

Single leg stance test (SLS)

Measures static balance

Phases

Pre-op
Post-acute¹
Active living



Body function
Activity



~ 5 mins to
administer and
score



Stopwatch or phone



Quality



Validity

Criterion: TKA: Good correlation with Berg Balance Scale ($r=0.70$) and Fall Efficacy Scale-International ($r=-0.54$).²



Reliability

Test-retest: TKA: Good (ICC=0.72).² Hip OA: Good (ICC=0.82, 95% CI 0.64-0.91).³ Community dwelling older adults: ICC=0.86.⁴
Interrater: Hip OA: Good (ICC=0.89, 95% CI 0.78-0.95).³



Responsiveness

Effect sizes: TKA: SMD=0.49 from pre-op to 6-mos post-op & multiple regression analyses showed that the SLS test was the only preoperative factor associated with post-op ADL (compared to Pain VAS & TUG).⁵ Knee OA: Moderate SMD (SMD 0.63 to 0.76) when compared to healthy controls.⁶



Floor/ceiling effects

Hip OA: Significant ceiling effect with 44-57% able to complete 30 sec test.³



Feasibility

Quick and simple with no equipment and minimal space required. To address possible safety issues, test with eyes open.



Instructions

Ask patient to stand on one-leg, arms across chest with hands touching shoulders. For safety, test only with eyes open. Measure time from when the patient takes one leg off the floor until they: (1) touch the free limb to the ground, (2) touch their legs together, (3) perform excessive trunk or upper body movements, or (4) remove their hands from their chest to regain balance. Allow 2 or 3 attempts. Test usually capped at 30 or 45 secs. Repeat on non-involved side for comparison. Can also instruct patient to place hands on hips; use consistent instructions each time. See 'Relevant Links' for detailed instructions.

Scoring: Record the best result (maximum time in secs) across the 2-3 attempts.



Interpretation

Direction: Higher value (secs) = better function

SEM: TKA: 6-mos post-op=7.08 secs²; Hip OA: 3.46 (95% CI 2.76-4.66) secs³; Community dwelling older adults: 8.7 secs⁴

MDC₉₅: TKA: 6-mos post-op=19.62 secs²; Hip OA: MDC₉₀=8.08 secs (6.44-10.87) (involved side) or 37.7% change (same day) & 10.78 (8.52-14.67) secs or 51.4% change (over 1-wk)³; Community dwelling older adults: 24.1 secs⁴; Lower functioning community-dwelling older females with SLS<20 secs: 8.3-11.6 secs⁷

Cut points/Thresholds: Healthy community-living adults: Patients unable to perform the SLS for at least 5 secs are considered at an increased risk (RR: 2.13, CI 1.04-4.34) of an injurious fall.⁸ Middle-aged & older adults: “ability to successfully complete the 10-s SLS is independently associated with all-cause mortality.”⁹ Older adults: Moderate sensitivity & specificity to differentiate between fallers & non-fallers at different cut-off values (sensitivity 0.51-0.67, specificity 0.61-0.89).¹⁰

PASS: No evidence found

Normative/Reference values: TKA: 6-mos post-op median score: 10.01 secs.² Knee OA: Significantly worse performance compared to healthy controls (24-42 secs vs 50-66 secs in healthy controls).⁶ Normative values for adults ages 18-80+ available.¹¹



Other

Key messages: Provisionally recommended. Although valid and reliable, other performance tests (TUG, 10mWT, 5xSST, 2MWT) are superior to the SLS test in evaluating balance.²

Virtual administration: Older adults with chronic lower limb MSK disorders: Virtual SLS test had moderate to good agreement with in-person test (ICC=0.71-0.82), moderate to good test-retest reliability (ICC=0.69-0.84).¹² SEM=3.37-5.13 secs & MDC₉₅=9.34-14.23 secs when tested virtually.¹² Older adults: Virtual SLS test had high agreement with in-person administration (ICC 0.79, 95% CI 0.36-0.93).¹³ SEM=7.8 secs or 15.5% and MDC=21.6 secs or 43.1% when tested virtually.¹³



Relevant Links

[Summary & instructions \(Pennsylvania PT Association Neuro Special Interest Group\)](#)

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

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

[Video \(Measurement & Evaluation Techniques\)](#)



References

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