

Hip Disability and Osteoarthritis Outcome Score & Hip Disability and Osteoarthritis Outcome Score-Joint Replacement (HOOS and HOOS-JR)

HOOS: Measures pain, other symptoms, function in daily living, sport and recreation & HRQoL

HOOS-JR: Measures pain & function/daily living after THA

Phases

Pre-op
Post-acute
Active living



ICF

Body function
Activity
Participation (HOOS)



Time

HOOS: 10 mins to complete, 5 mins to score
HOOS-JR: ≤ 3 mins



Administration

Print and electronic versions



Quality



Validity

HOOS: *Construct:* THA/hip OA: Good to excellent correlation with SF-36 subscales ($r=0.4-0.66$), Oxford Hip Score (OA $r=-0.66$ to -0.88 ; THA $r=-0.62$ to -0.85), Lequesne Index ($r=-0.51$ to -0.82), pain VAS ($r=-0.49$ to -0.71).³⁻⁶

HOOS-JR: *External:* Moderate to excellent ($r=0.60-0.94$) correlation with HOOS and WOMAC.⁷



Reliability

Internal consistency:

HOOS: THA: Cronbach's α ranged from 0.76-0.95 for each subscale.⁶ Hip OA: Cronbach's α ranged from 0.66-0.98 for each subscale.^{5,6}

HOOS-JR: High (person separation index=0.86)⁷

Test-retest:

HOOS: THA: Good to excellent (ICC=0.75-0.97) for all domains.⁴ Hip OA: Good to excellent (ICC=0.78-0.97) for all domains.^{5,6,8}

HOOS-JR: No test-retest reliability evidence found



Responsiveness

HOOS: THA: More responsive than WOMAC for pain subscale (SRM 2.11 vs. 1.83), other symptoms (SRM 1.83 vs. 1.28), & other subscales (SRM 1.29-1.70).³ Pre-THA & 3-mos post-op SRMs were 1.97-3.24 with large effect sizes 1.47-2.08.⁵ Greater responsiveness in patients <66 yrs.³

HOOS-JR: Excellent responsiveness (SRM=2.03, 95%CI 1.84-2.22)⁷



Floor/ceiling effects

HOOS: THA: 18% ceiling effect in Sports/Rec subscale pre-op; however this disappeared after surgery.⁵ No floor effect at 6-mos post-op, but ceiling effects ranged from 5% (ADLs) to 19% (pain) in subscales.³

Hip OA/THA candidates: Floor effects most common in Sport/Rec subscale, 4.1-17.8% of subjects had worst possible scores.⁴ Mixed Hip OA/THA: 15 of 39 items had floor effects.⁸

HOOS-JR: Low floor effects 0.6-1.6%, significant ceiling effect (37-46%) 2-yrs post-THA.⁷



Feasibility

Simple, quick to complete & score. Registration for clinical use is recommended.⁹



Instructions

Ask patient to respond to questions based on a one-wk recall period. See 'Relevant Links' for detailed instructions.

Scoring: HOOS: Items scored from 0 to 4, summed for each subscale & transformed to 0-100 scale.¹ A total score is not recommended. No training required.

HOOS-JR: Each item is coded 0 (none) to 4 (extreme) & scored by adding raw values (range 0-24) & converting to 0 to 100 scale using the table provided.²



Interpretation

Direction: HOOS & HOOS-JR: Higher score = better

SEM: HOOS: THA: 4.8 to 10.1 points on 100-point scale⁶

HOOS-JR: No evidence found

MDC: HOOS: THA: 2-yrs post-op, MDC₈₀₋₉₅ ranged from 10-16 points¹⁰

HOOS-JR: MDC₈₀₋₉₅ : 8-13 points¹⁰

MCID: HOOS: THA: 2-yrs post-op = 9 points for all subscales (distribution-based) & 13-36 points (anchor-based) approaches¹⁰

HOOS-JR: 7 (distribution-based) & 18 points (anchor-based) approaches¹⁰

MCII: HOOS: THA: 1-yr post-op = 24 points (pain), 23 points (ADL) & 17 points (QoL) subscales¹⁰

Substantial clinical benefit: HOOS: THA: 2-yrs post-op, ranged from 24-36 points¹⁰

HOOS-JR: 2-yrs post-op, 22 points¹⁰

Normative/Reference values: HOOS: Swedish¹¹ & Danish¹² population norms available for ages 18-84-yrs

HOOS-JR: Normative values based on US sample for ages 18-70+ yrs.¹³

Cut points/ thresholds: No evidence found

PASS: HOOS: THA=91 points (pain), 88 points (ADL), 83 points (QoL) 1-yr post-op¹

HOOS-JR: 77 points at 2-yr post-op¹⁴



Other

Key messages:

HOOS: Recommended. Rigorously developed, extensively researched and commonly used.

HOOS-JR: Provisionally recommended. Significant ceiling effect reported.

Translations: Multiple language versions available. Validated for Dutch, French, Italian, Japanese, Swedish^{4,15,16}

A 5-item short version (HOOS-PS) measuring only function is also available^{1,9}



Relevant Links

HOOS:

[Summary \(Mapi Research Trust, formerly www.koos.nu\)](#)

[Summary & instructions \(Shirley Ryan AbilityLab\)](#)

[Summary \(Physiopedia\)](#)

[Online fillable PDF \(orthopaedicsscores.com\)](#)

[Online fillable PDF \(orthotoolkit.com\)](#)

HOOS-JR:

[Summary, instructions & PDF](#)



References

1. Paulsen A, Roos EM, et al. Minimal clinically important improvement (MCII) and patient acceptable symptom state (PASS) in total hip arthroplasty (THA) patients 1 year postoperatively. *Acta Orthopaedica* 2014; 85(1):39-48. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3940990/>
2. Lyman S. HOOS, JR. and KOOS, JR. Outcomes Surveys. Hospital for Special Surgery. 2022. Accessed September 19 2022. <https://www.hss.edu/hoos-jr-koos-jr-outcomes-surveys.asp>
3. Nilsdotter A-K, Lohmander LS, et al. Hip disability and Osteoarthritis Outcome Score (HOOS)-Validity and responsiveness in total hip replacement. *BMC Musculoskel Disorders*. 2003;4:10. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC161815/>
4. Weick JW, Bullard J, et al. Measures of hip function and symptoms. *Arthritis Care Res (Hoboken)*. 2020; 72(Suppl 10):200-18. <https://deepblue.lib.umich.edu/handle/2027.42/163446>
5. Ornetti P, Parratte S, et al. Cross-cultural adaptation and validation of the French version of the Hip disability and Osteoarthritis Outcome Score (HOOS) in hip osteoarthritis patients. *Osteoarthritis Cartilage*. 2010;18(4):522-9. [https://www.oarsijournal.com/article/S1063-4584\(09\)00329-X/fulltext](https://www.oarsijournal.com/article/S1063-4584(09)00329-X/fulltext)
6. de Groot IB, Reijman M, et al. Validation of the Dutch version of the Hip disability and Osteoarthritis Outcome Score. *Osteoarthritis Cartilage*. 2007;15:104e109. [https://www.oarsijournal.com/article/S1063-4584\(06\)00202-0/fulltext](https://www.oarsijournal.com/article/S1063-4584(06)00202-0/fulltext)
7. Lyman S, Lee YY, et al. Validation of the HOOS, JR: A short-form hip replacement survey. *Clin Orthop Relat Res*. 2016 Jun;474(6):1472-82. https://journals.lww.com/clinorthop/Fulltext/2016/06000/Validation_of_the_HOOS_JR_A_Short_form_Hip.20.aspx
8. Klässbo M, Larsson E, et al. Hip disability and osteoarthritis outcome score. An extension of the Western Ontario and McMaster Universities Osteoarthritis Index. *Scand J Rheumatol*. 2003;32(1):46-51. PMID: [12635946](https://pubmed.ncbi.nlm.nih.gov/12635946/)
9. MAP Research Trust. Hip Injury and Osteoarthritis Outcome Score (HOOS). MAPI Research Trust. October 2023. Accessed December 1 2023. <https://eprovide.mapi-trust.org/advanced-search?search=HOOS>
10. Lyman S, Lee YY, et al, What are the minimal and substantial improvements in the HOOS and KOOS and JR versions after total joint replacement. *Clin Orthop Relat Res*. 2018;476(12):2432-41. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6259893/>
11. Sundén A, Lidengren K, et al. Hip complaints differ across age and sex: a population-based reference data for the Hip disability and Osteoarthritis Outcome Score (HOOS). *Health Qual Life Outcomes*. 2018;16(1):200. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6182801/>
12. Larsen P, Rathleff MS, et al. National population-based reference data for the Hip Disability and Osteoarthritis Outcome Score (HOOS). *Arch Orthop Trauma Surg*. 2023;143(11):6865-74. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10542294/>
13. Raja A, Jenkins A, et al. Normative data of the Hip disability and Osteoarthritis Outcome Score, JR in a healthy United States population. *J Arthroplasty*. 2019;34(6):1122-26. PMID: [30879873](https://pubmed.ncbi.nlm.nih.gov/30879873/)
14. Kunze KN, Fontana MA, et al. Defining the Patient Acceptable Symptom State for the HOOS JR and KOOS JR after primary total joint arthroplasty. *J Bone Joint Surg Am*. 2022;104(4):345-52. PMID: [34958538](https://pubmed.ncbi.nlm.nih.gov/34958538/)
15. Torre M, Luzi I, et al. Cross-cultural adaptation and validation of the Italian version of the Hip disability and Osteoarthritis Outcome Score (HOOS). *Health Qual Life Outcomes*. 2018;16(1):115. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5987663/>
16. Satoh M, Masuhara K, et al. Cross-cultural adaptation and validation reliability, validity of the Japanese version of the Hip disability and Osteoarthritis Outcome Score (HOOS) in patients with hip osteoarthritis. *Osteoarthritis Cartilage*. 2013;21(4):570-3. PMID: [23376014](https://pubmed.ncbi.nlm.nih.gov/23376014/)

Additional References:

Sato EH, Stevenson KL, et al. Recovery curves for patient reported outcomes and physical function after total hip arthroplasty. *J Arthroplasty*. 2023;38:S65-S71. PMID: [37068568](https://pubmed.ncbi.nlm.nih.gov/37068568/)

