

PANLAR Consensus Recommendations for the Management in Osteoarthritis of Hand, Hip, and Knee

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Objective: The objective of this consensus is to update the recommendations for the treatment of hand, hip, and knee osteoarthritis (OA) by agreeing on key propositions relating to the management of hand, hip, and knee OA, by identifying and critically appraising research evidence for the effectiveness of the treatments and by generating recommendations based on a combination of the available evidence and expert opinion of 18 countries of America.

Methods: Recommendations were developed by a group of 48 specialists of rheumatologists, members of other medical disciplines (orthopedics and physiatrists), and three patients, one for each location of OA. A systematic review of existing articles, meta-analyses, and guidelines for the management of hand, hip, and knee OA published between 2008 and January 2014 was undertaken. The scores for Level of Evidence and Grade of Recommendation were proposed and fully consented within the committee based on The American Heart Association Evidence-Based Scoring System. The level of agreement was established through a variation of Delphi technique.

Results: Both “strong” and “conditional” recommendations are given for management of hand, hip, and knee OA and nonpharmacological, pharmacological, and surgical modalities of treatment are presented according to the different levels of agreement.

Conclusions: These recommendations are based on the consensus of clinical experts from a wide range of disciplines taking available evidence into account while balancing the benefits and risks of nonpharmacological, pharmacological, and surgical treatment modalities, and incorporating their preferences and values. Different backgrounds in terms of patient education or drug availability in different countries were not evaluated but will be important.

Key Words: osteoarthritis of the hand, hip, and knee, consensus recommendations

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Osteoarthritis (OA) is the most common type of rheumatic disease; it is one of the main reasons for presentation to a rheumatologist. As the second most common cause of work disability after cardiovascular disease, OA incurs direct and indirect costs that have a major impact on the world economy and health systems.^{1,2}

The reported prevalence of OA ranges from 0.5 to 40% of the general population. The wide variation is attributed to the variability of the clinical features of the disease and the different criteria used for diagnosis.^{1,2} Multiple patient factors are associated with an increased risk of OA, with age being the most important, followed by gender, body mass index, and microtraumas.^{3–6} This consensus derives from a previous study of Demographic and Clinical Characteristics of 3040 Patients by the PANLAR OA study group, reporting significant differences in handling these patients and the need for reaching an agreement in the management of OA in Latin America, taking into account the conditions of this region.⁷

As there is a lack of standardized criteria for the treatment of OA, the objective of this committee of experts was to obtain agreement on OA treatment and to provide recommendations for the three most common joints affected by OA: the hand, hip, and knee.

METHODS

Literature Research

A group specialized in literature research performed a review of the literature available from 2008 to 2014 in MEDLINE, PubMed (National Center for Biotechnology Information, Bethesda, MD, USA), Cochrane Library (John Wiley & Sons, Inc., NJ, USA), and Embase (Elsevier, Madrid, Spain). The level of evidence and strength of recommendation were evaluated as shown in Table 1, which were proposed and fully consented within the committee based on The American Heart Association Evidence-Based Scoring System.⁸

A total of 896 articles were selected for analysis. The articles were classified according to the model proposed by the Center for Evidence-Based Medicine at Oxford, UK or the Jadad scale.⁹ Using these criteria, 108 articles were selected, and individual responses to questions developed through the analysis of the evidence available in the literature were given by the committee of experts.^{1–136}

Participants

Forty-eight experts in the field of OA (rheumatologists, orthopedic surgeons, and physical medicine specialties and OA

patients and a general coordinator) representing 18 Latin American countries agreed to take part in this study.

Experts' Consensus

Two sessions were conducted with the aim of reaching agreement on the final recommendations for OA in all three joints. Each participant was asked to contribute independently with questions related to key clinical aspects in the management of hand, hip, and knee OA. The consensus was reached by using a variation of the Delphi technique. The experts answered questionnaires in three rounds. After each round, a facilitator provided an anonymous summary of the experts' forecasts from the previous round and the reasons they provided for their judgments. The experts revised their earlier answers in light of the replies of other members of their panel.

Upon completion of the expert opinions, the document was edited by the Editorial Committee with the final texts approved by members of the working groups.

Recommendations for Hand OA

The recommendations for the management of hand OA are summarized in Table 2 together with the level of evidence supporting them. The treatment propositions are categorized into nonpharmacological, pharmacological, and surgical treatment modalities.

The treatment of hand OA should be individualized according to the type of OA (nodal or erosive), its location and severity, the presence of inflammation, the pain level, the level of disability and reduction in quality of life, the comorbidities and concomitant medication, and the needs and expectations of patients.^{10–15}

Nonpharmacological Treatment Modalities

Education with regard to joint protection should be provided (how to avoid adverse mechanical factors) together with an exercise regimen that includes muscle strengthening and range-of-motion exercises (IC).^{14–17} Furthermore, the combination of an orthosis (splint) with an exercise regimen to improve pain and functionality in the short and long term and an exercise regimen has been shown to decrease pain and increase the range of motion and strength in hand OA.^{10,14,16–26}

Pharmacological Treatment Modalities

Pharmacological modalities of treatment include the use of topical NSAIDs, acetaminophen/paracetamol, and oral NSAIDs. Topical NSAIDs are indicated as being effective and safe for mild to moderate pain, and they are also indicated in elderly patients

TABLE 1. Level of Evidence

Level	Meaning
A	Information from various randomized clinical trials or meta-analyses.
B	Information from a randomized clinical trial or nonrandomized studies.
C	Experts' consensus, case studies, or care standards.
Strength of Recommendation	
Level	Meaning
I	There is evidence and/or general agreement that a procedure or treatment is beneficial, useful, or effective.
II	Conflicting evidence and/or differing opinions about the efficacy of a procedure or treatment.
Ia	Evidence and/or agreement favor usefulness or efficacy.
Ib	Usefulness or efficacy is not established by evidence or opinion.
III	Conditions for which there is evidence, general agreement, or both that the procedure treatment is not useful/effective and in some cases may be harmful.

TABLE 2. Recommendations and Level of Evidence Relating to Hand OA

Proposition	Level of Evidence
Nonpharmacological treatment modalities	
1. Education with regard to joint protection together with an exercise regimen including muscle strengthening and range of motion exercises. ^{14–17}	(IC)
2. The combination of an orthosis (splint) with an exercise regimen to improve pain and functionality in the short and long term. ^{7,14,16–26}	(IIaB)
Pharmacological treatment modalities	
3. Topical NSAIDs are indicated as being effective and safe for mild to moderate pain in patients with few affected joints and in elderly patients with mild to moderate persistent pain. ^{13,30–34}	(IA)
4. Acetaminophen/paracetamol (up to 3 g/day) is the preferred oral analgesic for the long-term treatment particularly in elderly patients because of its relative safety in comparison with NSAIDs. ^{31,32}	(IB)
5. Oral NSAIDs are recommended at the lowest effective dose and for the shortest time possible if patients present inadequate response to acetaminophen/paracetamol. ^{13,31,35–37} The high risk associated with gastrointestinal and cardiovascular events should be considered.	(IA)
6. The use of chondroitin sulfate for pain relief and function is recommended as it has a good safety profile. ^{38–40}	(IA)
7. Glucosamine and chondroitin sulfate are supported in the treatment of hand and knee OA. ³⁹	(IB)
8. Steroids or intra-articular hyaluronic acid may be considered for use in the treatment of OA of the symptomatic TMC joint. ^{28,29,41}	(IIaB)
9. Intramuscular steroid is not recommended for patients with symptomatic hand OA. ⁴⁸	(IIIC)
10. The use of diacerein is not recommended as its effectiveness and the risk/benefits profile has not been established.	(IIIC)
11. Adalimumab or infliximab are not recommended in patients with secondary or erosive hand. ^{29,50,51,53}	(IIIB)
12. Bisphosphonates (clodronate) is not recommended. ⁵⁴	(IIIB)
13. Hydroxychloroquine is not recommended for the symptomatic treatment of erosive hand OA. ⁵²	(IIIC)
Surgical treatment modalities	
14. Trapeziectomy, arthroplasty with ligament reconstruction and tendon interposition, or arthrodesis may be considered for severe OA of the base of the first finger (rhizarthrosis) if severe pain and/or disability and after conservative treatment have failed. ^{53–60}	(IIbB)
15. Ligament reconstruction is recommended for stage I. Hemitrapeziectomy, TM joint arthrodesis, implant, or arthroplasty is recommended for stages II and III. Complete removal of the trapezium with or without ligament reconstruction is recommended for stage IV. ^{59,60,62}	(IIbB)

with mild to moderate persistent pain. For long-term treatment of hand OA, acetaminophen/paracetamol is the preferred oral analgesic. Other treatments in hand OA include the use of chondroitin sulfate for pain relief and function and the use of glucosamine and chondroitin sulfate. Furthermore, the use of steroids or intra-articular hyaluronic acid may be considered for use in the treatment of OA of the symptomatic TMC joint.^{28,29,41}

Surgical Treatment Modalities

Surgery (trapeziectomy, arthroplasty with ligament reconstruction and tendon interposition, or arthrodesis) may be considered for severe OA of the base of the first finger (rhizarthrosis) in patients who have severe pain and/or disability and after conservative treatment has failed (IIbB).^{53–60} Proper use of arthroplasty or arthrodesis for the affected joints requires careful consideration of the needs of the patient with regard to the affected fingers.^{55–60}

Recommendations for Hip OA

The recommendations for the management of hip OA are summarized in Table 3 together with the level of evidence supporting them. The treatment propositions are categorized into nonpharmacological, pharmacological, and surgical treatment modalities.

Nonpharmacological Treatment Modalities

Early rehabilitation is indicated to maintain mobility and prevent impairment of the extension and abduction function of the hip. Patients with hip OA should receive information and education regarding the therapeutic objectives and the importance of

changes in lifestyle, which include an exercise regimen, weight reduction, the use of walking aids (walking stick and crutches) and shoe adjustments, and other measures to prevent the progression of joint damage.^{62–64}

Available treatment options for pain relief in patients with hip OA include thermotherapy and transcutaneous electrical nerve stimulation (TENS).

Pharmacological Treatment Modalities

The use of acetaminophen/paracetamol is recommended for use in hip OA owing to its safety profile.⁶⁵ NSAIDs may be indicated at higher than usual doses to treat more severe pain.^{61,66,67} The use of hyaluronic acid in the treatment of hip OA may be beneficial and, thus, could help to reduce NSAID use.⁷⁰ In patients who suffer painful relapses and who do not respond to analgesics and NSAIDs, intra-articular corticosteroid injection (ultrasound-guided) may be beneficial to provide fast pain relief (IIaB).^{69,70}

Surgical Treatment Modalities

The recommendations for the surgical treatment of hip OA are based on the available literature from the last 2 years.

Total hip arthroplasty is a surgical modality that is undergoing continuous development. It is indicated in patients who have OA accompanied by pain and difficulty walking and whose quality of life is impaired as it improves not only these factors but also patient survival.⁷⁶ A variety of models and metal implants are available, and different approaches can be chosen such as the use of a cemented, uncemented, or hybrid prosthesis. The available evidence shows that cemented prostheses are as effective as uncemented,

TABLE 3. Recommendations and Level of Evidence Relating to Hip OA

Proposition	Level of Evidence
Nonpharmacological treatment modalities	
1. Information and education regarding the therapeutic objectives and the importance of changes in lifestyle, which include an exercise regimen, weight reduction, use of walking aids (walking stick and crutches) and shoe adjustments and other measures to prevent the progression of joint damage. ⁶²	(IB)
2. Strengthening the extensors and abductors improves functionality and can be used to prepare the patient before a hip implant. ^{61,62,64}	(IB)
3. The use of orthoses is recommended to prevent the progression of degenerative changes and improve hip function. ^{61,62,64}	(IIbB)
4. Thermotherapy can be performed to relieve pain. ^{61,62,64}	(IB)
5. Transcutaneous electrical nerve stimulation (TENS) should also be used for pain relief and to reduce stiffness. ⁶²	(IIbB)
6. Aerobic exercise performed on a regular basis and muscle stretching and strengthening and joint mobility exercises are recommended. ⁶²	(IB)
7. The use of a walking stick in the contralateral hand is also recommended. The handle should be at the level of the greater trochanter of the femur. ⁶²	(IIbB)
8. A neuromuscular bandage may be beneficial as it aids analgesia, stimulates circulation, and reduces pressure. Consequently, the patient's posture is improved. ⁶¹	(IIaB)
Pharmacological treatment modalities	
9. The use of acetaminophen/paracetamol is recommended in mild to moderate pain, owing to its safety profile. ⁶³	(IB)
10. NSAIDs (ibuprofen, naproxen, diclofenac, meloxicam) or selective COX-2 inhibitors (celecoxib, etoricoxib) may be indicated higher than usual doses in more severe pain. ^{61,66,67}	(IB)
11. Naproxen could be used in patients with cardiovascular risk. It should be administered in conjunction with a proton-pump inhibitor owing to the high gastrointestinal risk. ⁶⁶	(IA)
12. Weak opioids such as tramadol may be beneficial if there is no response to NSAIDs or COX-2 inhibitors, no toleration, or are contraindicated. ⁶¹	(IIbB)
13. The use of hyaluronic acid may be beneficial and, thus, could help to reduce the NSAID use. ⁶⁸	(IIbB)
14. Intra-articular corticosteroid injection (ultrasound-guided) may be beneficial to provide fast pain relief in patients who suffer painful relapses and who do not respond to analgesics and NSAIDs. ^{69,70}	(IIaB)
15. Avocado and soybean unsaponifiable may play a useful role, and recent studies have provided the evidence that they may slow the progression of OA. ⁷¹	(IIA)
16. The use of diacerein has reported a high rate of adverse effects, such as diarrhea and risk of liver damage. ^{49,70}	(IIIB)
Surgical treatment modalities	
17. Total hip arthroplasty is indicated when OA is accompanied by pain and walking difficulty and when the quality of life is impaired. It improves not only these factors but also patient survival. ⁷⁴ A variety of models and metal implants are available and different approaches can be chosen such as the use of a cemented, uncemented, or hybrid prosthesis.	(IA)

especially in the stem (femoral component), whereas uncemented prostheses are more effective for the cup (acetabular component).

Recommendations for Knee OA

The recommendations for the management of knee OA are summarized in Table 4 together with the level of evidence supporting them. The treatment propositions are categorized into nonpharmacological, pharmacological, and surgical treatment modalities.

Nonpharmacological Treatment Modalities

Information and education regarding treatment goals and the importance of lifestyle changes to reduce the degenerative damage of the knee joint should be provided to the patient. Use of support devices such as insoles and knee braces may help to reduce pain and stiffness.^{61,81}

Pharmacological Treatment Modalities

A wide range of pharmacological treatment modalities is available for patients with knee OA, including acetaminophen/paracetamol, oral and topical NSAIDs, and tramadol. Furthermore, oral administration of hyaluronic acid may have a beneficial therapeutic effect in patients with symptomatic knee OA and may

possibly have an even greater effect in relatively young patients.⁸² Treatment with chondroitin sulfate, which has a high safety profile, has been shown to have a beneficial effect on symptoms in patients with knee OA. In addition, it has been proven that this effect persists for 3 months after stopping the treatment (carryover effect). Recent studies have provided evidence that chondroitin sulfate use may delay OA progression.^{39,83–85} Moreover, the combined use of glucosamine and chondroitin sulfate is indicated in patients with knee OA and moderate to severe pain.^{98–100} Many other pharmacological treatment modalities are described in Table 4 (available only online only at...).

Surgical Treatment Modalities

Total knee arthroplasty may be indicated in the treatment of knee OA owing to its outstanding effect on pain and stiffness and the improvement obtained in physical activity 6 months after intervention.^{129,130} In patients with a partial rupture of the meniscus, a partial meniscectomy performed arthroscopically may be beneficial, followed by a physical therapy program.^{131,132}

DISCUSSION

From the results of a recently published study⁷ of the PANLAR OA group, we found it important to have a consensus

TABLE 4. Recommendations and Level of Evidence Relating to Knee OA

Proposition	Level of Evidence
Nonpharmacological treatment modalities	
1. Information and education regarding treatment goals and the importance of lifestyle changes to reduce the degenerative damage of the knee joint should be provided. ^{61,79}	(IA)
2. Hydrotherapy in a therapeutic tank may be indicated in mild knee pain without swelling or stiffness; it is especially beneficial for elderly patients. ⁶⁸ A program of exercises for flexibility, mobilization, and stretching can be included. ⁷⁹	(IIaA)
3. Mechanotherapy, including flexibility programs and mobilization and stretching exercises, can reduce pain and improve the range of motion of the knee. ⁷⁹	(IIbA)
4. Thermotherapy (heat and cold) may help to improve the symptoms of knee OA. ⁷⁹	(IIaA)
5. The use heat to reduce pain and stiffness before performing flexion exercises in moderate and persistent pain is recommended. ⁸¹	(IB)
6. A program of flexibility, stretching, and strengthening exercises for symptomatic knee OA is recommended as this reduces pain during walking and climbing stairs and improves the strength of the quadriceps femoris. ⁸³	(IA)
7. A daily walk is recommended as this improves muscle strength, aerobic capacity, and endurance; facilitates a good night's sleep; and reduces knee pain. ⁸¹	(IA)
8. Aerobic exercise can be implemented gradually and progressively according to each patient's level of fitness at a frequency of three or more times per week, with a minimum duration of 20 to 30 minutes per session. ⁸¹	(IA)
9. Exercises for concentric contraction of the flexor and extensor muscles of the knee are indicated as these have been shown to reduce pain both at rest and during activity. ⁸²	(IA)
10. Support devices may be useful for reducing pain and stiffness and improving the functionality of the knee. ⁷⁹ Insoles and knee braces have been shown to decrease valgus or varus and knee pain.	(IIaA)
11. The use of bandage tape may help to reduce pain in patients with joint instability knee OA. ⁸¹	(IIaB)
12. The use of assistive devices such as a walking stick, walker, or crutches is suggested as a preventive measure. A walking stick must be used in the contralateral hand and the height must be adjusted to the level of the greater trochanter, with the elbow bent at an angle of 25 to 30 degrees. ⁷⁹	(IIaB)
Pharmacological treatment modalities	
13. Acetaminophen/paracetamol is recommended at a dose of up to 3 g/day for the treatment of mild pain resulting from knee OA. Moderate gastrolesive effects may occur and patients should be monitored for possible hepatic complications. ^{63,88}	(IB)
14. NSAIDs such as diclofenac, ibuprofen, and naproxen, and selective NSAIDs including celecoxib and etoricoxib are indicated in moderate pain. ^{89,90} In all cases, gastric protection, such as a proton-pump inhibitor, is required ⁹¹ and naproxen is recommended in patients with cardiovascular risk. ⁹²	(IA)
15. Topical NSAIDs may be indicated in patients with gastrointestinal risk, even though the analgesic response decreases after 1 year of use. ⁹³⁻⁹⁵	(IA)
16. The use of tramadol in the case of severe pain in its various administration forms is recommended. ¹¹⁵	(IA)
17. Capsaicin gel was shown to be an effective treatment for knee OA accompanied by mild to moderate pain. ⁹⁶	(IIB)
18. Intra-articular corticosteroid injection (ultrasound-guided) may be beneficial to provide fast pain relief. ^{69,70}	(IIaB)
19. Chondroitin sulfate has shown to have a beneficial effect on symptoms in patients with knee OA and a high safety profile. It has been proven that its effect persists for 3 months after stopping the treatment (carryover effect). Recent studies have provided evidence that chondroitin sulfate use may delay OA progression. ^{39,83-87}	(IA)
20. The combined use of glucosamine and chondroitin sulfate is indicated in patients with knee OA and moderate to severe pain. ⁹⁷⁻¹⁰⁰	(IA)
21. Glucosamine may be beneficial for pain relief and for improving joint function in patients. ¹⁰³	(IA)
22. Avocado soybean unsaponifiable may help to slow the progression of joint damage associated with knee OA. ⁷¹	(IIbA)
23. The administration of intra-articular steroids may be reasonable for knee OA accompanied by inflammation. ¹⁰²	(IIbB)
24. Intra-articular injection of hyaluronic acid of different molecular weights has proven to be beneficial in the treatment of knee OA. ^{103,104}	(IIaB)
25. Oral administration of hyaluronic acid may have a beneficial therapeutic effect in patients with symptomatic knee OA and may possibly have an even greater effect in relatively young patients. ⁸²	(IIbC)
26. The use of strontium ranelate may be beneficial for the treatment of knee pain. ¹⁰⁵⁻¹⁰⁷	(IIbB)
27. Duloxetine may be helpful for knee OA accompanied by chronic pain. ^{108,109}	(IIbC)
28. The administration of low-dose oral steroids for a maximum of 12 weeks could be considered in patients older than 65 years. ¹¹⁰	(IIbC)
29. Intra-articular injection of platelet-rich plasma may help to relieve pain associated with knee OA ¹¹¹⁻¹¹⁷ ; however, our recommendation is to conduct better quality studies.	(IIbC)
30. The use of a supplement containing omega-3 and omega-6 fatty acids, zinc and vitamin E could be considered to reduce pain and stiffness and improve joint function, and also to reduce the intake of NSAIDs/analgesics. ¹²⁴	(IIbB)

Continued next page

TABLE 4. (Continued)

Proposition	Level of Evidence
31. Intra-articular injection of mesenchymal stem cells derived from the infrapatellar fat pad may be effective at reducing pain and improving knee function. ¹²⁸	(IIC)
Surgical treatment modalities	
32. There is no benefit associated with the use of arthroscopy in the treatment of knee OA, even in the presence of a partial meniscal tear. ¹³³	(IIIA)
33. In patients with a partial rupture of the meniscus, a partial meniscectomy performed arthroscopically may be beneficial, followed by a physical therapy program. ^{131,132}	(IIaB)
34. Total knee arthroplasty may be indicated owing to its outstanding effect on pain and stiffness and the improvement obtained in physical activity 6 months after intervention. ^{128,129} Proper preoperative planning is essential so that deformities (varus or valgus) and long-term instabilities may be corrected.	(IIaB)

on the treatment of hand, hip, and knee OA that could fit the needs of patients and specialists in America because of the significant differences in handling these patients. Moreover, the need to ensure proper care with the least economic impact, in a region in which many countries have large gaps in financial resources, and there is an important clinical diversity and various educational and cultural levels, suggests specific adaptation to regional characteristics. These recommendations for the management of patients with hand, hip, and knee OA are based on the best available evidence of benefit, safety, and tolerability of nonpharmacologic and pharmacologic and surgical treatment modalities and the consensus judgment of clinical experts from a wide range of disciplines balancing the benefits and harms of these treatments and incorporating their preferences and values.

Differences With Regard to ACR, OARS, and EULAR

Although there are other consensus and guidelines^{13,61,62,79} on the treatment of OA in the mentioned locations, this consensus focused on updating the information of the available modalities with the participation of the OA specialist and patients of 18 countries of America.

CONCLUSIONS

These recommendations are based on the consensus opinions of clinical experts from a wide range of disciplines taking available evidence into account while balancing the benefits and risks of nonpharmacological, pharmacological, and surgical treatment modalities, and incorporating their preferences and values. It is hoped that these recommendations will be utilized by healthcare providers involved in the management of patients with hand, hip, and knee OA.

The pharmacological management of OA has traditionally been centered on analgesics and NSAIDs; however, increasing toxicity warnings have been issued recently for paracetamol, traditional NSAIDs, and COX-2 inhibitors, making OA chronic treatment even more challenging. The value and therapeutic efficacy of these agents are unquestionable, but there is growing awareness that they should be used for short time periods and for specific flares of the disease. The use of safer alternatives suitable for long-term administration, such as chondroitin and glucosamine, is advisable and presents growing evidence of efficacy and safety, making them a suitable alternative for long-term control of the disease. On the other hand, the use of nonpharmacological treatments should also be taken into account due to the improvements that these may produce to the quality of life of the patient. Latin America is formed by different countries with background not similar to the European or North American countries in terms of patient education or drug

availability. How conditions in different regions of Latin America will need consideration.

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