

KNEE PAIN MANAGEMENT

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What causes knee pain?

Knee pain is often age-related. In younger people, knee pain is more commonly caused by trauma or overuse, usually related to sports or some physical activity. If you are over 40 and have knee pain, the most likely reason is wear and tear in the knee joint, also known as degenerative arthritis or degenerative joint disease (DJD).

Osteoarthritis is the most common cause of knee pain. Osteoarthritis (OA) is the gradual and painful deterioration of the articular cartilage and subchondral bone in your joint. When the cartilage thins, your bones rub against each other and the lining of your joints, which is full of nerves and sensitive to pain. Osteoarthritis is more common in people over 40 and often develops earlier in former athletes who suffered knee injuries during their youth. Its early symptoms are pain and stiffness in the morning or after strenuous activity. Morning stiffness usually resolves in less than an hour. See also our [Arthritis page](#).

Rheumatoid Arthritis is an inflammatory disease, triggered by the immune system, which affects millions of people worldwide. Rheumatoid arthritis damages the cartilage and joint lining. The damaged tissue releases enzymes that damage the cartilage, soft tissues, and even bone. No one knows what causes the immune system to begin attacking the body's joints. The problem tends to strike between the ages of 20 and 45, is more common in women, and usually affects many different joints in the body, not just the knees. Early symptoms are fatigue, flu-like aching, joint pain, and morning stiffness that lasts longer than an hour.

Pseudogout occurs when the body forms calcium crystals that are deposited in joints, typically in the knees and wrists. It usually strikes later in life. It can cause quick, severe pain but can produce long-term pain in about half the people it affects, appearing much like osteoarthritis. Early symptoms are red and swollen joints, painful to touch, and sometimes fever in bad attacks. Treatment usually consists of anti-inflammatory drugs or injections of steroids directly into the joint.

Bursitis of the knee occurs when the bursa, a fluid-filled sac that serves as a cushion between a bone and soft tissue, such as a tendon, becomes inflamed. It can be caused by extensive kneeling, infection, or an injury to the knee and usually lasts a few weeks. Early symptoms are pain and swelling just below the inside of the knee. Treatment includes stretching and anti-inflammatory drugs, either pills or injection of steroids. Surgery is rarely needed.

Tendinopathies: overuse tendinopathies are numerous and quite common. Numerous investigators worldwide have shown that the pathology underlying these conditions is tendinosis or collagen degeneration. Painful overuse tendon conditions have a non-inflammatory pathology and therefore tendinitis is not a correct term. Equally, anti-inflammatory drugs (NSAIDs) usually do not help. (see also [Overuse Injuries](#) page).

Sports Injuries: there are three common sports-related causes of knee pain: Runner's knee (overuse injuries), ligament injuries, and torn cartilage. Runner's knee is caused by damage and inflammation of the tendons, which develops when you run, ski, or cycle too much or incorrectly. Symptoms are pain, and sometimes swelling, at the front of the knee. Ligaments are tough bands of tissue connecting bones in your joints that can be stretched or torn when your knee is twisted or hit. Symptoms are immediate and severe pain. Don't attempt to walk on the leg until you've seen a doctor. The two pads of cartilage in your knee can be torn if you forcefully twist your knee while, for example, lunging for a tennis ball. Symptoms can include pain, swelling, locking of the knee, or clicking of the knee.

What drugs can ease common knee pain?

As their name implies, nonsteroidal anti-inflammatory drugs (or NSAIDs, as they are commonly called) are medicines that block or inhibit the body's inflammation process without the use of cortisone or other steroid drugs. The most commonly used NSAID's are aspirin, ibuprofen and naproxen. NSAIDs are often used along with exercises or therapy to help with the cause of the pain. While inflammation of tissue is the body's natural response to injury or overuse, it releases enzymes and chemicals that irritate and cause pain. Anti-inflammatory drugs can limit the immune system's response, relieving swelling and pain. These drugs can be used for all causes of knee pain.

What are NSAIDs?

- [What are NSAIDs?](#) AAOS - Your Orthopaedic Connection, December 2002

COX-2 Inhibitors (Vioxx, Celebrex, Bextra)

The COX-2 inhibitors are a relatively new family of nonsteroidal anti-inflammatory drugs (NSAIDs). Though not necessarily more effective in reducing inflammation and pain than traditional NSAIDs, they represent an advance over the older drugs because they are believed to cause less stomach irritation. The orthopaedic community embraced the coxibs as a result of their effectiveness and favourable side-effect profile, but there is no doubt that COX-2 inhibitors would not have been so popular without the excellent marketing by the pharmaceutical companies (see the article www.orthosupersite.com/view.asp?rID=1883, by Douglas W. Jackson, MD, *ORTHOPEDECS TODAY* 2005; 25:3)

However, there is a controversy surrounding the use of COX-2 inhibitors. Some scientists believe that their use is associated with an increased risk of cardiovascular events such as heart attack. The recent withdrawal of Vioxx (see www.vioxx.com) from the worldwide market has focused intense public scrutiny on drug safety. For more information in the USA see manufacturers and FDA information on Celebrex (www.celebrex.com) and Bextra (www.drugs.com/bextra.html). For latest updates in the UK search The BNF (www.bnf.org) and the NHS NICE website (www.nice.org.uk). On 17 February 2005 the Medicines and Healthcare products Regulatory Agency (MHRA) issued a letter to healthcare professionals giving advice on prescribing selective COX-2 inhibitors. The MHRA is advising patients taking selective COX-2 inhibitors to contact their doctor to arrange a non-urgent appointment. More information can be found on the MHRA website at www.mhra.gov.uk. A few days later, The Arthritis and the Drug Safety and Risk Management advisory committees to the Food and Drug Administration (www.fda.gov) recommended that COX-2 inhibitors remain on the market. The committees also recommended that the FDA consider allowing Vioxx back on the market in a limited capacity, but it seems that Merck has no plans to return Vioxx to the market. The committees further recommended restrictions on the marketing and use of these drugs, recognizing that they do place patients at increased risk for cardiovascular events.

So, what do we do now? The authors of the recent Editorial article suggest the following: *"In the face of rapidly changing data on the coxibs, what course should the prudent orthopaedic surgeon take? Acetaminophen and nonselective nonsteroidal anti-inflammatory drugs should be the first-line treatments for musculoskeletal pain, particularly when chronic therapy is anticipated. Patients who are more than 65 years old, have a history of gastric ulcers, or have a history of gastrointestinal bleeding could benefit from a coxib. The surgeon should probe for a history of hypertension or cardiovascular risk. Until definitive data on cardiovascular safety are available, surgeons should avoid prescribing coxibs for patients with or at high risk for coronary artery disease."* Bhattacharyya T and Smith RM. Cardiovascular Risks of Coxibs: The Orthopaedic Perspective. *The Journal of Bone and Joint Surgery*, February 2005; 87:245-246 (www.ejbjs.org).

In summary, there is still a role for COX-2 inhibitors: use them for the way they were intended, which is for people at high risk for ulcer disease in need of pain and arthritis treatment. Don't use them as a first-line treatment for someone not at risk, monitor their effects on blood pressure and do not use them beyond the dosages that are recommended. A similar level of gastrointestinal risk reduction as demonstrated by COX-2 inhibitors can be achieved by combining a traditional NSAID with a proton pump inhibitor.

Nonsteroidal Anti-Inflammatory Drug Precautions

All NSAID drugs (even the newer ones like Vioxx and Celebrex) have the potential to cause irritation, ulceration, bleeding and perforation of the lining of the stomach. For this reason, it is important that

you never take any NSAID drug on an empty stomach. NSAIDs should be taken with food, preferably after a meal. Mixing Coumadin (Warfarin Sodium) with NSAID drugs such as aspirin or ibuprofen can cause serious complications. Some NSAID drugs have been known to cause drowsiness. NSAID drugs are known to have few clinically significant drug interactions. Some researchers feel that NSAIDs can weaken the effect of certain blood-pressure medications, but this data needs more extensive corroboration. Ask your GP for an opinion and recommendations regarding this matter.

Steroid Injections are a common and effective treatment for a variety of conditions in which inflammation causes pain, swelling and other problems (advanced knee arthritis). Steroid injections are usually used if anti-inflammatory drugs don't work. These injections will offer relief which may last from several days to several months. Glucocorticoids, particularly prednisone and cortisone, are used in injections for inflammation and pain. These hormones help reduce inflammation and pain in the body. Cortisone is the most well known injected steroid and it has a strong anti-inflammatory effect on joints. This family of steroids is not the same thing as anabolic steroids which are used to enhance muscular development, and are illegal in international athletic competition.

However, the quickest way for an athlete to lose strength at the ligament-bone junction (fibro-osseous junction) is to inject cortisone to that area. Corticosteroids, such as cortisone and prednisone, have an adverse effect on bone and soft tissue healing. Corticosteroids inactivate vitamin D, limiting calcium absorption by the gastrointestinal tract, and increasing the urinary excretion of calcium. Bone also shows a decrease in calcium uptake with cortisone use, ultimately leading to weakness at the fibro-osseous junction. Cortisone inhibits prostaglandin and leukotriene production. It also inhibits chondrocyte production of protein polysaccharides (proteoglycans), which are the major constituents of articular cartilage. Ultimately, repeat injections of corticosteroids may lead to a decrease in bone, ligament, and tendon quality.

Viscosupplements: there are also newer drugs, so-called viscosupplements (or joint-lubricants), that are used to help someone with the most common cause of knee pain, osteoarthritis, who still has significant pain after trying exercise, lifestyle modifications, and several different anti-inflammatory drugs over time. These drugs are substitutes for hyaluronic acid, a naturally occurring lubricant in your joints. These drugs are given in a series of shots three to five injections done one week apart. In general, they're about as effective as standard anti-inflammatory drugs in providing pain relief. They don't irritate the stomach, and the benefits of one series of injections lasts about 6 months. It's not clear exactly how these new drugs reduce pain. Some researchers think they provide nutrition for your cartilage; others think they reduce pain simply by providing lubrication; and, still another theory is that they somehow reduce inflammation in the joint. However they work, studies indicate that between 56% and 87% of people feel better after one or two series of injections (see also our [Viscosupplementation](#) page).

Further information:

- For more information on pain medication, safety, side effects and possible interactions please visit DrugWatch.com which is a comprehensive website database featuring extensive up-to-date information about thousands of different medications and drugs currently on the market or previously available worldwide. This useful website features updated information concerning drug recalls, medication approvals, and current developments in the medical field. DrugWatch.com is not affiliated with any pharmaceutical companies or drug manufacturers.

What changes can I make to ease my knee pain?

Exercise and weight loss are important parts of your knee pain treatment, especially if you have arthritis. In fact, recent research has shown that obesity is one of the major factors for the

development of osteoarthritis of the knee. The force on your knees during ordinary activities going up and down stairs, walking, getting up out of a chair is somewhere between four and six times your body weight. If you're 5 kilograms overweight, you're asking your knees to sustain an extra 20 to 30 extra kilograms of force every time you take a step. There are several studies showing that obesity clearly increases the risk of medial knee OA in women, and that weight loss of 5 kilograms decreases the risk of knee OA for 50%. In another study, an even smaller decrease in body mass made a significant difference in pain relief and improved function:

Weight loss

- Obesity increases risk of knee OA in women (Felson et al. Ann Int Med 1988, Spector et al. Ann Int Med. 1994)
- Weight loss, 5.1 kg, reduced risk of knee OA by 50% (Felson et al. Ann Int Med. 1992)
- Weight loss, 3.9 kg over 6 weeks, reduced pain and improved function (Toda et al. J Rheum. 1998)
- Decreased body mass improves mobility

MedScape, 17 July 2002 (www.medscape.com)

Exercise is felt to help joints in a couple of ways by strengthening the muscles that support the joints and by increasing lubrication in the joints. People with knee pain caused by arthritis benefit from three main types of exercise.

- Daily stretching exercises to increase your range of motion.
- Strengthening exercises with light weights or bands to support your knee joints.
- Low-impact aerobics such as walking, swimming, or water aerobics at least three days a week to tone your muscles and improve your body's overall function.

Your individual exercise program should be tailored to prevent the pain and discomfort you feel. Ask your physiotherapist to recommend specific exercises that will benefit you the most.

Bionicare

This is non surgical treatment option for osteoarthritis of the knee.
For more information, please visit
www.bionicareuk.com.

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