

Supplementary material S1: research questions developed to drive the literature search

1. What is the added value of imaging to the diagnosis of OA?

Population	People presenting with joint symptoms
Interventions	X ray, US, MRI, CT, radioisotope scanning
Comparators	Clinical diagnosis (without imaging) Other imaging
Outcomes	Confirmation of the diagnosis of OA
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

2. What is the accuracy of different imaging modalities for detecting OA features (soft tissues and bone involvement)?

Population	Patients with OA Hand*, hip, knee, foot**
Interventions	X ray, US, MRI, CT, radioisotope scanning
Comparator (reference standard)	Physical examination Surgery Other imaging techniques
Outcomes	Sensitivity, specificity, Likelihood ratios, Odds Ratio, AUC
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

*Hand involvement includes metacarpophalangeal, proximal and distal interphalangeal and thumb involvement.

** foot involvement includes forefoot, midfoot and ankle

3. In people with suspected OA does imaging increase the detection of alternative diagnosis?

Population	People presenting with joint symptoms
Interventions	X ray, US, MRI, CT, radioisotope scanning
Comparators	Clinical diagnosis without imaging
Outcomes	Non-OA diagnosis
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

4. In people with OA do imaging have an impact on management?

Population	Patients with OA*
Interventions	X ray, US, MRI, CT, radioisotope scanning
Comparators	Clinical management without imaging Management with other imaging
Outcomes	Efficacy, efficiency, accuracy, change in therapy, change in monitoring, change in diagnosis
Study type	Systematic literature reviews, meta-analyses, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

*the setting of each study will be reported

5. What is the prognostic (prediction of outcome) value of imaging in OA?

Population	OA (joint level)*
Interventions	X ray, US, MRI, CT, radioisotope scanning
Comparators	Clinical examination
Outcomes	Symptoms Structural progression Function Quality of life Joint replacement and joint surgery Referral to orthopedic surgeons Mortality
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

*For hand joints, each region will be analyzed separately

6. What is the prognostic (prediction of therapeutic response) value of imaging in OA?

Population	OA (joint level)*
Interventions	X ray, US, MRI, CT, radioisotope scanning
Comparators	Clinical examination
Outcomes	Symptoms Structural progression Function Quality of life Joint replacement and joint surgery Referral to orthopedic surgeons Mortality
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

*For hand joints, each region will be analyzed separately

7. When, how often and under what clinical circumstance should imaging be used in the follow-up of osteoarthritic joints?

Population	OA (joint level)*
Interventions	X ray, US, MRI, CT, radioisotope scanning
Comparators	Other imaging techniques Clinical assessment
Outcomes	Sensitivity to change Symptoms Structure Function Quality of life Joint replacement and joint surgery Referral to orthopedic surgeons Mortality
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

*For hand joints, each region will be analyzed separately

8. When, how often and under what clinical circumstance should imaging be used in the treatment of osteoarthritic joints?

Population	OA: joint level (analyze separately hand joints)
Interventions	X ray, US, MRI, CT, radioisotope scanning
Comparators	Clinical examination
Outcomes	Symptoms Structure Function Quality of life Joint replacement and joint surgery Referral to orthopedic surgeons Mortality
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

9. What is the value of imaging-guided interventions in OA with respect to accuracy, therapeutic response, clinical and imaging outcome?

Population	OA (joint level)*
Interventions	X ray, US, MRI, CT guided interventions
Comparators	Anatomical-guided intervention Guided by other imaging
Outcomes	Efficacy (pain, function, quality of life, number of subsequent injections, number of medical visits, patient satisfaction) Accuracy of the injection Safety Time consumption, cost
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

*For hand joints, each region will be analyzed separately

Due to the overlap in the research questions, questions 8 was eliminated, keeping only question 9.

Additional research questions

What is the performance of different radiographic views in the assessment of OA?

Population	OA (both joint and patient level)
Interventions	X ray (a radiographic view)
Comparators	Other radiographic views
Outcomes	Clinical diagnosis Symptoms Sensitivity to change Structural progression Function Quality of life Joint replacement and joint surgery Referral to orthopedic surgeons Mortality
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies

What is the added value of imaging in guiding intra-articular needle placement compared to anatomically guided procedures, in terms of accuracy, efficacy and safety?

Population	No population restriction (OA, non OA diseases, healthy subjects, cadaveric studies)
Interventions	X ray, US, MRI, CT guided interventions
Comparators	Anatomical-guided intervention
Outcomes	Efficacy (pain, function, quality of life, number of subsequent injections, number of medical visits, patient satisfaction) Accuracy of the injection Safety Time consumption, cost
Study type	Systematic literature reviews, meta-analyses, RCTs, controlled trials, non-controlled trials, diagnostic accuracy studies, cohort studies, cross-sectional studies, case-control studies