

# Osteoarthritis Guidelines

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## GUIDELINES

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### Guidelines Summary

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Guidelines on osteoarthritis have been issued by the following organizations:

- American College of Rheumatology (ACR) – Nonpharmacologic and pharmacologic therapies for hand, hip, and knee osteoarthritis
- Osteoarthritis Research Society International (OARSI) – Nonpharmacologic therapies for hip and knee osteoarthritis
- American Academy of Orthopaedic Surgeons (AAOS) – 1) Nonpharmacologic and pharmacologic therapies and joint replacement for knee osteoarthritis; 2) Surgical management of osteoarthritis of the knee; 3) Management of osteoarthritis of the hip

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### Hand Osteoarthritis

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For hand osteoarthritis, the American College of Rheumatology (ACR) conditionally recommends the following <sup>[125]</sup> :

- Evaluate the ability to perform activities of daily living (ADLs)
- Instruct in joint protection techniques
- Provide assistive devices, as needed, to help patients perform ADLs
- Instruct in use of thermal modalities
- Provide splints for patients with trapeziometacarpal joint osteoarthritis

The ACR made no strong recommendations for the nonpharmacologic management of hand osteoarthritis, as the evidence supporting those interventions demonstrated only minor to moderate benefits. For pharmacologic treatment, the ACR conditionally recommends using one or more of the following <sup>[125]</sup> :

- Topical capsaicin
- Topical nonsteroidal anti-inflammatory drugs (NSAIDs), including trolamine salicylate
- Oral NSAIDs
- Tramadol

The ACR conditionally recommends against using intra-articular therapies or opioid analgesics for hand osteoarthritis. For patients 75 years and older, the ACR conditionally recommends the use of topical rather than oral NSAIDs.



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## Knee Osteoarthritis

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The Osteoarthritis Research Society International (OARSI) guidelines provides separate recommendations for treatment of symptomatic arthritis in one or both knees (knee-only OA) and in the knee(s) in addition to other joints (e.g., hip, hand, spine, etc). Separate recommendations are made based on the absence or presence of comorbidities (ie, diabetes; hypertension; CV disease; renal failure; gastrointestinal (GI) bleeding; depression; or physical impairment limiting activity, including obesity). The following nonpharmacologic recommendations apply to all subphenotypes [72] :

- Biomechanical interventions such as knee braces, knee sleeves, and foot orthoses as directed by an appropriate specialist
- Land-based exercise and strength training
- Aquatic exercise
- Self-management and education
- Weight management

The OARSI recommends use of a cane in knee-only OA to diminish pain and improve function and some aspects of quality of life. However, there was a lack of evidence for benefit in multiple-joint OA. The guidelines noted that cane use could be inappropriate for some patients because to relief of knee pain may require an increase in the weight-bearing load on other affected joints (e.g., contralateral hand and hip joints). [72]

For multiple-joint OA with comorbidities, balneotherapy (defined as the use of baths containing thermal mineral waters) is recommended and includes practices such as Dead Sea salt or mineral baths, sulfur baths, and radon-carbon dioxide baths. [72]

Updated and expanded OARSI guidelines provide the following recommendations on treatment of patients with knee OA [148] :

- Core treatments include arthritis education and structured land-based exercise programs with or without dietary weight management.
- Topical nonsteroidal anti-inflammatory drugs (NSAIDs) are strongly recommended.
- For individuals with gastrointestinal comorbidities, the use of cyclooxygenase (COX)-2 inhibitors or NSAIDs with proton pump inhibitors (PPIs) is recommended.
- For individuals with cardiovascular comorbidities or frailty, the use of any oral NSAID is not recommended.
- Intra-articular (IA) corticosteroids, IA hyaluronic acid, and aquatic exercise are recommended, depending upon comorbidity status.
- The use of acetaminophen (paracetamol) is conditionally not recommended.
- The use of oral and transdermal opioids is strongly not recommended.

The American College of Rheumatology (ACR) strongly recommends the following nonpharmacologic measures for patients with knee osteoarthritis [125] :

- Cardiovascular (aerobic) and/or resistance land-based exercise
- Aquatic exercise
- Weight loss for overweight patients

The ACR conditionally recommends the following nonpharmacologic measures for patients with knee osteoarthritis:

- Self-management programs
- Manual therapy in combination with supervised exercise
- Psychosocial interventions
- Medially directed patellar taping
- Medially wedged insoles for lateral-compartment osteoarthritis
- Laterally wedged subtalar strapped insoles for medial-compartment osteoarthritis
- Thermal agents
- Walking aids, as needed
- Tai chi

The ACR has no recommendations regarding the following:

- Balance exercises, either alone or in combination with strengthening exercises
- Laterally wedged insoles
- Manual therapy alone
- Knee braces
- Laterally directed patellar taping

An American Academy of Orthopaedic Surgeons (AAOS) guideline suggests encouraging patients with knee osteoarthritis to participate in self-management educational programs such as those conducted by the Arthritis Foundation and to incorporate activity modifications into their lifestyle (eg, walking instead of running or engaging in alternative activities).

### *Acupuncture for knee osteoarthritis*

Guidelines from different groups offer a range of recommendations regarding the use of acupuncture for knee osteoarthritis, as follows:

- The ACR conditionally recommends traditional Chinese acupuncture for patients with chronic moderate-to-severe pain who would be candidates for total knee arthroplasty but who either do not want it or have contraindications to it. [125]
- The OARSI guidelines find the efficacy of acupuncture to be uncertain. [72]
- The AAOS strongly recommends against the use of acupuncture for symptomatic knee osteoarthritis. [134]

## **Pharmacologic therapy**

The OARSI recommends intra-articular corticosteroid injections and oral nonselective NSAIDs for treatment of all subphenotypes. COX-2 selective oral NSAIDs were deemed appropriate for individuals without comorbidities and multiple-joint OA with moderate co-morbidity risk. Proton-pump inhibitor (PPI) co-prescription with oral NSAIDs is not recommended for those with no co-morbidity risk. For those with moderate or high co-morbidity risk receiving oral non-selective NSAIDs, PPI co-prescription is recommended. No recommendation was made for individuals taking COX-2 selective oral NSAIDs at

moderate morbidity risk. Use of oral NSAIDs is strongly advised against for individuals with high co-morbidity risk. [72]

Duloxetine is recommended for most subphenotypes, however, associated adverse events and availability of more targeted therapies precluded uncertain appropriateness for individuals with knee-only OA and co-morbidities. [72]

Additional recommendations include [72] :

- Acetaminophen for patients without co-morbidities
- Topical capsaicin for knee-only OA without co-morbidities; uncertain for multiple-joint OA and in patients with co-morbidities
- Topical NSAIDs for knee-only OA

For knee osteoarthritis, the ACR conditionally recommends using one of the following:

- Acetaminophen
- Oral NSAIDs
- Topical NSAIDs
- Tramadol
- Intra-articular corticosteroid injections

The ACR conditionally recommends against using chondroitin sulfate, glucosamine, or topical capsaicin for knee osteoarthritis. The ACR has no recommendations regarding the use of intra-articular hyaluronates, duloxetine, and opioid analgesics.

#### *American Academy of Orthopaedic Surgeons guidelines*

A 2013 clinical practice guideline from the American Academy of Orthopaedic Surgeons (AAOS) recommends the following pharmacologic treatments for symptomatic osteoarthritis of the knee [134] :

- Oral NSAIDs
- Topical NSAIDs
- Tramadol

The AAOS was unable to recommend for or against the use of the following for symptomatic knee osteoarthritis:

- Acetaminophen
- Opioids
- Pain patches
- Intra-articular corticosteroid injections
- Growth factor injections and/or platelet rich plasma

The recommendation on acetaminophen is a downgrade from the previous AAOS guideline, and reflects the use of new criteria that resulted in the selection of only one study, which found no statistical significance or minimum clinically important improvement with acetaminophen compared with placebo.

The AAOS does not recommend treatment with any of the following:

- Intra-articular hyaluronic acid
- Glucosamine and/or chondroitin sulfate or hydrochloride

## Knee replacement

A 2016 guideline on surgical management of knee osteoarthritis from the American Academy of Orthopaedic Surgeons (AAOS) includes the following recommendations regarding total knee arthroplasty (TKA) [149] :

- Obese patients have less improvement in outcomes (strong supporting evidence)
- Patients with diabetes are at higher risk for complications (moderate evidence)
- Patients with select chronic pain conditions have less improvement in patient-reported outcomes (moderate)
- Patients with depression and/or anxiety symptoms have less improvement in patient-reported outcomes (limited)
- Patients with cirrhosis or hepatitis C are at higher risk for complications (limited)
- An 8-month delay to TKA does not worsen outcomes (moderate)
- Supervised exercise before TKA might improve pain and physical function after surgery (limited)
- Compared with placebo, peri-articular local anesthetic infiltration in TKA decreases pain and opioid use (strong)
- Compared with general anesthesia, neuraxial anesthesia can improve select perioperative outcomes and complication rates (moderate)
- Use of a tourniquet in TKA decreases intraoperative blood loss (moderate) but increases short-term postoperative pain (strong) and decreases short-term postoperative function (limited)
- In patients with no known contraindications, treatment with tranexamic acid decreases postoperative blood loss and reduces the necessity of postoperative transfusions (strong)
- Routine use of antibiotics in the cement for primary TKA is not recommended (limited)
- Outcomes and complications are no different with posterior-stabilized versus posterior cruciate-retaining arthroplasty designs
- Outcomes are no different with either all-polyethylene or modular tibial components (strong)
- Use of patellar resurfacing makes no difference in pain or function (strong), but could decrease cumulative reoperations after 5 years (moderate)
- Cemented or cementless tibial component fixation provides similar functional outcomes and rates of complications and reoperations (strong)
- Use of either cemented or cementless femoral and tibial components results in similar rates of complications and reoperations (moderate)
- Either cementing all components or using hybrid fixation (cementless femur) results in similar functional outcomes and rates of complications and reoperations. (moderate)
- Use of either all cementless components or hybrid fixation (cementless femur) results in similar rates of complications and reoperations (limited)
- Simultaneous bilateral TKA can be performed in patients aged 70 or younger or with American Society of Anesthesiologists (ASA) status 1-2, because there are no increased complications (limited)
- In patients with medial compartment osteoarthritis, revision surgery risk could be lower with TKA than with (moderate); however, risk of deep venous thrombosis and manipulation under anesthesia may be higher with TKA) than with unicompartmental knee arthroplasty (limited)
- In patients with medial compartment knee osteoarthritis, there is no difference in outcome and complications with unicompartmental knee arthroplasty versus valgus-producing proximal tibial osteotomy (moderate)
- Using intraoperative navigation makes no difference in outcomes or complications (strong)
- Compared with conventional instrumentation, use of patient-specific instrumentation for TKA makes no difference in pain or functional outcomes (strong) or in transfusions or complications (moderate)
- Use of a drain with TKA makes no difference in complications or outcomes (strong)
- Use of cryotherapy devices after TKA does not improve outcomes (moderate)

- Postoperative continuous passive motion (CPM) does not improve outcomes (strong)
- Rehabilitation started on the day of surgery reduces length of hospital stay (strong), and reduces pain and improves function compared with rehabilitation started on postoperative day 1 (moderate)
- A supervised exercise program during the first 2 months after TKA improves physical function (moderate) and may decrease pain (limited)
- Selected patients might be referred to an intensive supervised exercise program during late-stage post-TKA to improve physical function (limited)

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# Hip Osteoarthritis

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The American College of Rheumatology (ACR) strongly recommends the following nonpharmacologic measures for patients with hip osteoarthritis <sup>[125]</sup> :

- Cardiovascular and/or resistance land-based exercise
- Aquatic exercise
- Weight loss, for overweight patients

The ACR conditionally recommends the following nonpharmacologic measures for patients with hip osteoarthritis:

- Self-management programs
- Manual therapy in combination with supervised exercise
- Psychosocial interventions
- Thermal agents
- Walking aids, as needed

The ACR conditionally recommends using one or more of the following pharmacologic agents for initial management of hip arthritis:

- Acetaminophen
- Oral NSAIDs
- Tramadol
- Intra-articular corticosteroid injections

The ACR conditionally recommends against using chondroitin sulfate or glucosamine for hip osteoarthritis. The ACR has no recommendation regarding the use of topical NSAIDs, intra-articular hyaluronate injections, duloxetine, or opioid analgesics.

A 2017 guideline on management of hip osteoarthritis from the American Academy of Orthopaedic Surgeons (AAOS) place an emphasis on presurgical treatments to reduce pain and increase mobility and also highlight patient populations who may have greater risk associated with hip replacement surgery.

<sup>[150]</sup> The guidelines found moderate strength evidence for the following risk issues <sup>[151]</sup> :

- Practitioners may use risk assessment tools for predicting complications, assessing surgical risks, and educating patients about receiving total hip arthroplasty.
- Obese patients may have lower absolute outcome scores, but similar levels of satisfaction and improvement in pain and function after total hip replacement compared with nonobese patients.

- Increased age is associated with lower functional and quality-of-life outcomes after total hip replacement.
- Mental health disorders, including depression, anxiety, and psychosis, are associated with decreased function, pain relief, and quality of life after total hip replacement.

The AAOS found strong evidence regarding the following management approaches <sup>[151]</sup> :

- Nonnarcotic medications: Nonsteroidal anti-inflammatory drugs (NSAIDs) improve short-term pain, function, or both.
- Corticosteroid injections provide short-term improvements in function and pain.
- Hyaluronic acid injections are no better than placebo for improving function, stiffness, and pain.
- Physical therapy improves function and decreases pain in mild to moderate hip osteoarthritis.

There was moderate strength evidence for the following <sup>[151]</sup> :

- Postoperative physical therapy improves early function more than no physical therapy.
- Glucosamine sulfate is no better than placebo for improving function, reducing stiffness, and decreasing pain.
- Practitioners may use intravenous or topical tranexamic acid to reduce blood loss associated with total hip replacement surgery.
- No clinically significant differences in patient-oriented outcomes for anterior vs posterior approaches in total hip replacement.

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