

Appendix 1. Knee OsteoArthritis Knowledge Scale (KOAKS) item development

From: Darlow B, Abbott JH, Bennell K, Briggs AM, Brown M, Clark J, Dean S, French S, Hinman R, Krageloh C, Metcalf B, O'Brien D, Stanley J, Whittaker J (2021) Consumers' knowledge about hip and knee osteoarthritis: development of the Hip and Knee Osteoarthritis Knowledge Scales and protocol for testing their measurement properties published in *Osteoarthritis and Cartilage Open*. <https://doi.org/10.1016/j.ocarto.2021.100160>

Table S1. Development of draft Knee OsteoArthritis Knowledge Scale (KOAKS) items from international consensus statements

Consensus Statement (Ranking) ¹	Consensus statement domain	Item V1	Item V2 (used for cognitive interviews)	Item V3 (used for testing of measurement properties)**
Osteoarthritis is not just a disease of the cartilage but affects your whole joint including muscles and ligaments (12)	Disease knowledge	Osteoarthritis just affects joint cartilage*	Osteoarthritis affects all parts of a joint including the muscles	3. Osteoarthritis affects all parts of the knee including the muscles
	Disease knowledge	Osteoarthritis affects many tissues in and around your knee joint	<i>Removed as preference was for item above</i>	
	Disease knowledge		Osteoarthritis is caused by wear and tear of the joint* - <i>Additional item suggested to include knowledge about causation</i>	1. Your knee joint wears out with everyday use*
Osteoarthritis is not an inevitable part of getting older (20)	Disease knowledge	Osteoarthritis always gets worse as you get older*	Everyone gets osteoarthritis as they age*	2. Everyone gets osteoarthritis as they get older*
	Disease knowledge		Osteoarthritis can only get worse over time* - <i>Additional item suggested to explore knowledge about disease course</i>	4. Osteoarthritis will only get worse over time*
	Disease knowledge	Increased knee pain always means that you have damaged your knee* - <i>Additional item suggested to explore knowledge about pain</i>	Increased knee pain always means that you have damaged your knee*	5. Increased knee pain always means that you have damaged your knee*
Joint damage on an x-ray does not indicate how much your osteoarthritis will affect you (15)	Disease knowledge	X-rays show how much knee osteoarthritis will affect you*	X-rays show how much your osteoarthritis affects you*	11. X-rays or scans show how much your osteoarthritis affects you*

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Nondrug treatments have similar benefits for your osteoarthritis symptoms to pain relieving drugs, but with very few adverse side effects (7)	Principles of management	Exercise can ease knee osteoarthritis pain as much as most drugs	Exercise programs can ease pain from osteoarthritis as much as most medications	14. Exercises can ease pain as much as most medications [†]
Actively taking part in self-management programs could benefit your osteoarthritis (10)	Principles of management	You can do things yourself to help your knee osteoarthritis	<i>Removed as covered by other items</i>	
Treatment interventions and lifestyle changes for your osteoarthritis should be individualized and include long- and short-term goals. These should be reviewed regularly with your health professionals (11)	Principles of management	Treatment plans designed to support your needs will achieve the best results	<i>Removed as considered that most people will see this as being self-evident and it is difficult to see people rating this as false, even if it is not something that they have considered previously</i>	
	Principles of management		It is fine to do things that increase your knee pain - <i>Additional item suggested to include knowledge about pain</i>	9. It is generally not harmful to your joint to do things that increase your knee pain
	Principles of management		You need an X-ray or scan to know if you have osteoarthritis* - <i>Additional item suggested to include knowledge about diagnosis</i>	6. You need an X-ray or scan to know if you have osteoarthritis*
Regular physical activity and individualized exercise programs (including muscle strengthening, cardiovascular activity, and flexibility exercises) can reduce your pain, prevent worsening of your osteoarthritis, and improve your daily function (1)	Exercise, physical activity and weight loss	Movement and activity improves the health of your knee	<i>Removed as covered by other items</i>	
Regular physical activity and individualized exercise programs (including muscle strengthening, cardiovascular activity, and flexibility exercises) can reduce your pain, prevent worsening of your osteoarthritis, and improve your daily function (1)	Exercise, physical activity and weight loss	Limiting knee use is the best thing to do for your knee osteoarthritis*	<i>Removed as covered by other items</i>	

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Regular physical activity and individualized exercise programs (including muscle strengthening, cardiovascular activity, and flexibility exercises) can reduce your pain, prevent worsening of your osteoarthritis, and improve your daily function (1)	Exercise, physical activity and weight loss	Regular exercise can improve osteoarthritis symptoms	<i>Removed as difficult to word for low reading age and construct covered by other items</i>	
Regular physical activity and individualized exercise programs (including muscle strengthening, cardiovascular activity, and flexibility exercises) can reduce your pain, prevent worsening of your osteoarthritis, and improve your daily function (1)	Exercise, physical activity and weight loss	Increased strength can improve how well you can do your daily activities when you have knee osteoarthritis	<i>Removed as covered by other items</i>	
If you are overweight and have osteoarthritis, it will be beneficial to lose weight and maintain a healthy weight through an individualized plan involving dietary changes and increased physical activity (2)	Exercise, physical activity and weight loss	Healthy eating is a key part of knee osteoarthritis care	Keeping a healthy body weight is a key part of osteoarthritis care	8. Keeping a healthy body weight is a key part of osteoarthritis care
If you are overweight and have osteoarthritis, it will be beneficial to lose weight and maintain a healthy weight through an individualized plan involving dietary changes and increased physical activity (2)	Exercise, physical activity and weight loss	Gaining weight is good for knee osteoarthritis*	<i>Removed as alternate item preferred</i>	
Living a sedentary life could worsen your osteoarthritis and also increases your risk of other lifestyle-related diseases, such as diabetes and cardiovascular disease (4)	Exercise, physical activity and weight loss	An inactive life can make your knee osteoarthritis worse	Being active makes osteoarthritis better	7. Being active makes osteoarthritis feel better
Living a sedentary life could worsen your osteoarthritis and also increases your risk of other lifestyle-related diseases, such as diabetes and cardiovascular disease (4)	Exercise, physical activity and weight loss	Exercise that helps your knee osteoarthritis is also good for the rest of your health	<i>Removed as covered by other items</i>	

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Individualized exercise is an integral component of treatment for everyone with osteoarthritis (5)	Exercise, physical activity and weight loss	Exercise is good for everyone who has knee osteoarthritis	Exercise is important for everyone who has osteoarthritis	10. Exercise is important for everyone who has osteoarthritis†
Maintaining sufficient muscle strength around the joints is important in reducing pain and maintaining function, and if you require an operation will benefit both pre- and post-operative periods of your treatment (6)	Exercise, physical activity and weight loss	Having strong muscles around your knee joint reduces osteoarthritis pain	Making your leg muscles stronger reduces pain from knee osteoarthritis	12. Making your leg muscles stronger improves your ability to do daily tasks†
Individualized exercises only work for your osteoarthritis if you do them regularly (9)	Exercise, physical activity and weight loss	The more often you exercise, the more it helps your knee osteoarthritis	<i>Removed as more about how to implement exercise rather than the knowledge of whether it is important, safe, or useful. The exercise construct was also considered to be sufficiently covered by other items</i>	
Your osteoarthritis symptoms can often be eased significantly without requiring an operation (3)	Surgery	Knee osteoarthritis symptoms can improve a lot without surgery	Pain from osteoarthritis can be made a lot better without surgery	13. Pain from osteoarthritis can be managed without surgery
If you cannot achieve pain relief from your osteoarthritis, have undertaken a sustained period of recommended conservative management, and it is very difficult to perform activities of daily living, joint replacement surgery is an option (13)	Surgery	All people with knee osteoarthritis will need a joint replacement at some point*	Most people with knee osteoarthritis will need a joint replacement at some point*	15. Most people with knee osteoarthritis will need a joint replacement at some point*
Keyhole surgery (arthroscopy) that involves washout of the joint and joint scraping should not be used to treat your pain unless there is a mechanical blocking of your joint (19)	Surgery	<i>No item drafted initially - Very complex, hard to word positively, and related to item about symptoms improving without surgery</i>	Surgery to clean up or wash out your knee is helpful when you have osteoarthritis* - <i>Additional item suggested to include knowledge about arthroscopic surgery</i>	<i>Removed as poorly understood</i>

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STATEMENTS FOR WHICH ITEMS WERE NOT DEVELOPED				
The symptoms of osteoarthritis can vary greatly from person to person (16)	Disease knowledge	<ul style="list-style-type: none"> - <i>Difficult to word into a statement.</i> - <i>Unlikely to be discriminative (few people would select false).</i> 		
Methods for you to self-manage your osteoarthritis should be discussed and agreed on by you and your health professionals (18)	Principles of management	<ul style="list-style-type: none"> - <i>Difficult to word into a statement.</i> - <i>Unlikely to be discriminative.</i> - <i>Relates to person-centred care in general more than osteoarthritis in particular</i> 		
Linking your individualized exercises to your other daily activities is a useful way to become more active (8)	Exercise, physical activity and weight loss	<ul style="list-style-type: none"> - <i>Difficult to word into a readable statement.</i> - <i>More about how to implement exercise rather than the knowledge of whether it is important, safe, or useful.</i> - <i>Already quite a few statements about exercise.</i> 		
Small amounts of individualized exercise undertaken frequently can be beneficial for your osteoarthritis (14)	Exercise, physical activity and weight loss	<ul style="list-style-type: none"> - <i>Difficult to word into a readable statement.</i> - <i>More about how to implement exercise rather than the knowledge of whether it is important, safe, or useful.</i> - <i>Already quite a few statements about exercise.</i> 		

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You should avoid the use of nonsteroidal anti-inflammatory drugs for your osteoarthritis over the long term (17)	Drugs	<ul style="list-style-type: none"> - <i>Difficult to word into a readable statement.</i> - <i>Very complex language that requires technical knowledge to interpret.</i> - <i>Related to item about non-drug treatments</i> 		
You may get some pain relief from your osteoarthritis by using acetaminophen (paracetamol) medications (21)	Drugs	<ul style="list-style-type: none"> - <i>Difficult to word given the qualified nature of the endorsement</i> 		

* Reverse scored item; ** Knee item wording demonstrated (hip items are exactly the same with the word 'knee' replaced by the word 'hip'). † Reading age greater than 12 years old

Reference

1. French SD, Bennell KL, Nicolson PJ, Hodges PW, Dobson FL, Hinman RS. What do people with knee or hip osteoarthritis need to know? An international consensus list of essential statements for osteoarthritis. *Arthritis Care Res* 2015; 67: 809-816.

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