

# Difference Between Arthritis and Osteoporosis

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## Key Difference – Arthritis vs Osteoporosis

Arthritis and osteoporosis are two common conditions that especially affect the elderly. They have become a major concern for health care professionals. In simple terms, arthritis can be defined as the inflammation of the joints. Osteoporosis is the reduction in bone density that decreases the weight bearing capacity of the bones. Thus, the key difference between arthritis and osteoporosis is that **arthritis affects the joints while osteoporosis affects the bones.**

## What is Arthritis?

Arthritis can be defined as the inflammation of the joint or joints resulting in pain and/or disability, joint swelling, and stiffness. It can be due to numerous causes such as [infection](#), trauma, degenerative changes or metabolic disorders. Different types of arthritis have been described according to the peculiar characteristics seen in each category.

## Osteoarthritis

[Osteoarthritis](#) is the commonest type of arthritis. It occurs as a result of the damages to the articular [cartilage](#) induced by a complex interaction of genetic, metabolic, biochemical and biomechanical factors. This gives rise to an inflammatory response, affecting the cartilage, bone, ligaments, menisci, synovium, and capsule.

Usually, the incidence of osteoarthritis before 50 is uncommon, but not unheard of. With advancing age, some radiological evidence will appear indicating the likelihood of getting osteoarthritis in the future.

## Predisposing Factors

- [Obesity](#)
- Heredity
- Polyarticular OA is more common in women
- Hypermobility

- [Osteoporosis](#)
- Trauma
- Congenital joint dysplasia

## **Clinical Features**

- Mechanical pain with movement and/or loss of function
- Symptoms are gradual in onset and progressive
- Short-lived morning joint stiffness
- Functional limitation
- Crepitus
- Bony enlargement

## **Investigations and Management**

On blood testing, ESR is usually normal, but CRP level is slightly elevated. X-rays are abnormal, only in the advanced disease. Early cartilage injury and meniscal tears can be observed by MRI.

During the management of osteoarthritis, the aim is to treat the symptoms and disability, not the radiological appearances. Pain, distress, and disability can be reduced, and compliance with the treatment can be increased by proper patient education about the disease and its effects.

## **Rheumatoid Arthritis**

[Rheumatoid arthritis](#) is a type of inflammatory arthritis that causes synovial inflammation. It causes inflammatory symmetrical polyarthritis. Rheumatoid arthritis is an autoimmune disease where autoantibodies are produced against [IgG](#) and citrullinated cyclic peptide.

The typical presentation of rheumatoid arthritis includes a progressive, symmetrical, peripheral polyarthritis which occurs over a period of a few weeks or months in patients between 30 and 50 years of age. Most patients complain of pain and stiffness of small joints of the hands (metacarpophalangeal, proximal interphalangeal) and feet (metatarsophalangeal). Distal interphalangeal joints are usually spared.

Diagnosis of RA can be made based on the clinical observations. NSAIDs and analgesics are used in the management of the symptoms. If synovitis persists

beyond 6 weeks, try to induce remission with intramuscular depot methyl prednisolone 80-120mg. If synovitis recurs, the administration of Disease Modifying Anti-Rheumatic Drugs (DMARDs) should be considered.

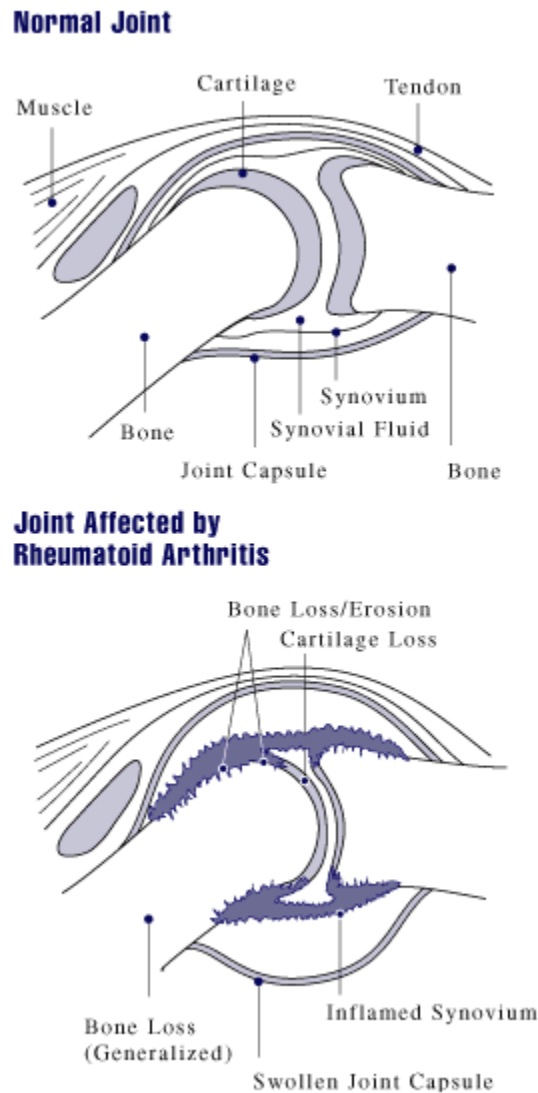


Figure 01: Rheumatoid Arthritis

## Spondyloarthritis

Spondyloarthritis is a collective term that is used to describe several conditions which affect the spine and peripheral joints with familial clustering and a link to type 1 HLA antigen. Ankylosing spondylitis, psoriatic arthritis, reactive arthritis, post-dysenteric reactive arthritis and enteropathic arthritis are included in this category.

## **Clinical Features of Ankylosing Spondylitis**

- Back pain
- Pain in one or both buttocks
- Retention of the lumbar lordosis during spinal flexion

Regular NSAIDs to improve the signs and symptoms and morning exercises aiming at the maintenance of the spinal morbidity, posture and chest expansion are often required in the management of the disease.

## **Clinical Features of Psoriatic Arthritis**

- Mono- or oligoarthritis
- Polyarthritis
- Spondylitis
- Distal interphalangeal arthritis
- Arthritis mutilans

## **What is Osteoporosis?**

Osteoporosis is a growing health problem with a high rate of prevalence throughout the world. Osteoporosis associated fractures severely impair the living standards of the patients, and a vast amount of money is spent annually to provide treatments and other facilities to these patients.

The characteristic feature of osteoporosis is the dramatic reduction in the bone density which leads to the deterioration of the micro architecture of bone. As a consequence, the bone tissues weaken, increasing the risk of fractures.

The risk of osteoporosis increases with advancing age.

## **Pathophysiology**

There is a fine balance between bone regeneration and bone resorption. Under normal physiological conditions, these two processes take place at equal rates in order to maintain the quality and quantity of the bone tissues. But in osteoporosis, bone resorption is inadvertently triggered due to the influence of different external and internal factors. As a result, bone remodeling does not occur properly, damaging both structure and function of bone tissues.

Usually, the bone mass gradually increases from birth and reaches the peak at around 20 years of age. From there onwards, it starts to decline. This happens at a rapid pace in women than in men because of the [estrogen](#) insufficiency which appears after [menopause](#). Estrogen stimulates the activity of osteoblasts that are responsible for the bone formation. Therefore this lack of hormonal stimulation considerably degrades the osteoblastic activity, ultimately resulting in osteoporosis. Another contributory factor is the increasingly apparent inability of the stem cells to produce the adequate amount of [osteoblasts](#). The recent studies carried out on the subject also suggests a genetic influence.

In addition to these intrinsic factors, behavioral factors such as the lack of exercise, insufficient intake of calcium and smoking increase the chance of getting osteoporosis by several folds.

## Causes

- Post menopausal hormonal changes
- Corticosteroids – taking more than 7.5 mg of prednisolone for more than 3 months considerably increases the risk of osteoporosis
- Pregnancy
- Endocrine diseases such as hypogonadism, [hyperthyroidism](#), [hyperthyroidism](#) and Cushing's syndrome
- Inflammatory diseases such as inflammatory bowel disease and ankylosing spondylitis
- Adverse effects of certain drugs such as heparin, aromatase inhibitors, etc.
- Chronic liver disease
- [Cystic fibrosis](#)
- Chronic obstructive pulmonary disease
- [Myeloma](#)
- Homocystinuria

## Clinical Features

- Patients with osteoporosis are usually asymptomatic, and the condition is identified once they get a fracture.
- In case of osteoporotic spinal fractures, there can be an acute back pain, loss of height, and kyphosis.
- Pain that radiates to the anterior chest wall or abdominal wall indicates the possibility of a vertebral fracture.

## **Investigations**

- DEXA scan should be performed on the patients with risk factors
- Renal function tests such as serum Creatinine
- Liver function tests
- Thyroid function tests
- Blood calcium levels should be measured

Indications for the bone densitometry are,

1. Low trauma fracture age < 50 years
2. Clinical features of osteoporosis such as kyphosis and loss of height
3. Osteopenia on plane X ray
4. Low body weight
5. Early menopause
6. Presence of other diseases associated with osteoporosis
7. Increased risk of fracture analysis on risk factor analysis
8. Assessing response of osteoporosis to treatment

## **Management**

The aim of management is to reduce the risk of bone fractures.

### **Nonpharmacological Management**

- Life style modifications such as cessation of smoking and alcohol consumption.
- Increasing the intake of calcium
- Doing exercises regularly

### **Drug Therapy**

- Bisphosphonate
- Denosumab
- Calcium and Vitamin D
- Strontium ranelate
- Parathyroid hormone
- Hormone Replacement Therapy ( raloxifene and tibolone)

## What are the similarities between Arthritis and Osteoporosis?

- Arthritis and osteoporosis affect the skeletal system and severely compromise the mobility of the patient.

## What is the difference between Arthritis and Osteoporosis?

Arthritis vs Osteoporosis	
Osteoporosis is a disease condition that is characterized by the decrease in bone density.	Arthritis is the inflammation of the joint or joints resulting in pain and/or disability, joint swelling, and stiffness.
Organs Affected	
This affects the bone.	This affects the joints.
Hormonal Influence	
Post menopausal hormonal imbalance plays a key role in the pathogenesis of osteoporosis.	Hormonal influence does not have any influence over the pathogenesis of arthritis.

## Summary – Arthritis vs Osteoporosis

Arthritis and osteoporosis are two disease conditions affecting the joints and bones respectively. The key difference between arthritis and osteoporosis is that arthritis affects the joints while osteoporosis affects the bones. Although they cannot be cured completely, various newly introduced drugs have revolutionized the management of these diseases by successfully controlling the symptoms and helping the patients to maintain an ordinary life.

### References:

1. Colledge, Nicki R, Brian R. Walker, Stuart Ralston, and Stanley Davidson. *Davidson's Principles and Practice of Medicine*. Edinburgh: Churchill Livingstone/Elsevier, 2010. Print.

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