

Four Square Step Test (4SST, FSST)

Measures dynamic balance

Phases

Pre-op
Acute
Post-acute
Active living



Activity



< 5 mins



Stopwatch, four 90cm canes
(or 4 strips of tape on floor)



Quality



Validity

Concurrent validity: THA: Good correlation with Figure of 8 Walk test ($r=0.7$) & moderate with the Berg Balance Scale ($r=0.6$).¹

Construct validity: Unspecified knee pain: Patients > 65 yrs were twice as likely (95% CI, OR 1.99, 7.18) to have a slow test time (>10 secs).²



Reliability

Test-retest: TKA: Excellent (ICC=0.97) 6-mos post-op³

Interrater & intrarater: Hip OA: Good interrater (ICC=0.86) & intrarater (ICC=0.83) in community adults aged >50⁴



Responsiveness

No evidence found



Floor/ceiling effects

No evidence found



Feasibility

Quick & simple with minimal equipment/space required.



Instructions

Ask the patient (with usual footwear & gait aids) to step into each of 4 squares marked out on floor using canes or tape (modified test) & then reverse the direction. This sequence requires stepping forward, backward & sideways to the right & left. Use standardized instructions & a warm-up trial. See 'Relevant Links' for detailed instructions.

Scoring: Record the time to complete in seconds for the fastest of 2 trials.



Interpretation

Direction: Less time = better performance

SEM: TKA: 1.11 secs (6-mos post-op)³

MDC₉₀: Hip OA: 2 secs (community adults > age 50)⁴

MCID: No evidence found

SRD₉₅: TKA: (smallest real difference at 95% confidence level) = 3.10 secs (6-mos post-op)³



Interpretation (contd.)

Normative/Reference values: Healthy active adults: < 6 secs (age < 30); < 7.49 secs (age 50-65); < 10 secs (age 65-80)⁵

Cut points/thresholds: Community dwellers (age \geq 65): > 15 secs are considered multiple fallers (2 or more falls annually), scores \leq 15 secs are non-multiple fallers^{6,7}

PASS: No evidence found

Effect size: No evidence found



Other

Key messages: Provisionally recommended. Not suitable for people who use walkers. Also, if the person is unable to complete the sequence twice, they are not given a score & thus it may not be feasible for those who have a significant balance or cognitive impairment.² Using tape markers rather than sticks can increase the proportion of people who can complete the test.²



Relevant Links

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

[Video \(OP Solutions\)](#)



References

1. Batting M, Barker K. Reliability and validity of the Four Square Step Test in patients with hip osteoarthritis before and after total hip replacement. *Physiotherapy* 2019;105(2):244-53. PMID: [30630621](#)
2. Moore M, Barker K. The validity and reliability of the four square step test in different adult populations: a systematic review. *Syst Rev.* 2017;6(1):187. <https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-017-0577-5>
3. Unver B, Sevik K, et al. Reliability of the Modified Four Square Test (mFSST) in patients with primary total knee arthroplasty. *Physiother Theory Pract* 2021;37(4):535-9. PMID: [31232623](#)
4. Choi YM, Dobson F, et al. Interrater and intrarater reliability of common clinical standing balance tests for people with hip osteoarthritis. *Physical therapy.* 2014;94(5):696-704. PMID: [24557648](#)
5. Langford Z. The Four Square Step Test. *J Physiother.* 2015;61(3):162. PMID: [26096011](#)
6. Dite W, Temple VA. A clinical test of stepping and change of direction to identify multiple falling older adults. *Arch Phys Med Rehabil.* 2002;83(11):1566-71. PMID: [12422327](#)
7. Cleary K, Skornyakov E. Predicting falls in older adults using the four square step test. *Physiother Theory Pract.* 2017;33(10):766-71. PMID: [28771062](#)

