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V-Discover

**THE STUDENTS
DIGITAL MAGAZINE**

Theme : JOINT CARE



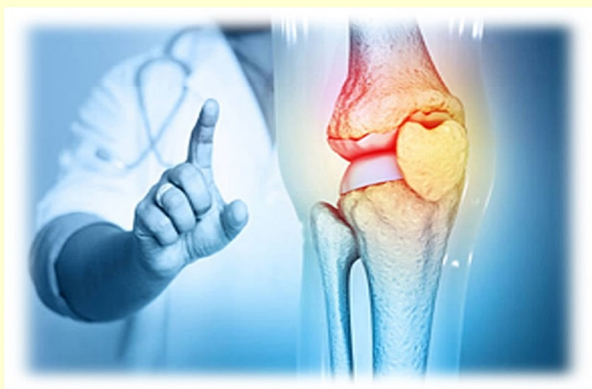
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JOINT CARE

INTRODUCTION TO JOINTS

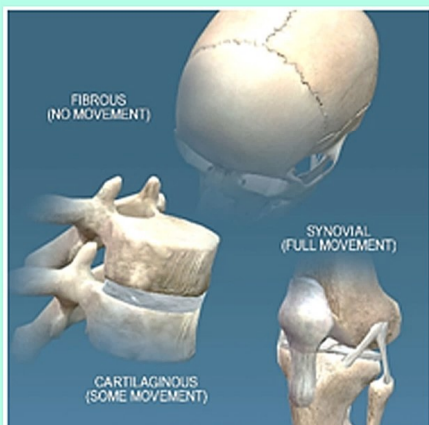


Joints come in many shapes, sizes and types throughout your body. They give your skeleton its shape and help you move. A joint is an any place in your body where two bones meet. They're part of your skeletal system. Nerves are like cables that carry electrical impulses between your brain and the rest of your body. These impulses help you feel sensations and move your muscles. They also maintain certain autonomic functions like breathing, sweating or digesting food.

WHAT DO JOINTS DO???

Joints support your body. They help you sit, stand and move. Some joints provide structural support.

TYPES OF JOINTS IN THE HUMAN BODY



Joints hold the skeleton together and support movement. There are two ways to categorize joints. The first is by joint function, also referred to as range of motion. The second way to categorize joints is by the material that holds the bones of the joints together; that is an organization of joints by structure

Joints Can Be Grouped by Their Function into Three Ranges of Motion

Immovable joints (called synarthroses) include skull sutures, the articulations between the teeth and the mandible, and the joint found between the first pair of ribs and the sternum. Examples of joints allowing slight movement (called amphiarthroses) include the distal joint between the tibia and the fibula and the pubic symphysis of the pelvic girdle. Joints allowing full movement (called diarthroses) include many bone articulations in the upper and lower limbs. Examples of these include the elbow, shoulder, and ankle.

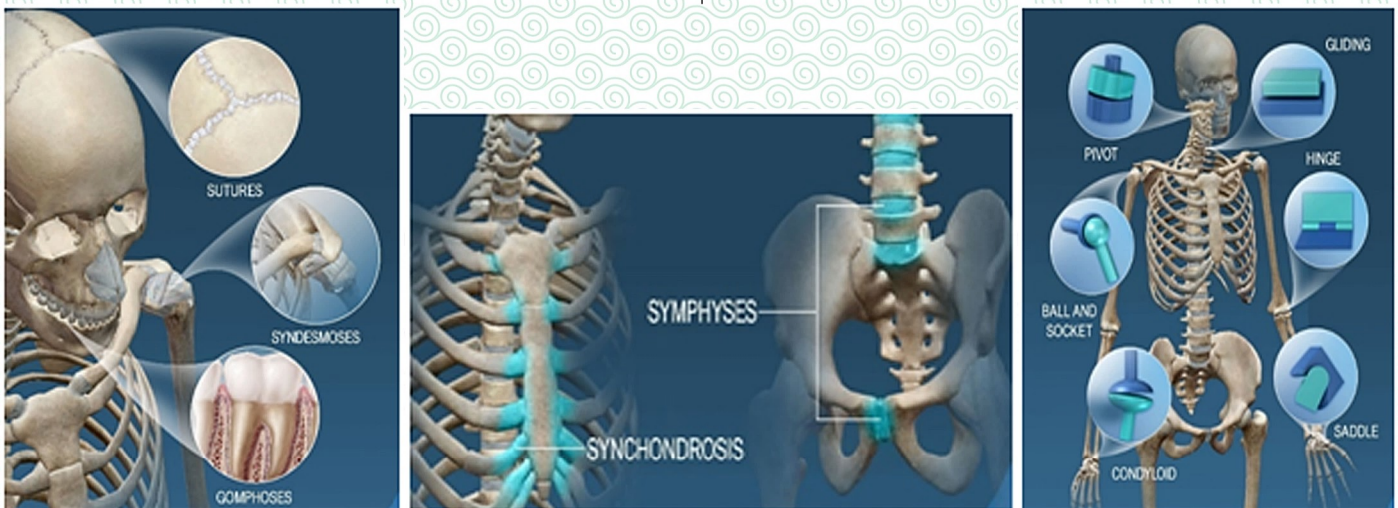


JOINTS CAN BE GROUPED BY THEIR STRUCTURE INTO FIBROUS, CARTILAGINOUS, AND SYNOVIAL JOINTS

Fibrous Joints between the articulations of fibrous joints is thick connective tissue, which is why most

(but not all) fibrous joints are immovable (synarthroses). There are three types of fibrous joint.



Cartilaginous Joints that unite bones with cartilage are called cartilaginous joints. Synovial joints are characterized by the presence of an articular capsule between the two joined bones. Bone surfaces at synovial joints are protected by a coating of articular cartilage. Synovial joints are often supported and reinforced by surrounding ligaments, which limit movement to prevent injury.



COMMON JOINT DISORDERS

A common joint disorder refers to any health condition that affects the joints and is frequently encountered in the population.

	<p>Gout A form of arthritis characterised by severe pain, redness and tenderness in joints. Pain and inflammation occur when too much uric acid crystallises and deposits in the joints.</p> <p>Symptoms of gout include severe pain, redness and swelling in joints, often the big toe.</p>
	<p>Arthritis Inflammation of one or more joints causes pain and stiffness that can worsen with age. Symptoms include pain, swelling, reduced range of motion and stiffness. Medication, physiotherapy, or sometimes surgery helps reduce symptoms and improve quality of life. Symptoms may worsen depending on severity and chronicity.</p>
<p>White due to lack of blood flow Blue due to lack of oxygen Red when blood flow returns</p>	<p>Raynaud's syndrome in which some areas of the body feel numb and cool in certain circumstances. Smaller arteries that supply blood to the skin constrict excessively in response to cold, limiting blood supply to the affected area.</p> <p>It is often accompanied by changes in skin color, turning white and then blue.</p>

	<p>Fibromyalgia is often accompanied by fatigue and altered sleep, memory and mood. Widespread muscle pain, stiffness and tenderness are the most common symptoms. Medication, talk therapy and stress reduction may help in controlling the symptoms.</p>
	<p>Bursitis Inflammation of the fluid-filled pads (bursae) that act as cushions at the joints. It occurs most often at joints that perform frequent repetitive motion.</p> <p>Symptoms include pain, swelling and stiffness. Common areas include the knees, shoulders, elbows and hips.</p>

GENERAL PHARMACOLOGICAL TREATMENT

ANTI-GOUT DRUGS	<p>Xanthine oxidase inhibition- Allopurinol, Febuxostat, Microtubule inhibitor- Colchicine, Act as a uricosuric- Probenecid, COX inhibitor- Indomethacin, Ibuprofen</p>
RAYNAUD'S DISEASE	<p>Calcium channel blockers - Nifedipine Alpha blockers – Prazosin Angiotensin 2 receptor blockers - Losartan Selective serotonin reuptake inhibitor - Fluoxetine</p>
ANTI-GOUT DRUGS	<p>NSAIDs- Ibuprofen, naproxen sodium Modifying anti-rheumatic drugs (DMARDs)- Methotrexate, leflunomide Biologic agents- Abatacept, Etanercept Glucocorticoids- Prednisolone, Dexamethasone</p>
FIBROMYALGIA	<p>Antiepileptic- Pregabalin Serotonin- Norepinephrine reuptake inhibitors (SNRI)- Milnacipran Antidepressants- Amitriptyline Muscle relaxants- Cyclobenzaprine</p>
BURSITIS	<p>NSAIDs, Intrabursal corticosteroid injections, Antibiotic Therapy</p>

NON-PHARMACOLOGICAL TREATMENT

Nutritional Requirements for Joints

CALCIUM



VITAMIN D



NON-PHARMACOLOGICAL TREATMENT

Nutritional Requirements for Joints

PROTEINS







ESTROGEN



FOODS THAT CAN NEGATIVELY AFFECT BONE AND JOINT HEALTH

While it's important to focus on the foods that can promote bone and joint health, it's also important to be mindful of the foods that can have a negative impact

<p>Processed Foods like chips, cookies, and soda are typically high in sugar, salt, and unhealthy fats. These foods can contribute to inflammation in the body and may also lead to weight gain, which can put extra stress on the joints.</p>	
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<p>Excessive Alcohol Consumption: Drinking too much alcohol can interfere with the body's ability to absorb important nutrients like calcium and vitamin D. It can also contribute to inflammation and weaken the bones over time.</p>	
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ADVANCES IN DIAGNOSIS

Machine Learning Techniques

A novel ensemble-based technique and this approach employs multiple algorithms, including support vector machines and logistic regression, to analyse clinical data from patients

The study reported a diagnostic accuracy of 94.03% with high precision and recall rates, indicating significant potential for early identification of RA in clinical settings.

ADVANCES IN DIAGNOSIS

Immunological Biomarkers

Research has identified new immunological biomarkers that can predict disease severity and flare-ups

Flare-Up vs. Remission: Elevated levels of CD11a on B lymphocytes have been associated with flare-ups, while decreased levels are observed during remission. This differential expression can guide clinicians in adjusting therapies appropriately.

T Cell Dynamics: In RA patients, a significant portion of T cells express both CD45RA and CD45RO simultaneously, indicating a unique activation state that may contribute to the pathogenesis of the disease

ADVANCES IN DIAGNOSIS

Novel Drug Delivery Systems

Emerging drug delivery systems such as nanoparticles, liposomes, and dendrimers are being explored to improve therapy for RA. For instance, PLGA nanoparticles have demonstrated effectiveness in reducing inflammation more efficiently than conventional glucocorticoids.



Biologic and Targeted Therapies

Recent developments in biologic therapies include the introduction of interleukin-6 (IL-6) receptor blockers like sarilumab, which has shown superior efficacy compared to standard treatments for patients with inadequate responses to traditional DMARDs. Additionally, several biosimilars have been approved, expanding treatment options.

Therapeutic Strategies

The focus on achieving low disease activity states (LDAS) has led to the exploration of treatment de-escalation strategies once remission is achieved. This involves tapering biologic therapies while monitoring patient responses closely, which could enhance long-term management of RA without compromising safety.



THE IMPORTANCE OF REGULAR EXERCISE FOR BONE HEALTH

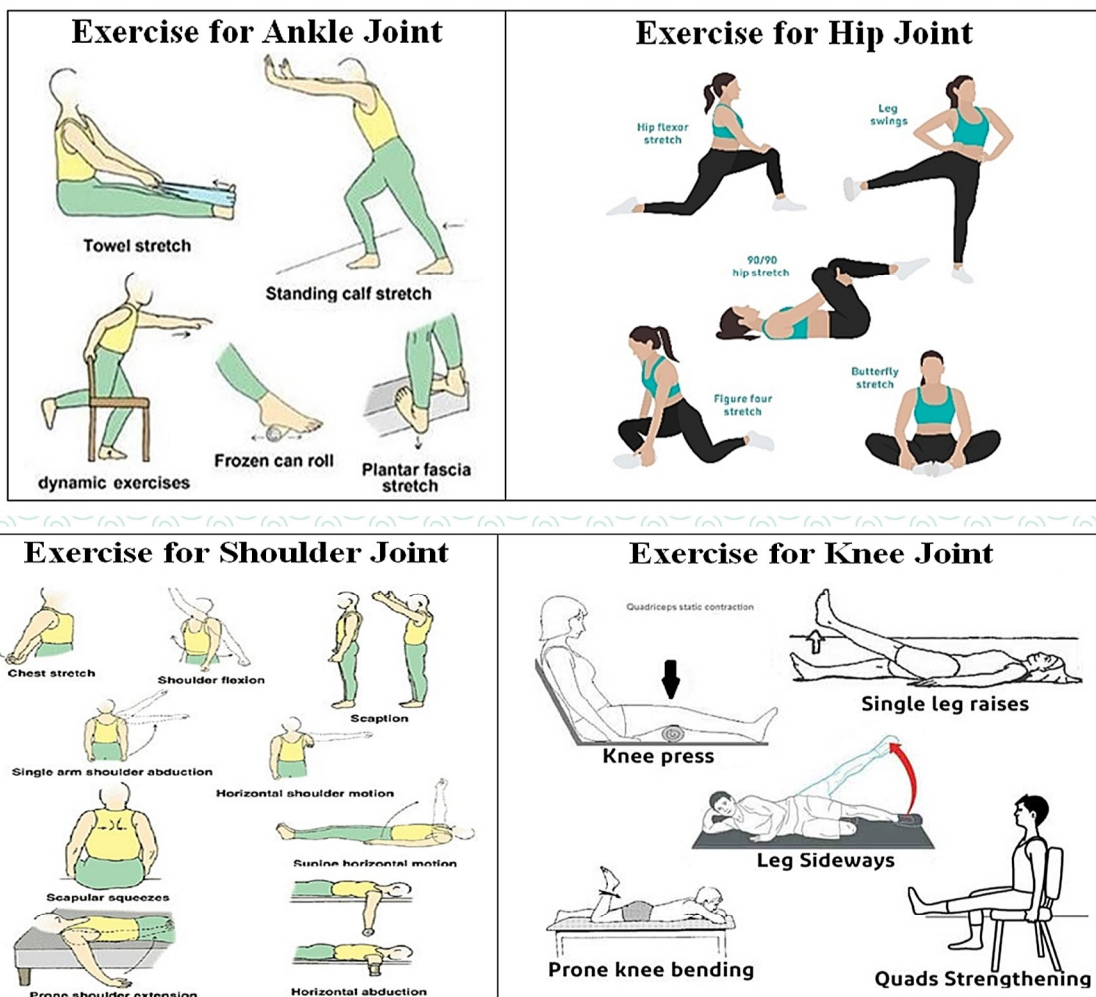
Joint exercise has numerous benefits for both your overall health and your joints. These exercises promote range of motion and flexibility, regular exercise also plays a crucial role in the health of your joints. It increases your range of motion by stretching and moving your body in new ways.

Improves Flexibility: Exercise increases your range of motion by stretching and moving your body in new ways.

Reduces Stress: Exercise helps reduce stress and anxiety by encouraging mental and physical relaxation.

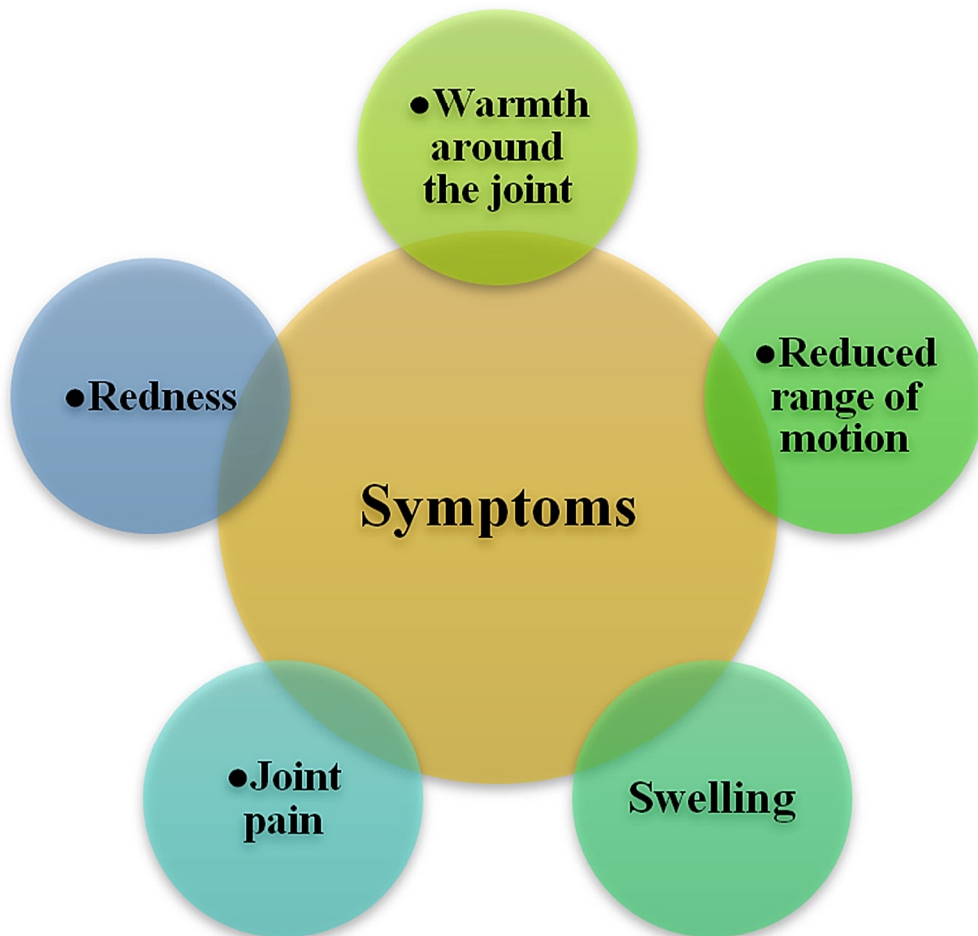
Promote Better Sleep: Exercise promotes restful sleep by calming and relaxing the body after a stressful day.

Builds Strength: The regular practice of exercise can help build muscle and improve overall strength.



DRUG INDUCED JOINT DISORDERS

Drug-induced joint disorders, also known as drug-induced arthropathy or arthralgia, refer to joint pain, inflammation, or other joint problems caused by medications. Some medications can lead to joint symptoms either directly by triggering an inflammatory response in the joints or indirectly by affecting other body processes that impact joint health.



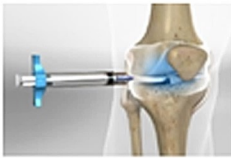


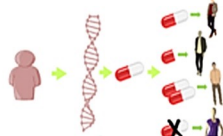
COMMON DRUGS ASSOCIATED WITH JOINT DISORDERS

Corticosteroids	Long-term use can lead to osteonecrosis, particularly of the hip and shoulder joints.
Fluoroquinolones (antibiotics)	Can cause tendonitis and tendon rupture, as well as joint pain.
Statins	While primarily used to lower cholesterol, they can cause muscle and joint pain.
Isotretinoin	Used for acne, it can lead to musculoskeletal symptoms, including joint pain.

COMMON DRUGS ASSOCIATED WITH JOINT DISORDERS

Diuretics	Can increase uric acid levels, leading to gout.
Methotrexate	Used in cancer and autoimmune diseases, can cause joint pain as a side effect.
Antibiotics like penicillin and cefaclor	While primarily used to lower cholesterol, they can cause muscle

RECENT ADVANCES IN DRUG-INDUCED JOINT DISORDER TREATMENT

	Targeted Drug Delivery Advances in nanomedicine have improved the precision of delivering drugs directly to affected joints, minimizing side effects.
Cartilage Regeneration New therapies like sprifermin (FGF18) and BMPs aim to regenerate cartilage by promoting chondrocyte proliferation.	
	Bone Health Bisphosphonates and cathepsin K inhibitors focus on strengthening subchondral bone and reducing pain linked to joint degeneration.
Personalized Treatment Approaches Emphasis is shifting toward personalized therapies that address specific molecular mechanisms of joint disorders.	

Myth vs Facts

Myth

You can't be active after joint replacement surgery.

Facts

The purpose of joint replacement is to allow activity without pain.

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