# Review of the Osteoarthritis Guidelines & Their Application to Clinical Practice

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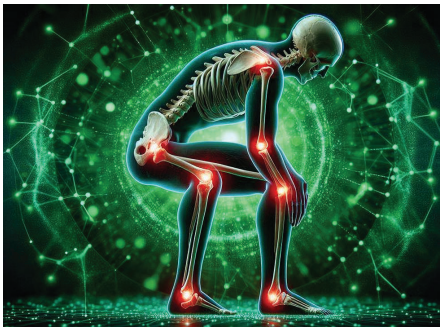


## Learning Objectives

| After viewing this webinar, participants should be able to… |
|---|
| Describe the guidelines for pain management in osteoarthritis. |
| Design strategies to improve pain management in clinical practice and individualize care. |
| Implement recommended approaches to pain management based on evidence and best practices. |


## Pain: Definition and Biopsychosocial Context

IASP 2020 definition of pain:[1]

"An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage."

- Pain is not equivalent to nociception.[2]
  - Biological, psychological, and social factors influence the pain experience.
- For chronic musculoskeletal pain, assessment should include function, sleep, mood, expectations, social context, and treatment goals – in addition to pain intensity.[2]

IASP, International Association for the Study of Pain

1. Raja SN, et al. *Pain.* 2020;161(9):1976-1982. 2. Moseng T, et al. *Ann Rheum Dis.* 2024;83(6):730-740.

## Mechanistic Descriptors of Pain[1-3]

| Descriptor | Definition | Relevance to OA |
|---|---|---|
| Nociceptive | Pain from actual or threatened non-neural tissue damage activating nociceptors | Common in OA; synovium, subchondral bone, periosteum, capsule, ligaments and periarticular tissues can generate nociceptive input |
| Neuropathic | Pain caused by a lesion or disease of the somatosensory nervous system | Not synonymous with chronic OA pain; evaluate for coexisting radiculopathy or peripheral neuropathy when neurologic features are present |
| Nociplastic | Pain arising from altered nociception not fully explained by nociceptive or neuropathic mechanisms | May contribute in a subset with persistent pain, hypersensitivity, widespread symptoms, sleep disturbance or pain-structure discordance |

OA, osteoarthritis

1. Raja SN, et al. *Pain.* 2020;161(9):1976-1982. 2. Kosek E, et al. *Pain.* 2021;162(11):2629-2634. 3. Huang K, et al. *Front Immunol.* 2026;17:1820875.

## Clinical Clues to the Dominant Pain Mechanism[1-3]

| Pattern | History and Examination Findings | Implications for management |
|---|---|---|
| Predominantly nociceptive | Localized/activity-related pain; mechanical provocation; joint-line or periarticular tenderness | Prioritize exercise, load modification, topical/oral NSAIDs when appropriate, and selected local therapies. |
| Possible neuropathic component | Burning/electric quality, numbness, paresthesia, allodynia in a neuroanatomic distribution, neurologic deficit | Look for a coexisting somatosensory lesion/disease. |
| Possible nociplastic features | Regional/multifocal pain, hypersensitivity, disproportionate symptoms, poor sleep/fatigue, variable triggers | Use a multimodal plan and address central amplification contributors; no single test confirms the mechanism. |

NSAIDs, nonsteroidal anti-inflammatory drugs

1. Kosek E, et al. *Pain.* 2021;162(11):2629-2634. 2. Barroso J, et al. *Nat Rev Rheumatol.* 2026;21(5):261-274. 3. Huang K, et al. *Front Immunol.* 2026;17:1820875.

## Osteoarthritis Pain Is Heterogeneous[1-3]

- Radiographic structural severity correlates imperfectly with pain intensity.
- Peripheral nociceptive input from innervated joint tissues is important, but inflammation, neurovascular remodeling, peripheral sensitization, and central nervous system adaptations can shape the pain experience.
- Multiple mechanisms may coexist in the same patient and can change over time.
- Avoid assuming that severe pain always means severe structural damage - or that persistent pain is purely "central."

1. Hoffman DB, et al. *Connect Tissue Res.* 2025;66(5):359-366. 2. Barroso J, et al. *Nat Rev Rheumatol.* 2026;21(5):261-274. 3. Huang K, et al. *Front Immunol.* 2026;17:1820875.

## Peripheral and Central Sensitization[1,2]

- Peripheral sensitization lowers the activation threshold of nociceptors within or around the joint.
  - Hyperalgesia: occurs when a painful stimulus elicits exaggerated pain.
  - Allodynia: normally non-painful stimuli are perceived as painful.
- Persistent peripheral input can promote spinal and supraspinal amplification, contributing to hyperalgesia and pain beyond the affected joint.
- Sensitization is clinically relevant because it may help explain pain persistence and variability, but it is not specific to a single OA phenotype.

1. Barroso J, et al. *Nat Rev Rheumatol.* 2026;21(5):261-274. 2. Huang K, et al. *Front Immunol.* 2026;17:1820875.

## Recognizing Possible Nociplastic Features[1,2]

- Consider nociplastic features when pain has persisted for more than 3 months and is regional, multifocal, or widespread.
- Look for hypersensitivity plus symptoms that are not fully explained by local nociceptive pathology or a somatosensory lesion.
- Sleep disturbance, fatigue, cognitive symptoms, and pain hypersensitivity can support the phenotype but are not diagnostic alone.
- Quantitative sensory testing is primarily a research/phenotyping tool; routine OA diagnosis does not require QST (a clinical measure of sensitization).

QST, Quantitative Sensory Testing

1. Kosek E, et al. *Pain.* 2021;162(11):2629-2634. 2. Barroso J, et al. *Nat Rev Rheumatol.* 2026;21(5):261-274.

## Structure-Pain Discordance: Why the X-ray Is Not the Whole Story[1-3]

- Cartilage is aneural under normal conditions; pain can arise from innervated tissues such as synovium, subchondral bone, periosteum, capsule, ligaments, and periarticular structures.
- Pain intensity may be influenced by peripheral sensitization, central amplification, obesity/metabolic factors, sleep, mood, and prior pain experience.
- Management should be guided by symptoms, physical function, goals, and clinical context rather than only by imaging severity.

1. Huang K, et al. *Front Immunol.* 2026;17:1820875. 2. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 3. Moseng T, et al. *Ann Rheum Dis.* 2024;83(6):730-740.

## Why Mechanism Matters for Treatment Selection[1-4]

Localized mechanical/nociceptive pain:

- Emphasize exercise and load management; use topical NSAID for knee, oral NSAID if appropriate, and selected local injection if persistent.

Possible nociplastic amplification:

- Maintain graded activity; address sleep, mood, and coping; consider CBT and, for selected knee OA, duloxetine.

Neurologic symptoms/signs:

- Evaluate and treat coexisting radiculopathy or neuropathy rather than escalating OA-specific local procedures.

Severe function/QOL impact despite appropriate nonsurgical care:

- Reassess diagnosis and goals and consider referral for arthroplasty when appropriate.

CBT, cognitive behavioral therapy; QOL, quality of life

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 2. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 3. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 4. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Barrier: Evidence-Based OA Care Is Not Reliably Implemented[1,2]

- Guideline-concordant OA care remains inconsistently delivered despite broad agreement on core management.
- Implementation barriers occur at patient, clinician, service, and health-system levels.
- Education alone is rarely sufficient; successful implementation often requires coordinated pathways, access to exercise/weight-management services, clinician confidence, and follow-up.

1. Cunningham J, et al. *Semin Arthritis Rheum.* 2026;79:153007. 2. Ramirez M, et al. *Arthritis Care Res (Hoboken).* 2024;76(9):1246-1259.

## Barrier: Comorbidities Constrain Analgesic Choices[1,2]

- Gastrointestinal, renal, cardiovascular, hepatic, and bleeding risks can limit oral NSAID use.
- Frailty, falls, cognitive effects, polypharmacy, and dependence risk make opioids particularly problematic in many older adults.
- Depression, sleep disorders, obesity, diabetes, and other chronic conditions can amplify disability and affect treatment feasibility.
- The safest and most appropriate treatment approach often relies on multimodal nonpharmacologic care plus selective use of lower-risk medications.

1. Bannuru RR, et al. *Osteoarthritis Cartilage*. 2019;27(11):1578-1589. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp

## Barrier: Access, Beliefs, Expectations, and Adherence[1,2]

- Common barriers include limited workforce/funding, fragmented services, clinician knowledge gaps, and inconsistent interdisciplinary collaboration.
- Patient beliefs about OA, treatment expectations, confidence, social support, and opportunity to participate in decisions can affect uptake and persistence.
- Methods to overcome these barriers include integrated care models, clear education, behavior-change support, and sustained access to exercise and weight-management services.

1. Cunningham J, et al. *Semin Arthritis Rheum*. 2026;79:153007. 2. Moseng T, et al. *Ann Rheum Dis*. 2024;83(6):730-740.

## Assess Pain Beyond Intensity Only[1,2]

- Pain pattern: activity-related, rest/night pain, flares, distribution, provoking/relieving factors
- Function: walking, stairs, transfers, hand use, work, caregiving, exercise participation
- Associated domains: sleep, mood, fatigue, confidence/fear, social participation
- Medication risk: kidney/GI/CV disease, anticoagulation, liver disease, falls, polypharmacy, prior opioid exposure
- Patient priorities: the specific activities or roles the patient wants to regain

1. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

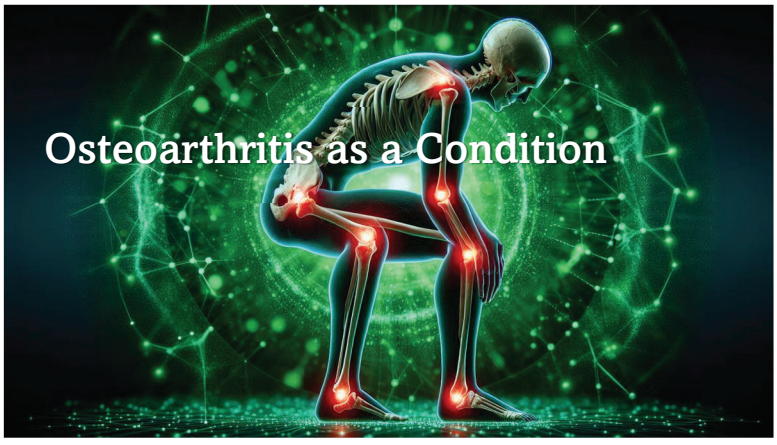
## Practical Principles for Chronic Musculoskeletal Pain Care[1,2]

- Start with an individualized, multicomponent plan rather than serial single-modality “fixes.”
- Set functional goals and reassess response using both symptom and activity outcomes.
- Use shared decision-making to communicate expected magnitude and duration of benefit, uncertainty, adverse effects, and cost.
- Escalate treatment when pain/function remain unacceptable, but reassess the diagnosis and pain phenotype before escalating to surgical procedures or high-risk drugs.

1. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Key Points: Background and Barriers to Effective Pain Treatment

- OA pain is multidimensional and may reflect overlapping nociceptive, sensitization, and psychosocial contributors.
- Pain severity cannot be inferred from radiographic severity alone.
- The largest gaps in OA care are often implementation gaps: exercise, weight management, education, risk assessment, and follow-up are underused.
- Mechanism-aware, patient-centered care supports safer and more rational treatment selection.



## Osteoarthritis Is a Whole-Joint Disease[1,2]

- OA involves progressive changes across cartilage, subchondral bone, synovium, menisci/labrum, ligaments, capsule, periarticular muscles, nerves, and other joint structures.
- Low-grade inflammation can contribute to symptoms and progression, but OA is not only characterized as an inflammatory arthritis.
- Cartilage loss does not solely explain pain in OA because cartilage is normally aneural.

1. Hoffman DB, et al. *Connect Tissue Res.* 2025;66(5):359-366. 2. Loeser RF, et al. *Arthritis Rheum.* 2012;64(6):1697-1707.

## Global Burden Is Increasing[1]

| Measure | GBD 2021 Estimate |
|---|---|
| People living with OA worldwide in 2020 | 595 million (7.6% of the global population) |
| Change in total cases since 1990 | +132.2% |
| Projected change in knee OA cases by 2050 vs 2020 | +74.9% |
| Projected change in hip OA cases by 2050 vs 2020 | +78.6% |
| Projected change in hand OA cases by 2050 vs 2020 | +48.6% |

GBD, Global Burden of Disease

1. GBD 2021 Osteoarthritis Collaborators. *Lancet Rheumatol.* 2023;5(9):e508-e522.

## US Burden of OA

- About 33 million adults in the US have osteoarthritis.
- OA commonly affects the hands, hips, back, and knees and can impair work and daily activities.
- The prevalence and disease burden are expected to rise as populations age and obesity and prior joint injury remain common.

US, United States

1. Centers for Disease Control and Prevention. Osteoarthritis. January 26, 2024. Accessed August 24, 2026. https://www.cdc.gov/arthritis/osteoarthritis/index.html. 2. GBD 2021 Osteoarthritis Collaborators. *Lancet Rheumatol.* 2023;5(9):e508-e522.

## Major Risk Factors for OA[1,2]

| Risk Factors |
|---|
| Age and sex |
| Overweight/obesity and metabolic factors |
| Prior joint injury or surgery |
| Repetitive occupational or sport-related joint loading |
| Anatomic/biomechanical factors and muscle weakness |
| Genetic/family susceptibility |

1. Centers for Disease Control and Prevention. Osteoarthritis. January 26, 2024. Accessed August 24, 2026. https://www.cdc.gov/arthritis/osteoarthritis/index.html. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Obesity and OA: More Than Joint Loading[1-3]

- Excess body mass increases mechanical load at weight-bearing joints and is a major modifiable risk factor for knee OA.
- Metabolic dysfunction and adipokine/inflammatory signaling may also influence joint biology and pain responsiveness.
- Weight management is a core treatment for OA and is strongly recommended for knee OA with overweight/obesity in the 2026 VA/DoD guidelines.[3]

DoD, Department of Defense; VA, Veterans Affairs

1. Huang K, et al. *Front Immunol.* 2026;17:1820875. 2. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Typical Clinical Presentation of OA by Joint[1-3]

| Joint | Common pattern |
|---|---|
| Knee | Activity-related pain, short-lived stiffness after rest, crepitus, reduced flexion/extension, bony enlargement, variable effusion; medial/tibiofemoral or patellofemoral symptoms. |
| Hip | Groin/anterior thigh or buttock pain, reduced internal rotation/flexion, pain with weight bearing; may refer to knee. |
| Hand | DIP/PIP and first CMC joint involvement, bony enlargement/nodes, thumb-base pain and impaired pinch/grip; inflammatory flares can occur. |

CMC, carpometacarpal; DIP, distal interphalangeal joint; PIP, proximal interphalangeal joint.

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 2. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Clinical Diagnosis: Imaging Is Often Unnecessary[1,2]

- NICE: in people age 45 or older with activity-related joint pain and no morning stiffness or stiffness lasting no more than 30 minutes, OA can usually be diagnosed clinically.
- Do not routinely use imaging when the presentation is typical and the result will not change management.
- 2026 VA/DoD: suggests against routine MRI, CT, or ultrasound for diagnosis of hip or knee OA.
- Use plain radiography when imaging is needed to evaluate atypical features, alternative diagnoses, severity relevant to procedures, or surgical planning.

CT, computed tomography; MRI, magnetic resonance imaging; NICE, National Institute for Health and Care Excellence

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226.
2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## When to Conduct Imaging or Consider Differential Diagnoses[1,2]

- Rapid onset or rapid progression; major trauma or inability to bear weight
- Marked warmth/swelling, prolonged morning stiffness, systemic symptoms, or multi-joint inflammatory pattern
- Concern for crystal arthritis, infection, inflammatory arthritis, osteonecrosis, occult fracture, malignancy, or referred pain
- Mechanical locking, major instability, neurologic deficit, or symptoms disproportionate to the expected OA pattern
- Persistent severe symptoms despite appropriate care when imaging will change management or guide referral

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226.
2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## OA vs Inflammatory Arthritis: Practical Distinctions[1,2]

| Feature | Typical OA | Typical inflammatory arthritis |
|---|---|---|
| Pain/stiffness | Activity-related; short morning stiffness | Prolonged morning stiffness; inflammatory rest/night symptoms may predominate |
| Swelling | Bony enlargement; cool or mildly warm effusion possible | Soft-tissue synovitis; warmth/tender swelling more prominent |
| Hand pattern | DIP, PIP, first CMC common | RA: MCP/PIP/wrist; other inflammatory arthritides vary |
| Systemic inflammation | Systemic inflammatory features generally absent | Systemic/extra-articular features and inflammatory markers may be present |

RA, rheumatoid arthritis

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226.
2. Loeser RF, et al. *Arthritis Rheum.* 2012;64(6):1697-1707.

## Where Does OA Pain Come From?[1-3]

Synovium/capsule:
- Inflammation, distension, mechanosensitivity

Subchondral bone/periosteum:
- Bone marrow lesions, remodeling, microdamage, innervation

Meniscus/labrum, ligaments, entheses, tendons, and periarticular muscle

Peripheral nerves:
- Sensitization and neurovascular remodeling

Central nervous system:
- Pain amplification and brain adaptations in persistent pain

1. Hoffman DB, et al. *Connect Tissue Res.* 2025;66(5):359-366. 2. Barroso J, et al. *Nat Rev Rheumatol.* 2026;21(5):261-274. 3. Huang K, et al. *Front Immunol.* 2026;17:1820875.

## Sensitization in OA and Persistent Pain[1,2]

- Lower pressure pain thresholds and enhanced temporal summation are reported in subsets of people with OA.
- Hypersensitivity can be local and widespread, consistent with peripheral and central amplification.
- While sensitization measures such as the QST can inform research phenotyping, they are not considered routine diagnostic tests.
- Persistent peripheral joint input and central adaptations can coexist; there is not a peripheral-vs-central dichotomy.

1. Barroso J, et al. *Nat Rev Rheumatol.* 2026;21(5):261-274. 2. Huang K, et al. *Front Immunol.* 2026;17:1820875.

## OA Is Heterogeneous - Phenotyping Is Promising but Not Yet Routine[1]

- Clinical, structural, metabolic/inflammatory, and sensitization-related phenotypes are being studied.
- Phenotypes often overlap and can change over time.
- No validated phenotype-to-treatment algorithm is currently ready for routine practice.

1. Huang K, et al. *Front Immunol.* 2026;17:1820875.

## OA Affects More Than Pain Scores[1,2]

- OA can result in:
  - Reduced walking ability, difficulty with stair climbing, impaired hand function, reduced work capacity, and lower levels of physical activity.
  - Sleep disruption, fatigue, mood symptoms, loss of confidence, and social participation.
  - Greater risk of deconditioning and downstream cardiometabolic consequences when pain limits activity.
- Patient-centered outcomes should include the ability to perform meaningful activities and preserve independence.

1. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Goals of OA Management in 2026[1-3]

- Reduce pain and improve function and health-related quality of life.
- Maintain or restore participation, mobility, strength, and independence.
- Address modifiable risk factors and co-occurring conditions, especially excess weight and physical inactivity.
- Minimize medication and procedure harms.
- Refer for joint replacement when symptoms substantially impair quality of life and appropriate nonsurgical management is ineffective or unsuitable.

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 2. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Disease Modifying Treatment: Still an Unmet Need[1,2]

- No disease-modifying osteoarthritis drug (DMOAD) currently has FDA approval for an OA indication.
- Current approved pharmacologic treatment is primarily symptom-directed.
- Messages of structural restoration or "cartilage regrowth" from currently available injections or supplements may be overstated and not supported by high-quality evidence.
- Emerging/potential disease-modifying candidates are being studied.

1. Garber K. *Nat Rev Drug Discov.* 2026;25(4):251-253. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.


## Current OA Guideline Landscape

| Guideline | Scope |
|---|---|
| ACR/Arthritis Foundation 2019 (published 2020)[1] | Hand, hip, knee |
| OARSI 2019[2] | Knee, hip, polyarticular |
| AAOS 2021[3] | Knee, non-arthroplasty |
| NICE NG226, 2022[4] | OA diagnosis and management |
| AAOS 2023[5] | Hip |
| EULAR 2023 update (published 2024)[6] | Core nonpharmacologic hip/knee care |
| VA/DoD 2026[7] | Hip/knee nonsurgical management |

AAOS, American Academy of Orthopaedic Surgeons; ACR, American College of Rheumatology; EULAR, European Alliance of Associations for Rheumatology; OARSI, Osteoarthritis Research Society International

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. Bannuru RR, et al. *Osteoarthritis Cartilage.* 2019;27(11):1578-1589. 3. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 4. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 5. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Hip Evidence-Based Clinical Practice Guideline. December 1, 2023. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-hip/oah-cpg.pdf. 6. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 7. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Where Major Guideline Recommendations Agree[1-7]

- Exercise/physical activity and education/self-management are foundational.
- Weight management is important for patients with overweight/obesity.
- Topical NSAIDs are preferred for knee OA when appropriate; oral NSAIDs are effective but require risk assessment.
- Opioids should not be routine OA therapy.
- Intra-articular corticosteroids can provide short-term relief in selected patients.
- Shared decision-making and comorbidity-sensitive treatment selection are essential.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. Bannuru RR, et al. *Osteoarthritis Cartilage.* 2019;27(11):1578-1589. 3. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 4. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 5. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Hip Evidence-Based Clinical Practice Guideline. December 1, 2023. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-hip/oah-cpg.pdf. 6. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 7. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Key Points Where Major Guidelines Differ

| Intervention | Examples of discordance |
|---|---|
| Acetaminophen | ACR conditional; OARSI conditionally not recommended; NICE not routine; VA/DoD 2026 weak for as an oral option; AAOS knee supportive. |
| Knee hyaluronic acid | AAOS: not routine; ACR: conditional against; OARSI: selected patients; VA/DoD 2026: insufficient evidence. |
| PRP | ACR: strongly against; AAOS: limited evidence may reduce pain/function; VA/DoD 2026: insufficient evidence. |
| Radiofrequency ablation | ACR: conditional for knee; AAOS: limited evidence for denervation; VA/DoD 2026: insufficient evidence. |
| TENS/acupuncture | Recommendations vary from conditional/limited/insufficient to "do not offer" depending on guideline. |

- Note: discordance in guideline recommendations reflects varying evidence timeframes, methods, comparators, thresholds for recommendations, and patient populations.

PRP, platelet-rich plasma; TENS, Transcutaneous Electrical Nerve Stimulation

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. Bannuru RR, et al. *Osteoarthritis Cartilage.* 2019;27(11):1578-1589. 3. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 4. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 5. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Hip Evidence-Based Clinical Practice Guideline. December 1, 2023. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-hip/oah-cpg.pdf. 6. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 7. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp. 8. Gray B, et al. *Osteoarthritis Cartilage.* 2024;32(6):654-665.

## Guidelines Inform Care But Do Not Replace Clinical Judgment[1,2]

- Use recommendations as evidence-based starting points, not rigid rules.
- Account for comorbidities, prior response, accessibility, patient preferences, cost, and treatment burden.
- When guidelines disagree, discuss the quality/uncertainty of evidence and the patient's goals.
- Shared decision-making may help when choosing a reasonable option with uncertain or conditional evidence.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Core Nonpharmacologic Management[1-3]

- Individualized education and self-management support
- Therapeutic exercise/physical activity
- Weight management when overweight/obesity is present
- Physical therapy when additional assessment, progression, or supervision is needed
- Walking aids, bracing, footwear, and home/work adaptations for selected patients
- Behavior change strategies to support adherence and long-term activity

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 2. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Exercise: The Strongest Common Recommendation Among Guidelines[1-3]

- Exercise reduces pain and improves function in knee and hip OA; no single modality is universally superior.
- Options include strengthening, aerobic, flexibility, neuromotor/balance, aquatic, and mind-body movement.
- The best program is one the patient can perform safely, progress, and sustain.
- Pain during or after starting exercise does not always indicate joint damage; intensity and progression can be adjusted.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Prescribing Exercise: Make It Specific[1,2]

- Choose exercise modalities based on joint, impairments, comorbidities, preferences, access, and goals.
- Start at a tolerable intensity; progress duration, resistance, repetitions, speed, or task complexity over time.
- Use supervised physical therapy when technique, confidence, balance, major weakness, or comorbidities warrant it.
- Embed exercise in a broader physical activity plan and reinforce adherence at follow-up.
- Digital, group, individual, land-based, and aquatic delivery can all be reasonable.

1. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Weight Management Is Core OA Treatment[1-3]

- For knee OA with overweight/obesity, the 2026 VA/DoD guideline gives a strong recommendation for weight loss; for hip OA, it suggests weight loss.
- ACR and EULAR also emphasize weight loss/support for patients with overweight/obesity.
- Benefits generally increase with greater sustained weight reduction, but the plan should be feasible and individualized.
- Combine nutrition/weight management with exercise when possible; treat obesity as a chronic disease rather than a brief lifestyle instruction.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## STEP 9 (semaglutide): Treating Obesity Improved Knee OA Outcomes[1]

- STEP 9 Trial: 407 adults with obesity and moderate knee OA; both groups received diet and physical-activity counseling.

| 68-week outcome | Semaglutide 2.4 mg weekly | Placebo |
|---|---|---|
| Mean body-weight change | -13.7% | -3.2% |
| Mean WOMAC pain change (0-100) | -41.7 points | -27.5 points |
| SF-36 physical-function change | +12.0 points | +6.5 points |

- Interpretation: aggressive obesity treatment can improve pain and function in patients with OA.
- Note: semaglutide does not currently have an OA-specific indication.

SF-36, Short Form Health Survey; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index

1. Bliddal H, et al. *N Engl J Med.* 2024;391(17):1573-1583.

## Education, Self-Management, and Behavior Change[1,2]

- Explain that OA symptoms fluctuate and do not inevitably worsen in a linear fashion.
- Challenge the misconception that activity "wears out" the joint; therapeutic exercise is a core treatment.
- Set specific functional goals and use follow-up/booster contacts to reinforce activity and self-management.
- Use behavior-change techniques when sustained physical activity or weight loss is needed.
- Provide realistic expectations about the modest average effect of many symptom-directed treatments.

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226.
2. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740.

## Tai Chi, Yoga, and Cognitive-Behavioral Approaches[1,2]

- ACR strongly recommends tai chi and conditionally recommends yoga and CBT in relevant OA populations.
- 2026 VA/DoD suggests yoga or tai chi for knee OA.
- These approaches can support mobility, balance, coping, and activity participation, but should complement core exercise and weight management strategies.
- Individualize for physical ability, preference, cost, and access.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Walking Aids, Bracing, Footwear, and Assistive Devices[1-3]

- A cane can reduce load and improve stability; typically use it contralateral to the symptomatic hip/knee.
- 2026 VA/DoD suggests bracing for selected knee OA but finds insufficient evidence for orthopedic insoles.
- EULAR recommends considering walking aids, footwear, assistive devices, and home/work adaptations to improve participation.
- For hand OA, first-CMC orthoses are strongly supported by ACR.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Pharmacologic Principles Before Choosing a Drug[1-3]

- Treat the patient: target symptoms that limit function and participation.
- Prefer local/lower-systemic-risk treatment when effective (for example, topical NSAID for knee).
- For oral NSAIDs, use the lowest effective dose for the shortest necessary duration and reassess gastrointestinal, renal, cardiovascular, bleeding, and drug interaction risks.
- Avoid routine escalation to opioids when benefit is small and harms are substantial.
- Review what the patient is already taking, including over-the-counter analgesics and supplements.

1. Bannuru RR, et al. *Osteoarthritis Cartilage.* 2019;27(11):1578-1589. 2. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Topical NSAIDs: High-Value First-Line Pharmacologic Therapy for Knee OA[1-4]

- ACR and AAOS strongly support topical NSAIDs for knee OA; NICE recommends a topical NSAID; VA/DoD 2026 suggests them.
- Network meta-analysis: topical NSAIDs improved function more than acetaminophen and were not statistically different from oral NSAIDs for function, with a more favorable gastrointestinal safety profile.[4]
- Use appropriate application instructions and counsel about skin reactions and total NSAID exposure.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp. 4. Zeng C, et al. *Osteoarthritis Cartilage.* 2021;29(9):1242-1251.

## Oral NSAIDs: Effective; Risk Determines Appropriateness[1-3]

- Oral NSAIDs are among the most effective commonly used oral symptom-directed treatments for OA.
- Assess gastrointestinal bleeding/ulcer history, kidney disease, cardiovascular disease, anticoagulants/antiplatelets, age/frailty, and interacting medications.
- NICE recommends gastroprotection with an oral NSAID and accounting for gastrointestinal, renal, liver, and cardiovascular toxicity.
- OARSI recommends restricting oral NSAID use in some high-risk comorbidity groups.

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp. 3. Bannuru RR, et al. *Osteoarthritis Cartilage*. 2019;27(11):1578-1589.

## Acetaminophen: Limited Benefit and Guideline Discordance[1-5]

- Average efficacy is modest.
- ACR conditionally recommends acetaminophen; OARSI conditionally does not recommend it; NICE does not recommend routine use; VA/DoD 2026 suggests acetaminophen or an oral NSAID for hip/knee OA.
- Short-term or episodic use is reasonable when NSAIDs are unsuitable, with attention to total daily dose and liver risk.

1. Kolasinski SL, et al. *Arthritis Rheumatol*. 2020;72(2):220-233. 2. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp. 4. Zeng C, et al. *Osteoarthritis Cartilage*. 2021;29(9):1242-1251. 5. Bannuru RR, et al. *Osteoarthritis Cartilage*. 2019;27(11):1578-1589.

## Duloxetine: An Option for Persistent Knee OA Pain[1,2]

- ACR conditionally recommends duloxetine for OA; VA/DoD 2026 suggests duloxetine for knee OA depending on patient characteristics and preferences.
- Consider when persistent pain coexists with limited NSAID options, mood symptoms, or features suggesting pain amplification.
- Counsel about nausea, dizziness, sleep effects, blood pressure, serotonergic interactions, and discontinuation symptoms.

1. Kolasinski SL, et al. *Arthritis Rheumatol*. 2020;72(2):220-233. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Tramadol and Other Opioids: Do Not Use Routinely[1-5]

- AAOS knee: oral narcotics, including tramadol, are not effective for meaningful improvement and increase adverse events.
- OARSI strongly recommends against oral/transdermal opioids; NICE does not recommend strong opioids and limits weak opioids to infrequent short-term use when alternatives are unsuitable.
- 2026 VA/DoD suggests against initiating opioids, including tramadol, for hip or knee OA.
- ACR 2019 conditionally recommends tramadol as an option.

1. Kolasinski SL, et al. *Arthritis Rheumatol*. 2020;72(2):220-233. 2. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp. 4. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 5. Bannuru RR, et al. *Osteoarthritis Cartilage*. 2019;27(11):1578-1589.

## Intra-Articular Treatment: What the Guidelines Say[1-5]

| Treatment | Knee OA | Hip OA |
|---|---|---|
| Corticosteroid | Short-term option in selected persistent pain; ACR/AAOS/VA-DoD supportive | Short-term option; VA/DoD recommends image guidance; AAOS 2023 supports short-term relief |
| Hyaluronic acid | Discordant: AAOS not routine; ACR conditional against; OARSI selected use; VA/DoD 2026 insufficient evidence | Generally against: ACR strong against; OARSI not recommended; AAOS 2023 strong against; VA/DoD 2026 weak against |
| PRP | ACR against; AAOS limited evidence; VA/DoD 2026 insufficient | VA/DoD 2026 insufficient; not standard care |
| Cell-based/other orthobiologics | VA/DoD 2026: insufficient for many products; weak against several specific injections | Evidence insufficient; not routine care |

1. Kolasinski SL, et al. *Arthritis Rheumatol*. 2020;72(2):220-233. 2. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 3. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 4. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Hip Evidence-Based Clinical Practice Guideline. December 1, 2023. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-hip/oah-cpg.pdf. 5. Bannuru RR, et al. *Osteoarthritis Cartilage*. 2019;27(11):1578-1589.

## Intra-Articular Corticosteroids: Short-Term Symptom Relief[1-3]

- Use for persistent knee OA pain inadequately relieved by other interventions when a short-term reduction in pain may enable activity or rehabilitation.
- For hip OA, use image guidance and counsel about procedural risks.
- Set expectations: benefit is generally short term, not disease modifying.
- Avoid “automatic” repeated injections without reassessing response, diagnosis, timing, and alternatives.

1. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 2. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Hip Evidence-Based Clinical Practice Guideline. December 1, 2023. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-hip/oah-cpg.pdf. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Repeated Corticosteroid Injections: Put Safety Data in Context

- In a 2-year randomized trial of triamcinolone 40 mg every 12 weeks vs saline in 140 patients, repeated triamcinolone caused greater cartilage-thickness loss and did not improve pain compared with saline.[1]
- While the trial evaluated scheduled repeated injections, a single clinically indicated injection may be appropriate.
- Use the minimum frequency needed and reassess whether repeated injections are helping function and goals.[2]

1. McAlindon TE, et al. *JAMA.* 2017;317(19):1967-1975. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Hyaluronic Acid: Evidence and Guideline Positions Remain Discordant[1-5]

The net incremental benefit of viscosupplementation over saline is uncertain and recommendation strength differs by guideline.

- AAOS knee: not recommended for routine use; ACR: conditionally against knee and strongly against hip; NICE: do not offer; AAOS hip: strong recommendation against.
- OARSI suggests selected knee use based on patient profile; 2026 VA/DoD finds insufficient evidence for knee and suggests against hip.
- Considerations include uncertainty, cost, injection burden, and lack of proven structural modification.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. Bannuru RR, et al. *Osteoarthritis Cartilage.* 2019;27(11):1578-1589. 2. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 3. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 4. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Hip Evidence-Based Clinical Practice Guideline. December 1, 2023. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-hip/oah-cpg.pdf. 5. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## PRP: A High-Quality Saline-Controlled Trial Was Negative

- RESTORE randomized 288 adults with mild-to-moderate medial knee OA to three weekly leukocyte-poor PRP or saline injections.[1]

| RESTORE, 12 months | PRP | Saline placebo | Between-group result |
|---|---|---|---|
| Knee pain change (0-10) | -2.1 | -1.8 | Difference -0.4; 95% CI -0.9 to 0.2; *P*=.17 |
| Medial tibial cartilage volume | -1.4% | -1.2% | Difference -0.2%; *P*=.81 |

- 29 of 31 secondary outcomes showed no significant between-group difference.[1]
- Guidelines remain discordant: ACR against; AAOS limited evidence; VA/DoD 2026 insufficient evidence.[2-4]

1. Bennel KL, et al. *JAMA.* 2021;326(20):2021-2030. 2. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 3. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 4. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Cell-Based/"Stem Cell" Injections: Insufficient Evidence for Routine Use

- Mautner, et al. randomized 480 patients with knee OA to bone-marrow aspirate concentrate, adipose stromal vascular fraction, allogeneic umbilical-cord-derived mesenchymal stromal cells, or corticosteroid.[1]
  - At 1 year, none of the three cell-based treatments was superior to another or to corticosteroid for the primary pain outcomes.
  - No group showed a significant change in MRI OA score vs baseline.
- 2026 VA/DoD: insufficient evidence for or against several orthobiologic injections including stem-cell injections.[2]

1. Mautner K, et al. *Nat Med.* 2023;29(12):3120-3126. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Glucosamine, Chondroitin, and Other Nutraceuticals[1,2]

- ACR recommends against glucosamine in knee/hip/hand OA and against chondroitin for knee/hip OA (conditional support only for hand chondroitin).
- 2026 VA/DoD finds insufficient evidence for or against a broad group of dietary supplements/nutraceuticals, including glucosamine, chondroitin, curcumin, collagen, vitamin D, and others.
- Counsel patients about uncertain benefit, product variability, cost, and potential interactions, countering common assumptions that "natural" means effective or risk-free.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## TENS/Electrotherapy and Acupuncture[1-4]

- TENS: 2026 VA/DoD finds insufficient evidence for or against; NICE recommends against routine electrotherapy including TENS; AAOS knee evidence is limited.
- Acupuncture: ACR conditionally recommends; NICE does not recommend acupuncture/dry needling; VA/DoD 2026 finds insufficient evidence for or against a broader integrative-therapy group.

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. American Academy of Orthopaedic Surgeons. Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline. August 31, 2021. Accessed August 24, 2026. https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf. 3. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 4. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Cannabinoids/CBD: Newer Randomized Trials Do Not Support Routine Use

- 2023 randomized trial: CBD 600 mg/day added to paracetamol did not improve WOMAC pain vs placebo and produced more adverse events/liver-enzyme elevations.[1]
- 2025 CANOA trial: CBD-rich oil (45 mg/day) did not outperform placebo for knee OA pain or secondary outcomes over 60 days.[2]
- 2026 VA/DoD suggests against CBD oil for hip or knee OA.[3]

CBD, cannabidiol

1. Pramhas S, et al. *Lancet Reg Health Eur.* 2023;35:100777. 2. Mojoli A, et al. *Front Pharmacol.* 2025;16:1657065. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Genicular Radiofrequency Ablation (RFA)

- Guidelines differ: ACR conditionally recommends radiofrequency ablation (RFA) for knee OA; AAOS 2021 reports limited evidence for denervation; 2026 VA/DoD finds insufficient evidence to recommend for or against RFA.[1,2]
- A 2026 meta-analysis of 8 sham-controlled RCTs (n=627) found improved pain at 12 weeks and WOMAC function, but heterogeneity was high and long-term evidence remained limited.[3]

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp. 3. Barreto RB, et al. *Pain Med.* 2026;27(4):449-461.

## Genicular Artery Embolization (GAE)

- A 58-patient sham-controlled trial found no significant benefit of genicular artery embolization (GAE) vs sham at 4 months; 12-month follow-up likewise found no significant between-group pain benefit.[1]
- A 2026 systematic review/meta-analysis concluded that three sham-controlled RCTs did not demonstrate significant between-group benefit.[2]
- 2026 VA/DoD suggests against GAE for knee OA.[3]

1. van Zadelhoff TA, et al. *Eur Radiol.* 2026;36(8):6624-6633. 2. Lanza E, et al. *Eur J Radiol.* 2026;202:112968. 3. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp

## Methotrexate: Updated Evidence

- A 2024 placebo-controlled trial randomized 155 adults with symptomatic knee OA to oral methotrexate (up to 25 mg/week) or placebo.[1]
  - At 6 months, methotrexate produced a modest between-group pain benefit (about 0.8 points on a 0-10 scale) with statistically significant improvements in stiffness and function.
- Methotrexate is not approved for OA and is not recommended as standard OA therapy; prior ACR guidance recommends against methotrexate based on older evidence.[2]

1. Kingsbury SR, et al. *Ann Intern Med.* 2024;177(9):1145-1156. 2. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233.

## 2026 Regulatory/Emerging Late-Stage Therapy Pipeline Update[1-4]

| Therapy | Status |
|---|---|
| Lorecivivint[2,3] (potential disease-modifying drug/DMOAD) | NDA submitted January 2026 for knee OA; not yet FDA approved. Early Phase 3 OA-10 and OA-11 did not meet prespecified week-12 pain primary endpoints. Regulatory review is pending. Lorecivivint is a small-molecule intra-articular injection that modulates the Wnt signaling pathway and inhibits intranuclear kinases. |
| Suzetrigine[4] (novel mechanism of action for pain) | FDA approved January 2025 for moderate-to-severe acute pain in adults. Not specifically indicated for OA. Suzetrigine targets a pain signaling pathway involving sodium channels in the peripheral nervous system. |

1. Garber K. *Nat Rev Drug Discov.* 2026;25(4):251-253. 2. Yazici Y, et al. *Clin Exp Rheumatol.* 2025;43(5):847-853. 3. Yazici Y, et al. *Clin Exp Rheumatol.* 2025;43(5):854-860. 4. US Food & Drug Administration. FDA Approves Novel Non-Opioid Treatment for Moderate to Severe Acute Pain. January 30, 2025. Accessed August 24, 2026. https://www.fda.gov/news-events/press-announcements/fda-approves-novel-non-opioid-treatment-moderate-severe-acute-pain.

## When to Refer for Joint Replacement[1,2]

- Consider referral when pain, stiffness, reduced function, or progressive deformity substantially affects quality of life and appropriate nonsurgical management is ineffective or unsuitable.
- Use clinical assessment rather than a single numeric severity score.
- NICE advises not excluding referral solely because of age, sex/gender, smoking, comorbidities, overweight, or obesity.
- Referral should not require exhausting low-value or non-recommended injections/medications first.

1. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 2. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.

## Potential, Practical 2026 OA Management Algorithm[1-4]

| | |
|---|---|
| Confirm | Typical clinical OA? Identify red flags, alternative diagnoses, and pain phenotype. |
| Define Goals/Risk | What activity is limited? Review comorbidities, medication risk, obesity, sleep/mood, access, and preferences. |
| Core Care for All | Education + therapeutic exercise/physical activity; weight management when indicated; aids/bracing/PT as needed. |
| Add Pharmacologic Treatment | Topical NSAID for knee -> oral NSAID if appropriate; acetaminophen only selectively; consider duloxetine for selected persistent knee OA. |
| Persistent Focal Pain | Selected short-term intra-articular corticosteroid; discuss uncertainty before HA/PRP/orthobiologics/interventional procedures. |
| Avoid Routine Low-Value Escalation | Avoid routine opioids; do not present CBD, stem-cell injections, GAE, or supplements as established OA therapies. |
| Refer | When symptoms substantially impair quality of life despite appropriate nonsurgical care, consider arthroplasty referral. |

1. Kolasinski SL, et al. *Arthritis Rheumatol.* 2020;72(2):220-233. 2. NICE. Osteoarthritis in over 16s: diagnosis and management. October 19, 2022. Accessed August 24, 2026. https://www.nice.org.uk/guidance/ng226. 3. Moseng T, et al. Ann Rheum Dis. 2024;83(6):730-740. 4. VA/DoD Evidence-Based Practice Work Group. June 2026. Accessed August 24, 2026. https://www.healthquality.va.gov/guidelines/cd/oa/index.asp.


## Key Takeaways

- Assess the whole patient—not just the joint: OA pain is heterogeneous and may include nociceptive, inflammatory, neuropathic, and nociplastic mechanisms.
- Start with core nonpharmacologic care: Exercise, weight management when appropriate, education, and mechanical/supportive strategies remain foundational.
- Individualize pharmacologic and procedural treatment: Balance expected benefit with comorbidities, adverse-event risk, patient preferences, and current guideline recommendations.
- Use emerging interventions selectively: Evidence for PRP, cell-based therapies, cannabinoids, and other newer approaches varies.
- Reassess and escalate appropriately: Monitor pain, function, treatment burden, and safety, and consider referral or surgical evaluation when guideline-based nonsurgical management is inadequate.