

## Institute for Women's Health Research

*Putting Women's Health First*

September 2011

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Dear Friends,

Osteoarthritis, the most common form of arthritis, occurs at a higher rate in women-about 60% of the 27 million Americans who have it are female. The good news is that researchers are beginning to recognize that there are sex differences in the manifestation and etiology of this serious condition.

This month we are focusing on knee osteoarthritis in women and some of the sex-based aspects of this disease. Researchers are currently exploring the role our genes, anatomy and hormones have on the prevention and progression of this painful condition with expectations that a personalized approach to treating it will emerge.

We will also continue to blog about this condition as new discoveries are made and we hope that you will subscribe to our [blog](#) and follow the progress being made.

Sincerely,

The Institute Staff



INSTITUTE FOR  
**WOMEN'S HEALTH**  
RESEARCH

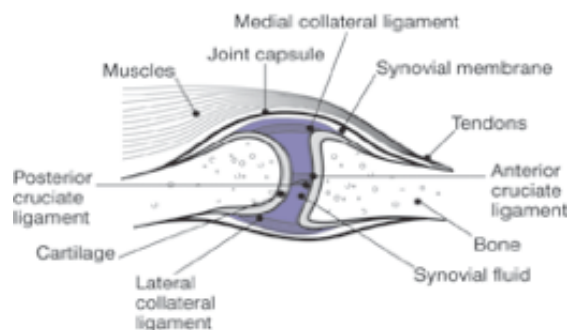
## KNEE OSTEOARTHRITIS IN WOMEN

### What is Osteoarthritis?

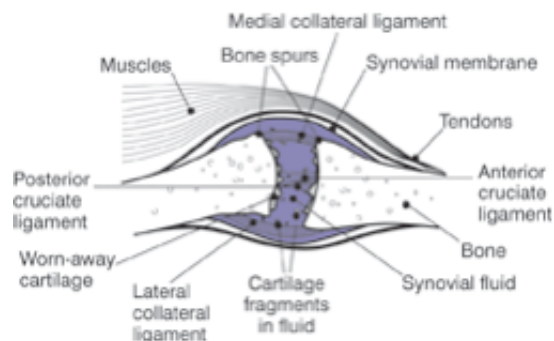
Osteoarthritis (OA) is the most common type of joint disease, and the knee is one of the most affected joints. However, it can also be found in the hips, hands, feet, shoulder and spine and its severity increases with age.

OA mainly affects cartilage, the hard but slippery tissue that covers the ends of bones where they meet to form a joint. Healthy cartilage allows bones to glide over one another and also absorbs energy from the shock of physical movement. In OA, the joint may lose its normal shape and small deposits of bone (osteophytes or bone spurs) may grow on the edges of the joints or break off along with pieces of cartilage and float in the joint space. This causes pain and can inflict even more damage. Current research indicates that OA not only affects the cartilage, but it may also cause damage to the synovial membrane (tissue that produces fluid to keep joint lubricated) and subchondral bone (the layer of bone just below the cartilage).

### HEALTHY KNEE JOINT



### KNEE JOINT WITH OA



*Diagram Source: NIAMS*

Unlike rheumatoid arthritis (RA) which causes systemic problems, OA only affects the joint function. RA typically begins at a younger age than OA, causes swelling and redness in joint, and may make people feel sick, tired and feverish. In RA, the joint involvement is symmetrical (e.g., both knees). OA, on the other hand, can occur in a single joint or can affect a joint on one side of the body more severely. Over time, OA slowly changes the joint and in advanced cases, when the cartilage wears completely away, the ends of the exposed bones rub against each other causing deformity and pain.

### **What are the symptoms of OA and how is it diagnosed?**

The primary symptoms are pain and sometimes stiffness in the joint. It may be localized in one area of the joint and worsen during certain activities. Rest often relieves the pain. Your knee may feel stiff when you first wake up in the morning but it often loosens up as you move around. In rare cases of advanced OA, knee pain may occur during the night and disrupt sleep.

There is no specific blood test for OA but your doctor may order some tests to rule out other types of arthritis. OA is usually diagnosed based on symptoms and physical examination of the problem joint. X-rays can help confirm the diagnosis and identify specific areas where the cartilage has thinned, bone spurs occur, or calcium deposits are present. Rarely is a MRI needed.

### **Who gets osteoarthritis and why?**

Several factors increase one's risk for developing osteoarthritis of the knee. They include:

- Heredity and genetic mutations
- Increased weight that puts more pressure on the joints
- Aging
- Gender: women older than 50 years are more likely to get OA than men at that age
- Repetitive movements found in certain occupations that include heavy lifting, bending, stress on the knees
- High impact sports that may lead to bone and joint injury
- History of illnesses that may increase calcium deposits (gout) or metabolic conditions
- Underlying orthopedic and muscle disorders
- Menopause and hormonal changes
- Certain bleeding disorders that affect the joints.

### **Why do women get more OA?**

The joints affected by OA tend to vary by gender and may be a clue to some of the etiology or cause of the disease. For example, men are more prone to have OA in their hips, and women are more likely to have OA affect their knees or hands.

The difference in anatomical structure is one factor being studied. Researchers have pointed out that because women are designed to give birth, their tendons in the lower body may be more elastic. Because of this, their joints may be less stable during certain movements making them prone to injury. Women's hips are

also wider and as a result are not well aligned with their knees, leading to more knee injury. For example, young women who play soccer are three to four times more likely to suffer knee injuries than young boys who play soccer.

Researchers, including several from Northwestern, are looking at knee alignment, gait, and thigh and hip muscle strength as factors in the development and progression of knee osteoporosis. Efforts are underway to study bowed out (vagus) vs knock-kneed or turned-in (valgus) positioning of the knee and how it influences the amount of pressure or load put on a joint. Understanding the mechanics of knee function could lead to physical therapy interventions that can modify one's gait and pressure on the knees.(1,2)

Because the incidence of OA increases after menopause, researchers are exploring the role of estrogen and other female hormones on OA. Studies have shown that women on menopausal hormone therapy have more knee cartilage than controls, indicating some protective effect, but more research is needed. There is some evidence that hormonal and reproductive factors, (e.g., going through puberty at an early age, having more children, etc.) influence the potential need for knee replacement due to OA in later years. (3)

Bone and joint researchers are studying the impact of early trauma due to an accident or sport injury on the long-term risk of developing OA. Scientists are trying to determine what constitutes a pathological versus healthy cellular pathway to healing. In other words, why do some people have injuries during their teens and never have OA and others do. (4)

As the population of aging women become more obese, experts are determining how excess weight influences the extent of pain and progression of OA.

### **How is OA treated?**

Current treatment modalities fall into five groups:

- Lifestyle and behavioral modifications including education, physical therapy, weight management and exercise.
- Drug therapy starting with simple pain relievers (aspirin, nonsteroid anti-inflammatory drugs [NSAIDs]) or stronger opiates/painkillers if there is no response to the over-the-counter medications. Topical cream painkillers are sometimes prescribed. For information about pain treatment for osteoarthritis, click [here](#).
- Intra-articular (within the joints) treatments including cortisone injections and hyaluronic acid injections.
- Surgery, including arthroscopy, osteotomy (a procedure where the bone is cut or lengthened to correct alignment) and joint replacement.
- Experimental/alternative treatments such as acupuncture, magnetic pulse therapy, and dietary supplements glucosamine/chondroitin sulfate.

### **When should you consider knee replacement surgery?**

While surgery is often the last resort treatment, researchers have reported that women wait longer to pursue knee-replacement surgery than men do. By doing so, women risk increased disability and quality of life. Several studies have found that when both men and women were referred to specialists to consider surgical treatment, men were more than twice as likely to get a recommendation for

treatment, then were more than twice as likely to get a recommendation for replacement surgery.(5) Whether there is some bias that men are more active or that women tolerate pain more is yet to be confirmed. However, the general rule is that patients-men or women-should assess how much their condition affects their ability to climb stairs, walk a block without pain, and do routine chores when considering surgery. Most surgeons agree one's functionality before surgery influences the outcome of knee replacement surgery, so waiting until one is incapacitated will make full recovery more difficult.

### **What about glucosamine and chondroitin supplements?**

Glucosamine and chondroitin have received a great deal of attention in the lay press. Glucosamine and chondroitin sulfate are natural substances found in and around the cells of cartilage. In the United States, they are sold as dietary supplements, which are regulated as foods rather than drugs, raising some issues about their safety and effectiveness.

New data from a long-term study of glucosamine and chondroitin for knee osteoarthritis pain reveal that patients who took the supplements (alone or in combination) had outcomes similar to those experienced by patients who took celecoxib (Celebrex) or placebo pills. This study, part of the Glucosamine/chondroitin Arthritis Intervention Trial (GAIT) funded by the National Center for Complementary and Alternative Medicine (NCCAM), is the first to assess the safety and effectiveness of these products over 2 years. The study enrolled 662 GAIT participants with moderate-to-severe knee osteoarthritis, who received either glucosamine, chondroitin sulfate, glucosamine and chondroitin sulfate combined, celecoxib (all at the standard dosages), or placebo.

All treatment groups experienced improvement in pain and function over the 2-year period, with clinically detectable improvements seen as early as 24 weeks in all groups; however, there was no statistically significant differences among the four treatment groups. Adverse reactions were mild and occurred among all treatment groups, and serious adverse events were rare.(6)

#### *References:*

1. Sharma L, et al. *Ann Rheum Dis* (2010 Nov).
2. Moisisio K, et al. *Arthritis Rheum* (2011 Apr).
3. Stevenson JC. *Maturitas* (2011).
4. Anderson D, et al. *Jour Ortho Resear* (2011 June).
5. Borkhoff CM, et al. *Can Med Assn Jour* (2008 Mar).
6. Sawitzke AD, et.al. *Ann Rheum Dis* (2010 Aug).

#### *Sources:*

[The Arthritis Foundation](#)  
[National Institute of Arthritis and Musculoskeletal and Skin Disease](#)  
[American Academy of Orthopaedic Surgeons](#)  
[Arthritis Research UD](#)

## UPCOMING EVENTS

September 21-24, 2011

[North American Menopause Annual Meeting](#)

Washington, DC

September 27, 2011

[Women's Heart Matters: The Truth About Heart Disease](#)

Prentice Women's Hospital, Chicago, Illinois

September 28, 2011

[IWHR Monthly Research Forum--Estrogen Across the Female Lifespan](#)

Prentice Women's Hospital, Chicago, Illinois

October 15, 2011, 10:00am

[Aware for All--A Clinical Research Education Day](#)

Robert H. Lurie Medical Research Center, Chicago, Illinois

## HEALTH TIP

Knowing your osteoarthritis risk is important for early intervention. The Arthritis Foundation has an on-line risk assessment tool that you can take on line by clicking [here](#).

## [Illinois Women's Health Registry News](#)

Nadia Reynolds, M.A. is the new coordinator for the registry. Previously working with the Northwestern Oncofertility Consortium for almost two years, she will now be running the registry and coordinating education and outreach programs for the Institute. Despite this change in personnel, the registry experience will remain unchanged for all of our members and all phone numbers will remain the same as well. Nadia can be reached at [nadia-reynolds@northwestern.edu](mailto:nadia-reynolds@northwestern.edu).

The e-newsletter topic this month is osteoarthritis, the most common form of arthritis. Out of all of the Women's Health Registry members, almost one third (32%) report having pain in their muscles/joints that limit activities, and almost a quarter (22%) report having osteoarthritis, degenerative arthritis, or some other form of arthritis.

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