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# What is osteoarthritis?



## Key points

- ◆ Osteoarthritis is the most common type of joint disorder.
- ◆ It is a chronic condition of the synovial joint causing pain and stiffness and sometimes inflammation and swelling.
- ◆ It results in the loss of cartilage, and involves all of the structures of the joint.
- ◆ It can affect people to varying degrees, but has a large impact on the medical and financial state as it is so common.
- ◆ It is important to understand as much as possible about the condition as this will help in future management of the osteoarthritis.

## Arthritis

There are over 200 different types of arthritis that can affect joints in the body, but osteoarthritis is the most common type of joint disorder in the world today, affecting the majority of those of us over the age of 65. In America it is thought this amounts to a staggering 23 million people and due to the increasing size of the elderly population and obesity in the western world this figure is likely to increase in number.

Although the disease is common, the degree to how it can affect us in our lives varies enormously between individuals. For some, osteoarthritis can have a detrimental impact on their lives while for others the condition may be little more than an inconvenience.

## The history of osteoarthritis

Osteoarthritis is not a new disease – in fact it has been around for many years. Scientists examining the skeletons of humans and mammals from as long ago as the ice age discovered that joints had osteoarthritis.

## What does osteoarthritis mean?

Like many other medical conditions, osteoarthritis has been acknowledged as a disease for hundreds of years and its name is derived from the Latin language. When the name is translated ‘osteo’ means bone, ‘arthro’ means joints and ‘itis’ means inflammation. Therefore ‘osteoarthritis’ means inflammation of the bones in the joint. In reality the bone does not become inflamed, but the joint as a whole can as a result of the disease process. It continues to be called osteoarthritis (or OA when abbreviated).

## What is osteoarthritis?

Over the past years musculoskeletal scientists and clinicians have deliberated over the correct definition of osteoarthritis. They concluded that it is a chronic condition of the synovial joint that develops over time and is the result of the thinning or loss of the cartilage, which is found at the ends of the bones. This loss of cartilage causes a reduced joint space, and sometimes the bone ends come into direct contact with each other, which in turn causes pain and anatomical changes to the bone itself in addition to the other structures of the joint. For this reason osteoarthritis is now recognized as a disease of the whole joint.

## Osteoarthritis – a chronic disease

A chronic condition differs from that of an acute illness, such as appendicitis or the flu, in that an acute illness has a start and an end to the illness, often with a treatment in the middle. A chronic condition often has a more gradual onset as opposed to an immediate response to trauma, it is often ongoing and may never end. Diabetes, heart disease and hypertension are also chronic conditions like osteoarthritis that develop gradually over time and continue to persist.

When the term ‘disease’ is used in this context it does not mean osteoarthritis is contagious or the result of injury, but that it is a recognized medical disorder that is accompanied by symptoms and clinical signs and follows a natural process.

## The joints affected by osteoarthritis

The joints that are most prone to osteoarthritis tend to be the weight-bearing joints of the body: the knee, hip and back. In addition it can also commonly

affect digits of the hand. Other joints such as the ankle and shoulder and elbow are less likely to develop osteoarthritis unless there has been previous trauma to that joint.

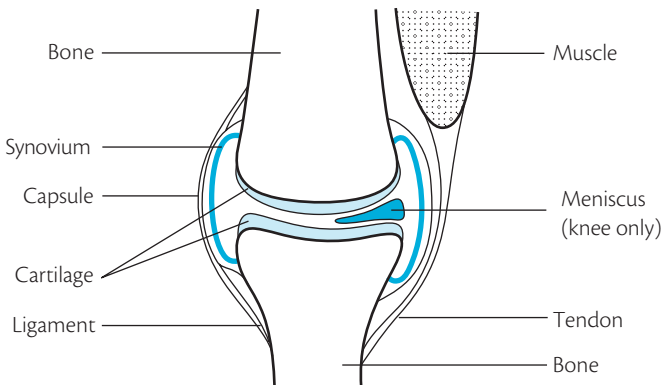
## What are the signs and symptoms of osteoarthritis?

The symptoms for those who have osteoarthritis consist of pain and stiffness (the latter is often relieved in a few minutes by movement) in the affected joints, although it varies between individuals. In some cases the pain can lead to reduced movement, which in turn limits the function of the joint. In severe cases inflammation can develop causing the joint to become swollen and warm. The signs that clinicians identify as part of the osteoarthritis condition include swelling and bony enlargement around the joint and crepitus (creaking of the joint when moved).

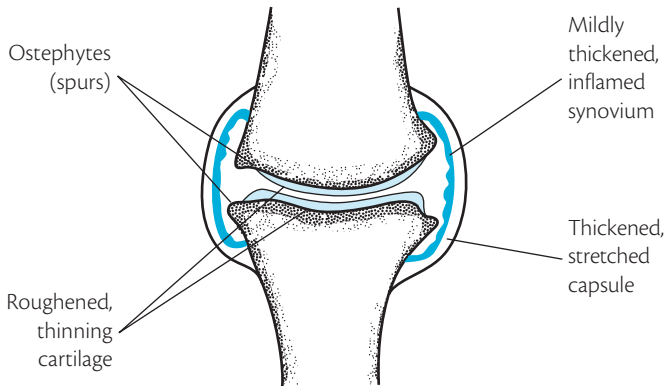
## The joint with osteoarthritis

The synovial joint is made up of two bones' ends, a layer of cartilage lining the end of each bone, a capsule lined by synovium which produces synovial fluid, ligaments, tendons and muscles (Fig. 1.1). The role of cartilage, which when healthy is usually smooth, firm, white and rubbery in nature, is to help the bone ends move smoothly and painlessly against each other when the joint is moved. The cartilage also acts as a shock absorber.

Synovial fluid is a viscous fluid of a similar consistency to car engine oil: it helps the joint ends move easily by acting as a lubricant. As a result we move joints easily, often without noticing the action.



**Figure 1.1** The normal synovial joint without osteoarthritis.



**Figure 1.2** A synovial joint with mild osteoarthritis.

The tendons attach the muscles to bone and are involved in moving and stabilizing the joints. The ligaments attach the two bones together and help to stabilize the joint at rest and during movement.

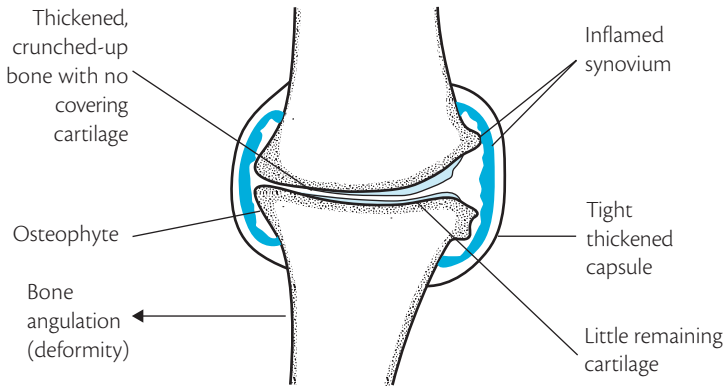
The bone tissue and cartilage are always undergoing regeneration and as long as this continues the joints work smoothly together. However, if the cartilage starts to diminish in size then it can put strain on the other tissues and as a result they work overtime in trying to compensate.

### The joint with mild osteoarthritis

Figure 1.2 shows a joint with mild osteoarthritic changes. As you can see, over time the cartilage has become thinner, scantier and less smooth in appearance which means that the two bones do not move as smoothly during joint movement. The space between the bone ends has also become narrower due to the thinning of the cartilage, and as a result more pressure is put on the tendons and ligaments to maintain joint stability. The bone in response to the depleted cartilage and imbalance starts to grow little bony spurs called osteophytes.

### The joint with severe osteoarthritis

You can see in Figure 1.3 that there is now much greater cartilage loss, including areas where the cartilage has disappeared exposing the underlying bones. The osteophytes are now bigger, and the end of the bones starts to thicken in response to the increased stresses that it encounters due to the loss of the shock-absorbing effect of the overlying cartilage. As the cartilage breaks down debris can be found in the synovial fluid, which is struggling to produce enough lubricant for the bone ends and remaining cartilage.



**Figure 1.3** A synovial joint with severe osteoarthritis.

This advanced stage of osteoarthritis results in pain and stiffness and inflammation as the joint struggles to maintain its smooth function.

### Other names for osteoarthritis

‘Wear and tear’, ‘degenerative changes’, ‘osteoarthrosis’, ‘degenerative joint disease’, ‘degenerative arthritis’ and ‘decaying cartilage’ are all common expressions used by physicians when describing osteoarthritis to a patient, however they all mean osteoarthritis. Some of these can sound quite catastrophic and are inaccurate, but unfortunately many people continue to use them even though they sound very alarming.

### What about rheumatoid arthritis and osteoporosis?

Medical conditions and their names can be very confusing, and sometimes people get muddled about the difference between rheumatoid arthritis, osteoporosis and osteoarthritis. They are all rheumatological conditions, but they are very different diseases.

- ◆ *Rheumatoid arthritis (RA)* is a condition where the synovium becomes inflamed and causes severe damage to the cartilage and bone. It is less common than osteoarthritis, presents with different signs and symptoms and its treatment is quite different to osteoarthritis.
- ◆ *Osteoporosis* is a disease of bones leading to an increased risk of fracture. It does not affect the joints and rarely causes joint pain. Its treatment by physicians is quite different to that of osteoarthritis.

## The impact of osteoarthritis in the general population

Osteoarthritis is common, especially in the elderly, and as such it causes strains to both the medical services and the financial welfare of the country. For example, in the USA it accounts for 315 million visits to the doctor per year, approximately 744,000 hospital admissions per year and amounts to 68 million days off work. In recent years osteoarthritis has been seen as the second biggest cause of work disability in those aged 50 and over, ischaemic heart disease being in first position, and therefore is of major concern, as it has significant implications on the welfare state.

## The impact of osteoarthritis to each individual

Of course not everybody with osteoarthritis will have to visit a doctor or be admitted to hospital, and not everybody will stop work due to the condition. As you will discover in this book, osteoarthritis affects people to different levels. For some osteoarthritis can have a major impact on their lifestyle, but for many it may cause just a minor disruption and some people have virtually no symptoms at all, often unaware that they have signs of osteoarthritis. For some people the disease only affects the one joint whilst for others the disease can be widespread and continue to progress, so affecting movement, causing pain and distress and impacting on private and working lifestyles, sometimes leading to surgical treatments. We are all individuals, and our experience of osteoarthritis will vary.

## In summary

Osteoarthritis is a chronic or long-term disease of the synovial joints characterized by a loss or depletion of cartilage and associated with pain and stiffness. The impact and experiences of osteoarthritis varies between individuals: however, the one thing clinicians know is that the more information people have about their osteoarthritis the easier it is to manage.