

Expert Consensus - Knee Osteoarthritis

WS 1: PRESERVE CARTILAGE - MAINTAIN HIGH ACTIVITY LEVEL

Management of knee OA is a multi-disciplinary task where a patient's positive self-motivation is the foundation to a successful outcome. Recent meta-analysis and guidelines for knee OA management include pharmaceutical treatment options, physical activity, body weight management, exercise, biomechanical intervention (such as insoles) and Unloader® knee braces^{1,2,3,4}.

Patient's expectations and professional medical expertise should match each other to create clear and realistic treatment objectives.

Participants of the Expert Consensus "Knee Osteoarthritis – Biomechanics & Biologics", London 2019



As there are no clear guidelines on patient treatments for knee OA available, Össur conducted a global consensus with experienced medical professionals such as physiotherapists, family practice physicians, PM&R and pain management doctors, rheumatologists and orthopedic surgeons. The goal of the consensus was to develop recommendations on knee OA management for three different treatment objectives:

- Preserve cartilage - maintain moderate-to-high activity level
- Reduce pain, maintain cartilage, and improve activity level
- Reduce pain, keep activity level

In preparation for the 2-day meeting in London, standardized questionnaires were sent to participants and speakers to capture their current treatment strategies. Evaluation of the questionnaires served as the basis for discussion during the workshops (WS). The outcomes were consented in one Delphi round following the meeting. They included clear recommendations for the diagnosis, conservative treatment and surgical options for patients with knee OA as determined by patient characteristics and treatment objectives.

Patient characteristics: Active lifestyle although moderate impact on activities of daily life due to knee OA

Treatment objective: Preserve cartilage - maintain high activity level

Expert panel: A. Anz (USA) | B. Devitt (AUS) | W. Potthast (GER) | C. Stolz (GER) | P. Heinzlmann (GER) | P. Crocker (UK) | C. Oliva (UK) | T. Williams (UK) | C. Minshull (UK) | M. Aunger (UK) | T. Billers (UK) | A. Hegab (UK) | Y. Kordofani (UK) | N. Boyd (UK) | V. Ford (UK) | B. Busfield (USA) | A. Patel (USA) | J. Boyer (USA)

Diagnosis:	Acute Phase: Week 0–6	Subacute Phase: Week 7–12		Ongoing Phase: Week >13	Comments:
		Responder	Non-Responder		
X-ray: Long leg standing	X				
Patient's history	X	X	X	X	
Physical exam	X	X	X	X	
Ultrasound			X		
MRI			X		Consider acute phase if mechanical symptoms
Psychosocial factors	X	X	X	X	
Sport-specific performance test		X		X	
Functional biomechanical test		X		X	
Diagnostic arthroscopy			X	X	Mechanical symptoms persist
Core Treatment:					
Self-management and education	X	X	X	X	
Water-based exercises	X	X	X	X	
Strength training	X pst	X	X	X	
Land-based exercises	X	X	X	X	
Weight management	X	X	X	X	

EXPERT CONSENSUS KNEE OA: PRESERVE CARTILAGE - MAINTAIN HIGH ACTIVITY LEVEL

Diagnosis:	Acute Phase: Week 0–6	Subacute Phase: Week 7–12		Ongoing Phase: Week >13	Comments:
		Responder	Non-Responder		
Biomechanical Intervention:					
Unloader brace	X BT	X	X	X	
Insoles	X	X	X	X	If indicated, biomech deviations
Sport equipment advice e.g. footwear/surfaces	X begin conversation	X		X	
Dynamic taping			X	X	
Gait strategies		X	X	X	
Neuromuscular control		X	X	X	
Pharmaceutical Treatment:					
NSAIDs oral/topical	X				
Paracetamol	X				
IA steroids			X		
DMOADs:					
HA			X	X	
PRP			X	X	
Other Conservative Treatment:					
Physiotherapeutic modalities	X	X	X	X	
RICE/Cryotherapy	X				
Psychological support	X		X	X	
Surgical Treatment:					
Arthroscopy					Mechanical symptoms KL 2/3
Osteotomy/realignment					With evidence of mechanical overload and after failure of other non-operative treatments

BT = Brace Test
KL = Kellgren-Lawrence Scale



Unloader One® braces from Össur are the best examined unloading knee braces and clinically proven to reduce pain and improve quality of life^{5,6}.

The Dynamic Force Straps with SmartDosing™ dials allow patients to control the amount of unloading and take an active part of their treatment.

Unloader One and Unloader One X are indicated for moderate to severe osteoarthritis, while the Unloader One Lite is indicated for mild to moderate OA.

1. Osteoarthritis: Care and management in adults [Internet] [cited 2014 Jul 21]. Available from: <http://www.nice.org.uk/Guidance/CG177>

2. Stöve J, Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie (DGOOC), 2018. Gonarthrose S2k Leitlinie, AWMF online Das Portal der wissenschaftlichen Medizin, download 04.04.2018

3. Moyer R, Birmingham T, Marriot K, Bryant D, Leitch K, Giffin J, Marriot K, Leitch M. Valgus bracing for knee osteoarthritis: a meta-analysis of randomized trials. Arthritis Care & Research. 2015;67(4), 493–501.

4. Gohal C, Shanmugaraj A, Bedi A, Adili A, Khan M. Effectiveness of Valgus Offloading Knee Braces in the Treatment of Medial Compartment Knee Osteoarthritis: A Systematic Review, Sports Health. 2018; 10(6):500-514

5. Phillips et al. (2016) Treatment of Osteoarthritis of the Knee with Bracing: A Scoping Review. Orthopedic Reviews 2016; volume 8.

6. Briggs KK, Matheny LM, Steadman JR. Improvement in quality of life with use of an unloader knee brace in active patients with OA: a prospective cohort study J Knee Surg. 2012 Nov; 25(5):417-21.

Expert Consensus - Knee Osteoarthritis

WS 2: REDUCE PAIN, MAINTAIN CARTILAGE, IMPROVE ACTIVITY LEVEL

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Patient characteristics: Less active, walking pain

Treatment objective: Reduce pain, maintain cartilage, improve activity level

Expert panel: B. Pietrosimone (USA) | P. Trikha (UK) | S. Patel (IND) | M. Hadod (GER) | A. Hamadou (GER) | C. Botha (UK) | M. Lal (UK) | W. Bruke (UK) | S. Ferns (UK) | L. Oliver-Welsh (UK) | J. Lisk (UK) | T. Beadle (UK) | A. Vajramani (UK) | H. Hassouna (UK) | K. T. Naik (UK) | S. Smallbone (UK) | S. Whalen (USA) | R. Kruse (USA) | D. Wang (USA) | S. Chandran (USA)

Diagnosis:	Acute Phase: Week 0–6	Subacute Phase: Week 7–12		Ongoing Phase: Week >13		Comments:
		Responder	Non-Responder	Responder	Non-Responder	
<ul style="list-style-type: none"> • Clinical investigation • Functional inspection • Psych/Social anamnesis • X-ray (full weight bearing, long leg) • Baseline functional • PROMS • Gait analysis 	X	X	X	X	X	Root cause analysis to determine referred pain
<ul style="list-style-type: none"> • Ultrasound • MRI 			optional		Yes, if available	Ultrasound in case of swelling
Core Treatment:						
<ul style="list-style-type: none"> • BMI optimization • Self management & education • Manage expectations • Activation/exercise 	X	X	X	X		Specific muscle strengthening, gait retraining, if misalignment correction
Biomechanical Intervention:						
Appropriate footwear	X	X		X		
<ul style="list-style-type: none"> • Functional insoles • Unloader brace • Walking aid 		X		X		

EXPERT CONSENSUS KNEE OA: REDUCE PAIN, MAINTAIN CARTILAGE, IMPROVE ACTIVITY LEVEL

Diagnosis:	Acute Phase: Week 0–6	Subacute Phase: Week 7–12		Ongoing Phase: Week >13		Comments:
		Responder	Non-Responder	Responder	Non-Responder	
Pharmaceutical Treatment:						
NSAIDs oral/topical	Oral temp. 1 W, topical optional	Stop	Change	Stop	Stop	
Paracetamol	optional					
Weak opioids			Consider		Adapt dose	discontinue
Steroid injections	optional		Consider		Consider	Max. 2 Corticosteroid-Injections
Antidepressants						Refer to specialist
Capsaicin	optional					
DMOADs:						
<ul style="list-style-type: none"> • Glucosamine • Chondroitin 	optional	ongoing		ongoing		Patient discussion, no clinical evidence. Continue use if OA diagnosed for min. 3 month
<ul style="list-style-type: none"> • Hyaluronic acid • PRP 	X		X	X		Ongoing treatment with HA for cartilage preservation 1/year. If not successful, switch PRP/HA every 4 months if respond
<ul style="list-style-type: none"> • Collagen (oral) • Adipocytes • Placenta derivatives • Stem cells 	optional	Optional – patient discussion no recommendation				
Other Conservative Treatment:						
<ul style="list-style-type: none"> • Spa therapy • Yoga • Tai Chi • Cold therapy • Shock wave • Induction therapy • Acupuncture • X-ray radiation • Medical flossing • Ablation genicular nerve 	optional	X		X		
Quad stimulation	optional	optional				
Supplements	optional	ongoing	ongoing	ongoing	stop	
Surgical Treatment:						
Osteotomy			consider		consider	
Arthroscopy					consider	
Cartilage repair procedure			consider			
Arthroplasty					consider	

- Osteoarthritis: Care and management in adults [Internet] [cited 2014 Jul 21]. Available from: <http://www.nice.org.uk/Guidance/CG177>
- Stöve J, Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie (DGOOC), 2018. Gonarthrose S2k Leitlinie, AWMF online Das Portal der wissenschaftlichen Medizin, download 04.04.2018
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WS 3: REDUCE PAIN, KEEP ACTIVITY LEVEL

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Patient characteristics: Moderate-to-severe pain, normal activity level

Treatment objective: Reduce pain, keep activity level

Expert panel: T. Conrozier (FRA) | C. Becher (GER) | P. Lee (UK) | M. Schwellnus (SA) | W. Kregher (GER) | J. Cassens (GER) | D. Danneberg (GER) | J. Wagner (GER) | M. Niederhaus (GER) | J. Baldwin (UK) | S. Stubbs (UK) | K. Moholkar (UK) | J. Saksena (UK) | J. Griffiths (UK) | L. Strong (UK) | J. Kozdryk (UK) | A. Adhikari (UK) | R. Yallapragada (UK) | B. Nistor (UK) | A. Panero (USA) | A. Makinde (USA) | N. Patel (USA) | A. Kamath (USA) | M. Korkola (USA) | A. Antebi (USA) | T. Rindlisbacher (CAN)

Diagnosis:	Acute Phase: Week 0–6	Subacute Phase: Week 7–12		Ongoing Phase: Week >13		Comments:
		Responder	Non-Responder	Responder	Non-Responder	
<ul style="list-style-type: none"> • Anamnesis • Clinical investigation • Functional inspection • X-ray (tunnel, pa, lateral in full weight bearing, long leg) 	X		X		X	Long leg x-ray if varus-/valgus malalignment exists
<ul style="list-style-type: none"> • Ultrasound • MRI 	optional		optional		Yes	Ultrasound in case of swelling
Core Treatment:						
<ul style="list-style-type: none"> • BMI optimization • Self management & education • Manage expectations • Activation/exercise 	X	X	X	X	X	
Biomechanical Intervention:						
Appropriate footwear	X					
<ul style="list-style-type: none"> • Functional insoles • Unloader brace 			X		X	

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		Responder	Non-Responder	Responder	No-Responder	
Pharmaceutical Treatment:						
NSAIDs oral/topical	Oral temp. 1 W, topical optional	Stop	Change	Stop	Stop	
Paracetamol	optional					
Weak opioids			Consider		Adapt dose	
Steroid injections	optional		Consider		Consider	Max. 2 Corticosteroid- Injections
Supplements Phytotherapy	optional	ongoing	ongoing	ongoing	stop	
i.a. Ketoprofen	optional					
Capsaicin	optional					
DMOADs:						
<ul style="list-style-type: none"> • Glucosamin • Chondroitin 	optional	ongoing	ongoing	ongoing	ongoing	Continue use if OA diagnosed for min. 3 month
<ul style="list-style-type: none"> • Collagen (oral) • Hyaluronic acid • PRP • Adipocytes • Placenta derivatives • Stem cells 	optional		X	X	X	Ongoing treatment with HA for cartilage preservation 1/year. If not successful, switch PRP/HA
Other Conservative Treatment:						
<ul style="list-style-type: none"> • Spa therapy • Yoga • Shock wave • Induction therapy • Acupuncture • X-ray radiation • Medical flossing • Ablation genicular nerve 	optional			X		
<ul style="list-style-type: none"> • Kinesio Tape • Sleeve • Ice compression 	optional					
Surgical Treatment:						
Osteotomy			consider		consider	
Arthroscopy					consider	
Arthroplasty					consider	

- Osteoarthritis: Care and management in adults [Internet] [cited 2014 Jul 21]. Available from: <http://www.nice.org.uk/Guidance/CG177>
- Stöve J, Deutsche Gesellschaft für Orthopädie und Orthopädische Chirurgie (DGOOC), 2018. Gonarthrose S2k Leitlinie, AWMF online Das Portal der wissenschaftlichen Medizin, download 04.04.2018
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