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You need your knees — these joints let your legs bend like hinges, and they also support your weight and stabilize you while you move. The knee joint is a symphony of moving parts, with bones, cartilage, muscles, ligaments and tendons, all of which enable the knee to do its job.

When you have knee pain and prob-

old wear and tear, you can feel as though your life is limited. After all, it's hard to do basic things like walking, standing, climbing stairs and crouching with aching knees, not to mention being able to run and dance and play your favorite sports.

Fortunately, there's a lot doctors can do to pinpoint knee problems and help you get back to your active life pain-free.



WHAT IS CAUSING YOUR KNEE PAIN?

Knee problems affect people of all ages and can be caused by a range of issues, from injury to overuse to arthritis. Here are several common causes:

OSTEOARTHRITIS

In this condition, the cartilage in your knee joint that normally cushions the bones begins to wear away, either from trauma or from repetitive movements, leaving the bones rubbing against each other and causing pain and stiffness. Osteoarthritis can be the result of joint injury, or it can happen if you're overweight, which puts more stress on joints, causing wear and tear. It also becomes more common as you age — it usually starts in people age 50 or older (most younger people with osteoarthritis have had an injury, or they may have a genetic form of the disease).

RHEUMATOID ARTHRITIS

This happens when the membrane that surrounds the joint, called the synovial membrane, becomes inflamed. Chronic inflammation of this membrane makes it grow thicker, which in turn can damage

the cartilage in your knee. The condition is a form of a whole group of disorders called inflammatory arthritis. When the cartilage, which normally protects the bones in the knee joint, gets damaged by arthritis, you end up with pain and stiffness. Some people have a genetic susceptibility to RA. When it's triggered — by an infection or an environmental cause — the body's immune system responds by attacking the wrong thing, causing the inflammation that damages the joint.

BURSITIS

In your knee joint, as well as in other joints, are small fluid-filled sacs called bursas. They're tucked between bones and soft tissues in your joints, and act as cushions, reducing friction. Bursitis of the knee, or prepatellar bursitis, happens when the bursae in front of your kneecap (patella) get irritated and inflamed. This puts pressure on the knee joint and causes pain. Bursitis can be caused by an injury to the knee such as a direct blow to the kneecap, but it's more common among people who kneel a lot. That includes roofers, tilers, carpet layers, gardeners and so on.

Women & Knee Pain

Are women more prone to problems with knee pain? Many experts believe so. Women can get anterior cruciate ligament (ACL) injuries three times more often than men. Why?

Some studies have found a greater risk of suffering an ACL injury during the days just before and just after ovulation, which suggests there could be a hormonal link. It could also be that a woman's shape leaves her more vulnerable to knee problems. A woman's relatively wider pelvis causes her thighbones to curve inward slightly. That creates a sharper angle at the knee joint and more pressure on the knees.

Also, women's ligaments tend to be more lax than men's, and women may not have muscles in the thigh (the quadriceps and hamstrings) strong enough to support and stabilize their knees.

WHAT IS CAUSING YOUR KNEE PAIN? (CONT'D)

PATELLAR TENDONITIS

This is when the patellar tendon, which attaches the thigh muscle (quadriceps) to the lower leg, becomes inflamed. It's common in athletes who do a lot of running and jumping (it's sometimes called jumper's knee). Patellar tendonitis weakens the patellar tendon, and a weak tendon is prone to tearing. Anyone can get patellar tendonitis or tear their patellar tendon, but it's more common the older you get, especially if you play sports that involve a lot of running and jumping, such as basketball or tennis. When the tendon becomes inflamed, it's more prone to tearing. If the tearing is severe, surgery is required to fix it.

BAKER'S CYST

Sometimes, the synovial fluid — which normally lubricates your kneecap — builds up, causing swelling in the knee. Pressure builds up, which can cause pain (though there are sometimes no symptoms). Baker's cysts occur when you have arthritis in your knee, with age, or because of a tear or other problem with your meniscus.

PATELLOFEMORAL PAIN SYNDROME (PFPS)

Also called runner's knee, PFPS is when you feel a dull pain around the front of your knee, where the kneecap (patella) connects to the thigh bone (femur). It's often the result of the way you walk or run, or because you have weaker thigh muscles (the quadriceps, which support the knee joint), tight hamstrings (the muscle in the back of the thigh), or a tight Achilles tendon in your foot. Some people get PFPS from overdoing it with running or wearing sneakers that aren't supportive.

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DMC Sports Medicine is dedicated to bringing local Collegiate, School-Aged, Club Sport athletes and Weekend Warriors the same expert care as we provide the professional athletes on the Detroit Tigers, Detroit Red Wings, Detroit Free Press/Talmer Bank Marathon and Detroit Belle Isle Grand Prix.

**1 IN 10
FEMALE
COLLEGE
ATHLETES
SUFFERS
A MAJOR
KNEE
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EVERY
YEAR**



YOUR FIRST STEPS TO FIGHTING KNEE PAIN

Knee pain doesn't have to sideline you permanently — nor do you have to go directly to surgery to relieve it. Here's what you can do to baby an injury, increase mobility, ease pain and prevent future problems:



1 WEIGHT LOSS

Sometimes, knee pain is triggered or made worse by excess weight. If you think of your knee joints as shock absorbers, you'll see that the heavier you are, the harder your joints have to work to keep you stable. Even losing a small amount of weight can reduce or even eliminate knee pain.

2 REST, ICE, COMPRESSION, ELEVATION

Most mild sprains and strains can be relieved and healed with the RICE method. That's rest, ice, compression (using an elastic bandage, for instance), and elevation (to reduce swelling.)

3 OTC PAIN MEDICATION

Over-the-counter nonsteroidal anti-inflammatory (NSAID) pain medications, such as ibuprofen and naproxen, can help by reducing swelling. A third choice is a COX-2 inhibitor (such as Celebrex), a type of NSAID that's less likely to cause stomach issues. Ask your doctor or pharmacist for advice.



4 EXERCISE

You may feel that you should avoid exercise when your knees hurt, but in most cases the opposite is true. Exercise helps arthritis pain in two ways. First, it increases blood flow to damaged cartilage, helping keep it healthy longer. Second, the right kind of exercise strengthens the muscles around your knees that help support and reduce stress on the joint.

Common Knee Injuries

Anterior Cruciate Ligament (ACL)

Located in the center of your knee, the ACL controls your shinbone (tibia). You might strain or tear this ligament when you twist suddenly. You may feel a pop in your knee, which then buckles when you try to stand. Treatment for an ACL injury ranges from rest, ice and pain relief to wearing a brace to support the knee while the ligament heals and swelling goes down. Or, you might need surgery for a severe tear.

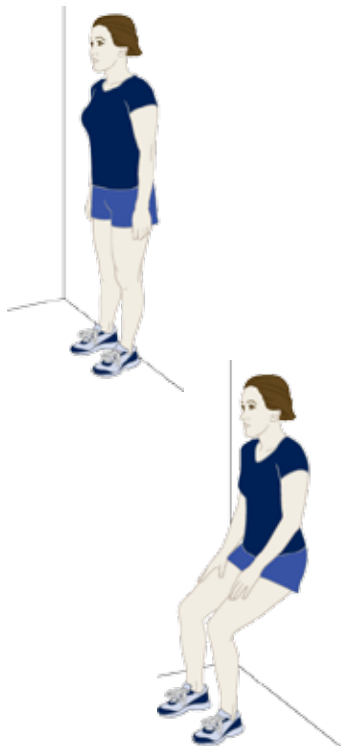
Medial Collateral Ligament (MCL)

This ligament connects the thighbone (femur) to the shinbone (tibia), on the inside of the knee, controlling side-to-side movement. An MCL injury is usually caused by a blow to the side of the knee. As with an ACL injury, you'll also feel a pop. Treatment for a strained MCL includes rest, ice and/or a knee brace, but a more serious injury, or one that also involves your ACL, requires surgery.

Meniscus The menisci (the plural of meniscus) are two crescent-shaped discs that sit on each side of your knees, acting as shock absorbers and stabilizers. A meniscus injury can happen when you twist your knee while exercising or jumping. If the tear is minor, the meniscus will still be attached to the knee. A more severe tear might mean it's separated completely. A minor injury is treated with rest, ice, pain relief and strengthening exercises. A major tear will require surgery to repair.

4 EXERCISES TO STRENGTHEN YOUR KNEES

Warm up with 5 to 10 minutes of low-impact activity, like walking or cycling, before doing these exercises.



WALL SQUAT

You should feel this exercise mostly in the front of your thighs.

- Stand with your head, back and hips against a wall. Step your feet out about 2 feet from the wall, hip-width apart. Slowly slide down the wall until you are almost in a sitting position. Hold for 5 to 10 seconds, then slowly slide up. Repeat.

Do: Keep your abdominal muscles tight. Hold the position longer as you get stronger.

Do not: Slide your hips down lower than your knees. Do not let your knees move forward over your toes.



SINGLE-LEG DIP

You should feel this exercise in the front and back of your thigh, hip and buttocks.

- Place two chairs on either side of you to help with balance. Lift one leg slightly in front of you. Plant your weight on the other leg. Slowly lower yourself down a few inches, pushing your weight onto the heel of your supporting leg. Hold for 3 to 5 seconds. Slowly straighten up. Repeat and switch sides.

Do: Sit back as if there were a chair behind you.

Do not: Let the knee of your supporting leg move forward over your toes.



HAMSTRING CURLS

You should feel this exercise at the back of your thigh.

- Hold on to the back of a chair for balance. Plant your weight onto your supporting leg. Lift the other foot and bring the heel up toward your buttocks. Hold for 3 to 5 seconds. Slowly lower your leg. Repeat and switch sides.

Do: Keep your knees close together.

Do not: Lock the knee of your supporting leg. Do not bring your heel up past a 90 degree angle.



STRAIGHT-LEG LIFT

You should feel this exercise mostly in the front of your thigh.

- Lie on your back with one leg bent and the other straight. Tighten the thigh muscles in your straight leg and slowly lift it until it is about a foot off the floor. Hold it for 3 to 5 seconds. Slowly lower your leg to the floor. Repeat and switch sides.

Do: Keep your upper body relaxed and tighten your stomach muscles to keep your low back flat against the floor.

Do not: Arch your back. Do not lift your leg too high with a jerking motion.



WHAT TO EXPECT AT YOUR APPOINTMENT

Headed to a doctor to find out what you can do for your knee pain? The first thing he or she will do is examine you and ask questions, taking a detailed medical history and asking about your general health. Some things the doctor will look for:

- Swelling, warmth, redness and tenderness in and around your knee
- Your range of motion (how easily, or not, you can move your knee)
- Any pain you feel when you put weight on that leg/knee
- Problems with the way you walk
- Whether you have pain or stiffness in any other joints (which could indicate rheumatoid arthritis)
- A grating sensation in the joint when you move, which is known as crepitus
- Signs of injury in muscles, tendons and ligaments

DIAGNOSTIC TESTS YOU MAY NEED

Your doctor may also order one or more of the following tests:

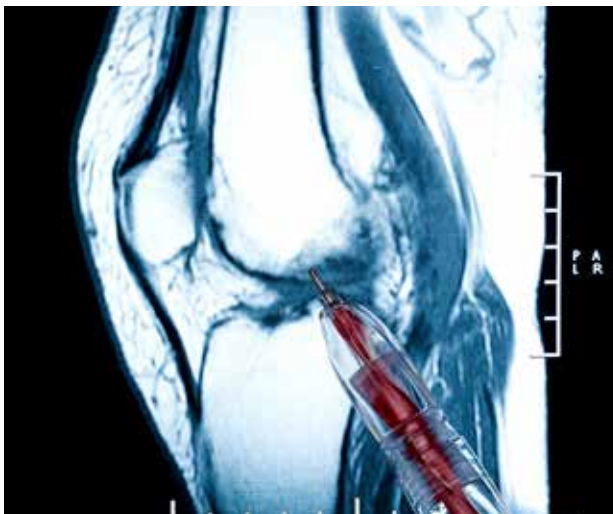
X-ray: This imaging test is good for creating detailed images of bones, which will help your doctor figure out what type of arthritis you might have. The images may show changes in the space between bones, among other things.

Magnetic Resonance Imaging (MRI): This is far more detailed than a traditional X-ray. The doctor will get several images of the structure of the inside of your knee.

Computed Tomography Scan (CT or CAT): This test combines an X-ray with computer technology to produce images that show “slices” of the body from all different angles.

Arthroscopy: Though also used to repair some knee problems, arthroscopy can be a diagnostic procedure. It’s minimally invasive, involving a small incision through which your doctor inserts a small lighted tube. Images of the inside of your joint are projected on a screen, and allow your doctor to detect the cause and extent of joint problems.

**NEARLY
40% OF
AMERICANS
OVER THE
AGE OF 45
HAVE SOME
DEGREE
OF KNEE
OSTEOARTHRITIS**



NONSURGICAL TREATMENTS FOR KNEE PAIN

In most cases of knee pain, you have other options before your doctor will recommend surgery. There's a range of things you can try, either on your own or under your doctor's care, to minimize pain and heal problems.

LIFESTYLE CHANGES

If you have arthritis, you can make some modifications to your daily activities that may help you protect your joints. Switch from activities that put a lot of stress on joints, such as running or tennis, to gentler activities like swimming and cycling. Losing weight can also help.

PHYSICAL THERAPY

Exercises that work to increase strength in your leg muscles, as well as stretches that improve flexibility and range of motion, can help stave off pain. You'll also learn how to use your knees without causing further damage.



BRACES

There are a couple of types of knee braces that are made just for arthritis sufferers. An "unloader" brace works to shift weight from the affected side of your knee. A "support" brace helps stabilize the whole knee. If you're recovering from a knee injury, a brace or bandage — as well as possibly using a cane or crutches



THERE ARE MORE THAN 10 MILLION PATIENT VISITS TO DOCTORS' OFFICES EACH YEAR FOR KNEE PROBLEMS

— helps you immobilize your knee and give it time to heal properly.

INJECTIONS

Shots of corticosteroids (or cortisone) may give you pain relief and reduce inflammation in the joint (cortisone is a strong anti-inflammatory). They may have side effects, however, and so aren't recommended more than a few times a year, and their effects are temporary. In some cases, they may make the problem worse over time.

SURGICAL OPTIONS FOR KNEE PAIN

If non-invasive options for alleviating knee pain haven't worked, your doctor may recommend surgery, both to identify the cause of your pain, and to treat it, hopefully giving you a pain-free future. Here are common options:

ARTHROSCOPY

Used to diagnose as well as repair some knee problems, arthroscopy is a minimally invasive procedure in which a tiny camera is inserted into the knee joint, allowing surgeons to see the joint on a monitor and pinpoint and fix problems without open surgery.

Are you a candidate?

An arthroscopic procedure is a good choice if the cartilage in your knee is damaged, either from injury or wear, or you have a torn ligament.

What are the risks?

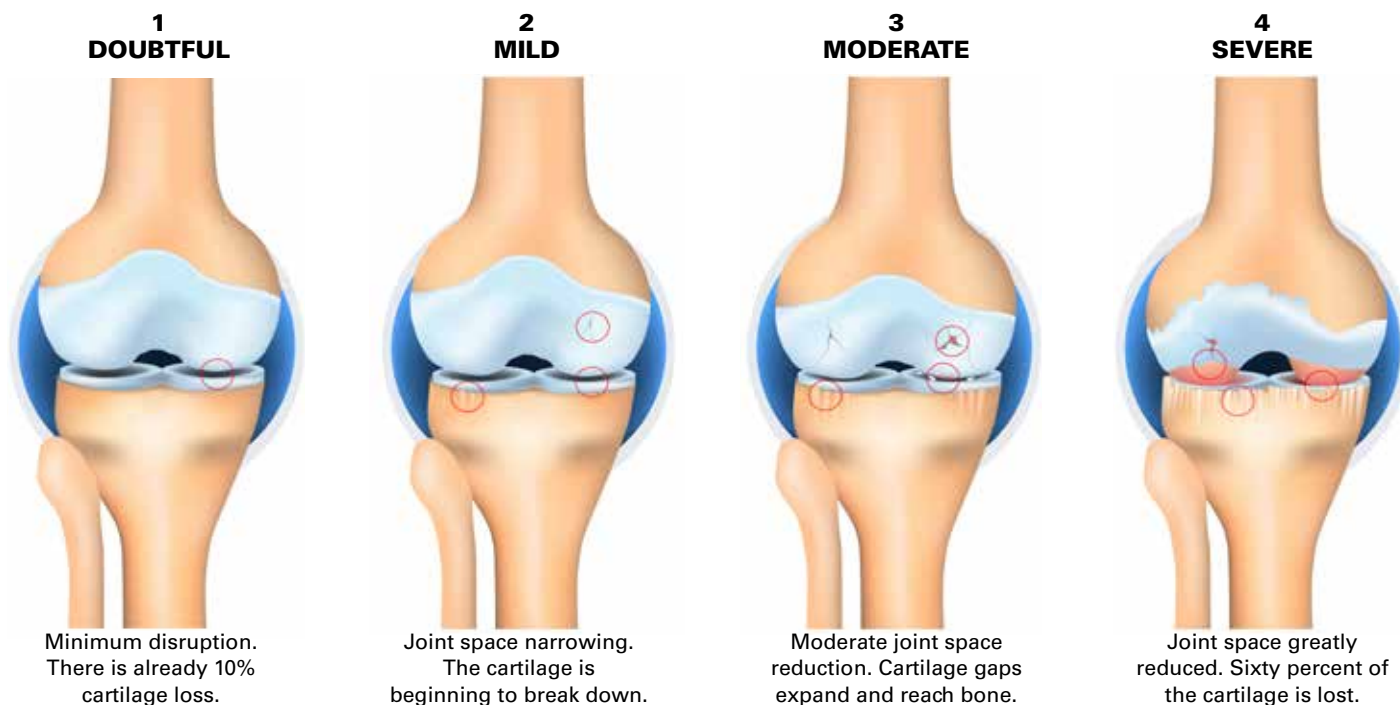
Risks are fairly minimal, and complications are rare. You could have an infec-

tion at the incision site, blood clots, or an accumulation of blood under the knee cap. If you experience fever, chills, warmth and redness around your knee, calf pain, or significant swelling, call your doctor right away.

What to expect

Arthroscopy is usually an outpatient procedure, but you'll be asked to arrive an hour or two early to prep. You'll get a local or general anesthesia, and your knee joint will be injected with a sterile solution that makes it easier to see on the monitor. Through a tiny incision, your surgeon will insert the arthroscope with a tiny camera that sends pictures to a monitor. Other incisions are used to insert surgical tools used to repair problems. After the procedure, which can take from 30 minutes to more than an hour, your incisions will be covered with butterfly bandages, or they may require a stitch. You'll be moved to a recovery room and usually you can go home in an hour or two (have someone drive you). Once home, keep the incision sites clean

STAGES OF KNEE OSTEOARTHRITIS



SURGICAL OPTIONS FOR KNEE PAIN (CONT'D)

and dry. Ask your doctor about medication you can take for pain or swelling, and how quickly you can return to normal activity.

PARTIAL KNEE RESURFACING

In partial knee resurfacing, also called unicompartmental knee replacement, only the damaged section of your knee needs to be resurfaced and replaced with plastic or metal parts. The surgeon leaves healthy cartilage and bone alone. The advantage is that you recover more quickly, with less blood loss and pain. On the minus side, if you end up with further damage from arthritis, you may end up needing a total knee replacement down the line.

Are you a candidate?

This procedure is best if you have arthritis in just one compartment of your knee. If you have inflammatory arthritis or damage to your ligaments, or if your knee has significant stiffness, you might be a better candidate for total knee replacement or other surgery.

What are the risks?

Complications are rare, but can include infection and the risk of developing a blood clot. You'll be given antibiotics to prevent infection, and possibly blood thinners (or aspirin) to help avoid blood clots. There's also a risk of injury to nerves during surgery, but this is very rare.

What to expect

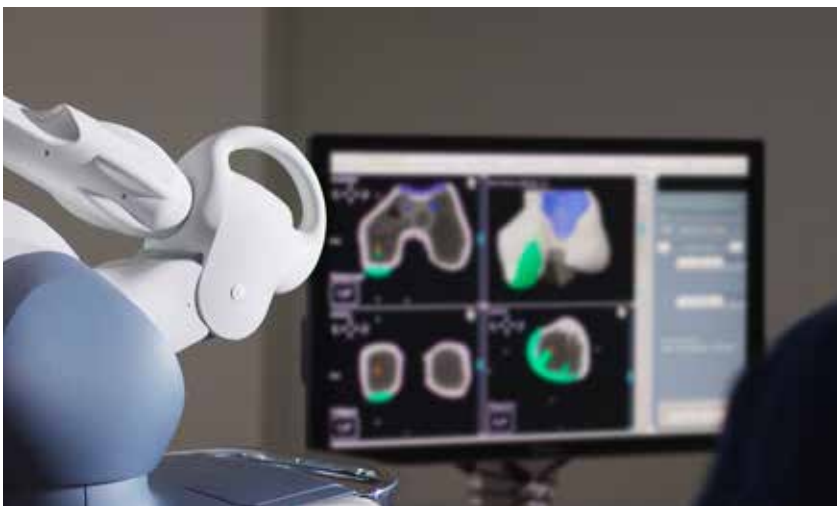
A partial knee replacement operation typically lasts between 1 and 2 hours. You'll be given either general anesthesia or a spinal block (you'll be awake but without feeling from the waist down). Your surgeon will make an incision at the front of your knee, then pinpoint where the damaged cartilage is and determine if this is the right procedure.

The surgeon will then remove damaged cartilage and cement metal coverings onto the ends of your thigh (femur) and shin (tibia) bones, and place a plastic insert between the two metal components

so the joint glides smoothly.

Another option for partial knee replacement is to have MAKOplasty®. It's far less invasive; surgical instruments and a tiny camera are inserted into your knee, and the surgeon controls the instruments via a robotic arm. This type of surgery means you have much smaller incisions, which means faster, more comfortable recovery time. It usually also allows the surgeon to be more precise and save more healthy bone than traditional surgery. After surgery, you'll be taken to a recovery room. You'll spend several days in the hospital, depending on the type of surgery you had, and you'll get physical therapy to help you return to normal activity as soon as you can.

MAKOplasty® is a robotic arm assisted partial joint resurfacing procedure designed to relieve the pain caused by joint degeneration due to osteoarthritis. By selectively targeting the part of your joint damaged by osteoarthritis, your surgeon can resurface your joint while sparing the healthy bone and ligaments surrounding it.



SURGICAL OPTIONS FOR KNEE PAIN (CONT'D)



THE NUMBER OF TOTAL KNEE REPLACEMENT SURGERIES IN THE U.S. MORE THAN TRIPLED BETWEEN 1993 AND 2009

ACCORDING TO THE AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS.

TOTAL KNEE REPLACEMENT

During knee replacement surgery, your surgeon preps the bone, removing the damaged surfaces of the two bones that meet at your knee joint, the femur and the tibia. He or she will then place metal implants to create new joint surfaces, and cement or fit them to your bones. Next, he or she may resurface the underside of your kneecap (patella), then insert a spacer between the metal parts, so that the joint glides smoothly. A more accurate term than “replacement” is “resurfacing”: Only the surfaces of the bones are replaced. Knee surgery may sound scary, but it’s a safe, effective procedure that often results in a return to normal activities without pain.

Are you a candidate?

The decision to have total knee replacement has to do with how much pain you’re in and how much disability you’re suffering, not your age or weight. If your knee problems haven’t improved even after you’ve tried medication, cortisone injections, physical therapy or other

exercise, total knee replacement may be right for you.

WHAT ARE THE RISKS?

Infection and blood clots are two serious complications of this type of surgery, which is why your surgeon may give you antibiotics and blood thinners.

What to expect

The procedure itself takes approximately 1 to 2 hours, and you’ll likely spend at least 3 days in the hospital. After you recover in the hospital, you’ll get physical therapy and will be encouraged to do low-impact activities like walking, swimming or golf. You’ll also get specific recommendations for what pain meds are okay to take, and how to avoid the risk of blood clots.

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