

## Key recommendations for management of OA of the hip and/or knee

CONSTRUCT	INTERVENTION	RECOMMENDATION	REFERENCES
<b>Diagnosis &amp; Follow-up</b>			
	Imaging	▪ X-ray ( <i>Level I</i> )	(1-14)
		▪ MRI ( <i>Level: Consensus</i> )	(1)
		▪ Bone scan ( <i>Level: Consensus</i> )	(1)
		▪ CT Scans ( <i>Level: Consensus</i> )	(1)
		▪ X-ray standing anteroposterior (weight bearing), lateral and notch patellar views ( <i>Level I</i> )	(1-15)
		○ Joint space narrowing, femoral or acetabular osteophytes in hip OA	(12, 15, 16)
		○ Subchondral sclerosis, cyst formation	(12)
	History	▪ Take detailed history and physical examination ( <i>Level IV</i> )	(3, 6, 17, 18)
		○ Sex, occupation, family history	(3, 5, 6, 8, 10, 17-20)
		○ Quality of life, impact of knee dysfunction, range of motion, level of symptomology, medical co-morbidity	(2, 3, 5, 6, 8, 10, 13, 15, 17-21)
		○ Patient's wishes and expectations, scheduling visit according to urgency	(10, 11, 22)
		▪ Detailed pain assessment ( <i>Level: Consensus</i> )	(10, 23)
		▪ Indicators of OA ( <i>Level: Consensus</i> )	
		○ >50 years of age	(1-11, 13, 15, 24)
		○ <30min morning stiffness	(1-11, 15, 24)
		○ Long standing pain that increases with weight bearing/stair climbing that reduces with rest	(1-11, 15)
		○ Insidious onset	(1-11, 15)
		○ Bone deformity	(1-11)
		○ Contracture	(1-11)
		○ Crepitus	(1-11, 15, 24)

CONSTRUCT	INTERVENTION	RECOMMENDATION	REFERENCES
		o Effusions that are not warm (as in inflammatory arthritis)	(1-11)
		o Muscle weakness and wasting	(15)
		o Locked knee, unable to bend	(11)
	Objective clinical assessment	▪ Dynamic gait analysis ( <i>Level IV</i> )	(11)
	Pathology	▪ Blood tests	(12, 15, 16)
		o Erythrocyte sedimentation rate ( <i>Level: Consensus</i> )	(12, 15, 16)
		▪ Inflammatory arthritis should be excluded as a cause of unicompartmental arthritis ( <i>Level: Consensus</i> )	(2)
▪ Joint taps ( <i>Level: Consensus</i> )		(1)	

#### Non-pharmacological management

Non-pharmacological interventions should form an integral part of the treatment of OA but the optimal treatment requires combination with pharmacologic measures (*Level I*) (25)

Psychosocial support	Information/education (self management courses)	▪ Patient education should represent a mainstay of therapy ( <i>Level I</i> )	(2, 4-6, 8, 10, 11, 14, 16, 19, 21-24, 26-30)
		▪ Treatment should begin with education, reinforced with written or oral instructions	(1, 16, 24-26, 31)
		▪ Self management courses, including lay language discussion ( <i>Level II</i> )	(7, 10, 12, 17, 27, 28)
Pain Function	Physiotherapy	▪ Physiotherapy referral recommended ( <i>Level I for exercise, taping, education and some modalities</i> )	(6, 7, 9, 10, 14, 32)
		▪ Cold therapy ( <i>Level II</i> )	(6, 7, 9, 10, 14, 32)
		▪ Superficial or deep heat therapy ( <i>Level: consensus</i> )	(6, 9, 10, 14, 32, 33)
		▪ Transcutaneous electrical nerve stimulation (TENS) ( <i>Level II</i> )	(6, 8-10, 14, 15, 27, 32, 33)
		▪ Massage ( <i>Level: Consensus</i> )	(6, 9, 10, 14, 23, 32)
	▪ Therapeutic ultrasound of no benefit ( <i>Level I</i> )	(27, 33)	
	Acupuncture	▪ Acupuncture ( <i>Level II</i> )	(5, 15)

	Exercise	<ul style="list-style-type: none"> <li>▪ Active range of motion exercises for hip and knee (<i>Level II</i>)</li> </ul>	(1, 2, 6, 11, 12, 16-19, 21, 22, 24, 26, 29)
		<ul style="list-style-type: none"> <li>▪ Strengthening (<i>Level II</i>)</li> </ul>	(2-4, 6-11, 14, 16-19, 21, 22, 24, 26, 27, 29, 30, 32, 34)
		<ul style="list-style-type: none"> <li>▪ Aerobic fitness/non impact exercise (<i>Level: Consensus</i>)</li> </ul>	(6, 9)
		<ul style="list-style-type: none"> <li>▪ Gait training (<i>Level: Consensus</i>)</li> </ul>	(8, 9)
Function	Footwear modification & orthoses	<ul style="list-style-type: none"> <li>▪ Appropriate footwear, patella taping, lateral wedged insoles (<i>Level II</i>)</li> </ul>	(2, 5, 7-9, 12, 15, 17-23, 26, 27, 29, 32, 34)
	Functional aids	<ul style="list-style-type: none"> <li>▪ Taping of patella (<i>Level II</i>)</li> </ul>	(5, 6, 8, 11, 16-18, 20, 24, 26, 32)
		<ul style="list-style-type: none"> <li>▪ Supportive devices, joint protection techniques and braces (<i>Level II</i>)</li> </ul>	(1, 2, 7-9, 12, 14-19, 21-24, 26, 27, 29, 32)
Pain	Hydrotherapy	<ul style="list-style-type: none"> <li>▪ Hydrotherapy (<i>Level II</i>)</li> </ul>	(6, 9, 10, 14, 27, 32)
Function	Tai Chi	<ul style="list-style-type: none"> <li>▪ Tai Chi (<i>Level II</i>)</li> </ul>	(27)
Psychosocial support	Social support	<ul style="list-style-type: none"> <li>▪ Social support including reassurance and counseling (<i>Level II</i>)</li> </ul>	(16, 24, 26)
		<ul style="list-style-type: none"> <li>▪ Telephone support (continuity of care) (<i>Level II</i>)</li> </ul>	(27)
		<ul style="list-style-type: none"> <li>▪ Support groups (eg Arthritis Foundation) (<i>Level II</i>)</li> </ul>	(4, 6, 8, 10, 28)
Co-morbidity	Weight loss	<ul style="list-style-type: none"> <li>○ Weight loss recommended (<i>Level II</i>)</li> </ul>	(2, 5, 7-9, 11, 12, 14-24, 26, 27, 29, 32, 34)
		<ul style="list-style-type: none"> <li>○ Obesity aggravates pain and disability especially knee OA (<i>Level III-2</i>)</li> </ul>	(4, 12, 14, 27, 32, 34)
Pain Function	Occupational therapy	<ul style="list-style-type: none"> <li>▪ Occupational therapy referral (<i>Level IV</i>)</li> </ul>	(23, 27)
Psychosocial support	Psycho-educational	<ul style="list-style-type: none"> <li>▪ Management must be individualized, based on holistic, patient-centered, patient's beliefs, co-morbidities, activity requirements (<i>Level: Consensus</i>)</li> </ul>	(16, 24-26, 30)

**Complementary and Alternative therapy/treatment**

Pain Function	Herbal therapies	▪ Avocado-soybean unsaponifiables (ASU) ( <i>Level II</i> )	(15, 27)
	Magnetic bracelet	▪ Magnetic bracelet therapy may be effective ( <i>Level II</i> )	(23)
	Antioxidants/minerals	▪ Antioxidants for preventing progression ( <i>Level III-1</i> )	(5)

**Pharmacological Management**

Pain	Glucosamine	▪ Glucosamine use recommended, but awaiting further trials ( <i>Level I</i> )	(5, 12, 15, 17, 18, 23, 27, 32)	
	Chondroitin sulfate	▪ Chondroitin sulfate use recommended but long term effects not established ( <i>Level I</i> )	(4-6, 8, 12, 15, 26, 27, 32)	
	Topical agents	Topical agents		(12, 21, 25, 32)
		▪ NSAIDS ( <i>Level I</i> )		(6-8, 15, 27)
		▪ Capsaicin ( <i>Level I</i> )		(3, 6-8, 17, 18, 23, 24, 26, 27)
		▪ Methylsalicylate ( <i>Level: Consensus</i> )		(6, 17, 18, 26)
	NSAIDS	▪ Menthol ( <i>Level: Consensus</i> )		(6, 23)
		▪ If paracetamol fails to provide symptomatic relief, then NSAIDS are most appropriate alternative, especially for moderate to severe OA ( <i>Level I</i> )		(1-3, 5-9, 11, 12, 14-19, 21-28, 31)
		▪ **Potential side effects i.e. disruption of renal, liver, gastrointestinal function ( <i>Level II</i> )		(6, 10, 12, 14, 27-29, 31)
		▪ Those who use NSAIDS for 6 months should have a CBC, renal and liver function tests and a stool guiac every 6 months ( <i>Level: Consensus</i> )		(4)
		▪ Only 1 NSAID should be prescribed at a time ( <i>Level: Consensus</i> )		(15)
	Cox-2 inhibitors	▪ For gastrointestinal protection in people with gastrointestinal events, non-selective NSAID should be used in conjunction with misoprostal, a proton pump inhibitor, antacid or H2 blocker ( <i>Level II</i> )		(4, 10, 12, 14, 15, 17, 18, 21-23, 25, 26, 28, 32)
		▪ Cox-2 inhibitor use ( <i>Level II</i> )		(5, 6, 9, 10, 21-23, 26-29, 32)

		<ul style="list-style-type: none"> <li>▪ Patients on anticoagulants should be watched carefully. Cox-2 specific should be chosen over non-specific NSAIDS in patients on anticoagulants and INR should be monitored (<i>Level: Consensus (40)</i>)</li> </ul>	(10, 25, 31)
		<ul style="list-style-type: none"> <li>▪ Cox-2 inhibitors in people with PUB (perforation, ulcers and bleeding) (<i>Level: Consensus (40)</i>)</li> </ul>	(6, 16, 25, 31)
		<ul style="list-style-type: none"> <li>▪ People with hypertension should have blood pressure checked 1 week after starting (<i>Level: Consensus (40)</i>)</li> </ul>	(31)
Pain Function	Intra-articular cortico-steroid injections	<ul style="list-style-type: none"> <li>▪ Intra-articular cortico-steroid injections (<i>Level II</i>)</li> <li>○ but little evidence for hip OA (26)</li> </ul>	(1-8, 11, 12, 15-19, 21, 23, 24, 26-29, 32)
		<ul style="list-style-type: none"> <li>▪ May be considered in patients with a flare that is unresponsive to analgesic and NSAIDS (<i>Level II</i>)</li> </ul>	(22, 25)
		<ul style="list-style-type: none"> <li>▪ Can increase risk of articular cartilage damage and should not be repeated more than 3 or 4 times/year (<i>Level: Consensus</i>)</li> </ul>	(16, 24)
	Intra-articular hyaluronan injections	<ul style="list-style-type: none"> <li>▪ Intra-articular hyaluronan injections for knee (<i>Level II</i>)</li> </ul>	(1, 2, 4-8, 12, 15, 17-19, 21, 23, 27-29, 32)
		<ul style="list-style-type: none"> <li>○ No evidence in the hip</li> </ul>	(14, 27)
		<ul style="list-style-type: none"> <li>○ Effect size is small and pharmaeconomic aspects are unclear (10)</li> </ul>	(9)
Pain	Tramadol	<ul style="list-style-type: none"> <li>▪ Tramadol use (<i>Level II</i>)</li> </ul>	(10, 17, 18, 23, 27, 32)
		<ul style="list-style-type: none"> <li>○ Use with caution</li> </ul>	(10)
	Opioid analgesia	<ul style="list-style-type: none"> <li>▪ Opioid analgesia (<i>Level II</i>)</li> </ul>	(6, 10, 16-18, 21-24, 26, 27)
		<ul style="list-style-type: none"> <li>○ Useful alternative in patients in whom NSAIDS (including Cox-2 selective inhibitors) are contraindicated, ineffective and/or poorly tolerated (<i>Level II</i>)</li> </ul>	(21, 22, 25)
Pain	Simple analgesia	<ul style="list-style-type: none"> <li>▪ Paracetamol for initial treatment and treatment of mild OA (<i>Level II</i>)</li> </ul>	(2-12, 14-19, 21-29, 32)

### Surgery

If a patient without a medical contraindication to surgery or neuropathic joint remains dissatisfied with the outcome of conservative care and has significant knee dysfunction, pain or both, surgical alternatives should be considered. *(Level: Consensus)* (8)

Pain Function	Osteotomy	<ul style="list-style-type: none"> <li>▪ Osteotomy <i>(Level II for knee medial compartment)</i> (8, 9, 13-16, 22-24, 26, 32)</li> </ul>
		<ul style="list-style-type: none"> <li>○ May provide pain relief and may prevent progression of disease for those not yet needing total joint arthroplasty (16, 24, 26)</li> </ul>
		<ul style="list-style-type: none"> <li>○ Consider in young adults with symptomatic hip OA, especially in the presence of dysplasia or varus/valgus deformity <i>(Level Consensus)</i> (22)</li> </ul>
		<ul style="list-style-type: none"> <li>○ Tibial osteotomy for young who failed to respond to conservative treatment <i>(Level II)</i> (13)</li> </ul>
		<ul style="list-style-type: none"> <li>○ Young, very active with isolated narrowing of lateral compartment may have distal femoral varus osteotomy <i>(Level III-2)</i> (13)</li> </ul>
		<ul style="list-style-type: none"> <li>○ Young, very active with symptomatic and radiological changes isolated to the patellofemoral joint may have patellectomy or procedure to elevate the tibial tubercle <i>(Level III-2)</i> (13)</li> </ul>
	Arthroscopic surgery	<ul style="list-style-type: none"> <li>▪ Arthroscopy <i>(Level III-3)</i> (12, 23, 32)</li> </ul>
		<ul style="list-style-type: none"> <li>○ Arthroscopic lavage may be useful (8, 24)</li> </ul>
		<ul style="list-style-type: none"> <li>○ Arthroscopic debridement may be considered for knee OA with mechanical symptoms (5, 13, 15)</li> </ul>
	Total/partial arthroplasty	<ul style="list-style-type: none"> <li>▪ Unicompartmental knee arthroplasty <i>(Level III-2)</i> (5, 9, 13, 14, 23, 32)</li> <li>○ for patients who are less active</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Total arthroplasty <i>(Level III-3)</i> (2, 5, 8, 9, 12-16, 19, 21-24, 26, 27, 32)</li> </ul>
		<ul style="list-style-type: none"> <li>○ Cost effective, marked pain relief and functional improvement (16, 24, 26)</li> </ul>
		<ul style="list-style-type: none"> <li>○ For refractory pain with disability and radiological deterioration (2, 15, 19, 21, 22)</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Severe cases (12)</li> </ul>
		<ul style="list-style-type: none"> <li>▪ For bi- and tri-compartmental (13)</li> </ul>

	Closed tidal irrigation	▪ Not enough evidence for closed tidal irrigation	(5, 24, 26)
<b>Other</b>			
	Other	▪ Not enough evidence to recommend MMP inhibitors, growth factors, autologous chondrocyte transplantation, cartilage repair using mesenchymal stem cells, autologous osteochondral plugs ( <i>Level: Consensus</i> )	(26)

**NOTE:** Level applies to level of evidence cited by reference guideline or systematic review against extracted recommendation. Levels of evidence are defined by NHMRC (35) . Where no level of evidence was attributed to the recommendation by the Guideline, and the methods of Guideline development were not detailed, the recommendation was assumed to be consensus based.

## References

1. Improving diagnosis of degenerative joint disease of the knee by primary care physicians. Report on medical guidelines & outcomes research. 2000;11(5):1-2, 5.
2. Pendleton, A, Arden, N, Dougados, M, et al. EULAR recommendations for the management of knee osteoarthritis: Report of a task force of the standing committee for international clinical studies including therapeutic trials (ESCISIT). Annals of the Rheumatic Diseases. 2000;59(12):936-944.
3. Knee pain or swelling: Acute or chronic guidelines for clinical care. University of Michigan Health System. 2005 Revised April 2005.
4. AAOS clinical guideline on osteoarthritis of the knee. Support document. 2003.
5. Saltman, DC, O'Dea, NA, Sambrook, PN. Managing osteoarthritis in general practice: A long-term approach. Medical Journal of Australia. 2001;175 (SUPPL.):S92-S96.
6. Exercise prescription for older adults with osteoarthritis pain: Consensus practice recommendations. A supplement to the AGS clinical practice guidelines on the management of chronic pain in older adults. American Geriatrics Society Panel on Exercise and Osteoarthritis. JAGS. 2001;49:808-823.
7. Knee osteoarthritis: Management options. www.pcrsociety.org.uk/guidelines\_00\_03p.jsp.
8. O'Reilly, S. The treatment of osteoarthritis. CPD Rheumatology. 2001;2(1):14-16.
9. Lower extremity musculoskeletal disorders: a guide to diagnosis and treatment. Brigham and Women's Hospital. 2003.
10. The management of persistent pain in older persons. AGS Panel on Persistent Pain in Older Persons. JAGS. 2002;50:S205-S224.
11. Diagnosis and treatment of adult degenerative joint disease (DJD) of the knee. Institute of Clinical Systems Improvement. 2004.
12. Brighton, S, Mody, GM, Tikly, M, et al. Osteoarthritis: Clinical guideline 2003. South African Medical Journal. 2003;93(12 II):972-990.
13. American Academy of Orthopaedic Surgeons (AAOS) clinical guideline on osteoarthritis of the knee (phase II): support document. 2003.
14. Anonymous. Guidelines for the diagnosis, investigation and management of osteoarthritis of the hip and knee. Report of a Joint Working Group of the British Society for Rheumatology and the Research Unit of the Royal College of Physicians. Journal of the Royal College of Physicians of London. 1993 Oct;27(4):391-396.
15. PRODIGY Guidance - Osteoarthritis. www.prodigynhs.uk/guidance.asp?gt=Osteoarthritis. 2005 July 2005.
16. Hochberg, MC, Altman, RD, Brandt, KD, et al. Guidelines for the medical management of osteoarthritis. Part I. Osteoarthritis of the hip. American College of Rheumatology.[see comment]. Arthritis & Rheumatism. 1995 Nov;38(11):1535-1540.

17. Michigan Quality Improvement Consortium. Medical management of adults with osteoarthritis. 2003 August 1.
18. Michigan Quality Improvement Consortium Guideline. Medical management of adults with OA. 2005 August 2005.
19. Mazieres, B, Bannwarth, B, Dougados, M, et al. EULAR recommendations for the management of knee osteoarthritis. Report of a task force of the Standing Committee for International Clinical Studies Including Therapeutic Trials. Joint, Bone, Spine: Revue du Rhumatisme. 2001 May;68(3):231-240.
20. The management of osteoarthritis: Diagnosis of osteoarthritis. www.pcrsociety.org.uk/guidelines\_00\_02p.jsp.
21. Jordan, KM, Arden, NK, Doherty, M, et al. EULAR Recommendations 2003: An evidence based approach to the management of knee osteoarthritis: Report of a Task Force of the Standing Committee for International Clinical Studies Including Therapeutic Trials (ESCISIT). Annals of the Rheumatic Diseases. 2003;62(12):1145-1155.
22. Zhang, W, Doherty, M, Arden, N, et al. EULAR evidence based recommendations for the management of hip osteoarthritis: Report of a task force of the EULAR Standing Committee for International Clinical Studies Including Therapeutics (ESCISIT). Annals of the Rheumatic Diseases. 2005;64(5):669-681.
23. Guideline for the management of pain in osteoarthritis, rheumatoid arthritis, and juvenile chronic arthritis. American Pain Society. 2002;2nd Edition.
24. Hochberg, MC, Altman, RD, Brandt, KD, et al. Guidelines for the medical management of osteoarthritis. Part II. Osteoarthritis of the knee. Arthritis and Rheumatism. 1995;38(11):1541-1546.
25. Lee, A, Tsang, C, Wong, W, et al. Clinical guidelines for managing lower-limb osteoarthritis in Hong Kong primary care setting; 2004.
26. Anonymous. Recommendations for the medical management of osteoarthritis of the hip and knee: 2000 update. American College of Rheumatology Subcommittee on Osteoarthritis Guidelines.[see comment]. Arthritis & Rheumatism. 2000 Sep;43(9):1905-1915.
27. Brand, C, Cox, S. Evidence-based clinical pathway for best practice management of OA of the hip and knee. Clinical Epidemiology and Health Service Evaluation Unit. 2004.
28. Ontario treatment guidelines for osteoarthritis, rheumatoid arthritis and acute musculoskeletal injury. 2000.
29. Snibbe, JC, Gambardella, RA. Treatment options for osteoarthritis. Orthopedics. 2005 Feb;28(2 Suppl):s215-220.
30. Roddy, E, Zhang, W, Doherty, M, et al. Evidence-based recommendations for the role of exercise in the management of osteoarthritis of the hip or knee - The MOVE consensus. Rheumatology. 2005;44(1):67-73.
31. Tannenbaum, H, Peloso, PMJ, Russell, AS, et al. An evidence-based approach to prescribing NSAIDs in the treatment of osteoarthritis and rheumatoid arthritis: The Second Canadian Consensus Conference. Can J Clin Pharmacol. 2000;7(Suppl A Autumn):4A-16A.
32. Altman, RD, Lozada, CJ. Practice guidelines in the management of osteoarthritis. Osteoarthritis & Cartilage. 1998 May;6 Suppl A:22-24.
33. Philadelphia Panel evidence-based clinical practice guidelines on selected rehabilitation interventions for knee pain.[see comment]. Physical Therapy. 2001 Oct;81(10):1675-1700.
34. O'Reilly, S, Doherty, M. Lifestyle changes in the management of osteoarthritis. Best Practice & Research in Clinical Rheumatology. 2001 Oct;15(4):559-568.
35. NHMRC. A guide to the development, implementation and evaluation of clinical practice guidelines: National Health and Medical Research Council; 1999.