

Stair Climb Test (SCT)

Measures functional strength, dynamic balance & agility¹

Phases

Pre-op
Post-acute
Active living



Pre-op
Post-acute
Active Living



~ 2 mins to complete and score^{1,2}



Stairs (8–14 steps) with handrails, timer/stopwatch
Where possible, the 9-step stair test with 20cm (8") step height (range 16-20 cm) and handrail are recommended²



Quality



Validity

Criterion: TKA: Good correlation ($r=0.59-0.68$) with figure-8 walk test, gait speed & chair stand tests.¹

Construct: Hip/Knee OA: Moderate correlation with WOMAC physical function subscale ($r=0.53$)¹; 6-step SCT has strong correlation with 30s CST ($r=-0.68$) & 40m FPWT ($r=0.83$).⁵ Knee OA: Faster SCT moderately correlated with quadriceps ($r=-0.50$) & hamstring strength ($r=-0.52$).¹ Some studies have questioned construct validity for both hip & knee OA using the 10-step SCT.^{6,7}



Reliability

Inter-rater: TKA: ICC=0.94^{1,3} Hip/Knee OA: Sufficient inter- & intrarater reliability (ICC=0.78).⁸

Test-retest: Hip/knee OA: Excellent (ICC=0.83) in advanced hip/knee OA awaiting TJA using both 6 and 9 steps.^{4,5} Other studies reported higher ICC values (0.90-0.94) for hip/knee OA.^{1,6} Community-dwelling adults with hip/knee OA: Test-retest & interrater reliability of 11-step SCT was poor.⁸



Responsiveness

TJA: 9-step SCT responsive in detecting initial deterioration (SRM=-1.74) and subsequent improvement (SRM=1.98) in patients during post-acute phase.⁹ TKA: 12-step SCT responsive 1-mo (ES=-0.71) & 12-mos (ES=0.84) post-op.¹ Hip/knee OA: Less responsive (ES=0.20; SRM=0.35)⁵ at detecting changes in advanced hip/knee OA & not recommended to assess change pre-TJA.^{5,6,8}



Floor/ceiling effects

No evidence found



Feasibility

Appropriate and feasible for assessing and detecting change in function.



Instructions

Ask patients to ascend & descend the flight of stairs as quickly and safely as possible. Record use of the handrail & walking aid, if needed.² Score the time it takes from when you say 'go' to when the patient has both feet on floor at bottom of stairs. Encourage patient to wear comfortable, non-slip footwear. See 'Relevant Links' for detailed instructions.

Scoring: Total time to ascend and descend steps is recorded to the nearest 100th second



Interpretation

Direction: Lower values (in secs) = better performance

SEM: THA: 9-steps, 3-mos post-op = 0.20 secs (5%)¹⁰; TKA: 11-steps = 0.14 secs³; Knee/Hip OA: 0.44 secs⁵

MDC₉₅: TKA: 11-steps = 3.2 secs³; THA: 9-steps, 3-mos post-op = 0.4 secs¹⁰; Knee OA: 9-steps, 0.2-2.0 secs (20%) proposed as representative of a true change beyond measurement error.¹¹

MIC: Hip/knee OA: 6-steps=1.37 secs (range 0.78-1.95 secs)⁵

Normative/Reference values: No normative values for TJA¹

Cut points/Thresholds: Hip OA: 9 steps, patients able to ascend (>11.5 secs), descend (>8.3 secs) & ascend/descend (>19.1 secs) likely to have more advanced Grade 4 OA damage on x-ray.¹²

PASS: No evidence found



Other

Key messages: Recommended. A core OARSI performance measure for hip/knee OA and TJA. Suitable to detect change in function post-surgery but important to use same set of stairs when re-testing. Supervise closely to ensure safety.

Virtual administration: In older adults with chronic lower limb MSK disorders, virtual SCT had excellent test-retest reliability (ICC=0.91) with SEM = 0.14 secs/stair & MDC₉₅ = 0.38 secs/stair.¹³ Good agreement with in-person administration (ICC 0.75).¹³



Relevant Links

[Summary & instructions \(OARSI\)](#)

[Video \(OARSI\)](#)

[Virtual Administration \(Centre for Health, Exercise and Sports Medicine, University of Melbourne\)](#)



References

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