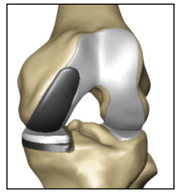
What is partial knee replacement?

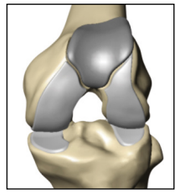
Partial knee replacement (PKR) is a surgical procedure that aims to relieve pain caused by joint degeneration due to osteoarthritis (OA).

In a PKR procedure, only the damaged area of the knee joint is replaced, which may help minimize trauma to healthy bone and tissue.

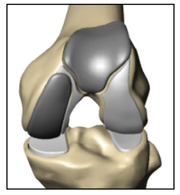
There are three types of partial knee replacement:



In a **unicondylar knee replacement,** only one area (or compartment) of the joint is replaced.



In a **patellofemoral knee replacement**, the kneecap (or patella) and the groove at the lower end of the thighbone (or femur) are replaced.



In a **bicompartmental knee replacement**, two compartments of the knee are replaced—the inside (medial side) and the kneecap.

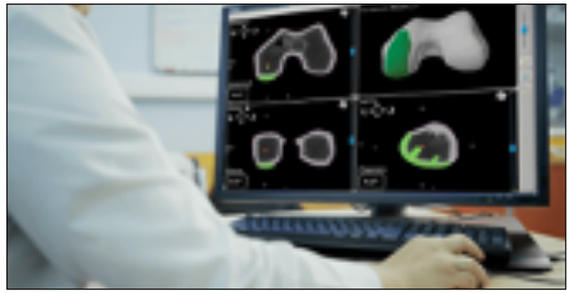
With Mako SmartRobotics™, your surgeon can selectively target the part of your knee damaged by osteoarthritis.

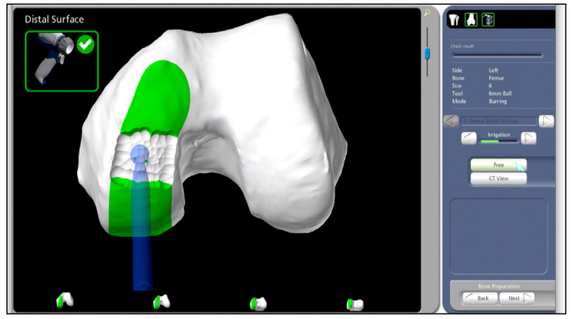
How does Mako SmartRobotics™ technology work?

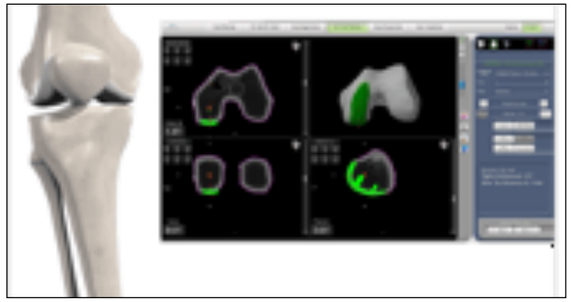
The AccuStop™ technology.

With Mako SmartRobotics™, your surgeon can create a personalized surgical plan. With the help of AccuStop™ technology, they are guided to accurately cut what's planned for you,[3] which could help protect your healthy bone.[4]

How does Mako SmartRobotics™ and AccuStop™ technology work?







Personalized surgical plan

Before your surgery, your doctor will take a CT scan of your knee joint, which develops a 3D virtual model of your unique anatomy. This model helps your doctor see things they can't typically see with an X-ray alone—things like your bone structure and disease severity. Throughout the procedure, Mako SmartRobotics™ provides real-time data to your surgeon so they can continuously assess the movement and tension of your new joint and adjust your surgical plan if needed. Mako SmartRobotics™ helps your surgeon determine the desired size, placement and positioning of your implant.

Arthritic bone removal

In the operating room, your surgeon guides Mako's robotic arm to remove arthritic bone and cartilage from the knee. AccuStop™ technology provides tactile resistance to help your surgeon stay within the boundaries defined in your surgical plan and accurately cut what's planned for you,[3] which could help protect your healthy bone.[4]

Implant placement and range-of-motion assessment

With the removal of the diseased bone, your implant is placed into the knee joint. Once your implant is successfully placed, it's off to the recovery room to begin the journey towards strengthening your new joint.

Frequently asked questions

These FAQs are not a substitute for medical advice from your own doctor.

Q: How long has the Mako procedure been available?

A: The first Mako procedure was performed in June of 2006. Since that time, more than 615,000 Mako Total Knee, Mako Partial Knee and Mako Total Hip procedures have been performed worldwide.

Q: Does the Mako Robotic-Arm actually perform the surgery?

A: No, surgery is performed by an orthopedic surgeon, who uses the surgeon-controlled robotic-arm system to pre-plan the surgery and to position the implant. The robotic-arm does not perform the surgery nor can it make decisions on its own or move in any way without the surgeon guiding it. The Mako System also allows your surgeon to make adjustments to your plan during surgery as needed.

Q: When can I get back to normal activities?

A: Most people who undergo knee replacement surgery and participate in a physical therapy regimen prescribed by their doctor return to their day-to-day activities, like driving, in four to six weeks,[5] but everyone is different. Realistic activities following knee replacement may include walking, biking, swimming, golfing and other low impact activities.[6] Your doctor will help determine a plan best suited for your recovery and your lifestyle.

Questions to ask your doctor

- How often do you perform surgeries using Mako SmartRobotics™?
- How long do knee implants usually last and what factors can impact their longevity?
- What to expect in weeks prior to surgery?
- Do I need a caregiver after the surgery and what do they need to know?

knee pain?

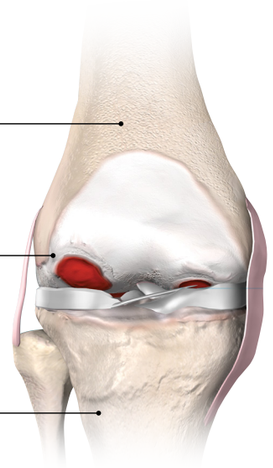
Your knee pain may be due to chronic swelling or inflammation in the joint – most often referred to as arthritis. Below are common forms of arthritis associated with knee pain.

With **osteoarthritis**, the cushioning cartilage at the end of the femur may have worn down, making walking painful as bone rubs against bone.[1]

With **rheumatoid arthritis**, sometimes called inflammatory arthritis, a person's immune system attacks the joints with uncontrolled inflammation, potentially causing joint erosion.[1]

With **post-traumatic arthritis**, a less common form of arthritis, a broken or fractured bone extends into the joint space, causing the surface to become uneven. Over time, friction causes the joint to break down and become arthritic.[2]

An **arthritic** knee



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Important information

Knee replacement: Knee replacement is intended for use in individuals with joint disease resulting from degenerative, rheumatoid and post-traumatic arthritis, and for moderate deformity of the knee. Knee replacement surgery is not appropriate for patients with certain types of infections, any mental or neuromuscular disorder which would create an unacceptable risk of prosthesis instability, prosthesis fixation failure or complications in postoperative care, compromised bone stock, skeletal immaturity, severe instability of the joint, or excessive body weight.

As with any surgery, knee replacement surgery has serious risks which include, but are not limited to, pain, infection, bone fracture, peripheral neuropathies (nerve damage), circulatory compromise (including deep vein thrombosis (blood clots in the legs)), genitourinary disorders (including kidney failure), gastrointestinal disorders (including paralytic ileus (loss of intestinal digestive movement)), vascular disorders (including thrombus (blood clots), blood loss, or changes in blood pressure or heart rhythm), bronchopulmonary disorders (including emboli, stroke or pneumonia), heart attack, and death.

Implant related risks which may lead to a revision include dislocation, loosening, fracture, nerve damage, heterotopic bone formation (abnormal bone growth in tissue), wear of the implant, metal and/or foreign body sensitivity, soft tissue imbalance, osteolysis (localized progressive bone loss), and reaction to particle debris. Knee implants may not provide the same feel or performance characteristics experienced with a normal healthy joint.

This information is solely intended for patients who have been booked for a Mako robotic-arm assisted surgery by their surgeon. The information presented is for educational purposes only. Stryker is not dispensing medical advice. Speak to your doctor to decide which treatment is appropriate for you. Individual results vary and not all patients will return to the same activity level. The lifetime of any joint replacement is limited and varies with each individual. Your doctor will counsel you about how to best maintain your activities in order to potentially prolong the lifetime of the device. Such strategies include not engaging in high-impact activities, such as running, as well as maintaining a healthy weight. It is important to closely follow your doctor's instructions regarding post-surgery activity, treatment and follow-up care.

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Mako SmartRobotics™ partial knee replacement

A patient's guide

Why do I have

To get a better idea of why your knee hurts, let's take a look at how it works. Your knee is the largest joint in your body, and it works a lot like a hinge. Three bones come together to form the joint: the lower end of the thighbone (the femur), the upper end of the shinbone (the tibia), and the kneecap (the patella) right above where the long bones meet. Tough bands called ligaments help keep everything in place and stable.

Cartilage provides cushioning, keeps bones from rubbing together, and absorbs the shock of walking, running and jumping. Your body also produces a natural lubricating fluid called synovium that minimizes friction in the joint. When everything is working smoothly, you don't have to think about the mechanics of your knee. When something's wrong, it can feel debilitating.

A **healthy** knee