Appendix 1:

Criteria used in the present study to evaluate the definitions of hip osteoarthritis used in the literature

Reliability

1. Does the definition provide consistent results when classifying the same conditions (e.g. split-half reliability)?

- Positive if the results are comparable when tested in the same setting, but in a new group (e.g. split-half reliability).

2. Is the intraobserver reliability described?

- Results individual variables/features: Kappa or ICC or Pearson Product Moment Correlation Coefficient (range, CI)
- Results case definition hip OA: Kappa or ICC or Pearson Product Moment Correlation Coefficient (range, CI)
- Are the results specified for experienced observer, specialisation?

3. Is the interobserver reliability described?

- Results individual variables/features: Kappa or ICC or Pearson Product Moment Correlation Coefficient (range, CI)
- Results case definition hip OA: Kappa or ICC or Pearson Product Moment Correlation Coefficient (range, CI)
- Are the results specified for experienced observer, specialisation?

Criterion validity

4. Did the study investigate the validity of the definition with a predefined “gold standard” by expert’s opinion (expert validity), in a cross-sectional study design?

5. Did the study investigate the validity of the definition with a predefined “gold standard” by an “obvious hip OA” (for example a THR) after a certain period of follow-up (predictive validity), in a longitudinal study design?

Construct validity

6. Does the definition discriminate between entities that are thought to be different in a way appropriate for the purpose?

- category is related to a different intervention, **or**
- category is related to a different prognosis, **or**
- category has a different underlying etiological process

7. Do the definition show adequate associations with known risk factors of hip OA? Positive if the definition showed an equal (positive) or higher association than the other definition of hip OA.

Risk factors of hip OA:

- Genetics
- Bone Mineral density
- Biomechanical workload
- Sport activities
- Acetabular dysplasia

8. Do the definition show adequate associations with other symptoms (or signs) of hip OA, than included in the definition?

Symptoms of hip OA:

- hip pain
- limited physical function of the lower limb
- limited ROM of the hip joint
- morning stiffness

For the radiological definitions 1–4 and 7:

Positive if the definition performs a positive association with pain (of the hip) **and/or** limited physical function of the lower limb **and/or** limited ROM of the hip joint **and/or** morning stiffness

For definitions 5 and 6:

Positive if the definition performs a positive association with limited physical function of the lower limb **and/or** limited ROM of the hip joint **and/or** morning stiffness.

For definition 5, the clinical definition of the ACR criteria of hip OA:

Positive if the definition performs a positive association with radiological symptoms (joint space narrowing, osteophytes of femur head, cysts, subchondral sclerosis, and migration of the femur head) of hip OA.

Content validity

9. Is the method of development of the definition clearly specified?

Which method is used?

- Informal: opinion of researcher
- Informal: opinion of (international) “experts”
- Formal: the classification is based on a study population, and frequencies of symptoms are given
- Formal: construction of the groups (classification) with help of clinical endpoints (effect of intervention or known progression)
- Mathematical method: cluster analysis, factor analysis, split-half analysis, classification tree (regression analysis)
- Other method,..

Applicability

10. Is the definition easy to perform (for persons at MD level) without special training?

Positive if no special training for persons with MD level (specific skills needed) is required.

11. Which tests are necessary to perform the definition?

- clinical history
- physical examination/measurements (ROM)
- radiographs
- lab/blood samples