Osteoarthritis of the Knee

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In This Issue

Understanding OA of the Knee

Don't let knee pain put you on the sidelines. It's time to get back into the life you enjoy

by Gerald Secor Couzens

When your knee aches continually from erosion of the joint and its internal padding, your life may come to a standstill. "And that's not good, for a host of physical and psychological reasons," says Mary I. O'Connor, M.D., associate professor and chair, department of orthopedic surgery at the Mayo Clinic in Jacksonville, FL. "Usually, the muscles around the knee provide cushioning and support while you walk or run. But, if you have to dramatically reduce your level of activity to avoid knee pain, then the muscles of the leg will weaken."

These weaker muscles, she points out, provide less cushioning to the knee—and the pressure of each step has to be absorbed mainly by that joint. As a result, your OA may become even worse, setting up a cycle of pain, inactivity and further joint erosion.

"On top of that," she adds, "as you become less active because of pain, it's easy to become frustrated and depressed."

Osteoarthritis (OA) can occur in almost any of the body's 200 or so joints, but OA of the knee is the most common type, accounting for more than 5.5 million doctor office visits annually in the United States. That's because the knee, with all the demands placed on it to bend, twist and straighten, is vulnerable to injury.

Most people who suffer from OA of the knee are older than 55, and about half of them are over 65; in fact, knee OA is one of the leading causes of disability among older men and women. According to the American Academy of Orthopaedic Surgeons (AAOS), the risk of disability from OA of the knee is equal to that of cardiovascular disease.

"While I have 75-year-old patients who are physically active and don't consider themselves to be old," says Dr. O'Connor, "patients who are younger, but suffer from knee OA, often admit to feeling old and incapacitated."

In one survey, when adults with knee OA were asked how they felt most of the time during the

previous month, more than 10 percent said that every activity was an effort, with many expecting their health to worsen, along with their morale.

"Luckily there are a host of things that can be done to change this outlook," says Dr. O'Connor.

What's Happening?

"Osteoarthritis typically begins in knees that have experienced trauma, infection or injury," says Richard Iorio, M.D., professor of orthopaedic surgery at Boston University School of Medicine. The cartilage that acts as a protective cushion between the bones starts to wear down. This decreases the ability of the cartilage to work as a shock absorber to reduce the impact of stress on the knees. Over time the remaining cartilage wears down faster, and in some spots it eventually may disappear altogether, leaving the bones to grind against one another.

"In addition, the joint slowly changes shape," adds Dr. Iorio, "and this causes more pain, swelling,

Risk Factors

Masterfile

Although aging itself is a risk factor for OA and decreases the ability of cartilage to heal itself, it's not the sole cause. Other factors include:

Genetics and gender In a study of female twins, heredity contributed to 39 to 65 percent of the hand and knee OA that developed. And OA of the knee is twice as common in women as in men.

Obesity Excessive weight can stress cartilage and alter body mechanics.

Injuries Prior injuries to knee cartilage or ligaments or a fracture of the joint can lead to knee OA years later.

Repetitive overuse of the joint For example, kneeling or squatting repeatedly over time can damage the knee.

Other causes Muscle weakness, poor bone alignment, poor aerobic fitness and the impact of nutritional imbalances are all being investigated.

stiffness and a decrease in motion at the joint."

The formation of osteophytes, or spurs—tiny growths of new bone that the body generates in an attempt to repair knee damage—can add to discomfort as they rub against nearby nerves and bone.

Therapies and Treatments

There are many ways to ease the discomfort caused by OA of the knee. The first steps usually involve making lifestyle changes so that you get enough of the right kind of exercise (see page 8) and lose weight, if you need to.

"I tell all of my knee OA patients that if you lose just 10 pounds, it's like taking a large load off your back when you are walking and climbing stairs," says Dr. Iorio. "Your knees will certainly thank you for that lessened load."

The weight-loss benefit was confirmed in the ADAPT (Arthritis, Diet and Activity Promotion Trial) study conducted by Stephen P. Messier, Ph.D., professor and director of the J.B. Snow Biomechanics Laboratory at Wake Forest University in Winston-Salem, NC. The study found that every pound of weight lost resulted in a four-fold reduction in the load exerted on the arthritic knee by every step.

You can also ease discomfort by using household helpers—products made to reduce strain on your knees, while letting you get on with everyday tasks. For more information, see the side bar on page 7.

Beyond lifestyle adjustments, millions of people with OA will need various types of medication and treatments (see page 12) to alleviate their knee pain this year. And more than 500,000 have knee joints so severely damaged by arthritis that joint replacement surgery becomes their therapy of choice. The surgery replaces worn surfaces of the joint with smooth-surfaced metal and/or plastic pieces.

Look to the Future

When you develop knee OA, there's no need to let life pass you by. Good medical attention and improving your body weight and exercise habits can provide enormous pain relief. "Here's my general prescription, which works well for most people," says Dr. O'Connor. "Take your medication when needed. Do low-impact exercise most days of the week. Keep your weight down."

Sources: JAMA, February 26, 2003, page 1017; the American Academy of Orthopaedic Surgeons

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○ Primary Care Physician/Family Doctor
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Important Safety Information. Synvisc-One™ (hylan G-F 20) is used to relieve knee pain due to osteoarthritis (OA). It is for patients who do not get enough relief from simple painkillers such as acetaminophen, or from exercise and physical therapy. Synvisc-One is generally well tolerated. However, it may not work for everyone. The side effects most commonly seen in a medical study were knee pain, stiffness, and swelling or fluid buildup in or around the knee. Side effects were generally mild to moderate and did not last long. More severe side effects have been reported only rarely in routine clinical use. Other side effects, such as rash, may also occur. Before trying Synvisc-One, tell your doctor if you are allergic to products from birds — such as feathers, eggs or poultry — or if your leg is swollen or infected. Talk to your doctor before resuming strenuous weight-bearing activities after treatment. Synvisc-One has not been tested in children, pregnant women or women who are nursing. You should tell your doctor if you think you are pregnant or if you are nursing a child.

Please see important Patient Information on the next page.

SONE-00069.B 06/2009 RYMD09

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Patient Information

Be sure to read the following important information carefully. This information does not take the place of your doctor's advice. If you do not understand this information or want to know more, ask your doctor.

Glossary of Terms

Hyaluronan (pronounced hy-al-u-ROE-nan): is a natural substance that is present in very high amounts in joints. It acts like a lubricant and a shock absorber in the joint and is needed for the joint to work properly.

Non-steroidal anti-inflammatory drugs: also known as "NSAIDs"; medication used to treat pain or swelling. There are many examples of NSAIDs, including (but not limited to) aspirin and ibuprofen. Some of these are over-the-counter drugs, and some can only be obtained by prescription.

Osteoarthritis (pronounced OS-te-o-arth-RI-tis): (OA) is a type of arthritis that involves the wearing down of cartilage (the protective covering on the ends of your bones) and loss of cushioning fluid in the joint.

What is the Synvisc-One™ product?

Synvisc-One is a gel-like mixture that comes in a syringe containing 6 mL (1½ teaspoons) and is injected into your knee. It is made up of hylan A fluid, hylan B gel, and salt water. Hylan A and hylan B are made from a substance called hyaluronan (pronounced hy-al-u-ROE-nan), also known as sodium hyaluronate that comes from chicken combs. Hyaluronan is a natural substance found in the body and is present in very high amounts in joints. The body's own hyaluronan acts like a lubricant and a shock absorber in the joint and is needed for the joint to work properly.

How is the Synvisc-One™ product used? (Indications)

The FDA-approved indication for Synvisc-One is: Synvisc-One is indicated for the treatment of pain in osteoarthritis (OA) of the knee in patients who have failed to respond adequately to conservative nonpharmacologic therapy and simple analgesics, e.g., acetaminophen.

How is the Synvisc-One™ product given?

Your doctor will inject Synvisc-One into your knee.

Are there any reasons why I should not receive a Synvisc-One™ injection? (Contraindications)

Your doctor will determine if there is any reason why you are not an appropriate candidate for Synvisc-One. You should be aware that Synvisc-One:

- Should not be used in patients who have had any prior allergic reactions to Synvisc, Synvisc-One or any hyaluronan-based products. Signs of an allergic reaction may include swelling of your face, tongue, or throat; difficulty breathing or swallowing; shortness of breath; wheezing; chest pain; a tightness in your throat; sleepiness; rash; itching; hives; flushing; and/or fever.
- Should not be used in patients with a knee joint infection, skin disease or infection around the area where the injection will be given, or circulatory problems in the legs.

What should my doctor warn me about?

The following are important treatment considerations for you to discuss with your doctor and understand in order to help avoid unsatisfactory results and complications:

- Synvisc-One is only for injection into the knee, performed by a doctor or other qualified health care professional. Synvisc-One has not been tested to show pain relief in joints other than the knee.
- Synvisc-One has not been tested to show better pain relief when combined with other injected medicines.
- Tell your doctor if you are allergic to products from birds such as feathers, eggs, and poultry.
- Tell your doctor if you have significant swelling or blood clots in the leg.
- Synvisc-One has not been tested in pregnant women, or women who are nursing. You should tell your doctor if you think you are pregnant, or if you are nursing a child.
- Synvisc-One has not been tested in children (≤21 years of age).

What are the risks of getting a Synvisc-One™ injection?

The side effects (also called reactions) sometimes seen after any injection into the knee, including Synvisc-One, include: pain, swelling, heat, redness, and/or fluid buildup around the knee. These reactions are generally mild and do not last long. Reactions are generally treated by resting and applying ice to the injected knee. Sometimes it is necessary to give pain relievers by mouth such as acetaminophen or NSAIDs, or to give injections of steroids, or to remove fluid from the knee joint. Patients rarely undergo arthroscopy (a surgical inspection of the knee joint) or other medical procedures related to these reactions.

Other side effects seen with Synvisc or Synvisc-One are: rashes, hives, itching, muscle pain/cramps, flushing and/or swelling of your face, fast heartbeat, nausea (or feeling sick to your stomach), dizziness, fever, chills, headache, difficulty breathing, swelling in your arms and/or legs, prickly feeling of your skin, and in rare cases a low number of platelets in the blood (platelets are a type of blood cell that are needed to help your blood clot when you are cut or injured). Rare cases of knee joint infection have been reported. If any of the above side effects or symptoms appear after you are given Synvisc-One, or if you have any other problems, you should call your doctor.

What are the benefits of getting a Synvisc-One™ injection?

As shown in a medical study of 253 patients with osteoarthritis (OA) of the knee, where approximately half received either a single injection of Synvisc-One or an injection of the same volume of salt water (a "Saline Control" injection), the major benefits of Synvisc-One are pain relief and improvement in other symptoms related to OA of the knee.

What do I need to do after I get a Synvisc-One™ injection?

It is recommended you avoid strenuous activities (for example, high-impact sports such as tennis or jogging) or prolonged weight-bearing activities for approximately 48 hours following the injection. You should consult your doctor regarding the appropriate time to resume such activities.

What other treatments are available for OA?

If you have OA, there are other things you can do besides getting Synvisc-One. These include:

Non-drug treatments

- Avoiding activities that cause knee pain
- Exercise or physical therapy
- Weight loss
- Removal of excess fluid from your knee

Drug therapy

- Pain relievers such as acetaminophen and narcotics
- Drugs that reduce inflammation (signs of inflammation are swelling, pain or redness), such as aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs, for example ibuprofen and naproxen)
- Steroids that are injected directly into your knee

When should I call my doctor? (Troubleshooting)

If any of the side effects or symptoms described above appear after you are given Synvisc-One, or if you have any other problems, you should call your doctor.

What did the clinical studies show?

A study was conducted in 6 countries outside the United States with 21 physicians. The patients in the study had mild to moderate knee OA, moderate to severe pain, and did not have sufficient relief of their pain and symptoms with medications taken by mouth.

A total of 253 patients in the study were assigned by chance to receive either a single injection of Synvisc-One (n=123 patients), or an injection of the same volume of salt water (a "Saline Control" injection) (n=130 patients). Neither the patients nor the doctors evaluating them knew which treatment they received. Any fluid that was present in the patient's knee was removed before the injection. The patients were seen by their doctor at standard times over 6 months. Information was collected about how much pain they were experiencing doing various types of activities, how much they were limited in their daily activities by their OA, and on their overall condition. Their doctor also provided an overall rating of their OA.

The main measure of the study was how much pain the subjects had doing five The main measure of the study was how much pain the subjects had doing five common types of activities over the 6 months duration of the study. Daily activity limitations and overall evaluations were also compared between the group of patients receiving Synvisc-One injection and the group receiving salt water injection. The study showed that patients receiving Synvisc-One had significantly less pain over 6 months, and felt significantly better than the patients who received the salt water injections. The difference in pain score reduction from baseline to 6 months between the Synvisc-One and salt water control injection was 0.15 out of a 5 point scale for the measurement of OA pain in the knee.

What adverse events were observed in the clinical study?

The following are the most common adverse events that occurred during the clinical trial of Synvisc-One:

- Pain in the knee or at the injection site
- Stiffness, swelling or warmth in or around the knee
- Changes in the way that you walk (e.g. limping)

Severe adverse events were not observed in the Synvisc-One trial. Joint infections did

not occur in the injected knee in the Synvisc-One clinical trial. The most commonly occurring adverse events outside of the injected knee were headache, back pain, sore throat and the flu. One patient had a single episode of feeling faint.

How do I get more information about the Synvisc-One™ product? (User Assistance)
If you have any questions or would like to find out more about Synvisc-One, you may call Genzyme Biosurgery at 1-888-3-SYNVISC (1-888-379-6847) or visit www.synvisc.com.

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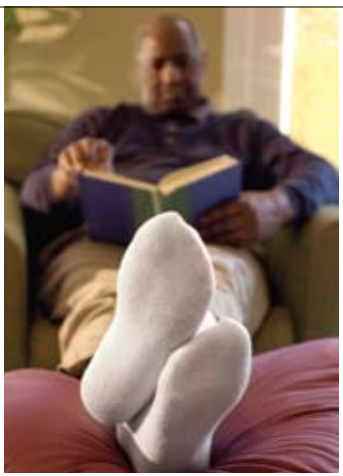

When you cannot bend your knee easily, getting ready to face the day can be difficult. Here are some devices that might make it less difficult to get washed, dressed and ready to go.

Bathtub bar This easy-to-grab bar locks onto the side of the tub so you can more safely and easily get in and out.

Bath/shower bench It can be difficult to lower yourself into and raise yourself up out of a bathtub; try one of these benches that lets you shower or take a sponge bath with little strain. Some versions have adjustable legs that are secured with suction cups.

Elevated toilet seat These can raise the seat level of your toilet by more than a couple of inches, making it easier to get up and down. Some come with padded arms for support.

Sock and shoe aids It can be tricky to bend your legs and knees enough to get your socks on—so try a sock holder that lets you slip the fabric over a form and then pull it up. Next, use a long shoehorn—with a flexible neck—to guide your shoe on. Stay clear of shoes that tie; slip-ons are easiest.

The main goal of all these devices is to spare yourself pain and make it possible to get up and into your day with fewer obstacles.

The Arthritis Foundation offers information on products that are easy to use and techniques for handling everyday tasks. You can contact them at Arthritis Answers, 800-283-7800. *—KD*

Jupiter Images

The Exercise Effect

Physical activity and simple routines can make you feel better **by Kalia Doner**

Although OA of the knee is often progressive and may require medical intervention, there are notable benefits from appropriate exercise. It not only reduces knee strain and pain as it strengthens muscles, helps control weight and increases mobility, but it also raises the spirits and improves self-confidence—so important in managing chronic pain.

Aquatic exercises and swimming are extremely beneficial. They put little stress on the joints while increasing joint flexibility and strengthening muscles.

Land-based physical activities such as bicycling can also ease pain and improve flexibility. The Cochrane reviews found that "there is platinum-level evidence that land-based therapeutic exercise has at least short-term benefit in terms of reduced knee pain and improved physical function for people with knee OA."

Manual physical therapy in combination with land-based exercise is also effective in easing discomfort.

"In one study we did, a physical therapist moved people's joints to let them passively experience motion at different speeds and to different degrees," explains study coauthor Gail D. Deyle, D.P.T., professor at Baylor University Graduate School in Waco, TX. "The associated exercise program included joint range of motion exercises, muscle strengthening and stretching exercises, and riding a stationary bicycle.

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"We found that the benefits of this routine are equal to or greater than many of the other treatment options for knee OA that have a much higher risk for complications."

Body Work

When you are planning an exercise routine, remember that the knee works in conjunction with the hip, ankle and back. You need to aim for well-balanced strength and flexibility.

"Each time you take a step, a load is placed on the knee joints," says Laura Thorp, Ph.D., assistant professor of anatomy and cell biology at Rush Medical College in Chicago. "How much of a load depends not just on your weight, but also on the way you walk and the alignment of your leg." In an ongoing study, she is exploring whether an exercise routine that focuses on the hip muscles can decrease the strain on knee joints in people with OA of the knee.

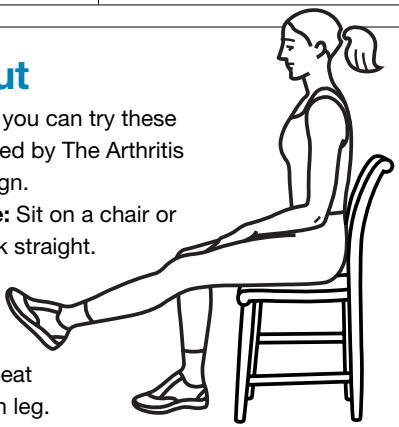
According to Thorp, the study exercises "strengthen hip abductor muscles that help stabilize the pelvis. In people with OA of the knees, these muscles tend to be weak." The goal, she adds, is not only to relieve pain, but perhaps to halt progression of the disease.

Sources: *Journal of Rheumatology,* Jan. 2009; *BMJ* Aug. 18, 2009; *Annals of Internal Medicine,* Feb. 2000

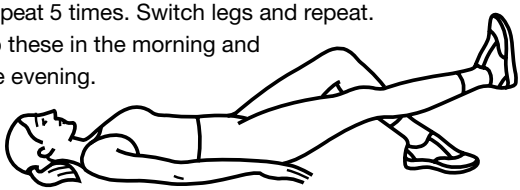
Work It Out

Ask your doctor if you can try these exercises suggested by The Arthritis Research Campaign.

Straight-leg raise: Sit on a chair or solid surface; back straight. Extend and raise the leg. Hold for a slow count of 10. Lower slowly. Repeat 10 times with each leg.



Straight-leg raise: Lying on a mat on the floor, bend one leg; keep the other leg straight. Lift the straight leg off the floor. Hold for a slow count of 5, then lower. Repeat 5 times. Switch legs and repeat. Do these in the morning and the evening.



Illustrations by: Susan M. Blubaugh

Diet Myths

Is there a connection between what you eat and how your knees feel? **by Andrea Klausner, R.D.**

Many people swear that they can make their osteoarthritis (OA) better or worse, by changing what they eat.

Foods that are sometimes thought to ease or aggravate OA symptoms include milk, wheat, meat, garlic, cherry juice and even gin-soaked raisins. In addition, sufferers often avoid eating nightshade vegetables, such as eggplant, potatoes, peppers, or tomatoes, believing they trigger symptoms.

The Skinny on Diet

Why do folks think food has an impact on OA? What may be going on, suggests the *UC Berkeley Wellness Letter,* is that as arthritis pain waxes and wanes, people blame or credit whatever they are eating (or not eating) at the time. In fact, notes John Hardin, M.D., chief scientific officer for the Arthritis Foundation, "Anecdotes are plentiful, but proof that diet affects OA pain is scarce."

What does exist is preliminary research that suggests antioxidants in fruits and vegetables may help prevent and slow the progression of osteoarthritis. But the only diet that's been proved to benefit OA is one that helps a person lose weight, if needed.

A registered dietitian (R.D.) can help you plan a healthy weight-loss diet. You can go online at Eatright.org to find one in your area.

Sources: *Arthritis Research & Therapy*, 2007; *Annals of Rheumatic Disease,* April 2007

continued

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managing osteoarthritis knee pain

Exercising and keeping your weight down are two of the most important things you can do for your knees. If osteoarthritis knee pain is getting in the way of staying active it's time to talk with your doctor about treatment options.

Use Steps 1 – 3 to guide your conversation with your doctor. Create your personal Action Plan in Step 4 based on the treatment plan you discussed.

step 1: describe your pain

Your doctor can tell from an x-ray if your osteoarthritis is at a mild, moderate or severe stage. However, your pain level is not necessarily connected with your stage of OA. It's important that you describe your pain level.

	No Pain				Lots of Pain
Walking	1	2	3	4	5
Sitting or lying down	1	2	3	4	5
Going up and down stairs	1	2	3	4	5
Exercising/playing sports	1	2	3	4	5

step 2: understand your treatment options

If your osteoarthritis is severe you may eventually need to have surgery. However, many people with osteoarthritis of the knee can manage their pain with non-surgical treatments. Ask you doctor which of the following treatments are right for you.

- Over-the-counter pain relievers
- One-injection viscosupplement
- Prescription NSAID/Cox-2 inhibitors
- Steroid injection

step 3: make the most of your treatment

Once you find a treatment that relieves your knee pain it's important to get active again. Talk with your doctor about the best exercise plan for you. Be sure to ask:

- What exercises are best for me?
- Are there certain activities I should avoid?
- Should I see a physical therapist?

continued on back...

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managing osteoarthritis knee pain

Now that you have the most up-to-date information from your doctor, become a health partner by creating your Personal OA of the Knee Action Plan. Use this side of My Doctor Discussion Planner™ to keep track of what you need to do to increase mobility, ease pain and stay healthy.

Next steps based on my most recent visit with

Dr._____on_____
(name) (date)

step 4: my action plan

My next appointment

Follow-up tests

Lifestyle changes

My exercise plan as discussed with my doctor

Information I need for my next doctor's appointment
(i.e.: family history, list of other medications, etc.)

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Supplement Savvy

What's known about the benefits of glucosamine and chondroitin **by Michael Goldman**

Dozens of compounds are marketed as dietary supplements for OA, but by far the most popular—and probably the most promising—is glucosamine, which is often taken along with chondroitin sulfate. Both are natural substances found in healthy cartilage and synovial fluid, which cushion joints. Many experts have looked at whether or not taking supplemental doses may slow or prevent deterioration of cartilage and reduce pain and stiffness.

But do they really work? Over the years, research has produced conflicting results. Experts hoped a clear answer would come from GAIT (Glucosamine/chondroitin Arthritis Intervention Trial), a large study of people with OA of the knee. In 2006, results of

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the study showed that neither glucosamine nor chondroitin, alone or in combination, worked significantly better than placebo in reducing pain or other symptoms when taken for six months. (The prescription pain reliever Celebrex, also tested, fared only slightly better.) In a 2008 follow-up study, subjects continued treatment for another 18 months and then had X-ray exams to measure cartilage loss. The exams found only insignificant differences in cartilage loss among the groups.

These disappointing findings are probably not the last word on glucosamine and chondroitin. As in most studies, the scientists called for more research. So, if you take one or both supplements and find it helps, this may be due to the placebo effect, which can be powerful when it comes to pain relief. Talk to your doctor, who may advise you to continue taking the supplement or to stop for a while to see if there's a difference.

Sources: National Center for Alternative and Complementary Medicine; Arthritis & Rheumatism, 2008

How To Feel Better

You and you doctor can individualize your treatment to find what works **by Kalia Doner**

If you have OA of the knee, there are many ways to ease discomfort and provide relief—from the time-tested use of over-the-counter (OTC) pain relievers such as ibuprofen to total knee replacement.

"Twenty years ago we thought that osteoarthritis was the inevitable result of wear and tear on your bones," says Joanne M. Jordan, M.D., M.P.H., director of the Thurston Arthritis Research Center at the University of North Carolina, Chapel Hill. "But clearly not everyone gets osteoarthritis, and, although there are risk factors such as obesity, genetics or injury, a lot of folks develop OA without having any. So we are looking at the role inflammation plays, as well as other factors."

While it appears to be intermittent and at a different level of intensity than in rheumatoid arthritis (RA), the inflammation is there and, says Dr. Jordan, very relevant. "Understanding this opens up the possibility that disease-modifying drugs, or even biologics, [such as those used to treat RA] may be useful in treating or stopping the progression of OA," she explains.

"Some people feel that for osteoarthritis, as opposed to RA, it's not justified to incur the risk of side effects that is associated with these drugs. But I think OA causes a lot of difficulty and trying these medicines may be worth the risks, particularly with multi-joint OA. Just because OA

isn't rheumatoid arthritis doesn't mean it isn't associated with significant disability."

Although using disease-modifying drugs for OA is still in the future, treatments are changing in other ways.

"Structurally, we're not just focusing on cartilage in the knee," says Dr. Jordan. "We are looking at the role of the meniscus—the cartilage pad between the thighbone and the shin—as well all the bone itself and supporting structures that contribute to OA."

Treatment Basics

Lifestyle interventions have been found to be effective in easing the pain associated with OA of the knee.

"Several studies have shown that being physically active and walking, as well as weight loss for those who are overweight, can help relieve symptoms," says Dr. Jordan. "What we don't know is if these programs do anything to alter or slow down the course of the disease.

"But at least the days of saying, 'Oh well, it's just arthritis,' are over. There are many treatment choices we can use quite effectively."

If you need medical intervention to ease the discomfort that OA of the knee is causing you, here are the options to discuss with your doctor.

OTC pain relievers such as acetaminophen and nonsteroidal anti-inflammatories (NSAIDs), such as ibuprofen, can be very effective in easing discomfort. If they're not, prescription strength NSAIDs may be prescribed, including Cox-2 inhibitors such as Celebrex.

Corticosteroids are powerful anti-inflammatory agents that can be injected into the joint. They remove pain but may not improve joint

Lifestyle Options

Frequent, non-weight-bearing exercise, alternative therapies such as mindfulness/meditation and massage, and weight loss when needed can ease the discomfort associated with knee OA. Danish researchers found that a 10 percent reduction in weight led to a 28 percent improvement in knee function. In addition, proper bracing is sometimes effective. The American Academy of Orthopaedic Surgeons (AAOS) says studies on the use of knee braces for OA of the knee have found they may be especially helpful if the arthritis is centered on one side of the knee. A brace can assist with stability and function.

function. Although there is concern that they may increase inflammation, Australian researchers looking at 28 trials of the drug in treating OA of the knee found "the short-term benefit of injections of corticosteroids in treatment of knee OA is well established."

However, a newer type of injectable therapy, viscosupplementation, can be useful in cases in which corticosteroids are not effective or to avoid their negative side effects. **Viscosupplementation** is an injection into the knee joint of hyaluronic acid, a naturally occurring substance found in synovial (joint) fluid. Once in the joint, it cushions and lubricates so that the bones do not catch, grind or touch.

Depending on the product, treatment is given as a one-time shot or in three to five injections at weekly intervals. Relief can come quickly or take a month to be felt; it can last for several months. Repeated injections are thought to be effective and safe.

According to the AAOS: "It has been shown to relieve pain in many patients who can't get relief from nonmedicinal measures or analgesic drugs." It is most effective for mild to moderate arthritis.

Jupiter Images

Knee replacement

More than half a million knee replacements are done every year in the U.S., and the results are usually positive, although the degree of success can depend on a person's overall health and how conscientiously he or she adheres to physical therapy afterwards.

"Studies show many people put off knee replacement because they have misconceptions about recuperation and results," explains Dr. Jordan. But serious complications, such as a knee joint infection, occur in fewer than 2 percent of patients. And according to the *NIH Consensus Development Conference on Total Knee Replacement*, 90 percent of people receiving total knee replacement report a rapid and substantial improvement in pain, mobility and overall health-related quality of life. And this level of satisfaction lasts over time.

There are various

types of knee replacement surgeries. Total knee replacement is recommended when you can no longer find relief from pain using other therapies, and your knee problems are curtailing your quality of life. There are two common forms: standard total knee replacement and the newer minimally-invasive knee replacement. Many designs and components are used in these surgeries, but generally they consist of a metal femoral (thigh) component, a durable plastic tibial (shinbone) component and a plastic patellar (knee cap) component.

Alternatives to total knee replacement do exist. They include:

Osteotomy It is used to improve the knee's alignment by reshaping the thighbone or the shinbone. Healthy bone and cartilage can then take over the work being done by damaged parts of the knee.

The AAOS says it is recommended for those 60 or younger, who are active or overweight, when there is "uneven damage to the joint, correctable deformity and no inflammation."

Unicompartmental knee replacement This procedure replaces one of two compartments of the knee: the medial (inner) compartment or the lateral (outer) compartment. The third compartment of the knee (the kneecap) is not replaced. The surgery is recommended for those 60 or older, who are not obese and are relatively sedentary.

Sources: Cochrane database reviews, April 2006; *Osteoarthritis and Cartilage,* January 2005; Nat'l. Institutes of Health

Please, Watch Your Step

"Everyone with knee or hip pain should get an evaluation of his or her gait alignment," says the Thurston Arthritis Research Center's Dr. Jordan. "In one of our research projects, we found that five to seven percent of people in the general population have differences in the length of their legs—and that can lead to painful arthritis of the hip and knee joints. For some people, putting a lift into a shoe to even out the gait may help knee pain dramatically."

Ask your physical therapist or physician to measure your legs and then, if necessary, to recommend a source for orthotic inserts for your shoes.

Doctors' Advice

Straight answers to interesting questions about OA of the knee **by Kalia Doner**

Q: I'm thin, active and healthy? Why do I have knee OA?

Dr. Jordan: We are looking for new answers to questions about what causes OA. And we are finding some surprising clues. University of North Carolina researchers have shown that people with higher lead levels in their blood were among those most likely to have more severe osteoarthritis. Up until the 1970s, lead was found in many products, such as gasoline, indoor house paint and even cans for food. Once you're exposed to it, lead goes into the bones where it can affect production of blood cells and absorption of calcium. We're starting to get some indication that it may affect joints as well, but that's still uncharted territory."

Q: Why can I ride a bike 25 miles with no knee pain, but I cannot run?

Dr. Callahan: Physical exercise is great for people with OA, but it needs to be the right type. Riding a bike—and even better, swimming—strengthens muscles and improves circulation and flexibility without putting strain on the knees, as running does. These activities not only *do not* aggravate OA, when done regularly, they are pain relievers.

Joanne Jordan, M.D., is director of the Thurston Arthritis Research Center, University of North Carolina in Chapel Hill.
Leigh Callahan, Ph.D., is assoc. professor in the departments of social medicine, orthopaedics and medicine at the University of North Carolina.

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Joanne Jordan, M.D., director Thurston Arthritis Research Center, Univ. of North Carolina in Chapel Hill

Mary I. O'Connor M.D., assoc. prof. and chair, department of orthopedic surgery, Mayo Clinic, Jacksonville, FL

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