

## Brief Balance Evaluation Systems Test (Brief-BESTest)

Measures dynamic balance, functional mobility and gait.

### Phases

Pre-op  
Post-acute  
Active living



### ICF

Activity



### Time

10 mins



### Equipment

Stopwatch; measuring tape mounted on wall for Functional Reach Test; ~ 60cm x 60cm (2 X 2 ft) 4" medium density Tempur® foam; firm chair with arms; with 3m in front marked with tape for Get Up and Go test; masking tape to mark 3m & 6m lengths on the floor for Get Up and Go; paper form, pen/pencil.



## Quality



### Validity

**Criterion and construct:** Multiple populations: In a systematic review (n=24 studies, including TKA) criterion validity =  $r > 0.71$  and construct validity =  $r > 0.50$ .<sup>1</sup>

**Concurrent & convergent:** TKA: Moderate-to-high associations with the Functional Gait Assessment ( $r=0.59-0.72$ ), Berg Balance Scale ( $r=0.64-0.74$ ) & Activities-specific Balance Confidence ( $r=0.34-0.50$ ) at 2, 12 & 24-wks post-op.<sup>2</sup>



### Reliability

**Interrater:** TKA: Excellent (ICC=0.97 (95% CI 0.94-0.98)<sup>2</sup> to 0.99 (95% CI 0.97-0.99).<sup>3</sup> ICC on six subscales ranged from 0.67-1.0 one-month post-op.<sup>3</sup>

**Intrarater:** TKA: Excellent (ICC=0.94 (95% CI 0.90-0.97)<sup>2</sup> to 0.98 (0.97-0.99).<sup>3</sup> ICC on six subscales ranged from 0.68-1.0 one-month post-op.<sup>3</sup>

**Internal Consistency:** TKA: Excellent overall Cronbach alpha ( $\alpha$ )=0.97 and moderate-excellent on six subscales (0.68-0.94).<sup>3</sup>



### Responsiveness

**Internal:** TKA: SRM: 2-24-wks post-op ranged from 0.27-0.91<sup>4</sup>



### Floor/ceiling effects

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



### Feasibility

Free for clinical & research purposes. Moderately time consuming, requires adherence to detailed instructions and purchase of ~\$100 Tempur foam.



## Instructions

Patient performs 6 balance tasks (includes all 6 postural control subsystems) as per test instructions. Each task is scored from 0-3 based on performance. Patients can be tested with flat heeled shoes or barefoot. If an assistive device is needed for an item, 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:** 6-items scored on a 4-level ordinal scale (0-3) where 0 = severe impairment & 3 = no impairment. Two items include both a right and left component in the total score.



## Interpretation

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

**SEM:** TKA: 0.573 to 1.15 (95% CI 0.95-1.45)<sup>2</sup>

**MDC<sub>95</sub>:** TKA: 1.573 to 3.19<sup>2</sup>

**MCID:** TKA: Anchor-based: absolute=3 points, relative=10.4% & Distribution-based: absolute= 2 points, relative= 9.2%<sup>5</sup>

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

**PASS:** No evidence found

**Normative/Reference values:** Healthy Canadian Adults: 22.7 (age 50-59), 20.5 (age 60-69), 18.8 (age 70-79), 15.0 (age 80-89).<sup>6</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. Requires less time but the same equipment as the BESTest.

**Translations:** Available in 3 languages including French.



## Relevant Links

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

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

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

[Video \(Jennifer Nash\)](#)



## References

1. Lo CWT, Lin CY, et al. Psychometric properties of Brief-Balance Evaluation Systems Test among multiple populations: A systematic review and meta-analysis. Arch Phys Med Rehabil. 2022;103(1):155-75.e2. PMID: [34015349](#)
2. 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>
3. Mital SB, Ramalingam TA, et al. Intra and inter-rater reliability of Brief Balance Evaluation System Test in patients with total knee arthroplasty. Indian J Physiother Occup Ther 2018;12(1):144–50. <https://ijpot.com/scripts/IJPOT%20Jan-March%202018.pdf>
4. 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>
5. 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](#)
6. 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/>

