

# Patient information

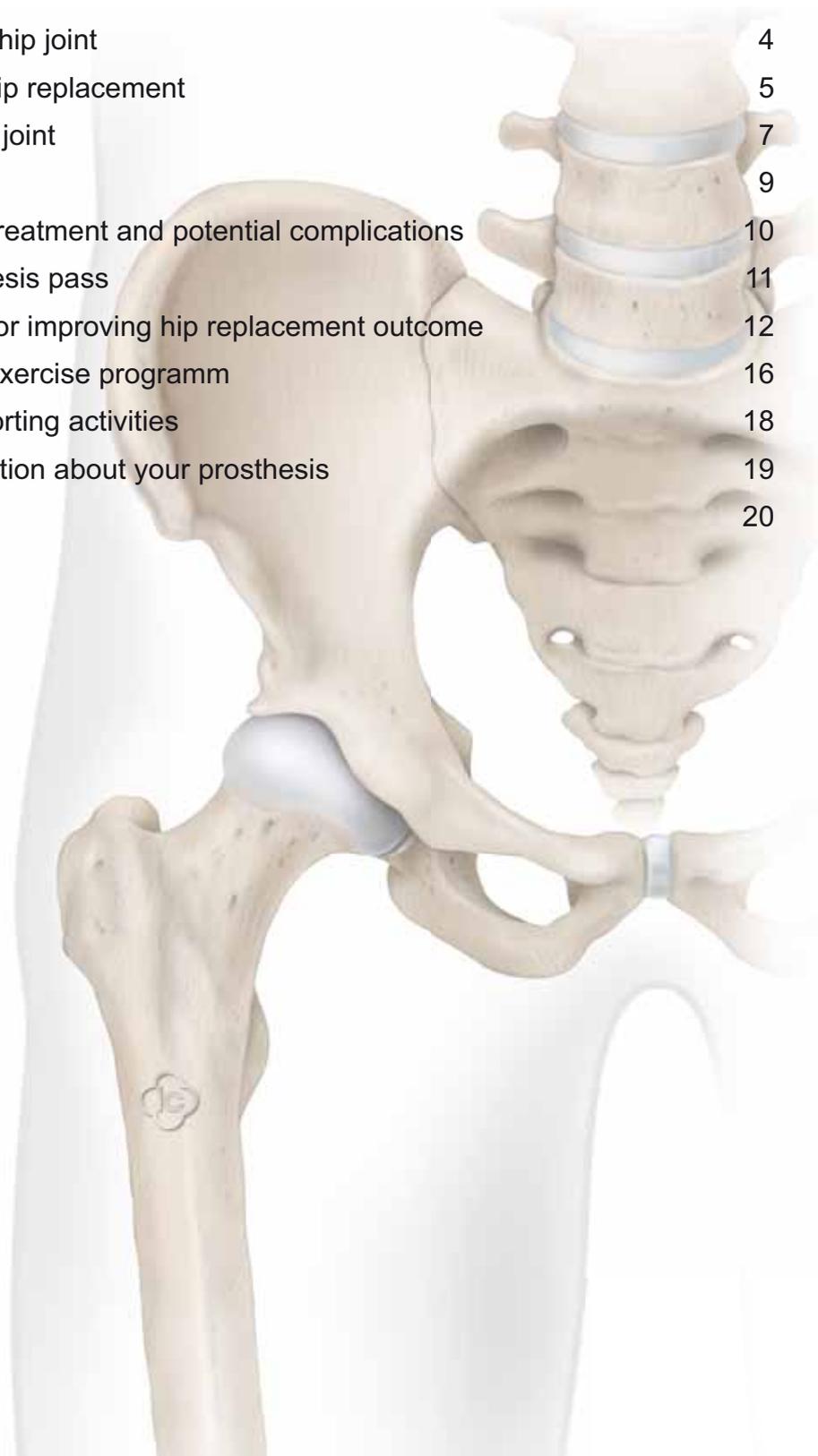


*Your new  
hip joint*



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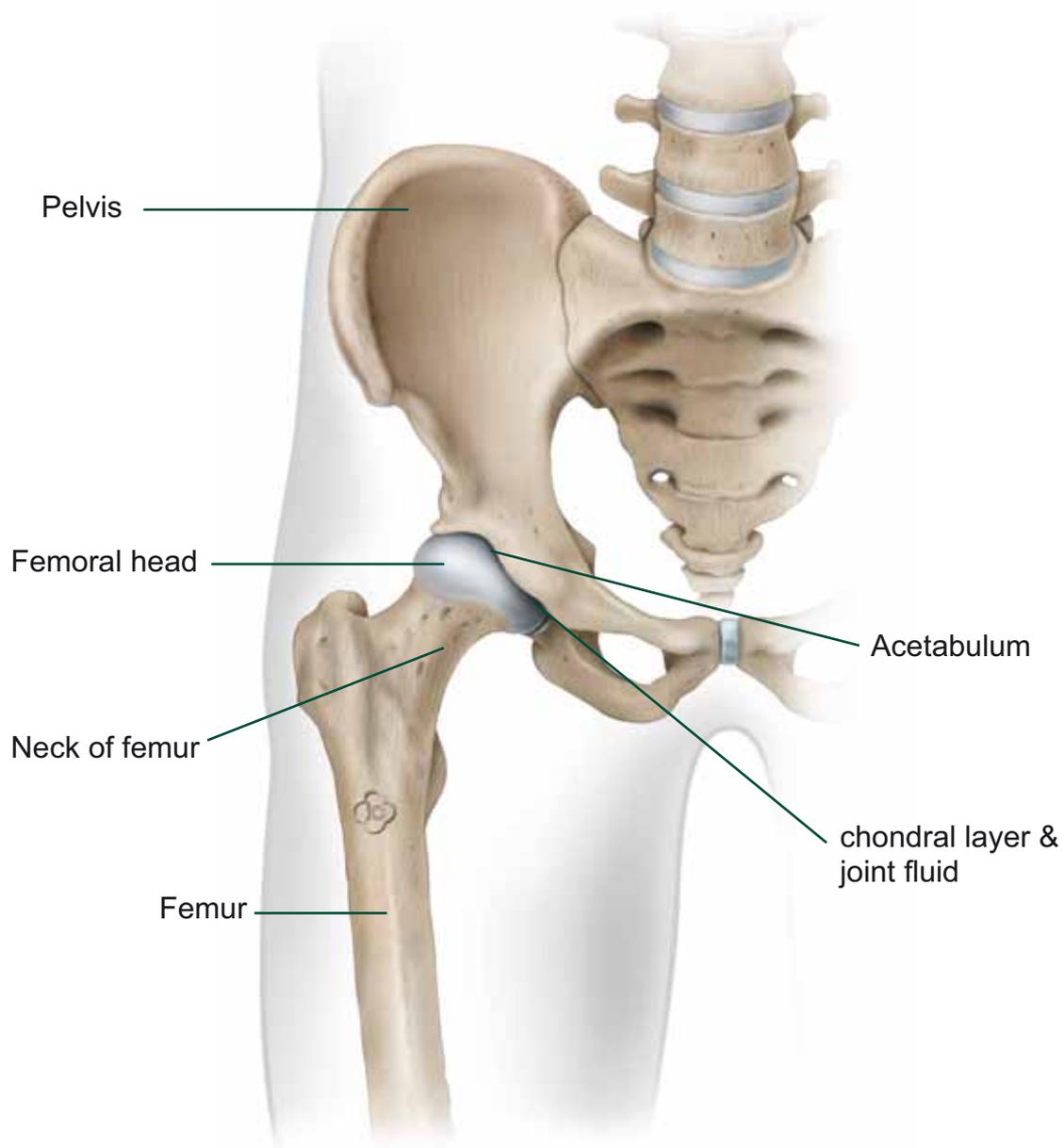


This brochure is a general guide. It is designed to give you some information on the principals and the procedure for the implantation of a hip prosthesis. Additionally this brochure provides you with useful advice and exercises for improving the outcome with your new hip replacement. This brochure is not a substitute for advice or treatment protocols given by your attending physician and healthcare professionals.

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## Structure of the hip joint

The hip joint consists of the acetabulum of the pelvis and the spherical femoral head as part of the femur which is commonly known as the thigh bone. This joint is also commonly referred to as a ball and socket joint due to its physical appearance and the way its functions. In a healthy hip joint the bony tissue is covered with a cartilaginous synovial tissue. This ball and socket joint or articulation is encapsulated by a joint capsule which produces a nourishing synovial fluid. This fluid acts as a lubricant for the joint and aids in smooth motion in daily activity. As a ball and socket type joint the hip allows different movements like rotating, stretching and bending. The hip joint itself relies upon other anatomical structures to improve its stability. These are strong ligament and powerful muscles that attach the thigh bone to the pelvic.



## Reasons for the hip replacement

There are approximately 200.000 total hip replacements yearly in Germany, making the total hip replacement one of the most common orthopaedic procedures performed so that nowadays it is regarded as a standard orthopaedic procedure throughout the world.

The reasons for a hip replacement are wide ranging.

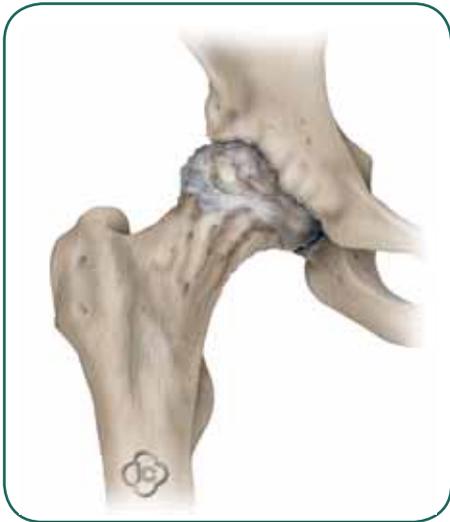
Osteoarthritis is by far the most common cause for artificial hip joint replacement. It is caused by the gradual wearing of the cartilage in the joint, due to an imbalance between pressure and carrying capacity of the hip joint, that leads to a limitation of the movement and pain. Pain during walking and in resting are indications that osteoarthritis may be present in your joint. A genetic pre-existing condition, or an injury which has not fully healed completely or a joint malposition can also be the reason for arthrosis.

Femoral head necrosis is the dying off of bony tissue due to lack of blood circulation. The causes for femoral head necrosis are not known in the most cases.

Another condition which is treated by total joint replacement is hip dysplasia. This is a joint misalignment which is characterized by a deficient formation of the hip joint which does not allow the femoral head to glide around in the acetabulum. The femoral head is not positioned centrally when the joint is at rest and this causes point pressure within the joint that leads to abrasion and wear. Due to this a dysplastic joint is more prone to dislocation.

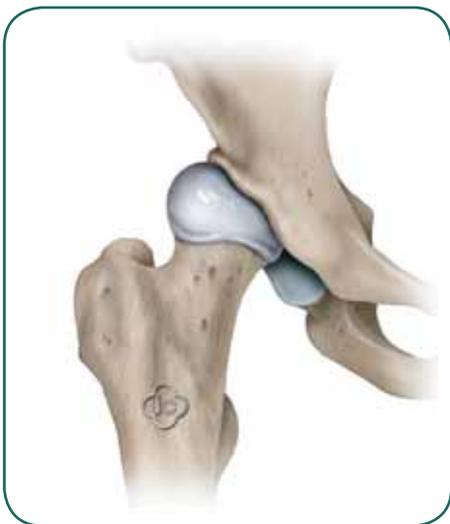
Femoral neck fracture are typical injuries in the elderly due to osteoporosis.

## Reasons for the hip replacement



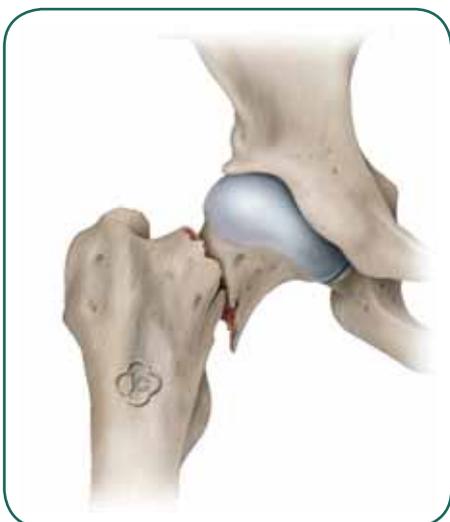
### *Hip osteoarthritis and femoral head necrosis*

The joint space between femoral head and acetabulum is significantly reduced, or can even be non-existent. This is caused by an imbalance between load and load capacity of the hip joint. A consequence of this is that cartilage tissue is destroyed increasingly over time.



### *Hip dysplasia*

This is congenital malformation of the acetabulum. This condition occurs in children so the femoral head is still cartilaginous and soft compared to an adult. The femoral head does not engage correctly in the hip socket which leads to an unstable hip joint.



### *Fracture of the neck of the femur*

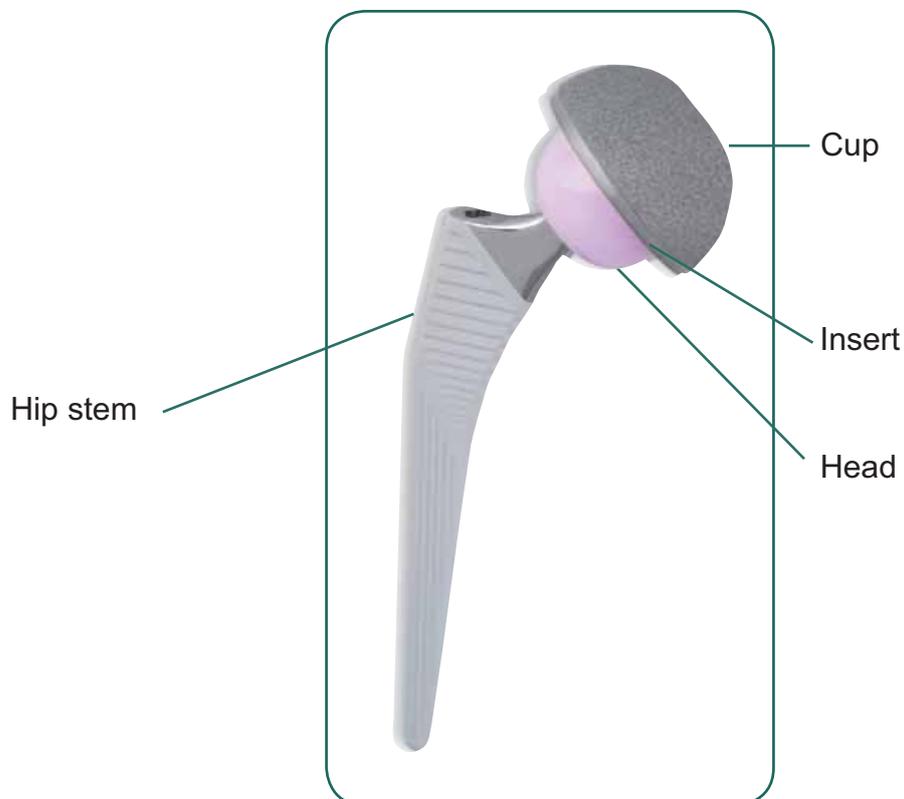
This is a hip fracture near the femoral neck of the femur. A particularly common injury in elderly woman who have weakened bones due to osteoporosis.

## The artificial hip joint

Since the worn articular cartilage cannot be restored, a hip joint destroyed by osteoarthritis is usually completely replaced.

The aim of the artificial hip joint is to restore the mobility and ambulation as well as remove the joint pain.

A hip stem which is fixed into the thigh bone through a cemented or non cemented option, and a femoral head which is attached the hip stem so that it articulates with the acetabulum cup - thus artificially recreating the hip joint. The choice of the endoprosthesis depends on the underlying bone quality, the age, body weight and the physical activity demands of the patient. Since the introduction of Hip arthroplasty in the 1960's there has been a vast amount of research into varying materials and today there is a wide choice of artificial components.



## The artificial hip joint



### *Short stem prosthesis*

Cementless short stem prosthesis as a bone-saving and thigh neck sustaining procedure is a gentle alternative to conventional total hip prosthesis for young and active patients with good bone quality.



### *Cemented total hip prosthesis*

The joint socket and the joint capsule will be replaced. The implant components will be fixed with bone cement. Frequently used for elderly people with decreased bone strength.



### *Cementless total hip prosthesis*

Anchoring of the implant components without bone cement. The cup is pressed into the bone. The fixation of the hip stem occurs in the thigh bone by a seized mechanism.

## The operation

The assessment of the extent of the hip osteoarthritis is made radiologically and then a surgical planning is made. The procedure itself is carried out either under general anesthesia or a spinal anesthetic and takes about 50-120 minutes. The procedure is carried out in the operating theatre, where the joint is initially exposed. The joint capsule and the destroyed femoral head are removed. Then, a metal acetabular cup or polyethylene acetabular cup is applied. The metal cup is provided with an insert of ceramic or plastic. To fix the hip stem the femur is reamed to the correct corresponding depth of the stem. The hip stem is then inserted and anchored either cementlessly or by cementing the stem in the created cavity in the thigh bone. Subsequently, a metal- or ceramic head is mounted on the stem and the stability and flexibility of the new joint is checked. Then the soft tissues are closed and a drain is inserted in order to drain wound secretions, this is removed after 2-4 days.



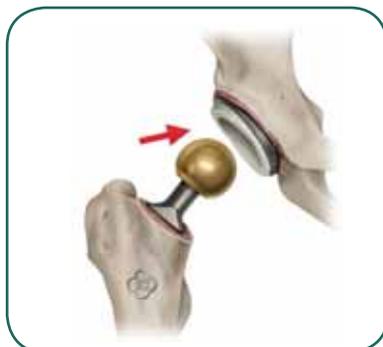
The diseased femoral head from the thigh-bone is removed.



Placing the artificial cup socket.



Placing the artificial hip stem.



Finally, the femoral head or ball is fitted on the hip stem and the functionality checked. Different neck lengths and size options of the various components ensures an optimal outcome.

## Post-operative treatment

Exercises are started on the first day after surgery, this is because the risk of complications are significantly reduced by early mobilization. A cemented hip prosthesis allows for full weight bearing immediately postop. While a cementless arthroplasty the operated leg may be only partially loaded about a period of 6 weeks. The range of movement is limited during the first weeks after hip replacement, for example, certain rotational movements, as well as crossing your legs must be avoided. Intensive physiotherapy promotes muscle building and fast recovery to unaided walking. The rehabilitation program are of a great importance to the successful outcome and speedy recovery of the patient. The patient's cooperation helps to achieve this goal quickly.

## Potential complications

In addition to general surgical risks such as intra-operative bleeding, secondary hemorrhage and infection there are also specific complications which can occur during and after surgery. Even with careful surgical technique damage to major nerves and blood vessels can occur. This can lead to a dislocation of the artificial joint. For patients who initially cannot be fully mobilized after surgery, there is an increased risk of thrombosis. This risk is due to early start of physiotherapy, as well as the regulation of embolism stockings and syringes.

# Your endoprosthesis pass

After the implantation of an artificial joint, you will receive a patient / endoprosthesis pass which will include the following information:

-  Personal data
-  Type and Model of the endoprosthesis used
-  technical data of the implant
-  information which hip was operated
-  date of the surgery
-  information on follow-up and follow-up appointments

<p><b>Hinweise information</b></p> <p>⊕ Ein künstliches Gelenk ist geringer belastbar als ein natürliches. Vermeiden Sie extreme Belastungen. Ratlos sind gleichmäßige Belastungen wie beim Radfahren oder Schwimmen. Als Träger einer Endoprothese sollten Sie jede Infektion frühzeitig (z.B. an Zähnen, Hautwunden etc.) behandeln lassen. Nutzen Sie das Angebot zur Nachuntersuchung, so können evtl. Komplikationen frühzeitig erkannt werden.</p> <p>⊕ An artificial joint can't withstand the load a human joint can. Please prevent extreme loading. Constant loads as they appear while bicycle riding and swimming are appreciated. Any infection (i.e. dental and uretral infection) should be treated immediately. Regular follow up investigation allow to face possible complication early.</p> <p>Version 3.0 Datum/valid: 30.08.2017</p>	<p><b>Nachuntersuchung follow up</b></p> <p>1. Nachuntersuchung follow up date</p> <p>2. Nachuntersuchung follow up date</p> <p>3. Nachuntersuchung follow up date</p> <p>4. Nachuntersuchung follow up date</p> <p>5. Nachuntersuchung follow up date</p> <p>6. Nachuntersuchung follow up date</p> <p>Name des Operateurs surgeon's name</p> <p>Wundstempel stamp of hospital</p> <p>www.Implantcast.de</p>	 <p><b>endoprosthesis pass</b></p>  <p><b>Endoprothesenpass</b></p>	<p><b>Bescheinigung certification</b></p> <p>Vorname first name</p> <p>Name surname</p> <p>Geburtsdatum date of birth</p> <p>Straße street</p> <p>PLZ/City zip/town</p> <p>Telefon phone</p> <p>⊕ Der Inhaber des Passes hat ein künstliches Gelenk, das teilweise aus Metall besteht. Metalldetektoren können evtl. ansprechen.</p> <p>⊕ The owner of this certification has an artificial joint partly consisting of metal. Detectors may respond.</p> <p>www.Implantcast.de</p>
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<p>Implanttyp type of implant</p> <p>Operationsdatum date of surgery</p> <p><input type="checkbox"/> links left <input type="checkbox"/> rechts right</p> <p>Metallallergie metal hypersensitivity</p> <p><input type="checkbox"/> ja yes <input type="checkbox"/> nein no</p> <p><input type="checkbox"/> zementiert cemented <input type="checkbox"/> zementfrei cemented</p> <p>Nutzen comments</p>	<p>Implanttyp type of implant</p> <p>Operationsdatum date of surgery</p> <p><input type="checkbox"/> links left <input type="checkbox"/> rechts right</p> <p>Metallallergie metal hypersensitivity</p> <p><input type="checkbox"/> ja yes <input type="checkbox"/> nein no</p> <p><input type="checkbox"/> zementiert cemented <input type="checkbox"/> zementfrei cemented</p> <p>Nutzen comments</p>	<p>Implanttyp type of implant</p> <p>Operationsdatum date of surgery (optional)</p> <p><input type="checkbox"/> links left <input type="checkbox"/> rechts right (for 2. Operation for 2nd surgery)</p> <p>Metallallergie metal hypersensitivity</p> <p><input type="checkbox"/> ja yes <input type="checkbox"/> nein no</p> <p><input type="checkbox"/> zementiert cemented <input type="checkbox"/> zementfrei cemented</p> <p>Nutzen comments</p>	<p>Implanttyp type of implant</p> <p>Operationsdatum date of surgery</p> <p><input type="checkbox"/> links left <input type="checkbox"/> rechts right</p> <p>Metallallergie metal hypersensitivity</p> <p><input type="checkbox"/> ja yes <input type="checkbox"/> nein no</p> <p><input type="checkbox"/> zementiert cemented <input type="checkbox"/> zementfrei cemented</p> <p>Nutzen comments</p>
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Note: Please carry your endoprosthesis pass with you at all times. It can be useful in emergency cases.

## Tips and tricks for improving hip replacement outcome

The long-term success of a joint replacement is influenced by the treatment and behavior after surgery. After having learnt new patterns of going about things during recuperation everyday living will have to be faced. This will include all of the then occurring situations and strains.

Your new hip arthroplasty takes 7 months to fully integrate into the body and it advisable that heavy loads should not be placed on the prosthesis for this period.

Below are some recommendations for improving the outcome of your operation, which would be especially important to adhere to in the first 6 months after surgery:

### ***Are to be avoided:***

-  Abrupt and sudden or jerky movements
-  Endurance sports, frequent and prolonged standing
-  Standing or Hitting of the leg
-  Sitting in deep seating furniture such as sofas and lounge chairs
-  Strong and disproportionate weight gain
-  Lifting heavy loads

### ***Recommendations for ease of every day functionality:***

-  Good, flat and non-slip footwear
-  footwear with Velcro or elastic laces
-  seat cushion as an increasing support

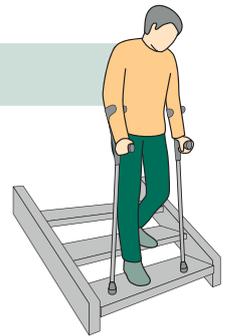


### Walking with crutches

Lean forward, with slightly bent elbow to the handles of the crutches. Enter the weight on the hands and not via the forearms.

### Descent of stairs with crutches

During descent of the stairs, please place the healthy leg furthest from the railing and place the crutches on the next lower level below, the healthy leg is then brought to this level. Then with the help of the railing or crutches the affected leg is then also placed on the level. The process is then repeated step by step.



### Ascent of stairs with crutches



You should always go up the stairs with the affected side closest to the railing. Take the second crutch in the other hand and carry parallel to the ground. Start the climb with the healthy leg, put the crutch on the same stair height and pull up the affected leg. Repeat this process step by step.

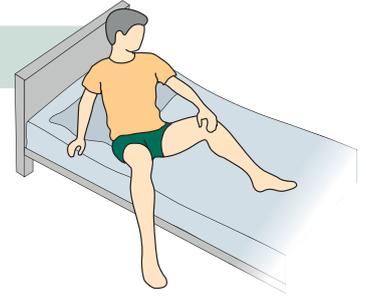
### Sitting and Standing

It is recommended to use a chair with arm rests, which can provide additional support for achieving sitting position or rising from a sitting position. It is important to ensure that, when sitting the knee joints will not be higher than the hip joint. Additionally when sitting, the crossing of your legs should be avoided.



### Going to bed

To do this, raise first the healthy and then the operated leg into the bed. For patients who like to sleep on their side it is recommended a pillow which is placed between the legs in order to prevent the crossing of the legs involuntarily while sleeping. The ideal sleeping position would be lying on back with your legs slightly parted.



### Getting up from bed



Bring your buttocks towards the edge of the bed. First lift the healthy on to the floor followed by the operated leg. A low bed height places additionally strain on the newly operated joint. A bed height of 70cm is ideal. If your bed is too low consider adding a second mattress in order to achieve a more optimal height.

### Dressing

Consider using dressing aid like a dressing stick. You catch the waistband of your clothes with the clamp of the stick and pull your clothes over the affected leg while sitting. With the help of crutches, you can stand up and pull the garment up completely.



### Sexual intercourse

Sex is allowed after 6-12 weeks, but only by utilizing limited movements initially. Hip extensions of more than 90° should be avoided.





## Showering

Utilise non-slip mats in front of the shower and in the shower, in order to avoid slipping. Utilising a stool would also reduce risk of falls and minimize undue stress to the newly operated joint. You should enter the shower stall with the healthy leg first, followed by the operated leg.

## Bathing

Again, the following tools are recommended: standing solid stool, grab handle and non-slip mats. First place the healthy leg in the bathtub. Then lift the operated leg carefully over the edge.



## Entering a car

Sit in the front with the car seat extended as far back as possible to ensure plenty of room. Sit in the driver's seat 90 degrees to the car. Your legs will be still outside the car. Then turn the entire body with the legs into the car. Use your hands to support your leg by lifting the thigh into your car.

## Exercise program at home

The below exercise program should be implemented after surgery, for optimal results. It is recommended that a continued long-term program is maintained ideally for eight weeks post-surgery. Perform the exercises 1-10 daily over a period of 30 minutes.

***For questions or problems please contact your surgical team or your physiotherapist.***

1. From a supine position stretch your hips and arms extended next to your body. Tense your abdominal muscles. Pull the tips of your toes to your body and push the heels to the floor. Hold for 5 seconds.

times daily       repetition



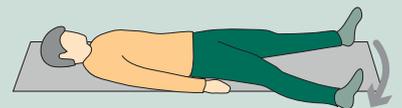
2. From the supine position raise the foot of the affected leg until the thigh is about 90 ° of flexion. From week 2, you can try to bend the hips completely by moving the knees with hands to your torso.

times daily       repetition



3. From the supine position, lift the leg which should be straight about 10cm, swing away from the you to the side. Without pause and repeat.

times daily       repetition



4. From the supine position bend both knees and slowly lift the hips up from the base. Hold the position for a while and release the tension.

times daily       repetition



5. Lie down on the back with a roll under your knees. Lift the feet by tightening the muscles. A weight around the ankle can increase the muscle training.

times daily       repetition



6. Lie on your stomach, with arms and leg extended and tighten the buttocks muscles so that the spine bends to the hollow. Hold and relax in rotation.

times daily       repetition



7. Stand on the non-operated leg and grip a handle. Extend the operated leg to the side and run it slowly out away you're weight bearing leg. Please keep your body straight. After a few seconds of holding the position, release the tension.

times daily       repetition



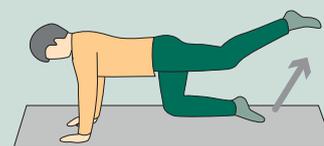
8. Place the operated leg on a flat stair. Shift your body weight slowly on the foot of the operated leg. Do not lift the heel during the exercise from the stage.

times daily       repetition



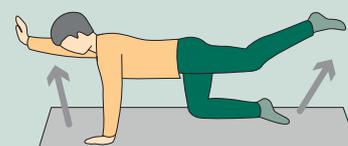
9. Get into an all four position. Supported on hands and knees, lift alternately from the right to left leg stretched and go back to the starting position.

times daily       repetition



10. Leaning on hands and knees, lift the left arm and right leg stretched from your body. Hold this position for approximately 5 seconds.

times daily       repetition



## Returning to sporting activities

After the intergration of the prosthetic components into the bones, a highly stable artificial joint replacement is achieved. However, an artificial joint no matter how good, does not compare with a natural one, so some adaption may be required. Avoid sports that require shock movements, jumping from great heights, or that require a high range of motion which may subject the joint to high loads.

### ***Suitable sports:***

-  Cycling
-  swimming
-  hiking
-  Nordic walking
-  Cross-country skiing
-  dancing

### ***In consultation with your doctor the following sports can be operated:***

-  Golf
-  jogging
-  weight training

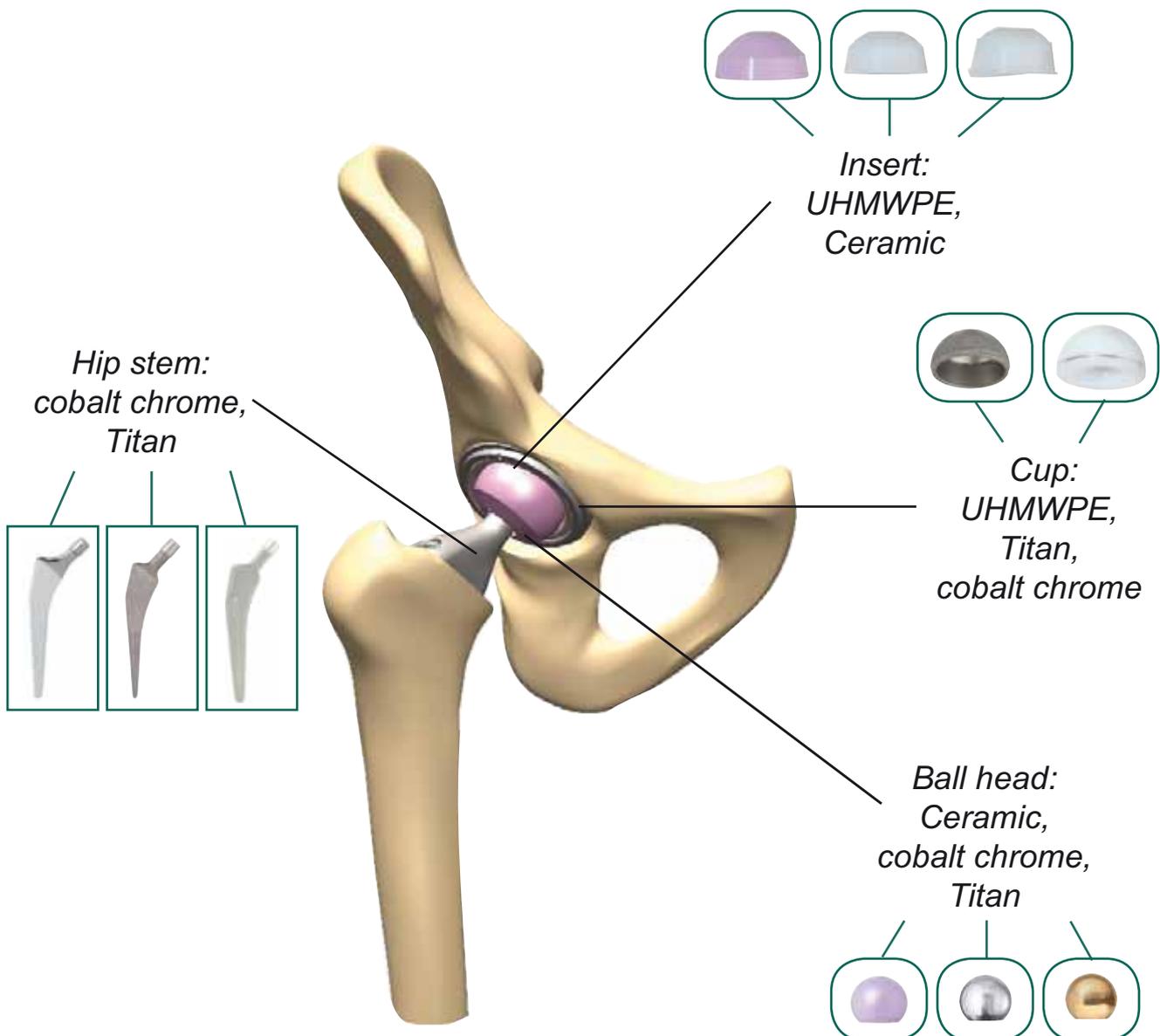
### ***Less suitable sports:***

-  Ball game, e.g. soccer
-  squash
-  horseback riding
-  tennis
-  Alpine skiing

The points listed above are corresponding to any general recommendation and can vary from patient to patient. Your age, athletic experience as well as your general physical condition affect the overall situation. Please consult your attending physician directly with any questions.

## General information about your prosthesis

The artificial hip joint consists of an artificial acetabulum, a hip stem and a ball head, which is placed on the hip stem and moves in the cup. These components can be made of various materials, all of which have to meet the highest demands for use, and are thoroughly tested. Some of the various different materials are briefly outlined below.



Properties of these materials:

- Highly resistant to corrosion
- Biocompatible
- Low friction
- High resistance to wear
- mechanical strength











implantcast GmbH  
Lüneburger Schanze 26  
21614 Buxtehude  
Germany  
phone: +49 4161 744-0  
fax: +49 4161 744-200  
e-mail: [info@implantcast.de](mailto:info@implantcast.de)  
internet: [www.implantcast.de](http://www.implantcast.de)

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