

Understanding
treatments for
knee pain.



ZIMMER BIOMET

Your progress. Our promise.™

Table of Contents

Why does my knee hurt? 2

Diagnosis 4

Nonsurgical treatments 5

Surgical treatments 9

Arthroscopy

Partial Knee Replacement 10

What is knee replacement? 11

What risks are involved? 12

What is it like to have knee replacement surgery? 12

Notes 16



Renew your passion for living.

If knee pain is keeping you from the things you love, you and your doctor may decide it is time for knee replacement surgery. While there are many important factors to consider, keep in mind that surgical treatments are designed to reduce pain and restore function.

This brochure is intended to provide an overview of knee pain and treatment options and should be reviewed with your orthopaedic specialist. It does not include all of the information needed to determine eligibility for knee replacement or for the proper use and care of knee implants. Please consult your orthopaedic specialist for more information.

For more information or to find a doctor near you, visit zimmerbiomet.com

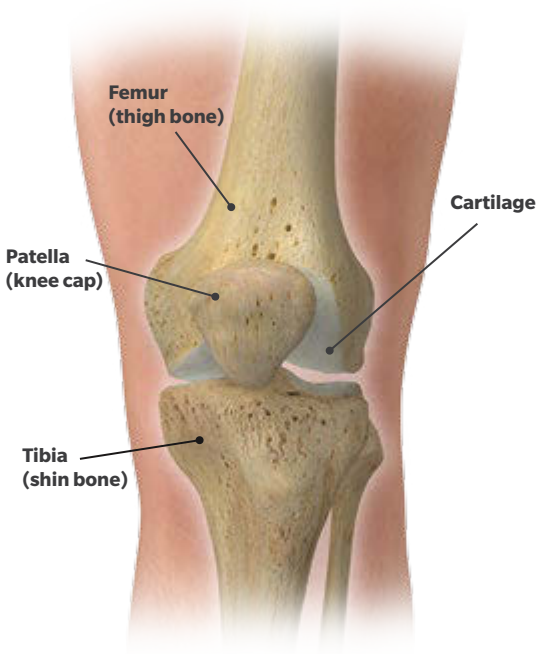
The information herein is of a general nature and does not represent or constitute medical advice or recommendations and is for general education purposes only. This information is not meant to replace the specific verbal and written recommendations and instructions provided by your surgeon for your specific situation. Patient treatment plans and outcomes will vary.

Why does my knee hurt?

If your knees ache, you have lots of company. Over 52 million Americans suffer from arthritis.¹ To understand why your knee hurts, it is important to understand how a healthy knee joint works.

The knee is the joint in the body where the lower end of the thigh bone (femur), the upper end of the shin bone (tibia) and the knee cap (patella) meet. In a healthy joint, these bones are cushioned with cartilage and a thin lining called the synovial membrane to reduce friction and absorb shock.

Healthy Knee



Osteoarthritis (OA) is the most common type of arthritis and it can affect any joint in the body.² However, OA is most common in knees and hips. When OA affects the knee joint, the cartilage cushioning the bones softens and wears away, causing the bones to rub against one another. This bone-on-bone contact causes pain and stiffness that can increase over time.

Osteoarthritic Knee



Diagnosis

Early diagnosis of arthritis* may help to tailor the treatment of your joint health. Only a physician can determine if you have arthritis, based on:

- the overall pattern of symptoms
- medical history
- physical exam
- X-rays and other imaging techniques
- lab tests

The good news about arthritis in the knee is that it can be treated. Here are some signs that it might be time to talk to your doctor:

- Pain persists or recurs over time
- Pain worsens after exercise or other weight-bearing activities
- Pain prevents you from sleeping
- Stiff or swollen knees
- Difficulty walking or climbing stairs

*Arthritis is a disease that typically worsens over time, so it is common for treatment to involve more than one approach and to change over time. For some people, lifestyle changes, medications and walking aids help alleviate the pain. For others, knee replacement surgery may be the only long-term solution. Together, you and your doctor can determine the best treatment options for you.



Nonsurgical treatments

When it comes to relieving knee pain, there are many different treatment options. For some people, early intervention treatments like the ones below may help restore knee function and reduce pain.

Heat/cold therapies

The use of heat or cold over joints may provide short-term relief from pain and stiffness. Cold packs can help reduce inflammation and swelling and may be useful for flare-ups. Heat can aid in relaxing muscles and increasing circulation.

Low-impact exercise

Low-impact exercise, such as joint and muscle exercises, can improve strength and flexibility. A common myth is that exercise will “wear out” joints, however, when done properly, varied intensity levels of exercise, such as walking or jogging, may help to reduce pain and improve function or movement.³



Weight management

Weight loss helps to ease pain by reducing the amount of stress on your joints. One research study suggested that for each pound of body weight lost, there was a four pound reduction in knee joint stress among overweight and obese people with osteoarthritis of the knee.⁴



Physical and occupational therapy

Physical therapists can work with you to create a personalized exercise program and show you how to use therapeutic heat and massages to potentially reduce pain. In addition, occupational therapists can introduce you to beneficial devices, such as those used to elevate chairs or toilet-seats.

Assistive devices

You can protect your knees by using a cane or other walking aid to keep from putting excess stress on them. Shoe inserts called orthotics are designed to support, align and improve the function of your foot. In turn, they may reduce the pressure on your knees.



Bracing

Different types of braces may help reduce knee pain and improve function and mobility. A “support” brace supports the entire load on your knee. An “unloader” supports the weight on only one side of the knee, when only one side of the knee is damaged.

Medication

Both prescription and over-the-counter medications can be used to treat the symptoms of osteoarthritis and control pain. Commonly used medications include, but are not limited to, aspirin-free pain relievers, anti-inflammatory drugs, corticosteroids, disease modifying drugs, and sleep medications when pain prevents or interferes with sleep.



It is important to talk to your doctor about all medications and dietary supplements you are considering taking, even those available without a prescription.



Injections

Knee injections, either corticosteroid or hyaluronic,⁵ may be used in patients whose osteoarthritis knee pain does not respond to medications such as non-steroidal anti-inflammatory drugs (NSAIDs) or simple pain relievers such as acetaminophen. Synovial fluid acts as a lubricant and shock absorber to help your knee joints move smoothly. In the early stages of osteoarthritis, synovial fluid can begin to lose some of its hyaluronic acid content and joints can become painful.⁶ Be sure to consult your doctor to discuss the best treatment plan for you.

Surgical treatments

If nonsurgical treatments fail to relieve your pain and loss of mobility, your doctor may recommend a surgical procedure.

Arthroscopy

Often the first surgical treatment for knee osteoarthritis is arthroscopy, a surgical procedure used to see, diagnose and treat problems inside the joint. Arthroscopy typically involves inserting a small camera into the knee joint through an incision and then treating identifiable problems, which may include⁷:

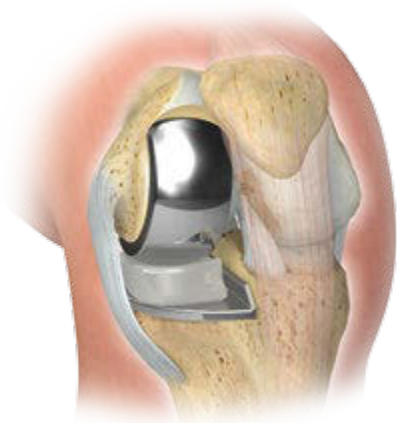
- trimming damaged cartilage
- removing loose debris within the knee (debridement)
- irrigating the inside of the knee (lavage)
- removing/repairing a torn meniscus (cartilage) or reconstructing a damaged ligament

Partial knee replacement

Unicompartmental knee replacement

For some people with osteoarthritis, the joint damage is limited to only one portion of their knee. When this is the case, your surgeon may prescribe unicompartmental knee replacement. This partial knee replacement procedure preserves the healthy side of your knee. Only one side of the joint – the diseased portion – is replaced, leaving the healthy portion untouched.

Partial Knee Replacement



What is total knee replacement

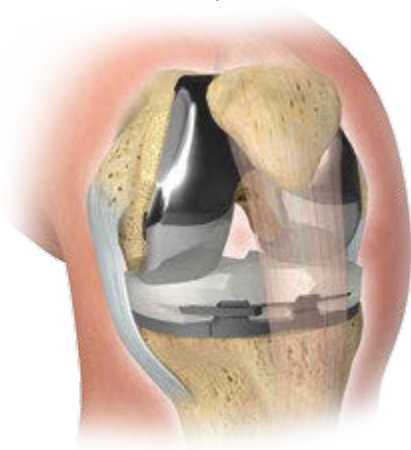
A total knee replacement is typically considered when the surfaces on both sides of the bones are significantly damaged.

In total knee replacement surgery, the surface of the thigh bone (femur) is replaced with a metal implant designed to fit the curve of the bone.

The surface of the shin bone (tibia) is typically replaced with a flat implant piece and a smooth polyethylene piece that serves as cartilage.

The polyethylene implant is designed to allow the new knee to glide smoothly, much like natural cartilage.

Total Knee Replacement



What risks are involved?

It is important to understand the risks involved. There are potential complications both during and after surgery. Generally, these include infection, blood clots, pneumonia, implant loosening, nerve damage, bone fracture and implant breakage; any of which can require additional surgery. While joint replacement is generally successful in lowering pain levels and increasing mobility, some patients will continue to experience pain and your doctor may permanently restrict certain activities that could damage and wear your new knee parts. Ask your doctor to explain other surgery risks.

What is it like to have knee replacement surgery?

If you and your surgeon decide that it's time for knee replacement surgery, there will likely be many questions on your mind. This information is intended to provide you with an overview of what to typically expect before, during, and after surgery. Whether you are preparing for total or partial knee replacement, you can expect the process to be much the same. Every patient is unique and may have different needs and requirements, which should be discussed with your surgeon.

Before Surgery

There are a number of tasks to complete before surgery day. Your surgeon usually schedules the procedure well in advance, giving you time to make necessary plans and arrangements.

Before surgery, your doctor may suggest lifestyle changes such as smoking cessation or a healthy diet to promote weight loss. These lifestyle



changes may improve surgical outcomes. It may also be necessary to finish any required dental work to help prevent infection.

Your doctor may suggest that you meet with a physical therapist to strengthen your muscles and maintain your range of motion. The more you can build upper body

strength, the better prepared you will be for the use of a walker, crutches or cane. Getting accustomed to an exercise routine before surgery can make it easier to maintain physical therapy after you return home.

During Surgery

On the day of surgery, a small intravenous (IV) tube will be inserted into a vein in your arm. The tube will be used to administer antibiotics, pain medication, and liquid nutrition during and after your surgery. You will then be taken to the operating room and given anesthesia.

The procedure is performed through an incision on your knee joint. The length and exact location of the incision will vary depending on your specific situation. The surgeon then removes the damaged bone surfaces and places the final implants. After the implants are secured in place, the ligaments surrounding the knee may be adjusted for improved knee function and the incision will be closed.

For some patients, a less-invasive approach may be sufficient to replace the joint. This may utilize a smaller incision and less or no cutting of key muscles and tissues.

After Surgery

After the surgery is complete, you will be taken to the recovery room. As the anesthesia wears off, you will slowly regain consciousness and will be closely monitored. Your knee may be wrapped in a cooling pad to reduce swelling and pain and your legs and feet may be covered with plastic wrappings to promote circulation. Once you are fully awake, you will be moved to your room or another location for further recovery until discharge. Approximately one or two hours after you leave the recovery area, you may begin gentle rehabilitation to strengthen your muscles and range of motion.

Recovery and Rehabilitation

Recovery after surgery is different for every patient and is influenced by a variety of factors. Following surgery, you will begin a rehabilitation program prescribed by your surgeon to help strengthen the muscles around your new knee and regain your range of motion. You will also learn how to protect your new knee while doing daily activities.

As soon as possible, usually within 24 hours, your physical therapist will help you start walking a few steps at a time with the aid of a walker. Before you are discharged from the hospital, a physical therapist will guide you through activities such as getting into and out of bed, standing and walking with crutches or a walker and maneuvering stairs. Your therapist and doctor will also review the precautions you should take with your new knee.

When your surgeon determines that you have recovered sufficiently, you will be discharged. Upon returning to your home, you will need to continue taking your medications and exercising as directed by your surgeon or physical therapist.

Recovery varies greatly based on individual factors. In most cases, successful knee replacement will relieve your pain and stiffness, and allow you to resume many of your normal daily activities. But even after you have fully recovered from your surgery, you will still have some restrictions. Normal daily activities do not include contact sports or activities that put excessive strain on your knees.



Notes:

[illegible]

References:

1. Arthritis – Quick Stats. Centers for Disease Control and Prevention. www.cdc.gov/arthritis/press/quickstats.html
2. Handout on Health: Osteoarthritis. National Institute of Arthritis and Musculoskeletal and Skin Diseases. www.niams.nih.gov/health_info/osteoarthritis/#5
3. Arthritis - Physical Activity Programs. Centers for Disease Control and Prevention. <http://www.cdc.gov/arthritis/interventions/physical-activity.html>
4. Small Weight Loss Takes Big Pressure Off Knee. WebMD. <http://www.webmd.com/osteoarthritis/news/20050629/small-weight-loss-takes-pressure-off-knee>
5. Injections and Procedures for Knee Pain. Arthritis Foundation. <http://www.arthritis.org/about-arthritis/where-it-hurts/knee-pain/treatment/knee-injection.php>
6. Hyaluronic Acid Injections for Osteoarthritis. Arthritis Foundation. <http://www.arthritis.org/living-with-arthritis/treatments/medication/drug-types/other/hyaluronic-acid-injections.php>
7. OrthoInfo - Knee Arthroscopy. American Academy of Orthopedic Surgeons. <http://orthoinfo.aaos.org/topic.cfm?topic=a00299>

Results may vary. Not all patients are candidates for this product and/or procedure. Only a medical professional can determine the treatment appropriate for your specific condition. Appropriate post-operative activities and restrictions will differ from patient to patient. Talk to your surgeon about whether joint replacement is right for you and the risks of the procedure, including the risk of implant wear, loosening, or failure.

All content herein is protected by copyright, trademarks and other intellectual property rights owned by or licensed to Zimmer Biomet or its affiliates unless otherwise indicated, and must not be redistributed, duplicated or disclosed, in whole or in part, without the express written consent of Zimmer Biomet.

For more information or to find a doctor near you, visit zimmerbiomet.com

Moving beyond pain.

Zimmer Biomet understands that making the decision to have joint replacement surgery can be stressful and difficult. This guide was designed to help you understand knee replacement. Knowing what to expect is not only important for making the best possible decision about knee replacement surgery — it's your first step toward recovery.

For additional information or to find a doctor near you, visit zimmerbiomet.com



ZIMMER BIOMET

Your progress. Our promise.™