

Knee injury and Osteoarthritis Outcome Score & Knee injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS & KOOS-JR)

KOOS: Measures pain, symptoms, function in daily living, sport and recreation & HRQoL^{1,2}

KOOS-JR: Measures stiffness, pain & ADL after TKA

Phases

Pre-op
Post-acute
Active living

ICF

Body function
Activity
Participation (KOOS)
Quality of life (KOOS)

Time

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

Administration

Paper and electronic versions

Quality

Validity

Construct:
KOOS: TKA: Subscales had small to moderate correlations with knee flexion ($r=0.21-0.43$).³ Good correlations with SF-36 scales measuring similar constructs (bodily pain & pain, $r_s=0.62$; physical function & ADL, $r_s=0.48$).⁴ Less strongly correlated with SF-36 mental health subscales.³
KOOS-JR: Good to excellent correlation with KOOS subscales (pain 0.89 (95%CI 0.88-0.91); ADL 0.87 (95%CI 0.85-0.88)).⁵

Reliability

Internal consistency:
KOOS: Knee OA: ADL, sport/recreation, & QoL subscales have adequate internal consistency ranging from ICC=0.78-0.98, while pain & symptoms subscales have lower or adequate ICC (0.65-0.83).^{3,6}
KOOS-JR: Person Separation Index=0.84-0.90^{5,7}
Test-retest:
KOOS: TKA: ICC ranged from 0.58 (pre-op Sport/Rec) to 0.94 (post-op pain).⁴
 Knee OA: ICC ranged from 0.60-0.94 with knee pain & ADL subscales performing best.^{3,6,8}
KOOS-JR: No evidence found

Responsiveness

KOOS: TKA: Subscale ES ranged from 1.18–2.86, 6-mos post-op & 1.08-3.54, 12-mos post-op.⁴
 Knee OA: SRM values ranged from 0.89–1.93 & ES from 1.3-2.8.⁹
KOOS-JR: 3-mos post-op SRM = 1.49 & ES = 0.98; 6-mos SRM = 1.16 & ES = 0.82¹⁰; TKA: SRM 1.70 at 2-yrs post⁵

Floor/ceiling effects

KOOS: TKA: Floor effects minimal at 6 & 12-mos post-op. At 6-mos post-op, 15% (pain) & 16% (sport/rec) had best possible scores, other subscales had low ceiling effects.⁴ At 12-mos post-op, 22% (pain) & 17% (QoL) had best possible scores.⁴ At 2-yrs post-op, floor effects were 22-26% for sport/rec & ceiling effects were 27-29% for pain & 17-20% for ADL.⁵ Severe OA awaiting TKA: Minimal floor & ceiling effects with exception of sport/rec subscale (40-48%).^{4,9}
KOOS-JR: At 2-yrs post-op, minimal floor (0.4-1.2%) & some ceiling effects (18.8-21.8%)⁵

Feasibility

Quick and easy for patient to complete. Some additional time required by clinician to score although online versions with automatic scoring are available (see Relevant Links). Registration for clinical use is recommended.¹¹



Instructions

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

Scoring:

KOOS: Items scored from 0 to 4, summed for each subscale & transformed to 0-100 scale.^{3,12} A total score is not recommended.³

KOOS-JR: Each item is coded 0 (none)-4 (extreme) & scored by adding the raw values (range 0-28) & converting them to 0 to 100 scale using the table provided.¹³



Interpretation

Direction: KOOS & KOOS-JR: Higher score = better.

SEM: KOOS: Moderate knee OA: Pain=9.0; Symptoms=8.0; ADL=5.8; Sport/rec=11.6; QoL=7.4³

KOOS-JR: No evidence found

MDC: KOOS: Knee OA: Ranges from 13.4 in pain subscale to 21.1 in QoL5 (ADL 15.4, Symptoms 15.5).³

KOOS-JR: MDC₈₀-MDC₉₅ ranged from 7-11 points 2-yrs post-op.¹⁴

MCID: KOOS: 8-10 points¹²; 8-9 points at 2-yrs post-op (distribution method) & 7-18 points (anchor-based method)⁶

KOOS-JR: 6 points at 2-yrs post-op (distribution method) & 14 points (anchor based)¹⁴

MPCI: KOOS: A change of 8-10 points may represent a minimal perceptible clinical improvement (MPCI).¹⁵

KOOS-JR: No evidence found

Substantial clinical benefit: KOOS: 15-23 points at 2-yrs post-op (anchor based)¹⁴

KOOS-JR: 20 points at 2-yrs post-op (anchor based)¹⁴

Cut points/Thresholds: No evidence found

Normative/Reference Values: KOOS: TKA: Reference Swedish-based scores at baseline, 6 & 12-mos are available.⁴ US-based population, normative values available for ages 18-64-yrs.¹⁶ KOOS-JR: No evidence found

PASS: KOOS: Pain = 84.5 points at 1-yr, 87.7 points at 3-yrs; Symptoms = 80.5 points at 1-yr, 84 points at 3-yrs; ADLs = 83 points at 1-yr, 87.5 points at 3-yrs; QoL = 66 points at 1-yr, 66 points at 3-yrs.¹⁷

KOOS-JR: 64 points at 2-yrs post-op¹⁸



Other

Key messages: Recommended. Rigorously developed, extensively researched (particularly for TKR 6-12 mos post-op) and commonly used. Potential ceiling effect for KOOS-JR and floor effect for Sport and Recreation subscale within 6-mos post-op.

Translations: Available in multiple languages.¹¹ A 7-item short version (KOOS-PS) measuring only function is also available (KOOS-PS).¹¹



Relevant Links

KOOS:

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

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

[Summary \(Physiopedia\)](#)

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

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

KOOS-JR:

[Summary, instructions & PDF](#)



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