

## Balance Evaluation Systems Test (BESTest)

Measures dynamic balance, functional mobility and gait

### Phases

Pre-op  
Post-acute  
Active living



Activity



30 mins



### Equipment

Stopwatch; measuring tape mounted on wall for Functional Reach test; ~60 cm x 60cm (2 X 2 ft) 4" medium-density Tempur® foam; 10° incline ramp (at least 60cm x 60cm (2 x 2 ft)); 15cm (6") stair step; 23cm (9") high box (~2 stacked shoeboxes); 2.5 Kg (5-lb) free weight; firm chair with arms; masking tape; paper form and pen/pencil



## Quality



### Validity

*Concurrent & Convergent:* TKA: Moderate-to-high associations with the Functional Gait Assessment ( $r=0.73-0.81$ ), Berg Balance Scale ( $r=0.64-0.78$ ), & Activities-specific Balance Confidence ( $r=0.42-0.48$ ) at 2, 12 & 24-wks post-op<sup>1</sup>



### Reliability

*Interrater:* TKA: Excellent [ICC=0.99 (95% CI 0.99-0.99)]<sup>1</sup>  
*Intrarater:* TKA: Excellent [ICC=0.96 (95% CI 0.93-0.98)]<sup>1</sup>  
*Internal:* TKA: Excellent (Cronbach alpha=0.98)<sup>1</sup>



### Responsiveness

*Internal:* TKA: SRM: 2-24-wks post-op ranged from 0.6-1.14<sup>2</sup>



### Floor/ceiling effects

TKA: No significant floor or ceiling effects between 2-24-wks post-op.<sup>1</sup>



### Feasibility

Free for clinical & research purposes. Time consuming (~30 mins) and requires adherence to detailed instructions & several pieces of equipment including purchase of ~\$100 Tempur foam.



## Instructions

Ask patient to perform the 36 balance tasks as per instructions (with flat heeled shoes or barefoot). Each task is scored from 0-3 based on performance. If patient needs an assistive device to perform a task, score that item one category lower. If physical assistance is needed to perform an item, score the lowest category (0) for that item. See 'Relevant Links' for detailed instructions

**Scoring:** Scored on a 4-level ordinal scale (0-3) where 0 = severe impairment & 3= no impairment. For items with a right & left assessment, use the lower score to determine the total score. Score can also be normalized to 0-100%.



## Interpretation

**Direction:** Higher scores = better functional ability

**SEM:** TKA: 2.24 (95% CI 1.86-2.83)<sup>1</sup>

**MDC<sub>95</sub>:** TKA: 6.22<sup>1</sup>

**MCID:** TKA: Anchor-based: absolute=8 points, relative=7.5% & Distribution-based: absolute=6 points, relative= 5.2%<sup>3</sup>

**Cut points/thresholds:** No evidence found

**PASS:** No evidence found

**Normative/Reference values:** Healthy Canadian adults: 95.7 (age 50-59), 91.4 (age 60-69), 85.4 (age 70-79), 79.4 (age 80-89)<sup>4</sup>



## Other

**Key messages:** Provisionally recommended. Established validity, reliability, responsiveness and interpretability in TKA population. No studies were found assessing measurement properties in THA population. Test is used with OA population but no psychometric/measurement evidence available. Clinical feasibility impacted by the equipment and time required.

**Translations:** Available in 10 languages including French.



## Relevant Links

[Tool, scoring sheet & instructions \(BESTest\)](#)

[Instructions with patient script \(BESTest\)](#)

[Training \(BESTest\)](#)

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

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

[Video \(BESTest\)](#)



## References

1. Chan AC, Pang MY. Assessing balance function in patients with total knee arthroplasty. *Phys Ther.* 2015;95(10):1397-407. <https://academic.oup.com/ptj/article/95/10/1397/2686464?login=false>
2. Chan ACM, Ouyang XH, et al. Recovery of balance function among individuals with total knee arthroplasty: Comparison of responsiveness among four balance tests. *Gait Posture.* 2018;59:267-71. <https://www.sciencedirect.com/science/article/pii/S0966636217309761?via%3Dihub>
3. Chan ACM, Pang MYC, et al. Minimal clinically important difference of four commonly used balance assessment tools in individuals after total knee arthroplasty: A prospective cohort study. *PM R.* 2020;12(3):238-45. PMID: [31359626](#)
4. O'Hoski S, Winship B, et al. Increasing the clinical utility of the BESTest, mini-BESTest, and brief-BESTest: normative values in Canadian adults who are healthy and aged 50 years or older. *Phys Ther.* 2014;94(3):334-42. <https://pubmed.ncbi.nlm.nih.gov/24092900/>

