



### A Slow-Moving Setback

The clock starts ticking the moment you injure your knee. Ignore it and here's what happens.

**MONTH ONE:** Once cartilage has been damaged, knee cells become inflamed.

**MONTHS ONE TO SIX:** Without treatment, the inflammation spreads, and cartilage directly around the site of the injury starts breaking down.

**YEAR ONE:** Damage spreads to nearby healthy cartilage, like ripples across a pond.

**YEAR TWO:** You could still be pain-free, but the immune proteins have started to break down the sturdy framework that holds your knee together. An MRI could pick up early changes in cartilage and bone, called pre-osteoarthritis.

**YEAR FOUR:** So much cartilage has worn away that bones and nerves start to rub against each other and your knee begins to ache. The soft lining around the joint is swollen. Injections of cortisone or hyaluronic acid may ease pain and swelling.

**YEARS FIVE TO 10:** Cartilage can no longer work as a shock absorber, leaving bones rubbing together and causing joint-damaging bone spurs. What began years ago as a tiny chink in cartilage is now full-blown OA, what doctors call end-stage joint disease. Your only option is a complete joint replacement.

# How Old Are Your Knees?

Why your joints might be breaking down prematurely—and ways to sidestep the pain

By *Jeanne Erdmann*

Allyson Jackson is 31, but she walks on the knees of a senior citizen. Years of playing sports, followed by weight gain and a boxing injury, stressed her joints until they needed a surgical fix. Now, she sometimes ices her knees up to six times a day.

Allyson's experience is part of a growing—and scary—trend: Osteoarthritis (OA), a progressive joint disease, is increasingly striking young women, most commonly in the knees. In 2000, just over 53,000 women ages 20 to 39 saw a doctor for a diagnosis of OA; 10 years later, that number skyrocketed to 230,000. "Doctors are even beginning to see women in their twenties with end-stage joint disease," says orthopedic surgeon Zackary Vaughn, M.D.

CLOCKWISE FROM TOP LEFT: ISAAC LANE KOVAL/CORBIS; MASTERFILE; TY MILFORD/AURORA OPEN/CORBIS; PASCAL SHIRLEY/GALLERY STOCK; ERIK ISAKSON/TETRA IMAGES/CORBIS

**Damage Inequity**

The dramatic rise in so-called older people's knee problems in young women is due, in part, to a more even playing field. Following the mandate for equal opportunity in sports in the 1970s, more women started participating in high school and college soccer, basketball, and volleyball, where the fast pace, high jumps, and quick pivots put knees in danger. Jumping and landing even a tiny bit off balance, or twisting the knee after planting the foot on the ground, can destroy the knee in seconds.

Starting young and specializing in one sport is especially bad for knees, but nonathletes are seeing the same cartilage-crushing effects from fitness routines overloaded with repetitive motion (say, pumping away on the stair-climber or logging miles on the treadmill).

Moreover, women are three to eight times more likely to do in their knees than men are.

What gives? For one, basic biology. Hormones can make women's joints more susceptible to damage. Recent research found that knee muscles work differently at different points in your menstrual cycle, which can destabilize the joints and set them up for injury.

Gender variations in the nervous system may also play a role: Scientists at Oregon State University found that men's muscles respond to nerve impulses at a much faster rate than women's, a difference that suggests females' muscles may be less likely to react efficiently during crucial moments.

And then there's the fact that those of us graced with two X chromosomes simply move differently. Women tend to land knock-kneed from jumps, with one knee pointing toward the other, potentially putting the anterior cruciate ligament (ACL)—which is crucial for

stabilizing the knee—in danger of ripping free, according to recent research.

**The Cartilage Connection**

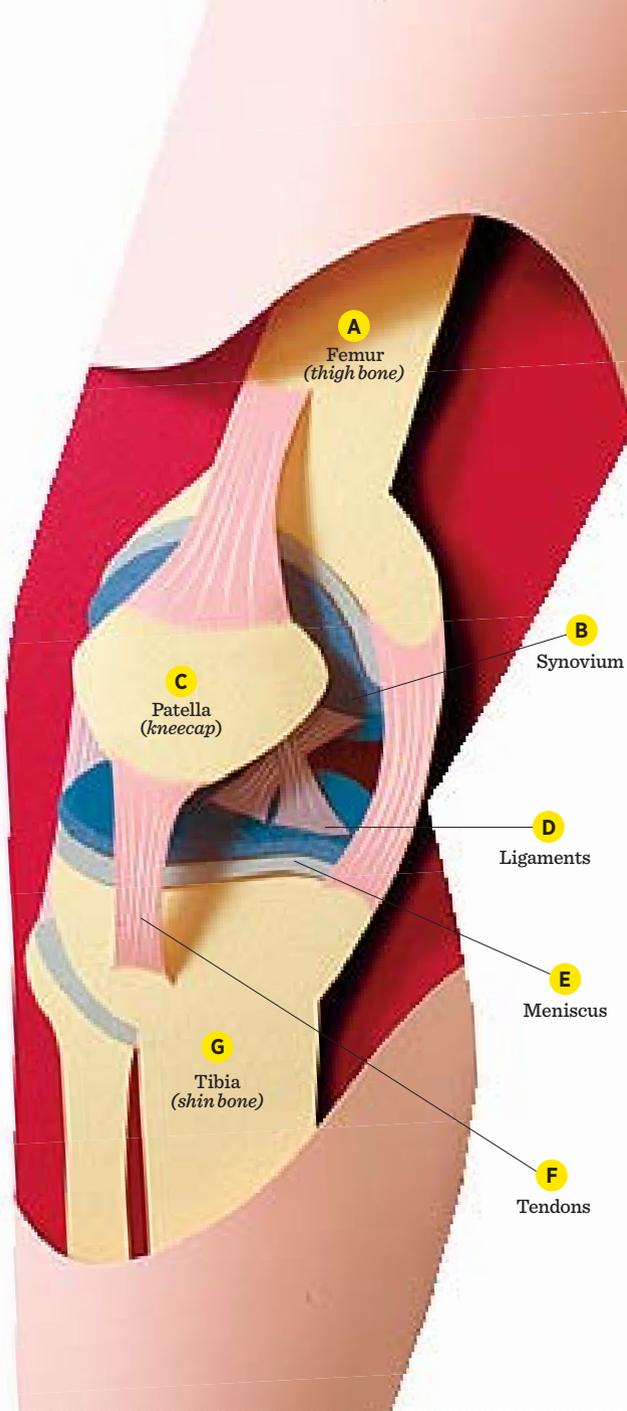
Those ACL injuries aren't just causing painful short-term damage. More than half of women with this type of injury will end up with OA, most likely within 10 years (see "A Slow-Moving Setback," page 70). This stat is particularly troubling because ACL injuries are on the rise: Studies show young female athletes are up to

eight times more likely to tear their ACL than their male counterparts are.

Also damaging—and much more common—are injuries to the meniscus, the cartilage that cushions the knee. "Injuring the meniscus increases your odds of developing OA by more than half, because some cartilage can't heal itself, so small injuries get worse over time," says orthopedic surgeon Donald Goodfellow, M.D. Being off balance during a simple task like squatting and

**The Knee Bone's Connected to the...**

A peek inside your largest and most complicated joint



**A. Femur:** The longest and strongest bone in your body connects the knee to the hip.

**B. Synovium:** This tissue keeps knees lubricated and healthy by producing gooey synovial fluid.

**C. Patella:** Acts like a shield, protecting the ligaments and cartilage

**D. Ligaments:** Connect bones and keep them from sliding too far backward and forward. The ACL (shown here) is the most commonly injured ligament in women.

**E. Meniscus:** This strong, squishy C-shaped cartilage disk acts as a shock absorber.

**F. Tendons:** Connect muscles to bone. Repeated pounding can strain the patellar tendon.

**G. Tibia:** One of two bones below the knee that supports most of our weight

twisting to pick up a dropped object can cause tears, even in a healthy woman with no prior knee injury. What's worse, you can have a small injury to cartilage and not even realize it until it worsens, since cartilage doesn't have nerve endings, says Rick Wright, M.D., an orthopedic surgeon at Washington University in St. Louis, Missouri.

**Knee Savers**

Though you can't entirely ward off OA (cartilage naturally breaks down as we

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## THE DOCTOR IS IN

### What's the difference between bad breath and halitosis?

—Megan, Memphis, TN

Zilch. Halitosis is just med-speak for stinky breath, especially when it's chronic. It's typically caused by bacteria on your tongue and gums, so your best defense is vigilant brushing and flossing—and cutting down on sugary foods and drinks, which fuel bacterial growth. Slurping lots of H<sub>2</sub>O can also help wash away dead cells that lead to offensive odors. If you have good dental hygiene but still suffer bad breath, see your doctor. Sinus infections and gut issues can also trigger halitosis.

### My family has a history of alcohol abuse—how big is my own risk?

—Pauline, Conshohocken, PA

Research shows that it does run in families: Someone with an affected parent has up to a fourfold risk for alcoholism. However, risk is not destiny. Stay safe by following the government's drinking guidelines: No more than one tipples per day, and never more than seven per week. If you do overindulge and notice cravings or a much higher tolerance, talk to someone you trust or contact a doctor or counselor for more information.

### Keri Peterson, M.D.

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age), you can keep it at bay by giving your knees a little TLC. Obesity is a big OA risk factor, so keeping a healthy weight is key—according to experts, as little as five or 10 extra pounds can add strain to the joint.

Smoking is also a no-no, because ingredients in cigarettes may harm cells that keep cartilage healthy. High heels (as little as two inches) also stress your joints because they make you walk with a shortened gait, which puts extra force on the inside of the knee, says Constance Chu, M.D., of Stanford University's Sports Medicine Clinic.

Worried you've already damaged your joints? Mild or moderate pain that comes and goes with exercise is common,

but if you regularly feel the same pain in the same part of the knee for more than three weeks and it doesn't respond to OTC nonsteroidal anti-inflammatory drugs, a reduced exercise regimen, or ice, it's time to get the knee evaluated by a specialist, says Vaughn. Swelling, clicking, popping, dull throbbing in cold weather, or feeling that the knee is unsteady are also signs of damage, says Vaughn. Injections that stop inflammation and replace joint fluid can help ease pain now; on the near horizon are treatments with lab-grown cartilage transplants, which aim to fix small defects—kind of like filling potholes.

In the meantime, a knee-friendly fitness plan with

plenty of variety can keep wear and tear to a minimum. (See the moves below.) Cross-training and aerobic fitness improve coordination and balance, making tumbles less likely; jumps and modified squats boost core strength, which stabilizes your knees and prevents that knock-kneed collapse on landings. Low-impact workouts on a stationary bike or elliptical build leg muscles while going easy on the joints.

"Muscle mass and strength around the knee can give you better joint longevity, because strong muscles share more of the load," says Chu. The time and sweat you put into keeping your knees healthy will help you get—and stay—pain-free. ■

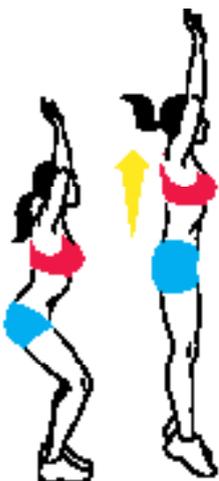
## Jump for Your Joints

It seems counterintuitive, but these moves from Tim Hewett, Ph.D., director of The Ohio State University Sports Health & Performance Institute, ward off problems by strengthening muscles around

3 reps for each move.

### Vertical Jump

Stand with legs shoulder-width apart, knees slightly bent, your body weight over the balls of the feet. Keeping your shoulders back and your eyes up, raise your arms overhead and jump straight up. Land with your knees slightly bent, knees aligned squarely over your toes. That's one rep.

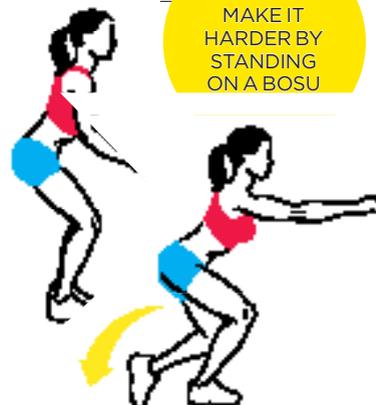


### Straight-Leg Deadlift

Hold a pair of light dumbbells in front of your thighs, feet hip-width apart, knees slightly bent. Bend at your hips to lower your torso until it's almost parallel to the floor, keeping your back flat and the weights close to your legs. Squeeze your glutes as you slowly return to standing. That's one rep.

### Single-Leg Balar

Stand on the floor with feet together, knees slightly bent, and arms in front of you. Transfer your weight to one leg, and step the other leg slightly behind you, keeping the knee bent. Return to start. That's one rep.



**QUICK TIP**  
MAKE IT HARDER BY STANDING ON A BOSU