

medi



## Freedom and safety in treatment

An informative brochure with  
an individual exercise plan

medi GmbH & Co. KG  
Medicusstraße 1  
95448 Bayreuth  
Germany  
T +49 921 912-0  
F +49 921 912 780  
ortho@medi.de  
www.medi.de



4 402639 872821 6  
9/ES7/09.2012

medi. I feel better.



# medi presents

medi is a global leader in the healthcare market and has been producing medical devices since 1951.



## Phlebology

medi's compression stockings for your venous health, for lymph node therapy and also as a vital preventative measure against thrombosis.



## Orthopaedics

medi supports and braces to treat joint disease and injuries, such as arthritis, osteoporosis, cruciate ligament rupture and many more.



## CEP

Your partner for sports compression. Compression sport socks and sportswear for improved performance, endurance and faster regeneration!



## Hospital

For your recovery in hospital - medi's medical stockings to prevent thrombosis - to reduce the risk of thrombosis.



## Prosthetics

Innovative prosthetic components and products against phantom pain by medi for leg amputees.



## Dear Patient,

---

**Your doctor has prescribed the knee brace M.4 X-lock for you. This means you now have a totally new innovation for the treatment of your knee injury. You can look forward to more freedom and flexibility during the course of your treatment due to its simple handling and outstanding medical efficacy.**

---

You will soon notice how easily you can integrate the M.4 X-lock into your everyday routine. You will achieve outstanding treatment results and will soon be back on your feet.

On the following pages, we have compiled some information and notes on how to use the orthosis as well as some helpful exercises.





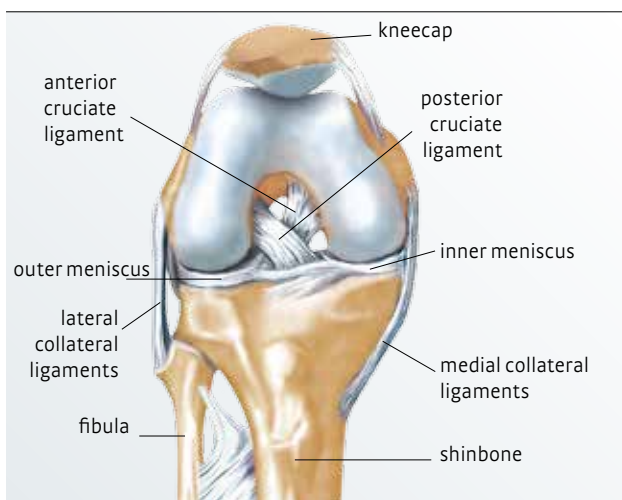


# The knee

---

The knee joint is one of the most complicated and frequently used joints in the human body. The shapes of the bones, ligaments, tendons and menisci interact perfectly to allow the many movements of the joint, which is basically a hinge.

---



## **Bone**

The bones that form the joint are the thigh bone (femur), the shinbone (tibia) and the kneecap (patella). The kneecap lies in front of the knee joint and protects it.

## **Meniscus**

The menisci lie between the thigh bone and the shinbone. Your knee joint has a medial (inner) and a lateral (outer) meniscus, both of which consist of elastic collagen fibre tissue.

Their primary function is to distribute the pressure evenly throughout the knee (buffer function). They are also responsible for the stability of the entire knee joint.

### **Cartilage**

The ends of the thigh bone and the shinbone are covered by smooth structures that form the cartilage. One of the functions of the cartilage is to dampen sudden strong impacts on the joint like a shock absorber. This ensures „frictionless“ joint movement.

### **Ligaments**

The ligamentous apparatus of the knee joint consists of collateral and cruciate ligaments. There are two ligaments in the centre of the knee joint that cross each other - the anterior and the posterior cruciate ligaments. The medial and lateral collateral ligaments are situated on the inner and outer sides of the knee respectively. The ligaments consist of collagen fibres and ensure that the knee joint stays strong.

### **Tendons**

The ends of the muscles are known as tendons. The muscles taper off into tendons, which join them to the bone. The kneecap is surrounded by two tendons: the quadriceps tendon (tendon of the thigh muscles) above, and the patellar ligament below.

# Knee injuries

## **Meniscus injuries**

The menisci work very hard because they are permanently exposed to strong stresses. And it is not just their structure that is responsible for the fact that they eventually „wear out“.

The water content gradually diminishes over time and the meniscus becomes brittle and begins to tear - often without any outside influences. Treatment always depends on the degree of severity of the injury. Minor injuries respond well to conservative therapy, while more serious damage usually requires an operation that is performed with keyhole surgery of the knee. If the meniscus is sewn back together a suture remains. If this is in a region of the meniscus with a good blood supply, the chances of healing are very high.

## **Rupture of the cruciate ligament(s)**

Ruptures of the cruciate ligaments are serious and usually chronic knee injuries. A rupture of the anterior cruciate ligament is typically caused by a change of direction when running or jumping. Excessive bending or straightening movements of the knee can also cause a tear. A tear in the anterior cruciate ligament is frequently associated with a meniscus injury. Simultaneous rupture of the medial collateral ligament results in complex instability of the joint.

Ruptures of the posterior cruciate ligament



are much less common. This usually occurs as a result of a strong outside force on the knee (e.g. a heavy knock with the knee bent). This is also usually treated with surgery. However, it can also be treated conservatively.

### **Collateral ligament injuries**

Damage to the collateral ligaments occurs either in isolation or in conjunction with cruciate ligament and meniscus injuries. These are caused by sideways stress on the knee joint. Treatment can be conservative or surgical depending on the degree of severity and the type of injury.

### **Patellar luxations and MPFL (Medial Patello Femoral Ligament) replacement grafts**

Luxation of the patella is a knee injury in which the kneecap (patella) is displaced outside its groove. The most common causes are a hereditary malformation of the kneecap and the patellofemoral groove or a deformity of the knee joint. After the first luxation, there is a risk of further luxations and damage to the joint's cartilage. This must be treated by a suitable surgical procedure. The majority of cases can be managed by operations on the ligamentous apparatus. In this procedure, the inside band that secures the kneecap (medial retinaculum / MPFL) is tightened. Alternatively, the retinaculum is replaced by transplanting a tendon from the hamstring muscles (MPFL replacement graft).

### **Ruptures of the patellar tendons (patellar ligament, quadriceps tendon)**

Ruptures of the patellar ligament and quadriceps tendon usually occur as a result of trauma (e.g. lifting heavy weights) or tremendous forces exerted by the muscle. Treatment is operative. The torn ends of the tendon are sewn back together using a special suture technique.

### **Cartilage operations in the region of the patella and patellofemoral joint**

Cartilaginous damage in the region of the kneecap or the patellofemoral groove can cause pain, swelling and locked joints. Spontaneous recovery is not possible. The symptoms can be relieved by conservative therapy. Joint-saving operations include cartilage ablation (smoothing), drilling holes in the bone to stimulate cartilage healing and different types of cartilage transplant.







# Effective aftercare

---

## Immobilisation and mobilisation at the same time.

---

### Immobilisation and mobilisation at the same time.

#### The knee joint injuries and operations described above require specific and individual aftercare:

- Depending on the type of injury and surgery, you will be able to support your body weight your leg at an early stage with the leg straight.
- You can lock your M.4 X-lock orthosis in extension for this.
- When you are not weight bearing, e.g. when sitting, you can unlock the orthosis and mobilise the knee joint.
- Your doctor will specify the limitation of flexion or extension appropriate for your rehabilitation. This is done by inserting the limiting wedges supplied with the brace.
- With suitable exercises, which can be performed while wearing the orthosis, you can begin the process of training your joints and muscles early on (see enclosed exercise poster).



#### Your personal exercise poster

At the end of this brochure, you will find a poster with exercises that you can do to support the healing process.

---



# M.4<sup>®</sup> X-lock – Safety and confidence with just a single click

## 1 orthosis – 2 possibilities

The physioglide joint ensures the brace remains securely locked with the leg straight. When not weight bearing (e.g. when sitting), the joint can be switched to the freely mobile mode by a single click.



M.4 X-lock in full extension

## Product features in detail

---



### **Ease of mobility**

You can move around freely thanks to the reliable locking of the joint with the leg held straight.

This prevents muscle atrophy and promotes proprioception (sense of the joint in space).

---



### **Showering with the orthosis**

The orthosis can also be worn in the shower.

The water-repellent padding material makes this possible without any problems. Ask your doctor when you can shower again after the operation to avoid inflammation of the wound.

---



### **Sitting comfortably**

The very quick and simple switch to the free mobile mode ensures that you can sit comfortably when not weight bearing, e.g. at work or in the car. Early functional exercises are possible with the orthosis.

---



### **Wearing under clothing**

The orthosis' flat construction makes it possible to wear unobtrusively under clothing.

---

## Tips for your safety



### **Weight bearing on the leg**

Only bear weight on the operated leg when it is straight – the joints in the orthosis are locked in the extended position (red field in the joint window).



### **Bending the leg**

In the non-weight bearing state (sitting or lying), you can unlock the orthosis' joints (green field in the joint window).

You may now bend your leg, for example, to do your exercises. Make absolutely certain that the leg is not weight bearing during flexion.



### **Standing up with the orthosis**

It is essential to lock the joints in the extended position again before standing up and to stand up with the leg straight.



## M.4<sup>®</sup> X-lock – therapeutic exercises

Individual exercises to do at home

medi. I feel better.

### Your personal exercise poster

Here you will find exercises you can do to support the healing process.

---