

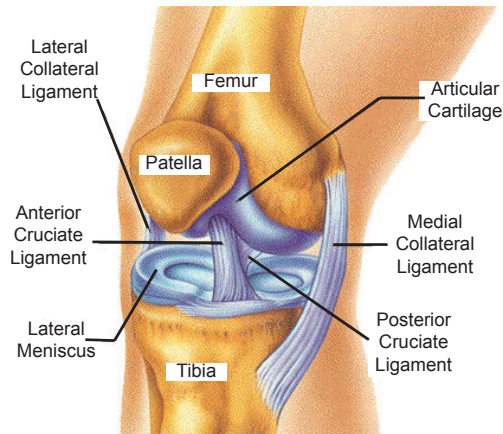
# ATHLETE'S EDGE

SPORTS MEDICINE EDUCATION AND INFORMATION FOR WATERLOO REGION

## Knee Osteoarthritis: Current Concepts in Treatment and Rehabilitation

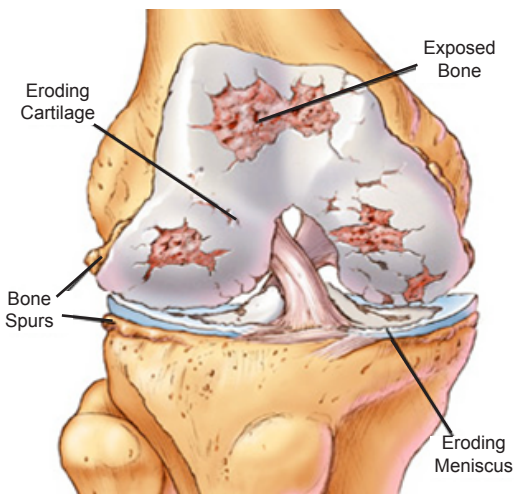
### What is Osteoarthritis?

Osteoarthritis (OA) is usually a slowly progressive degenerative disease in which the joint cartilage gradually wears away. In severe cases, when the joint cartilage is gone, the thickened bone ends rub against each other and wear away. This results in a deformity of the joint and normal activity becomes painful and difficult.



As a person ages, the water content of the cartilage decreases, causing the cartilage to be less resilient. Without the protective effects of this resiliency, the collagen fibers of the cartilage can become susceptible to degradation and thus exacerbate the degeneration. Inflammation of the surrounding joint capsule can also occur, though often mild. This can happen as breakdown products from the cartilage are released into the synovial space, and the cells lining the joint attempt to remove them. New bone outgrowths, called "spurs" or osteophytes, can form on the margins of the joints, possibly in an attempt to improve

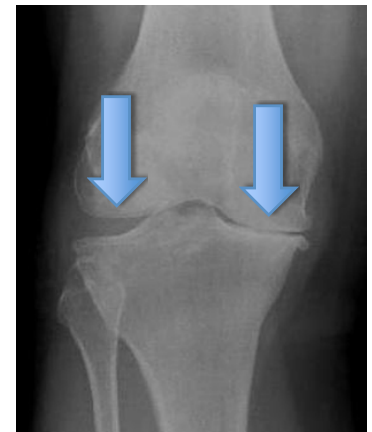
the congruence of the articular cartilage surfaces. These bone changes, together with the inflammation, can be both painful and debilitating.



### Risk Factors for Osteoarthritis

Although the exact cause of OA is unknown, some common risk factors have been identified including: **advanced age, occupational or sport related joint stress, and excess body weight.** The most important modifiable risk factor in the development and progression of osteoarthritis is **body weight.**

Both the American College of Rheumatology and the European League Against Rheumatism recommend weight loss and exercise for overweight patients with knee OA.



Primary osteoarthritis of the left knee. Note the **osteophytes**, narrowing of the joint space, and increased subchondral bone density.

### Common Symptoms of Knee Osteoarthritis

- Pain and or swelling which is often worse in the morning
- Stiffness or swelling in the joint may make it difficult to straighten or bend the knee
- Pain increasing after activities such as walking, stair climbing, sitting for prolonged periods or kneeling.

### Why does weight loss make such a difference?

A study published in the *Journal Arthritis & Rheumatism* in 2005 showed that for every **1** pound of weight loss that is achieved, there is a **4** pound reduction of knee joint load per step. This would translate to approximately 4800 pounds less stress placed on the knee per mile walked. <sup>4</sup>

Why does weight loss make such a difference?

**Physiotherapy** has been shown to significantly improve function, decrease pain, and delay need for surgical intervention in advanced cases. Exercise prescribed by a physiotherapist has been shown to be more effective than medications in treating osteoarthritis of the knee. Functional, gait, and balance training has been recommended to address impairments of proprioception, balance, and strength in individuals with lower extremity arthritis as these can contribute to higher falls in older individuals.

Arthroscopic surgery allows for debridement of the knee joint, whereby the joint surfaces can be surgically smoothed. The goal of this procedure is to eliminate mechanical interference with joint motion and to reduce the inflammation of the membrane in the knee in order to decrease pain and swelling. However, recent studies have shown that surgery has not had very favourable results.

A study published in 2008 in the *New England Journal of Medicine* showed that patients who underwent arthroscopic surgery had no better pain relief than the ones who participated in optimized physical therapy for the treatment of osteoarthritis of the knee. Optimized physical therapy included 12 weeks of weekly physiotherapy sessions. A home exercise program was prescribed including range-of-motion and strengthening exercises depending on the patient's age, the severity of their OA, and the patient's specific needs. The patients completed the exercises twice per day. After two years, there was *no difference in pain relief and function between the group who had surgery with physiotherapy and the group who had physiotherapy alone.* <sup>3</sup>

#### References

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4. Messier, S. et al. Weight Loss Reduces Knee-Joint Loads in Overweight and Obese Older Adults With Knee Osteoarthritis. (July 2005) *Arthritis & Rheumatism*, 52(7), pp. 2026-2032.

An effective form of treatment has evolved over the last decade. Knee **viscosupplementation** involves intra-articular (within the knee joint) injections of a thick fluid-like medication which mimics synovial fluid. This is important in shock absorption, lubrication and nutrition of the cartilage. Injections can be a series of three smaller doses one week apart, or one larger injection. There are several different brands now on the market. A sports medicine doctor can give these injections.

There are excellent **braces** on the market, off-the-shelf and custom-made which are light-weight, with special hinges designed to "unload" the knee joint during activity.

### What's the bottom line?

The most effective and the safest treatment for a person with knee osteoarthritis is a combination of losing weight and participating in an exercise program intended to increase the strength and the range of motion of the knee.



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