RAPID RESEARCH

January 2023

Inside This Week:

Knee Osteoarthritis: Risks, MRIs, & Scores

✅ Knee OA Outcome Score (KOOS), Is It Any Good?

✅ Prevalence of Knee OA on MRI Scans in People Without Pain

✅ Risk Factors for Knee OA
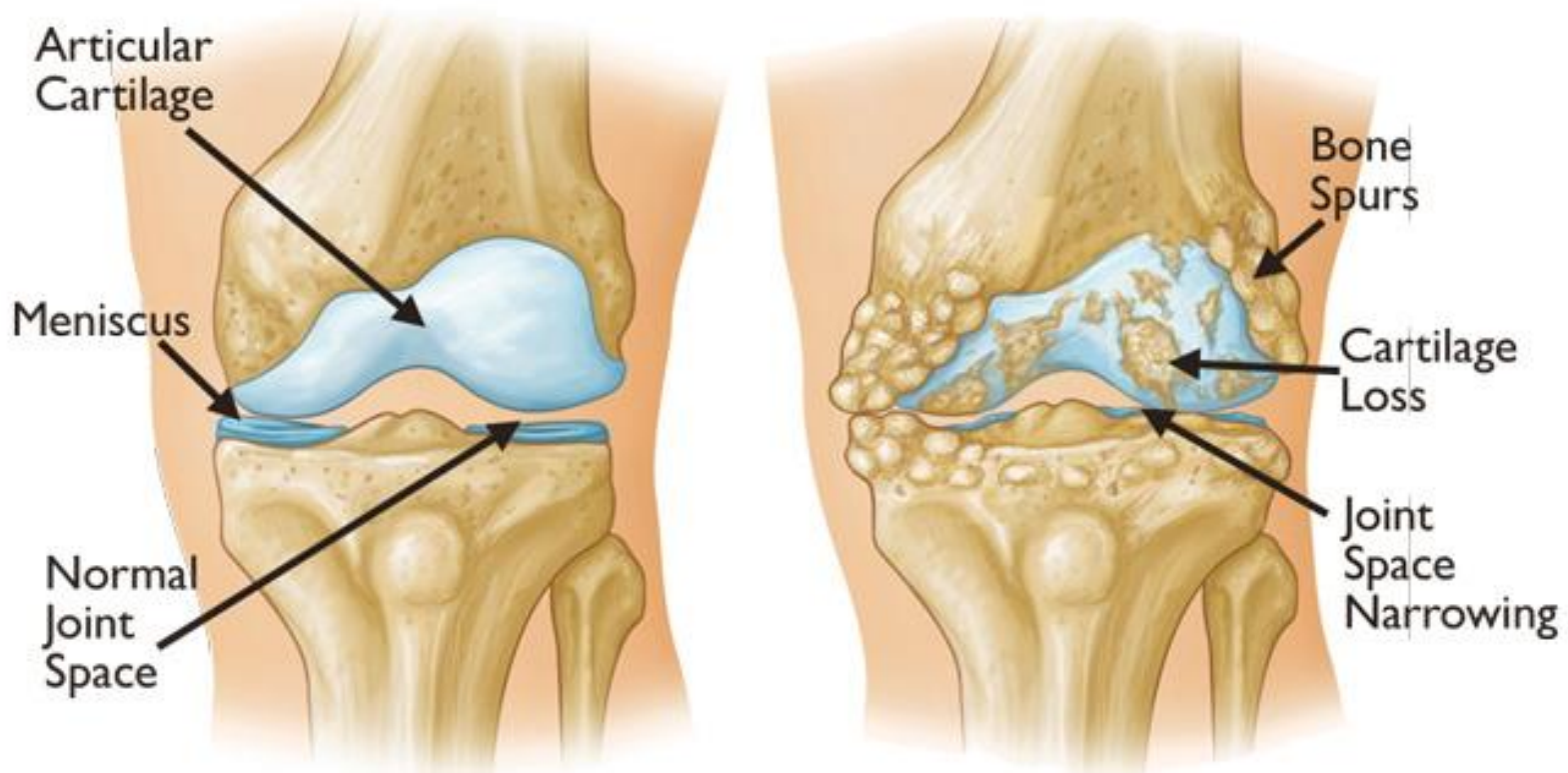
KNEE OA OUTCOME SCORE (KOOS), IS IT ANY GOOD?

JBI 10/11 [90%]

Quality Check
*see appx

This systematic review and meta-analysis synthesized evidence regarding measurement properties of the Knee injury and Osteoarthritis Outcome Score (KOOS).

Articular Cartilage

Meniscus

Normal Joint Space

Bone Spurs

Cartilage Loss

Joint Space Narrowing

KEY FINDINGS

37 studies included.

KOOS Overall:
Adequate internal consistency, test-retest reliability and construct validity for young and old adults with knee injuries and/or OA.

5-factor structure of the original KOOS is unclear.

Sub-Scales:
ADL: Better content validity for older patients.
Sport/Rec: Better validity for younger patients with knee injuries.
Pain: More relevant for painful knee conditions.
Minimal detectable change:
14.3 to 19.6 for younger individuals & ≥20 for older individuals.

Evidence of larger effect sizes following surgical (TKA) vs. non-surgical.

MAIN TAKEAWAYS

Use KOOS with confidence in content validity, internal consistency, test-retest reliability, construct validity and responsiveness for age- and condition-relevant sub-scales.

Structural validity, cross-cultural validity and measurement error require further evaluation.

This article can guide researchers and clinicians to effectively use KOOS in patients with knee conditions.

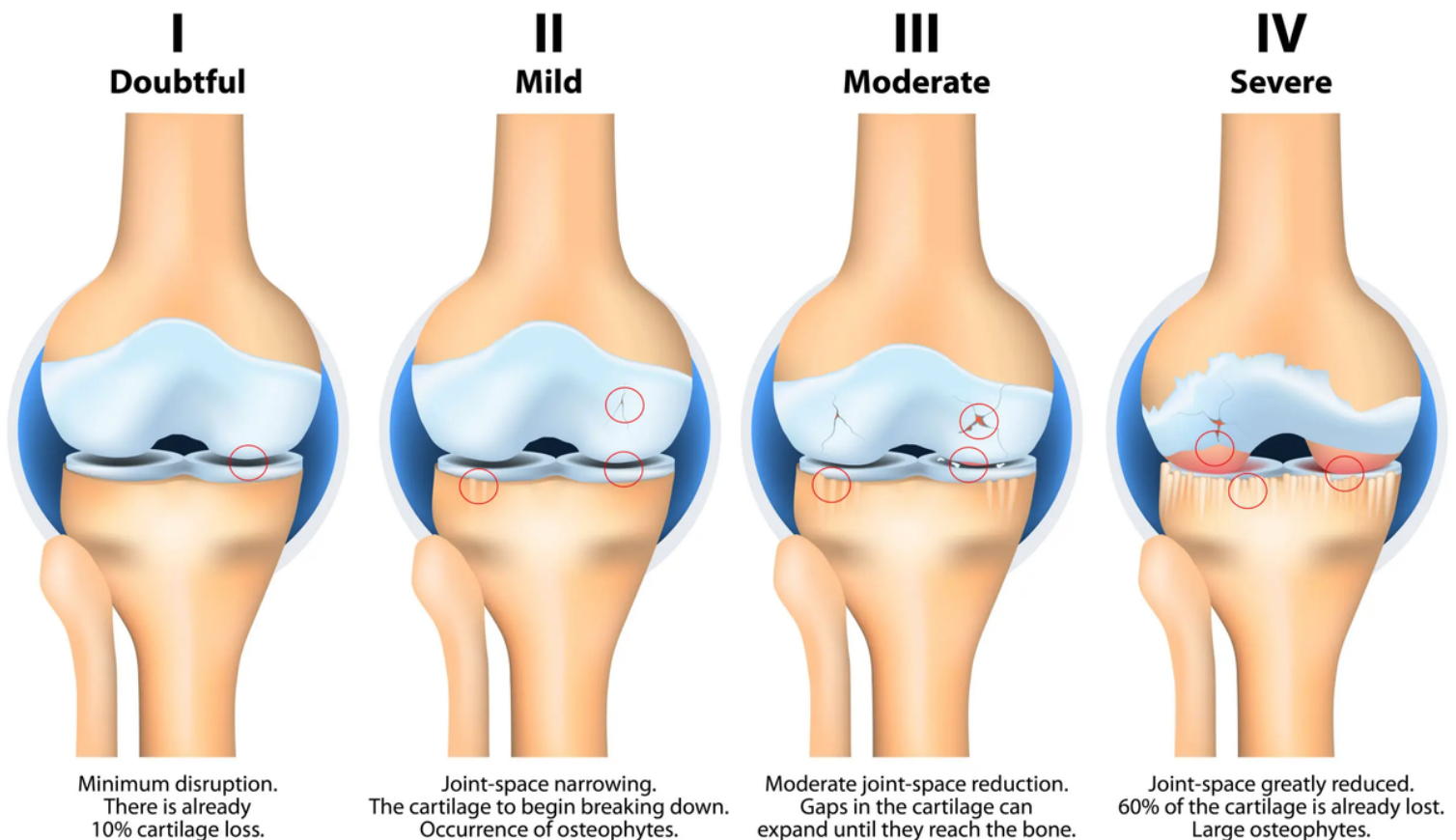# PREVALENCE OF KNEE OA ON MRI SCANS IN PEOPLE WITHOUT PAIN

JBI 11/11 [100%]

✓ **Quality Check**
*see appx

This systematic review provided summary estimates of the prevalence of MRI features of osteoarthritis in asymptomatic uninjured knees.

STAGE OF KNEE OSTEOARTHRITIS

I	II	III	IV
Doubtful	**Mild**	**Moderate**	**Severe**
Minimum disruption. There is already 10% cartilage loss.	Joint-space narrowing. The cartilage to begin breaking down. Occurrence of osteophytes.	Moderate joint-space reduction. Gaps in the cartilage can expand until they reach the bone.	Joint-space greatly reduced. 60% of the cartilage is already lost. Large osteophytes.

KEY FINDINGS

63 studies included; 5397 knees of 4751 adults

Prevalence Findings in Asymptomatic Knees:
Cartilage defects **[24%]**
Cartilage defects & <40yr **[11%]**
Cartilage defects & >40yr **[43%]**

Meniscal tears **[10%]**
Meniscal tears & <40 years **[4%]**
Meniscal tears & ≥40 years **[19%]**

Bone marrow lesions **[18%]**
*Didn't increase with age

Osteophytes [25%] was 18%
*10.2% increase per 10 years

MAIN TAKEAWAYS

The prevalence of knee osteoarthritis features on MRI in otherwise healthy, asymptomatic, uninjured knees is high:
4% to 14% in young adults.
19% to 43% in older adults aged ≥40 years.

Prevalence rates generally increase with age and are influenced by other factors such as physical activity levels and type of MRI sequences used.
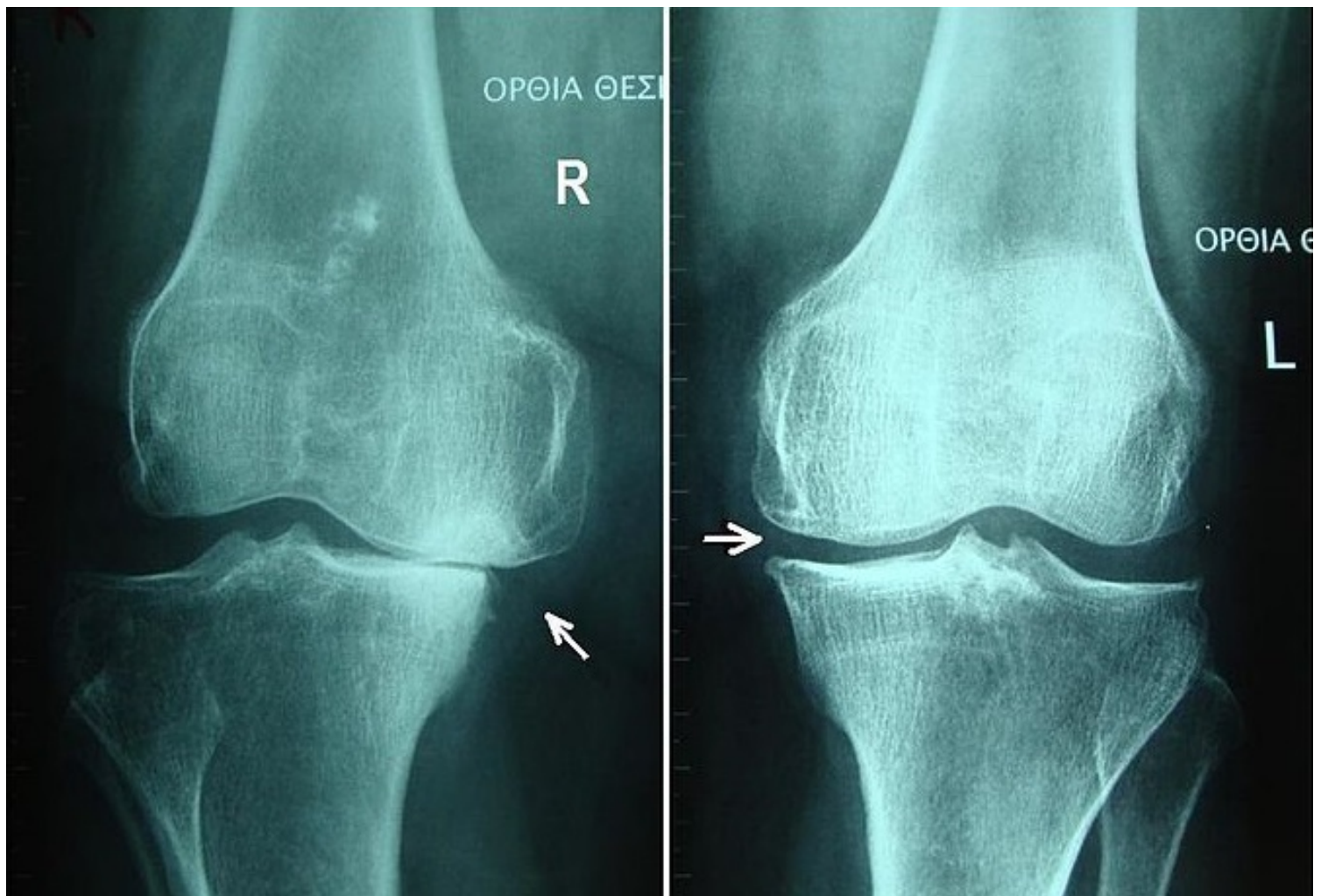
These imaging findings must be interpreted in the context of clinical presentations and considered in clinical decision making.

RISK FACTORS FOR KNEE OSTEO-ARTHRITIS

This systematic review and meta-analysis determined the current evidence on risk factors for onset of knee pain/OA in those aged 50 and over.

KEY FINDINGS

46 studies were included, 34 for meta-analysis.

Main Factors Associated with Onset of Knee Pain:

Being Overweight [1.98x as likely]

Obesity [2.66x]

Female gender [1.68x]

Previous Knee Injury [2.83x]

Hand OA [1.30x] *Was found to be non-significant.

Smoking was found not to be a statistically significant risk or protective factor.

Population Attributable Fractions (PAF) indicated that in patients with new onset of knee pain, 5.1% of cases were due to previous knee injury, and 24.6% related to being overweight or obese.

MAIN TAKEAWAYS

This review has identified several risk factors for the development of knee pain and knee OA in older adults.

Some, such as weight, can be targeted clinically in order to reduce the number of patients who suffer from knee OA.

Patients with other risk factors such as previous knee injury, age and female gender can be managed to reduce progression of the condition.

There is however limited evidence regarding factors such as the influence of co-morbidities, and socio-economic status and therefore further research needs to focus on these risk factors rather than those for which extensive evidence already exists.
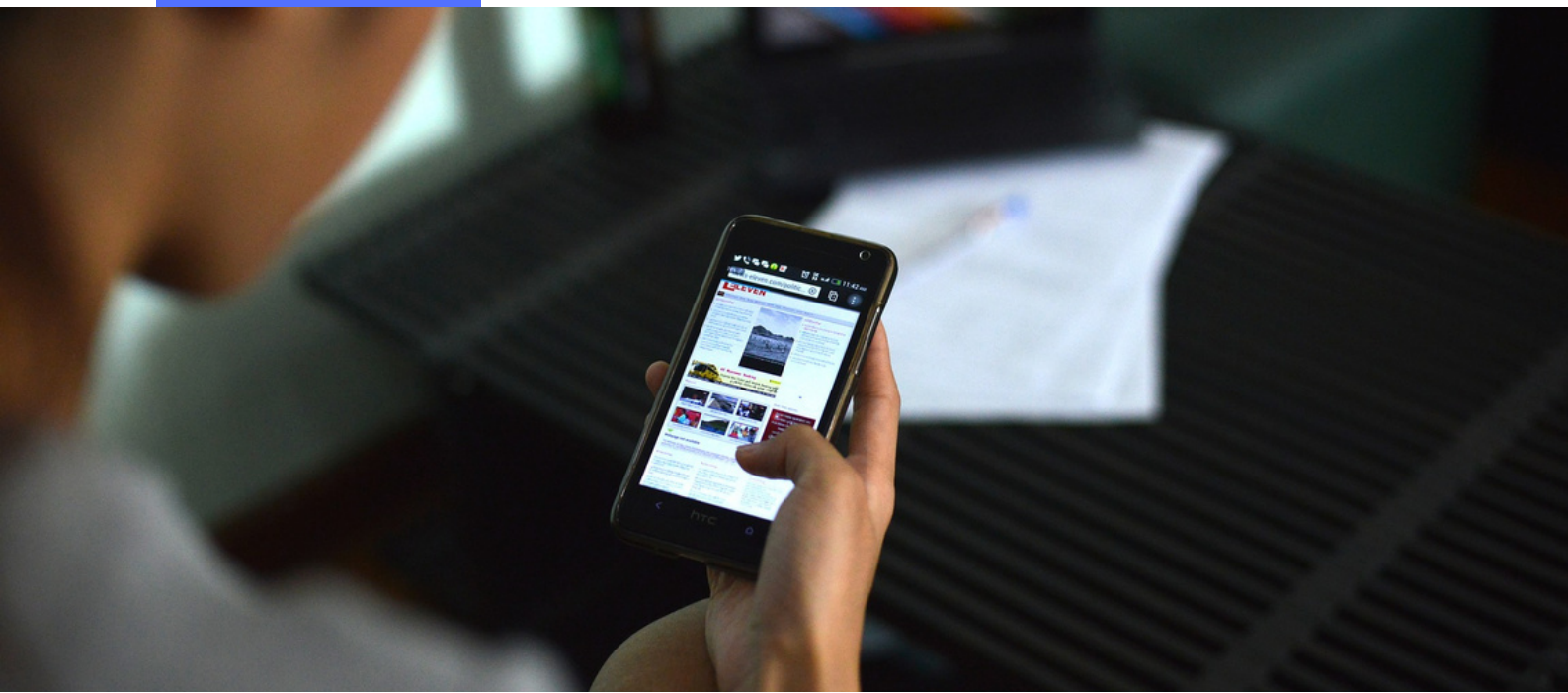
GIVE US YOUR FEEDBACK!

MEMBERS

We are on a mission to make research more accessible, easier to interpret, and quicker to implement.

Help us by giving 1 minute of your time to leave feedback for us.

We would greatly appreciate any feedback you have, as it helps us continually improve!

Leave Review

JBI CRITICAL APPRAISAL CHECKLIST FOR SYSTEMATIC REVIEWS AND RESEARCH SYNTHESES

Author: Collins et al. Year: 2016

	Yes	No	Unclear	Not applicable
1. Is the review question clearly and explicitly stated?	+	☐	☐	☐
2. Were the inclusion criteria appropriate for the review question?	+	☐	☐	☐
3. Was the search strategy appropriate?	+	☐	☐	☐
4. Were the sources and resources used to search for studies adequate?	+	☐	☐	☐
5. Were the criteria for appraising studies appropriate?	+	☐	☐	☐
6. Was critical appraisal conducted by two or more reviewers independently?	☐	X	☐	☐
7. Were there methods to minimize errors in data extraction?	+	☐	☐	☐
8. Were the methods used to combine studies appropriate?	+	☐	☐	☐
9. Was the likelihood of publication bias assessed?	+	☐	☐	☐
10. Were recommendations for policy and/or practice supported by the reported data?	+	☐	☐	☐
11. Were the specific directives for new research appropriate?	+	☐	☐	☐

Overall appraisal: 10/11 (90%)

LIMITATIONS:

Didn't conduct full translation of 4 non-English papers.

Inability to perform COSMIN ratings means that the methodological quality of these studies is unknown.

Critical Appraisal Checklist for Systematic Reviews and Research Syntheses

JBI CRITICAL APPRAISAL CHECKLIST FOR SYSTEMATIC REVIEWS AND RESEARCH SYNTHESES

Author: Colvenor et al. Year: 2016

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	✚	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	✚	☐	☐	☐
3.	Was the search strategy appropriate?	✚	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	✚	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	✚	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	✚	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	✚	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	✚	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	✚	☐	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	✚	☐	☐	☐
11.	Were the specific directives for new research appropriate?	✚	☐	☐	☐

Overall appraisal: 11/11 (100%)

LIMITATIONS:

Heterogeneity between studies remained unexplained by the variables examined.

Unexplained factors, such as the inherent subjective nature of grading MRIs, irrespective of experience, may contribute to OA feature prevalence.

The influence of BMI was unable to be assessed as half of the studies did not report BMI.

JBI CRITICAL APPRAISAL CHECKLIST FOR SYSTEMATIC REVIEWS AND RESEARCH SYNTHESES

Author: Silverwood et al. Year: 2015

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	✚	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	✚	☐	☐	☐
3.	Was the search strategy appropriate?	✚	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	✚	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	☐	X	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	✚	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	✚	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	✚	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	☐	X	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	✚	☐	☐	☐
11.	Were the specific directives for new research appropriate?	✚	☐	☐	☐

Overall appraisal: 9/11 (82%)

LIMITATIONS:

Did not assess the quality of the studies.

Excluded non-English language papers, which means that potentially there could be additional studies which were missed.

Moderate heterogeneity for hand OA and high for all other risk factors therefore despite using random effects meta-analysis, some caution is needed in interpreting the pooled ORs.

Critical Appraisal Checklist for Systematic Reviews and Research Syntheses