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## ABSTRACT

In a healthy person the body's immune system detects foreign particles such as bacteria and viruses, and send chemical signals to fight against them. Diving further into our main context Rheumatoid arthritis or RA, body senses it's self-cells as foreign particles and start working against them, this causes inflammation. The inflammatory process of RA causes the synovium to thicken, making the joint swollen and painful.

If we leave this inflammation untreated, it can damage the cartilage and joint space between bones gets smaller. Therefore, it is important to monitor minor changes in our body. A bearable pain can turn out to become a serious autoimmune disease like rheumatoid arthritis. In this article we will travel deep into RA its causes, symptoms, diagnosis and lifestyle changes to make easy life with rheumatoid arthritis.so let's get started.

## Introduction

Rheumatoid arthritis is a long-term condition where the body's immune system attacks its tissues. This mainly affects the joints. Unlike osteoarthritis rheumatoid arthritis causes inflammation that can affect parts of the body.

The condition mostly affects the lining of joints causing swelling, pain, stiffness and damage if not treated.

Rheumatoid arthritis often affects joints on both sides of the body like the hands, wrists and knees.

Rheumatoid arthritis is a type of disease. The exact cause is not clear. It is thought to be due to a mix of genetic, environmental and hormonal factors.

Symptoms include pain that does not go away stiffness in the morning that lasts more than an hour, tiredness and sometimes a fever or weight loss.

Over time rheumatoid arthritis can cause joints to become misshapen and make it harder to move.

Getting diagnosed and treated early is key to slowing down the condition and improving life.

Modern treatments, such as Methotrexate and biologic therapies have greatly improved life for people with rheumatoid arthritis.

There is no cure. Many people can manage symptoms and stay active with proper care.

Rheumatoid arthritis treatment. People, with rheumatoid arthritis can live a good life.

## **Rheumatoid Arthritis Glossary**

### **Autoimmune Disease**

A condition where the immune system mistakenly attacks the body's own tissues. RA is one of many Autoimmune diseases.

### **Synovium**

The soft lining of joints that produces fluid for smooth movement. In RA, this tissue becomes inflamed and thickened.

### **Flare**

A period when RA symptoms suddenly worsen, with increased pain and stiffness.

## **DMARDs (Disease-Modifying Antirheumatic Drugs)**

Medications that slow RA progression rather than just treating symptoms. A common example is Methotrexate.

## **Biologic Therapy**

Advanced drugs made from living cells that target specific parts of the immune system to reduce inflammation.

## **Rheumatoid Factor (RF)**

A protein found in the blood of many RA patients, often used as a diagnostic marker.

## **Anti-CCP Antibodies**

Highly specific blood markers that help confirm RA diagnosis.

## **Morning Stiffness**

A classic RA symptom where joints feel stiff and hard to move, especially after waking up.

## **Remission**

A stage where symptoms are minimal or absent, though the disease may still be present.

## **Rheumatologist**

A doctor specializing in diseases of joints, muscles, and autoimmune conditions like RA.

## **Symmetrical Joint Involvement**

RA typically affects the same joints on both sides of the body (e.g., both wrists or both knees).

## **Fatigue**

An overwhelming sense of tiredness commonly experienced by people with RA, beyond normal exhaustion.

## **Cytokines**

Proteins in the immune system that promote inflammation; overactive in RA.

## **Rheumatoid Arthritis vs Osteoarthritis: know the difference**

At a glance, both conditions cause joint pain—but the “why” behind that pain is completely different.

Rheumatoid Arthritis (RA) is an autoimmune condition where the body attacks its own joints.

Osteoarthritis (OA) is a mechanical, wear-and-tear problem where joint cartilage gradually breaks down.

Feature	Rheumatoid Arthritis (RA)	Osteoarthritis (OA)
Cause	Immune system attack (see Autoimmune diseases)	Cartilage degeneration over time
Onset	Can be rapid	Slow and gradual
Age Group	Any age (often 30–60)	Usually older adults
Joint Pattern	Symmetrical (both sides)	Often asymmetrical
Inflammation	High (swelling, warmth)	Mild
Morning Stiffness	Long (>1 hour)	Short (<30 min)
Systemic Symptoms	Yes (fatigue, fever)	No
Joint Damage	Erosive, can deform joints	Cartilage loss, bone changes

## How It Feels

- **RA:** Joints feel *stiff, swollen, and hot*, especially in the morning. You may also feel unusually tired or unwell overall.
- **OA:** Joints feel *achy and sore*, often worse after activity and better with rest.

## Treatment Focus

- **RA:** Control the immune system and prevent damage using medications like Methotrexate or biologics.
- **OA:** Manage pain and improve function with exercise, weight control, physical therapy, and sometimes surgery.

## Quick Memory Trick

- RA = “Runs Amok” → immune system attacking joints
- OA = “Overuse Aging” → joints wearing out over time

## Early warning signs

### Early Warning Signs of Rheumatoid Arthritis You Shouldn't Ignore

**Rheumatoid Arthritis** often starts subtly. Here are the key early signals to watch for:

#### 1. Persistent Joint Pain and Tenderness

Pain in small joints—especially fingers, wrists, or toes—that doesn't go away and may feel worse with rest.

#### 2. Morning Stiffness Lasting Over an Hour

A classic early sign. If your joints feel stiff and difficult to move for a long time after waking, it's a red flag (unlike Osteoarthritis, where stiffness is usually brief).

#### 3. Swelling and Warmth in Joints

Inflamed joints may look puffy and feel warm to the touch—signs of active inflammation.

#### 4. Symmetrical Joint Involvement

RA often affects the same joints on both sides of the body (e.g., both wrists or both knees).

#### 5. Unusual Fatigue

A deep, persistent tiredness that doesn't improve with rest—often overlooked but very common in autoimmune conditions like Autoimmune diseases.

#### 6. Low-Grade Fever

Mild fever may appear due to ongoing inflammation in the body.

#### 7. Loss of Appetite or Unexplained Weight Loss

Systemic inflammation can affect metabolism and appetite.

## 🔑 8. Reduced Range of Motion

You may notice joints becoming harder to move or feeling “tight.”

## 🍂 9. Numbness or Tingling

Inflammation can compress nearby nerves, causing sensations like tingling in the hands.

## 🚨 When to Take It Seriously

If you notice **joint pain + prolonged morning stiffness + swelling lasting more than a few weeks**, it’s time to consult a specialist (rheumatologist). Early treatment—often with medications like Methotrexate—can slow or even halt disease progression.

## 💡 Why Early Detection Matters

RA can quietly damage joints in its early stages. Acting early can:

1. Prevent permanent deformity
2. Maintain mobility and independence
3. Improve long-term quality of life



## WHO IS AT RISK?

In Rheumatoid arthritis, certain groups of people are at higher risk of developing the condition, and this risk is not random but follows known patterns related to biology, lifestyle, and genetics. Women are two to three times more likely to develop rheumatoid arthritis than men, likely due to hormonal factors. The disease most commonly begins between the ages of 30 and 60, although it can occur at any age. Individuals with a family history of rheumatoid arthritis have an increased risk,

particularly if they carry genetic markers such as HLA-DR4. Smoking is a major environmental risk factor, as it increases both the likelihood of developing the disease and its severity. Obesity is also associated with higher inflammation levels and a greater risk, especially in women under 55. In addition, long-term exposure to environmental hazards like silica dust, often found in mining or construction work, has been linked to increased risk. Hormonal and reproductive factors, including early menopause or never having given birth, may slightly raise the likelihood of developing the condition. Finally, people with other autoimmune disorders may be more susceptible, as their immune system is already prone to abnormal immune responses.

## Causes of Rheumatoid Arthritis

The exact cause of Rheumatoid arthritis is not fully known, but it is considered a complex autoimmune disorder that develops due to an interaction between genetic susceptibility, environmental triggers, and abnormal immune system activity. In this condition, the immune system mistakenly identifies the body's own joint tissues—especially the synovium (the lining of the joints)—as foreign and attacks them, leading to chronic inflammation, swelling, pain, and eventual joint damage.

Genetics play an important role in predisposing individuals to the disease. Certain genes, particularly HLA-DRB1 (often referred to as HLA-DR4), are strongly associated with increased risk because they influence how the immune system recognizes antigens. However, having these genes does not guarantee development of the disease; it only increases susceptibility.

Environmental factors are also important triggers. Smoking is one of the strongest known risk factors, as it can alter immune responses and increase the production of inflammatory proteins. Infections caused by certain bacteria or viruses are also thought to potentially trigger abnormal immune reactions in genetically susceptible individuals. Long-term exposure to pollutants such as silica dust (common in mining or industrial work) has also been linked to higher risk.

Hormonal influences may contribute as well, which helps explain why rheumatoid arthritis is more common in women. Changes in estrogen levels, pregnancy-related immune shifts, and menopause have all been studied for their possible roles in disease onset.

In addition, obesity can contribute to disease development by increasing systemic inflammation in the body. People who already have other autoimmune conditions may also be more vulnerable because their immune system is already dysregulated.

Overall, rheumatoid arthritis develops when a genetically predisposed immune system is triggered by environmental or hormonal factors, resulting in a long-term autoimmune response against joint tissues.

## How it affects the body?

Rheumatoid arthritis is a long-term inflammatory disease that affects the body in two main ways: it damages the joints and it also produces effects throughout the whole body (systemic effects).

At the joint level, the immune system attacks the synovium (the lining inside joints), causing it to become inflamed, thickened, and swollen. This leads to persistent pain, stiffness (often worse in the morning), warmth, and reduced range of motion. Over time, the inflamed synovium grows abnormally and forms a tissue called pannus, which spreads across the joint surface. The pannus releases enzymes and inflammatory chemicals that gradually destroy cartilage and erode bone. As a result, joints lose their smooth movement and may become deformed, unstable, and difficult to use. Common deformities can affect the fingers, wrists, and feet, and tendons may rupture or become misaligned, further reducing hand and joint function.

Beyond the joints, rheumatoid arthritis is a systemic condition, meaning it affects multiple organs due to ongoing inflammation in the blood. Many people experience general symptoms such as fatigue, low energy, weight loss, mild fever, and muscle weakness. This happens because the immune system continuously releases inflammatory chemicals called cytokines that circulate throughout the body.

The disease can also affect several organs. In the eyes, it may cause dryness or inflammation (such as scleritis). In the lungs, it can lead to inflammation of lung tissue or scarring, making breathing more difficult. In the heart and blood vessels, long-term inflammation increases the risk of cardiovascular disease, including heart attack and stroke. It can also affect the skin, causing small firm lumps under the skin called rheumatoid nodules, usually near pressure points like elbows. In some cases, it can affect blood vessels themselves, a condition called vasculitis, which can damage nerves and organs.

If untreated or poorly controlled, rheumatoid arthritis can lead to permanent joint destruction, disability, and reduced life expectancy mainly due to cardiovascular complications. However, with early diagnosis and modern treatments that suppress the immune response, many of these effects can be slowed or prevented.

## Common symptoms beyond joint pain

In Rheumatoid arthritis, symptoms beyond joint pain occur because the disease produces ongoing systemic inflammation, meaning inflammatory chemicals (cytokines) circulate throughout the body and affect multiple organs and systems.

One of the most prominent non-joint symptoms is **severe fatigue**, which is not simple tiredness but a deep, persistent exhaustion that does not improve easily with rest. This is driven by chronic immune activation, anemia of chronic disease, and disrupted sleep patterns. Along with fatigue, many people experience **generalized weakness and reduced physical endurance**, making even light activities feel tiring.

**Morning stiffness** is another key symptom that reflects inflammation building up during rest. It can last more than an hour and often improves slightly with movement, unlike mechanical joint stiffness. This stiffness can contribute significantly to disability in daily functioning.

Systemic inflammation can also cause **low-grade fever, loss of appetite, and unintentional weight loss**. These occur because inflammatory cytokines like TNF-alpha and IL-6 alter metabolism and suppress normal appetite regulation. Over time, this can lead to **muscle wasting (rheumatoid cachexia)**, where muscle mass decreases even if body weight appears stable.

The disease can also affect the **blood system**, leading to anemia (low red blood cell count), which further worsens fatigue and weakness. Some individuals develop **increased platelet counts** or other inflammatory blood changes.

Neurological symptoms may occur when inflammation affects or compresses nerves. This can cause **numbness, tingling, or burning sensations**, especially in the hands and feet, often due to conditions like carpal tunnel syndrome linked with rheumatoid inflammation.

Rheumatoid arthritis can also affect the **eyes**, causing dryness, redness, or pain due to inflammation of the tear glands or surrounding tissues (such as scleritis or dry eye syndrome). In the **lungs**, inflammation may lead to shortness of breath, persistent cough, or lung scarring (interstitial lung disease), which can gradually reduce breathing capacity.

Cardiovascular effects are also important but often silent. Chronic inflammation increases the risk of **atherosclerosis (hardening of arteries)**, raising the likelihood of heart attacks and strokes. This is why people with rheumatoid arthritis may have higher long-term cardiovascular risk even if joint symptoms are controlled.

Psychological effects are also common. Chronic pain, fatigue, and functional limitations can contribute to **depression, anxiety, and cognitive “brain fog”**, where concentration and memory feel reduced. Sleep is often disrupted due to pain, inflammation, or discomfort, creating a cycle that worsens fatigue and mood symptoms.

In more advanced or uncontrolled disease, patients may develop **rheumatoid nodules** (firm lumps under the skin), **vasculitis** (inflammation of blood vessels), and generalized worsening of organ function.

Overall, rheumatoid arthritis is not only a joint disease but a full-body inflammatory condition that can affect energy levels, blood, nerves, lungs, heart, eyes, and mental health in addition to the joints.

## Diagnosis

The diagnosis of Rheumatoid arthritis is based on a combination of clinical symptoms, physical examination findings, blood tests, and imaging studies. There is no single test that confirms the disease on its own, so doctors use a pattern of evidence.

Diagnosis usually begins with a detailed medical history and physical examination. A doctor looks for symptoms such as persistent joint pain, swelling, warmth, and stiffness—especially if it affects small joints like the fingers, wrists, and feet and occurs on both sides of the body. Morning stiffness lasting more than an hour is a key clinical clue.

Blood tests are then used to support the diagnosis. One important test is the **rheumatoid factor (RF)**, which is present in many—but not all—patients. Another highly specific marker is **anti-CCP (anti-cyclic citrullinated peptide) antibodies**, which are strongly associated with rheumatoid arthritis and can sometimes appear early in the disease. Doctors also check for signs of inflammation in the body using tests like **ESR (erythrocyte sedimentation rate)** and **CRP (C-reactive protein)**, which are usually elevated during active disease.

Imaging tests help assess joint damage and inflammation. **X-rays** can show joint space narrowing and bone erosion in more advanced stages. In early disease, **ultrasound** and **MRI scans** are more sensitive and can detect inflammation in the synovium before permanent damage occurs.

Doctors often use classification criteria (such as the ACR/EULAR criteria) that combine the number of affected joints, blood test results, duration of symptoms, and inflammation markers to confirm the diagnosis and assess disease severity.

Overall, rheumatoid arthritis is diagnosed through a combination of consistent symptoms, supportive blood markers, and imaging evidence rather than a single definitive test.

## Treatment Options

Treatment of Rheumatoid arthritis is aimed at three main goals: controlling inflammation, preventing joint damage, and maintaining long-term function and quality of life. Because it is a chronic autoimmune disease, treatment is usually continuous and adjusted over time depending on disease activity.

The cornerstone of treatment is **disease-modifying antirheumatic drugs (DMARDs)**. These medications target the underlying immune dysfunction rather than just symptoms. The most commonly used first-line DMARD is **methotrexate**, which reduces immune cell activity and slows joint destruction. It is often given once weekly, sometimes with folic acid to reduce side effects. Other conventional DMARDs include **sulfasalazine, hydroxychloroquine, and leflunomide**. These drugs may be used alone in mild cases or in combination for better control in more active disease.

If conventional DMARDs are not effective, doctors may move to **biologic DMARDs**, which are genetically engineered drugs that target specific parts of the immune system. These include **TNF inhibitors** (such as adalimumab, etanercept, infliximab), which block tumor necrosis factor—a key inflammatory protein. Other biologics include **IL-6 inhibitors** (tocilizumab), **B-cell inhibitors** (rituximab), and **T-cell co stimulation blockers** (abatacept). These are usually given by injection or intravenous infusion and are highly effective in reducing inflammation and preventing joint damage.

Another modern option is **targeted synthetic DMARDs**, especially **JAK inhibitors** such as tofacitinib, baricitinib, and upadacitinib. These work inside immune cells by blocking signaling pathways (Janus kinase pathways) that drive inflammation. They are oral medications and are often used when biologics or methotrexate are insufficient.

For symptom control, **nonsteroidal anti-inflammatory drugs (NSAIDs)** like ibuprofen or naproxen are used to reduce pain and stiffness, but they do not prevent disease progression. **Corticosteroids** (such as prednisone) are powerful anti-inflammatory drugs used for rapid symptom relief or flare control. However, due to side effects like osteoporosis, weight gain, diabetes risk, and infection susceptibility, they are generally used at the lowest dose for the shortest possible time.

Non-pharmacological management is a major part of treatment. **Physiotherapy** helps maintain joint movement, reduce stiffness, and strengthen surrounding muscles.

Regular low-impact exercise such as swimming or walking improves mobility and reduces fatigue. **Occupational therapy** helps patients adapt daily activities using joint-protection techniques and assistive devices (for example, modified grips, splints, or ergonomic tools) to reduce stress on inflamed joints.

Lifestyle modification plays an important supportive role. **Smoking cessation** is crucial because smoking worsens disease activity and reduces treatment response. Maintaining a healthy weight reduces mechanical stress on joints and lowers inflammation. A balanced diet rich in anti-inflammatory nutrients (such as omega-3 fatty acids) may also support overall health, although it does not replace medical therapy.

In cases where joint damage becomes severe and irreversible, **surgical interventions** may be required. These include synovectomy (removal of inflamed synovial tissue), tendon repair, or **joint replacement surgery** (such as hip or knee arthroplasty) to restore function and reduce pain.

Modern management often follows a “treat-to-target” approach, where treatment is regularly adjusted to achieve remission or low disease activity. Early diagnosis and early use of DMARDs are key factors in preventing long-term disability and improving outcomes.

## **Lifestyle changes to ease symptoms**

In Rheumatoid arthritis, lifestyle changes do not replace medical treatment, but they can significantly reduce symptoms like pain, stiffness, fatigue, and flare frequency while improving overall function.

A key change is **regular low-impact exercise**. Activities such as walking, swimming, cycling, or yoga help keep joints flexible, strengthen surrounding muscles, and reduce stiffness. Gentle range-of-motion exercises are especially helpful in the morning or during flares when stiffness is worse. The goal is consistency rather than intensity, since overexertion can trigger pain.

**Rest and activity balance** is also important. During flare-ups, short periods of rest help reduce inflammation, but prolonged inactivity can worsen stiffness and muscle weakness. People often benefit from pacing activities throughout the day rather than doing long, continuous tasks.

Maintaining a **healthy body weight** reduces stress on weight-bearing joints like knees and hips and also lowers overall inflammation in the body. Even modest weight loss can improve mobility and reduce pain.

A **balanced, anti-inflammatory diet** may help ease symptoms. Diets rich in fruits, vegetables, whole grains, fish (especially omega-3 fatty acids), nuts, and olive oil are often recommended. Reducing processed foods, excess sugar, and saturated fats can help control systemic inflammation.

**Stopping smoking** is one of the most important lifestyle changes. Smoking not only increases the risk of developing rheumatoid arthritis but also makes symptoms more severe and reduces the effectiveness of medications.

Good **sleep hygiene** is essential because poor sleep can worsen fatigue and pain sensitivity. Maintaining a regular sleep schedule, reducing caffeine late in the day, and creating a comfortable sleep environment can help improve rest quality.

**Stress management techniques** such as meditation, deep breathing exercises, mindfulness, or counseling can also reduce symptom flares, as stress is known to trigger immune system activity.

Using **joint protection techniques** in daily life helps reduce strain. This includes using larger joints instead of smaller ones for carrying objects, avoiding repetitive gripping, using ergonomic tools, and wearing supportive splints if needed.

Finally, staying socially and physically active helps prevent isolation and supports

mental health, which is important because chronic illness can increase the risk of depression and anxiety.

Overall, these lifestyle changes work best when combined with medical treatment and regular monitoring.

## Conclusion

Rheumatoid arthritis is more than a disease of painful, swollen joints—it is a lifelong condition that reflects how deeply the immune system, lifestyle, and environment are connected to

**Living with Rheumatoid Arthritis**

- Morning Stiffness:** Plan tasks when energy peaks
- Modify Tasks:** Use tools, avoid joint strain
- Rest & Move:** Alternate rest with light activity
- Mental Health:** Support groups/counselling help
- Family Support:** Emotional & physical care matters

**WHAT TO CONSUME**

- Omega-3 Foods:** Fish, flaxseeds = less inflammation
- Avoid Triggers:** Processed food, red meat, sugar
- Whole Foods:** Grains, fruits, veggies = joint health
- Stay Hydrated:** Lubricates joints
- Supplements:** Check for Vitamin D, Calcium

human health. While its course can be unpredictable and challenging, modern medicine has transformed it from a disabling illness into one that can often be effectively controlled. With early diagnosis, targeted treatment, and consistent care, many people are able to preserve joint function, reduce pain, and continue leading active, fulfilling lives.

Just as importantly, rheumatoid arthritis highlights the value of listening to the body early, acting promptly, and embracing a holistic approach that combines medical therapy with healthy lifestyle choices. Though it may leave its mark, it does not define a person's future. With awareness, support, and advancing treatments, the story of rheumatoid arthritis is no longer only about limitation—it is also about resilience, adaptation, and the possibility of living well despite chronic illness.

Beyond treatment and medical advances, living with Rheumatoid arthritis also emphasizes the importance of patience, support, and self-care. The journey may include challenges, but it also encourages individuals to build strength through small daily victories—whether that means moving with less pain, maintaining independence, or simply finding balance in everyday life. With the combined power of modern therapy, healthy habits, and a strong support system, people with rheumatoid arthritis can continue to shape meaningful, active lives, proving that even chronic illness can be met with courage and resilience.

*“Strength is not the absence of pain, but the courage to keep moving despite it”*

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