Muscles and Bones-Aches and Pains

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Welcome!

individualized by the patient's clinician/PT/pharmacist

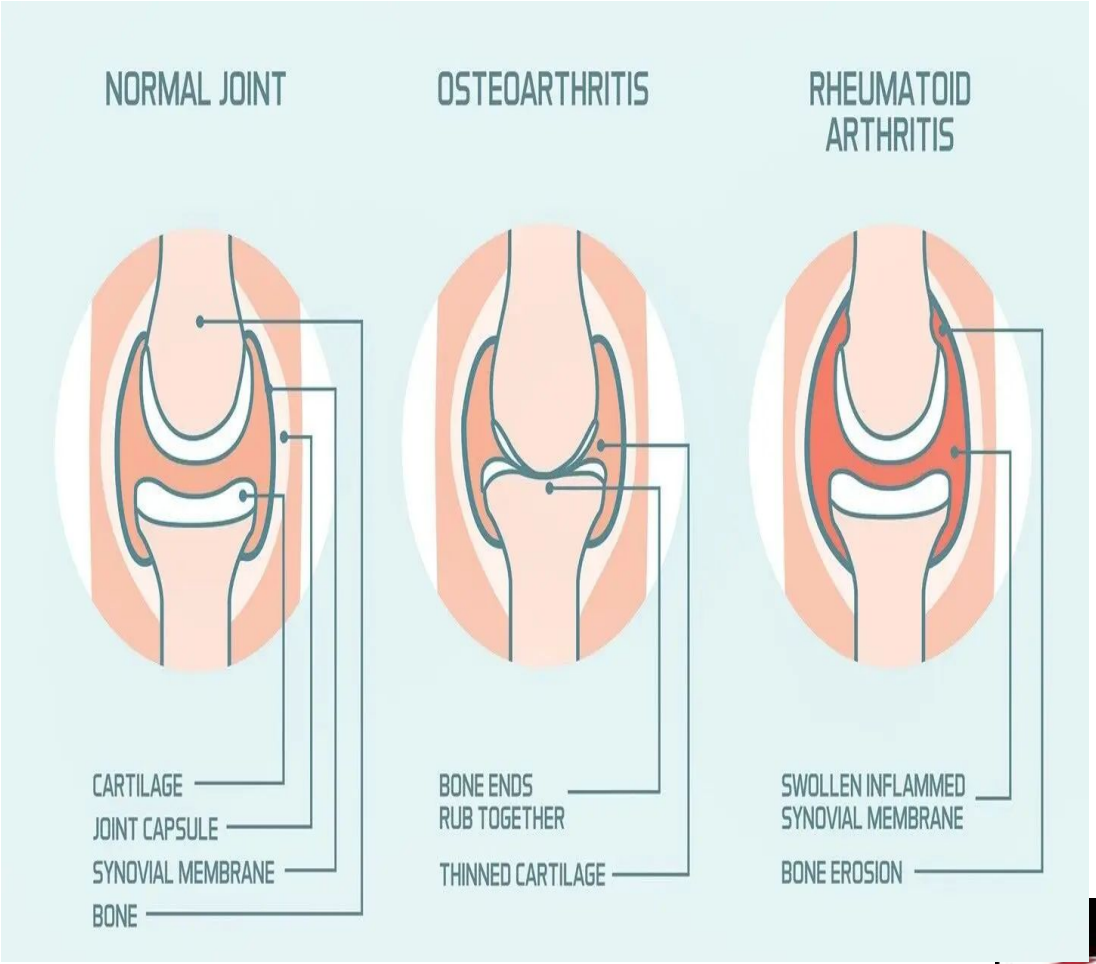
The Mind, Spirit and Body connection

What we will cover

- Arthritis with focus on osteoarthritis and inflammatory arthritis
- Muscle pain
- Supplements
- Falls

What is Arthritis

- **Arthritis is a family of more than 100 conditions — not simply “old age.”**
- **Affects joints and the tissues around them.**
- **Common symptoms: pain, stiffness, swelling, warmth, and reduced movement.**
- **Some types are mainly wear/degeneration; others are caused by inflammation or an overactive immune system**



Types

Often knees, hips, hands

Often hands, wrists, feet

Uric-acid crystals

May affect skin, spine, tendons, eyes or other organs

Why Osteoarthritis happens

- changes
- genetics
- inactivity
- stress





Healthy knee joint

Osteoarthritis

Ignoring symptoms is not an option

- **Pain → less movement → weaker muscles → more difficulty moving → more pain.**
- **Loss of strength and balance increases fall risk.**
- **Difficulty with stairs, bathing, dressing, cooking, driving, and getting up from a chair.**
- **Sleep, mood, social activity, and confidence can suffer.**
- **Less mobility can threaten independence — and can make worship more difficult.**
- **Inflammatory arthritis can damage joints and sometimes affect organs if untreated.**

Treatment of Osteoarthritis

- The most important treatment - MOVEMENT
- Exercise can reduce pain and improve function, mood, strength and mobility.
- Start small: even 5–10 minutes counts.
- Build toward aerobic activity + strength training + balance work.
- Exercise should be adapted to the person — not abandoned because of arthritis

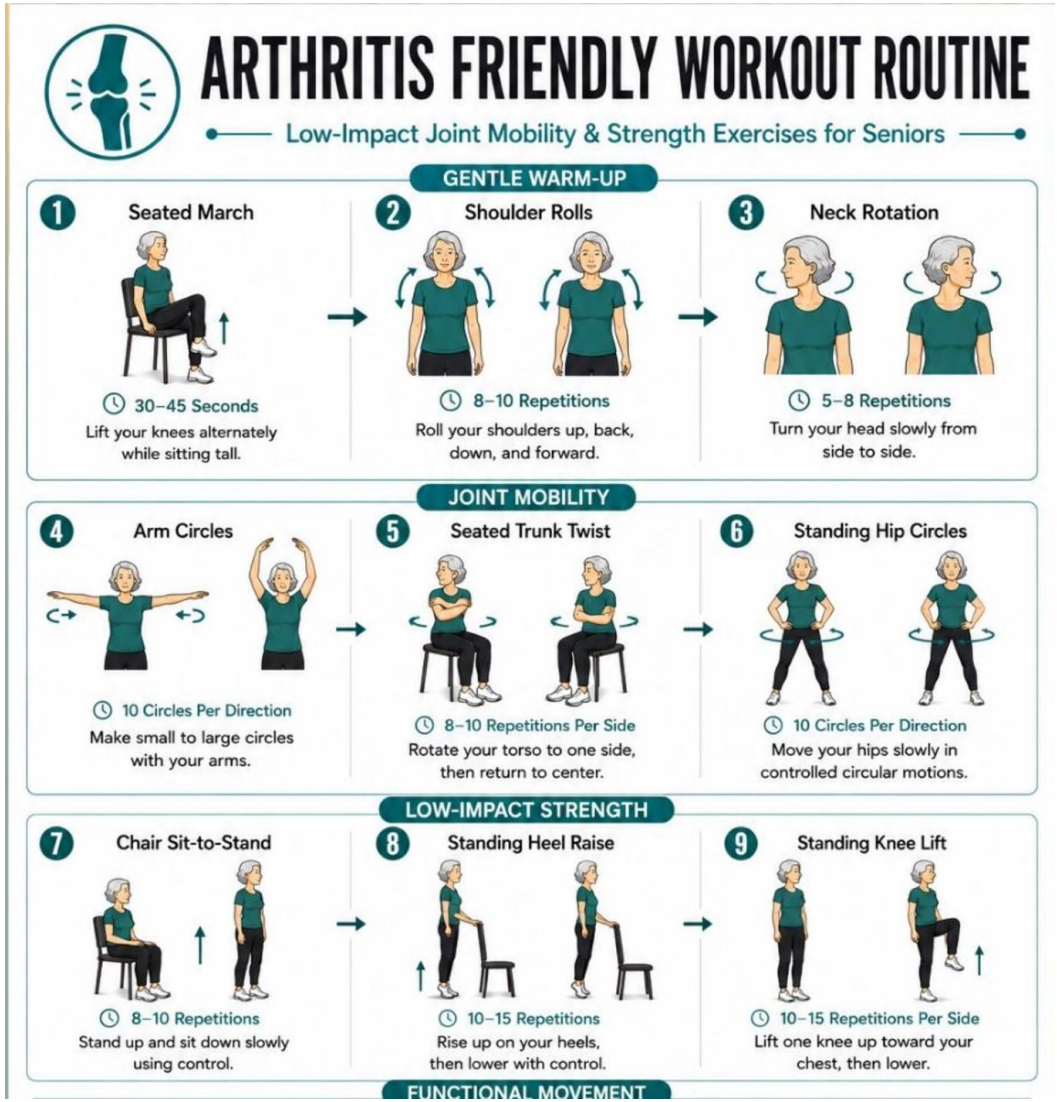
Role of Therapy

- **Identifies WHY movement hurts — weakness, stiffness, poor mechanics, balance, or fear of movement.**
- **Creates a progressive strengthening program for the affected joint AND muscles.**
- **Teach safe transfers, stairs, walking, cane/walker use, braces, and joint protection.**
- **Help return to meaningful activities — including getting down to the floor and back up when appropriate.**
- **Occupational therapy can adapt cooking, dressing, bathing, prayer setup, and other daily tasks.**

Practical tips

- **Sit-to-stand: 5–10 repetitions**
- **Heel raises: 10–15 repetitions**
- **Wall push-ups: 8–12 repetitions**
- **Marching while holding a counter: 30–60 seconds**

- **Do 1 set to start; progress gradually toward 2–3 sets.**

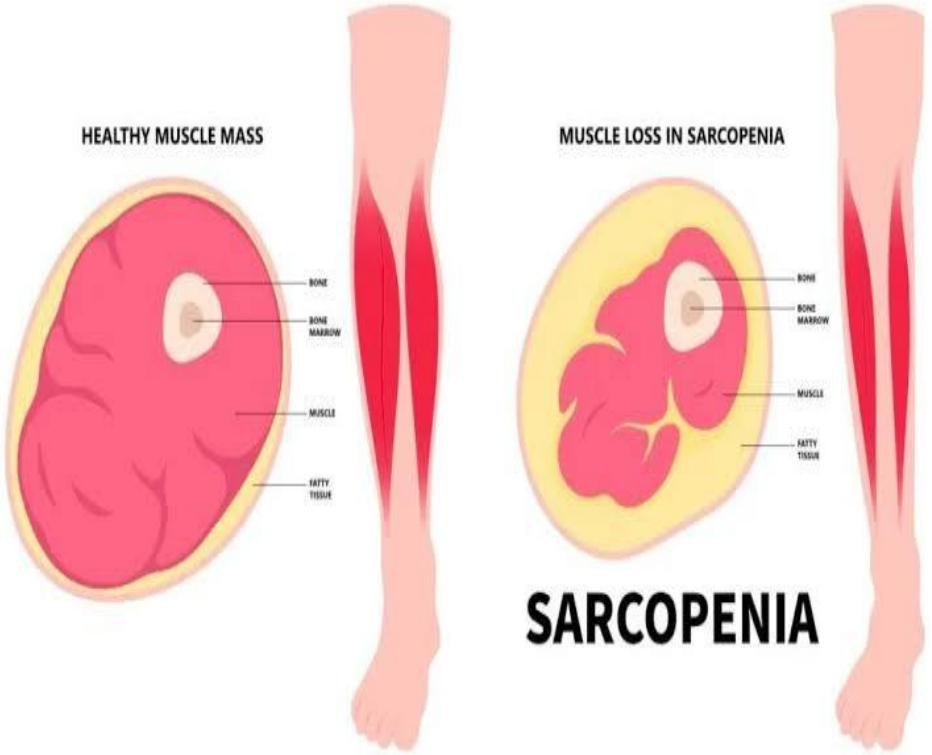


Rules of Exercise

- Warm up 5 minutes with gentle walking or range-of-motion.
- Mild muscle soreness can happen when starting. Sharp or escalating joint pain is a signal to modify.
- During an inflammatory flare, reduce intensity and use shorter, gentler sessions — do not become completely inactive unless your clinician says so.
- Choose joint-friendly activities: walking, cycling, swimming/water exercise, tai chi, or chair exercise.
- Strengthen 2+ days/week; add balance work for older adults.

Muscle is the “ currency” of ageing well!

- **Muscle supports mobility, balance, blood sugar, blood pressure, independence, and fall prevention.**
- **Older adults generally benefit from more protein than the basic adult minimum.**
- **Useful target for many older adults: about 1.0–1.2 g/kg/day; active adults may need ~1.2–1.5 g/kg/day, individualized for kidney disease and other conditions.**
- **Spread protein across meals rather than eating almost all of it at dinner.**
- **Pair protein with resistance exercise — protein alone cannot replace strength training.**



Optimal weight

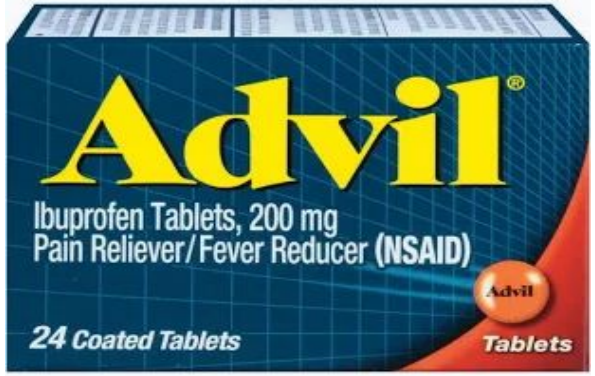
- **If weight loss is appropriate, aim for gradual loss while preserving protein and strength.**
- **Protein-rich foods can improve fullness and help preserve muscle during weight loss.**
- **Build meals around: protein + vegetables/fiber + a reasonable carbohydrate portion + healthy fat.**
- **Do not use extreme dieting or prolonged inactivity to treat arthritis.**
- **Ask for individualized nutrition advice if you have kidney disease, liver disease, diabetes, or frailty.**

Medication

- Topical NSAID
- Oral Acetaminophen
- Oral NSAID
- Prescription medication

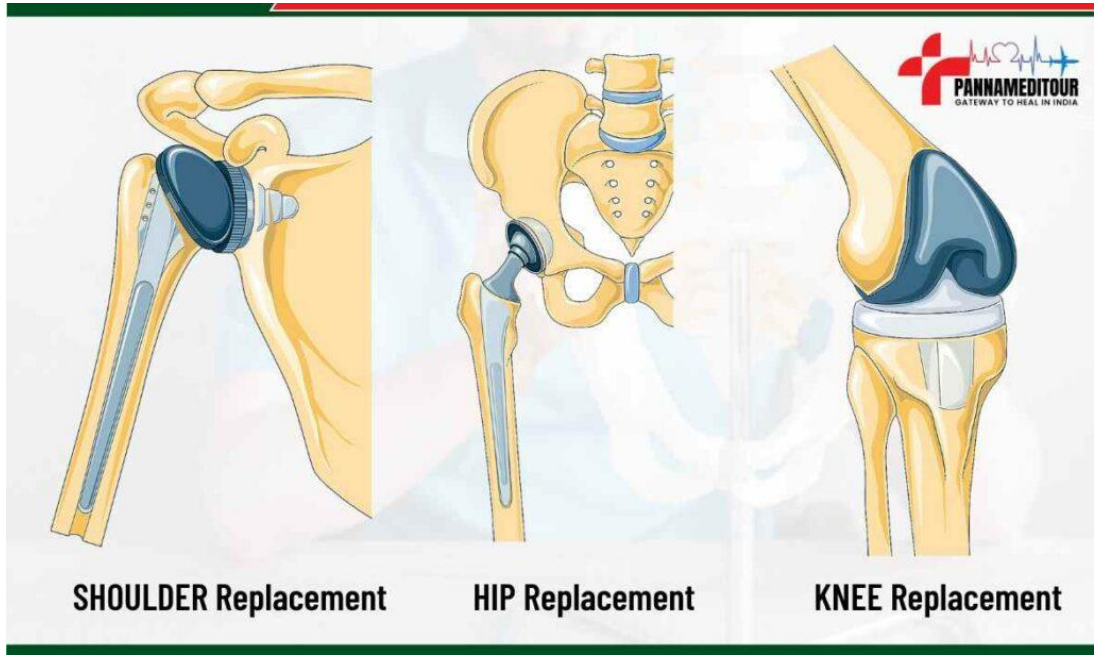






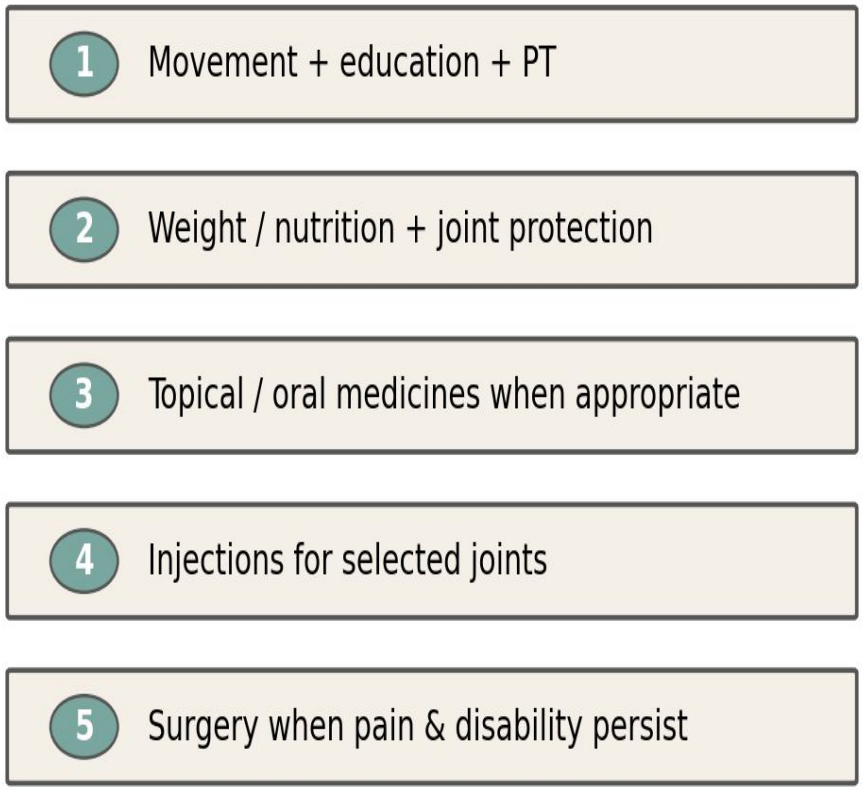
Final answer-joint replacement

- When pain and disability remain substantial despite appropriate non-surgical treatment.
- Common procedures: joint replacement (knee/hip/shoulder), selected repairs, and other joint-specific operations.
- Good prehabilitation — strength, walking capacity, nutrition, and medical optimization — can improve readiness for surgery.
- Recovery still depends on rehabilitation after surgery.
- Needing surgery is not a personal failure. It can be the right tool when the joint is



Action Plan

The goal is function, independence & quality of life



1. Get the correct diagnosis.

2. Start/continue appropriate movement and PT.

3. Build strength and preserve muscle with adequate protein.

4. Use medicines strategically and safely.

5. Consider injections or surgery when appropriate.

6. Protect the activities that give life meaning — including family, independence and worship

Part 2-Inflammatory Arthritis

- Introduce common inflammatory arthritides
- Give an overview of common causes of muscle pain
- Supplements for arthritis
- Role of PCP, appropriate referrals for orthopedics and rheumatolog

Goals

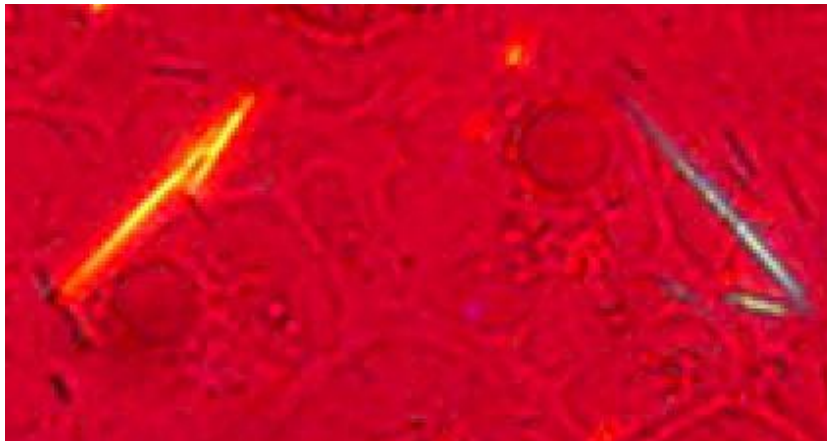
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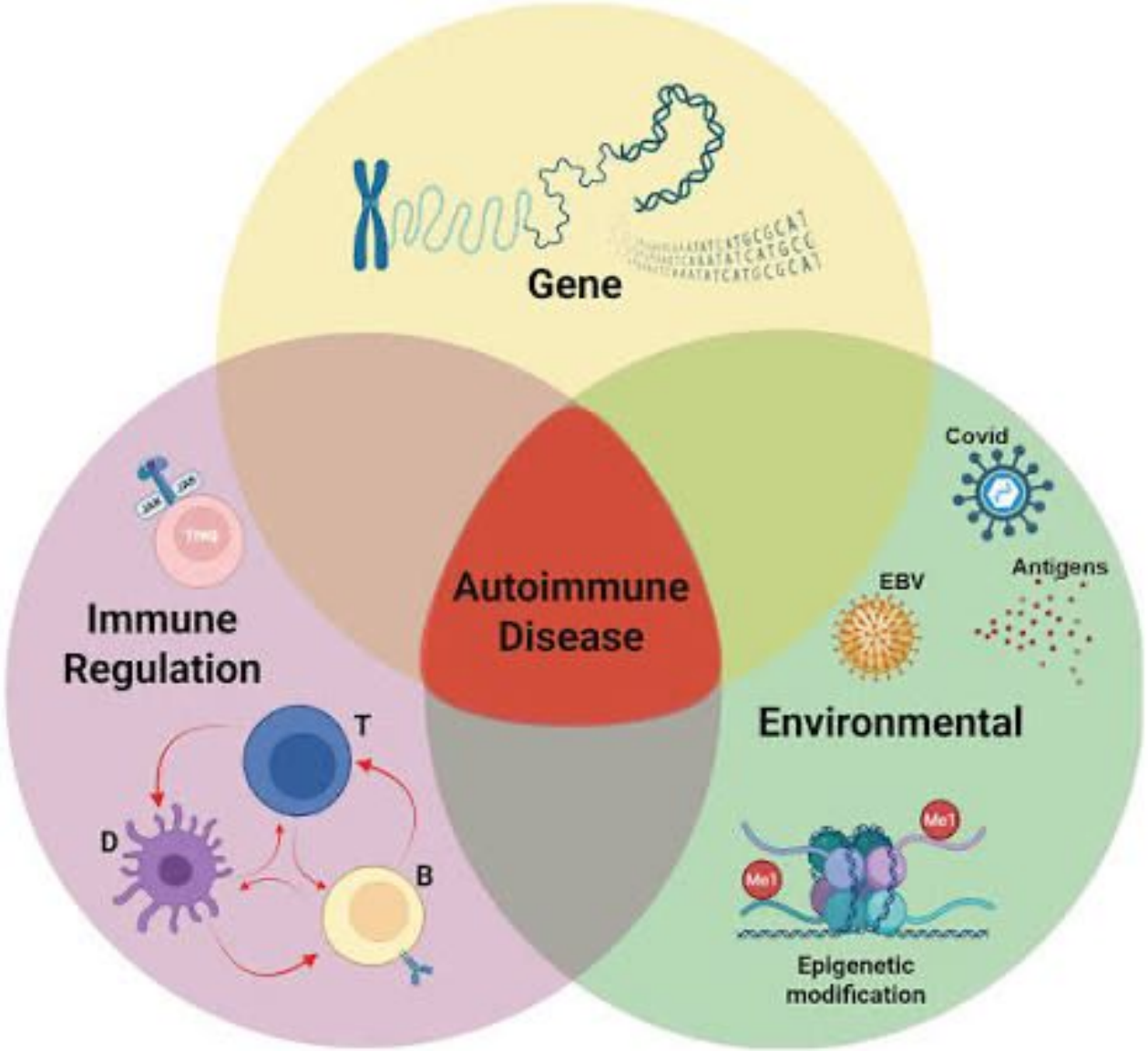




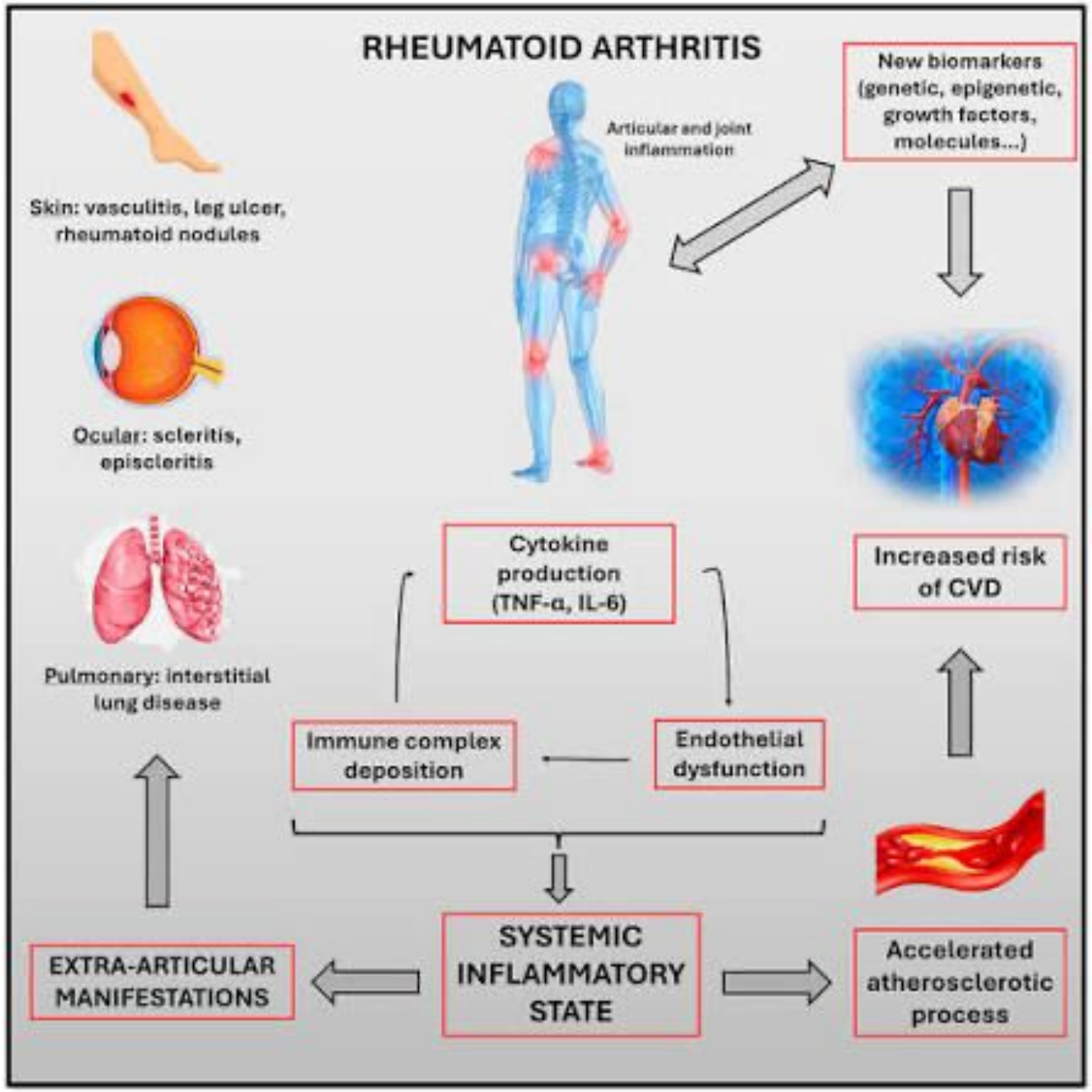


Characteristic	Gout	CPPD disease
Prevalence	17 to 20 per 1000 individuals, largely adult men and postmenopausal women	<1 per 1000 individuals experience acute CPP crystal arthritis (pseudogout); CPPD disease is common in osteoarthritis and increases with age
Crystal chemistry	Monosodium urate	CPP dehydrate
Crystal appearance	Negatively birefringent; needle-shaped or rods	Weakly positively birefringent; rods or rhomboidal
Articular involvement	Monoarticular > oligoarticular; polyarticular <30%	Monoarticular > oligoarticular
Most frequently affected joints	First MTP joint	Knee, wrist, other
	Initially 50%	
	Eventually 90%	
	Ankle, knees, other	
Predisposing conditions/risk factors	Hyperuricemia*, obesity, hypertension, hyperlipidemia, alcohol ingestion, lead ingestion, hereditary enzyme defect	Hemochromatosis, osteoarthritis, hypomagnesemia, hyperparathyroidism, hereditary (rare), and increased age
Therapeutic options	Acute gout attacks	Acute CPP crystal arthritis (pseudogout)
	NSAIDs, glucocorticoids, colchicine	NSAIDs, glucocorticoids, colchicine
	Chronic gout management	Chronic CPPD disease management
	Urate-lowering agents, colchicine	NSAIDs, colchicine
		DMARDs: hydroxychloroquine, methotrexate (no randomized

Autoimmune disease

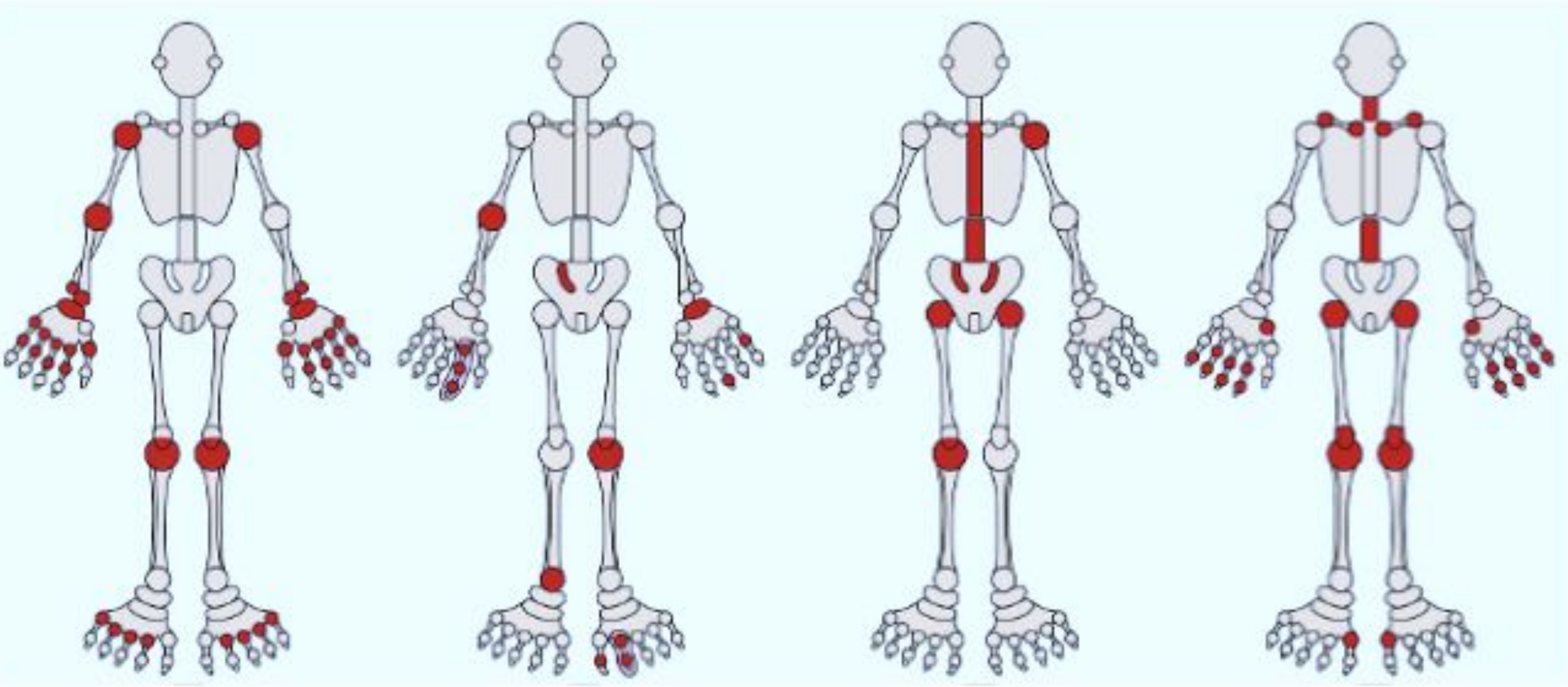





RHEUMATOID ARTHRITIS
Skin: vasculitis, leg ulcer, rheumatoid nodules
Articular and joint inflammation
New biomarkers (genetic, epigenetic, growth factors, molecules...)
Ocular: scleritis, episcleritis
Pulmonary: interstitial lung disease
Cytokine production (TNF-α, IL-6)
Increased risk of CVD
Immune complex deposition
Endothelial dysfunction
EXTRA-ARTICULAR MANIFESTATIONS
SYSTEMIC INFLAMMATORY STATE
Accelerated atherosclerotic process











Spectrum of conditions

- Ankylosing Spondylitis
- Non radiographic axial spondyloarthritis (nr-axSpa)
- Psoriatic arthritis
- Reactive arthritis
- Arthritis associated with IBD
- Peripheral SpA

- Arthritis is axial (particularly sacroiliac joints), asymmetric oligoarthritis, dactylitis, enthesitis



Plaque Psoriasis



Guttate Psoriasis



Pustular Psoriasis



Inverse Psoriasis



Nail Psoriasis



Psoriatic Arthritis





Pitting



Onycholysis



Subungal Hyperkeratosis

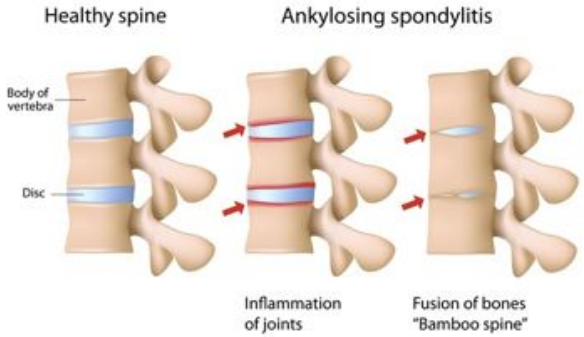


Oil Drop Sign



Nail Plate Dystrophy

-Early diagnosis
-Prompt treatment can modify disease and prevent damage
-Regular follow and testing needed
-Life style changes and treatment



Flexion deformity of the neck, thoracic kyphosis, loss of lumbar lordosis and flexion deformity of the hips

Squaring of vertebra bodies due to Anterior and posterior inflammation, syndesmophwytes, ankylosis of facet Joints, ankylosis of the anterior longitudinal ligament, bamboo Spine.

Progressive deformity due to AS over a period of 36 years



Little H, Swinson DR, Cruickshank B. *Am J Med.* 1976;60:279-285. Reproduced with the permission of Cahner's Publishing Co.

Other co-morbidities

- Increased cardiovascular risk, MI and stroke
- Metabolic syndrome
- HTN , DM, atherosclerosis

Part 3-Muscle pains


Muscle stress from overuse.
Traumatic injuries.
Viral and bacterial infections.
Reactions to medications.
Chronic muscle diseases.
Chronic pain syndromes.
Neuromuscular disorders.
Metabolic disorders and imbalances.
Ischemia.
Cancer.

SIGNS OF VITAMIN D DEFICIENCY

In adults, vitamin D deficiency **isn't** obvious.
But you **might** have:



Mood Changes



Bone Loss



Muscle Cramps
(or weakness)



Bone & Joint Pain
(especially in your back)



Fatigue



Muscle pain or tenderness



Low energy



Face and jaw pain



Diarrhea and constipation



Urinary urgency or frequency



Headaches and migraines



Memory problems



Anxiety



Depression



Insomnia and other sleep disorders

Vitamin D

-Fat soluble vitamin & a hormone involved in calcium,Mg and Phosphate metabolism and connected to the immune system

-Insufficiency 21-29 ng/ml

-Deficiency < 12 ng/ml

-Toxicity: increased calcium, nausea/vomiting, urinary frequency, weakness, bone pain, kidney stones

-Role in immune regulation , reduced IL-17 levels (PsA)

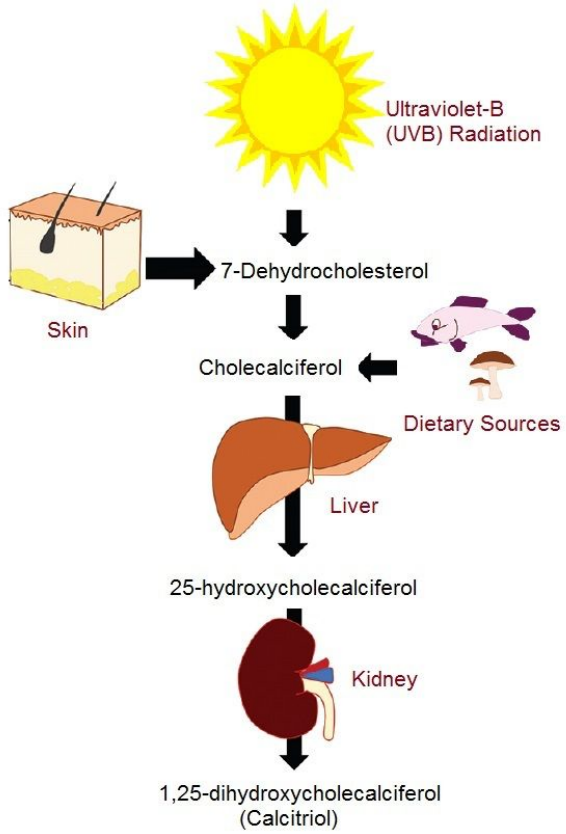
-Vitamin D receptors on immune cells which regulate their functions

-Inverse relationship between RA and vitamin D level (Low level can increase risk of development by 62%)

-VITAL study BMJ 2022: Deficiency increases risk of developing AI disease(2000 IU)

-Concomitant osteoporosis risk in inflammatory arthritis





Fish Oil



-Obtained from fatty fish like mackerel, trout, sardine, salmon

-An essential fatty acid that the body cannot make

-In addition to heart, cholesterol benefits, also include reduction in inflammation , they block COX-2 (Like NSAIDS),reduced TNF-alpha, IL-6

-RA 2015/2017 study showed it reduced pain and stiffness and need to take NSAIDS, fatigue, increased benefit in patients on triple therapy

-possible benefit in lupus

-Could potentially prevent gout attacks

-PsA reduce joint pain and psoriasis, Improves sicca symptoms in Sjogrens

-Back pain: Reduced need for NSAIDS by 60% when taken daily for 4 months

2-4 gm epa/DHA daily , take with food

-may interact with blood thinners, BP medications or contraceptives (careful no mercury)

Senftleber N K(2017)'Marine Oil Supplements for Arthritis Pain,a meta analysis' Nutrients Jan 6;9(1)

Turmeric: Curcumin



-Active ingredient is curcumin

-10,000 studies, 120 clinical trials

-blocks COX-2 and reduces inflammation

- Osteoarthritis (dose was 1 gm/day in a 2020 study)

-Rheumatoid arthritis (Dose was 1-1.5 gm/day in a 2023 study), this also showed reduction in tender and swollen joints

-reduces need for NSAIDS in RA patients

-use with Pepper for better absorption

-Careful higher doses can act as a blood thinner

Probiotics

- Gut microbiome linked to many chronic diseases including inflammatory arthritis, like RA,Gout
- **Dysbiosis:** Loss of beneficial or good bacteria and increased harmful bacteria
- As food or supplements
- Adding probiotic supplements like Lactobacillus casei can reduce inflammatory cytokines (Alipour B, RCT, Int J Rheum Dis 2024)
- Reduced joint swelling and pain seen
- Helped reduced markers of inflammation in Psoriasis patients
- Some studies also did not show robust improvement (type? duration?)
- Multi strain with at least 20 billion colony forming units







Collagen

-Important for skin, nail, bones, formation reduces 1%/yr after age 30.

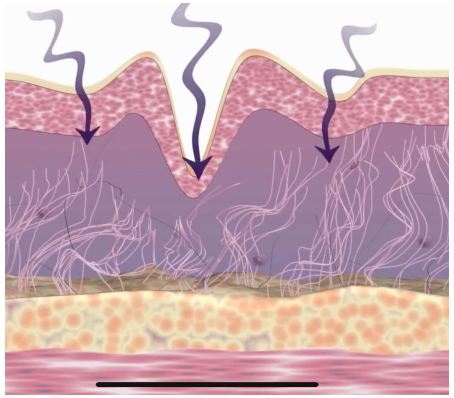
- reduced exercise, sleep, RA , smoking, ETOH, sun expose all increase loss

-Collagen peptides or hydrolyzed Collagen is better

-Some benefit for osteoarthritis

-RA: still debatable, more research is needed

-Food sources: Bone broth, chicken skin, fist, beef





Martínez-Puig D(2023)"Collagen Supplementation for Joint Health: The Link between Composition and Scientific Knowledge." *Nutrients* 15 (6)

Chun-Ru L(2023) ‘Analgesic efficacy of collagen peptide in knee osteoarthritis: A meta analysis of RCT’ J of orth S and R

Alfonso E.B.(2006) ‘Collagen Hydrolysate for tx of OA’:Curr Med Res Opin

Glucosamine/Chondroitin



- **Occurs in cartilage**
- **May reduce inflammation , cartilage loss and pain**
- **GAIT Trial 2008 : Possible benefit in moderate to severe knee OA**
- **2010: Two year extended analysis: not better than placebo**
- **2016 MOVES TRIAL: Compared to Celebrex and Placebo**

Combined chondroitin sulfate (400 mg) plus glucosamine hydrochloride (500 mg) taken three times daily

Some benefit over 6 months for knee osteoarthritis

Careful: May interact with coumadin or increase blood sugar

regulated by the FDA

Buy supplements certified by a third party

(NSF, USP, consumerlab certification)

Check how long a particular company has been on the market

- **NOT A SUBSTITUTE** for your medications

Who to see & when

Role of your family doctor/your gatekeeper

Role of the rheumatologist

Role of the orthopedics doctor

Part 4-Falls

injury AND death by traumatic injury.

each year

results in fracture or head injury



Causes

Older age

Balance problems

Cognitive impairment

Medication

Female gender

Pain

Past history of a fall

Parkinson's disease

Low Vit D

Stroke

Foot disorders

Arthritis

Prevention of Falls

- and gait training
- Review risky medications
- Manage blood pressure
- Manage foot problems and footwear
- Supplement vitamin D
- Treat vision impairment
- Modify the home environment









[Senior Fall Prevention Fall-Proof Home Checklist]

Every second of every day, an older adult (age 65+) suffers a fall in the U.S.— making falls the leading cause of injury-related hospitalization and death.
Using this simple home checklist could save a life.



General

- Keep walkways open and free of clutter
- Eliminate excess rugs or floor mats
- If you have stairs, install proper railings on both sides

Hallway

- Keep hallways well lit with bright bulbs
- Eliminate miscellaneous trip hazards such as: umbrellas, shoes, etc.

Bedroom

- Install night lights
- Ensure lamps are within reach
- Have a phone at bedside

Kitchen

- Keep often used items in easy to reach places
- Eliminate the use of a step stool

Bathroom

- Install grab bars inside & outside of your shower and next to your toilet
- Use non-slip bath mats
- Consider a shower chair


Any
Questions

References

- CDC. Arthritis Basics; Osteoarthritis; Physical Activity and Arthritis; Self-Care for Arthritis. 2024–2026.
- NIAMS. Osteoarthritis; Rheumatoid Arthritis; Arthritis and Rheumatic Diseases.
- American College of Rheumatology / Arthritis Foundation. Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee.
- FDA. Acetaminophen safe [illegible] ults.
- Egyptian clinical practice guideline for knee osteoarthritis (2025)

patient's clinician/PT/pharmacist