommendations.

However, you will progress to weight bearing activities as tolerated and may discontinue assistive devices as your comfort level improves, always following your doctor's recommendations.

- 1 A complete list of your routine medication including dosage, times and your x-rays
- 2 All papers for hospital admission including a copy of insurance cards (if applicable in your country)
- 3 Any equipment (crutches, stockings, etc.) ordered for you by your doctor

# 9 - TAKING CARE OF YOU

## LONG TERM CARE OF YOUR NEW KNEE

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Follow your orthopedic surgeon's instructions carefully to minimize any potential complications which may affect your recovery. These complications are quite infrequent and some simple rules can dramatically reduce their likelihood.

### DON'T FORGET

- 1 Lead a healthy and active life.
- 2 In case of fever, throat inflammation, pulmonary inflammation or similar, tell your physician that you have a knee implant.
- 3 Undergo regular general check-ups.

# OUR NEW KNEE

If you have any concerns about your new knee, don't hesitate to contact your physician and, finally, ...

...enjoy your new knee!





# IMPROVE YOUR QUALI

*My experience:*





# TY OF LIFE



# TY OF LIFE



## Redefining Better in Orthopaedics and Spine Surgery

For further information visit our website:

[medacta.com](http://medacta.com)

