

# Balance Assessments

**Outcome measures** are used to capture change in the health of an individual that is attributable to an intervention. Assessment of patients can be completed by performing outcome measures at the initial patient assessment, and then again at follow-up visits. The following outcomes measures, plus pre- and post-enrollment falls data, are used to assess mobility in the RxFunction walk2Wellness clinical trial ([clinicaltrials.gov](https://clinicaltrials.gov); NCT #03538756).

## Functional Gait Assessment (FGA)

**Description:** Ordinal scale assessment of postural stability during walking and an individual's ability to perform multiple motor tasks while walking. Modified from the Dynamic Gait Index (DGI) to have less of a ceiling effect.<sup>i</sup>

**Supported Use:** Physical therapy clinical practice guidelines "Core Set of Outcome Measures for Adults with Neurologic Conditions."<sup>ii</sup>

**Cut-Off Score:** Score of  $\leq 22/30$  predicts unexplained falls in community-dwelling older adults.<sup>iii, iv</sup>

**Minimally Clinically Important Difference (MCID):** Increase  $\geq 4$  for community-dwelling elderly individuals.<sup>v</sup>

### FGA Items (scored 0-3)

1. Gait on Level Surface
2. Change in Gait Speed
3. Gait & Horizontal Head Turns
4. Gait & Vertical Head Turns
5. Gait & Pivot Turn
6. Step Over Obstacle
7. Gait Narrow Base of Support
8. Gait with Eyes Closed
9. Ambulating Backwards
10. Staircase up & down

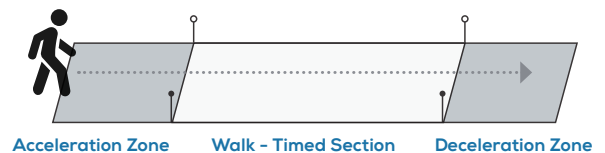
## 10-Meter Walk Test, Gait Speed

**Description:** Timed test to assess walking speed over a short duration. May be performed at self-selected and fast speeds.

**Supported Use:** CDC-recommended STEADI test protocol for balance function<sup>vi</sup> and physical therapy clinical practice guidelines "Core Set of Outcome Measures for Adults with Neurologic Conditions."<sup>ii</sup> Gait speed is an important predictor of survival in older adults.<sup>vii</sup>

**Cut-Off Score:** Gait speed  $\leq 1.0$  m/s indicates need for intervention to reduce risk of falling.<sup>viii</sup>

**Minimally Clinically Important Difference (MCID):** Small meaningful change = 0.05 m/s; Substantial meaningful change 0.13 m/sec.<sup>ix</sup>



## Activities-specific of Balance Confidence Scale (ABC)

**Description:** Self-reported measure of balance confidence in performing various daily activities.

**Supported Use:** Physical therapy clinical practice guidelines "Core Set of Outcome Measures for Adults with Neurologic Conditions."<sup>ii</sup>

**Cut-Off Score:** Scores  $< 67\%$  indicate risk for falling and 84% of the time accurately classifies individuals who fall.<sup>x</sup>

**Minimally Clinically Important Difference (MCID):** Not established in community-dwelling elderly, MDC established in Parkinson's population = 13 points.<sup>xi</sup>

"How confident are you that you will not lose your balance or become unsteady when you ..."

## Timed Up and Go

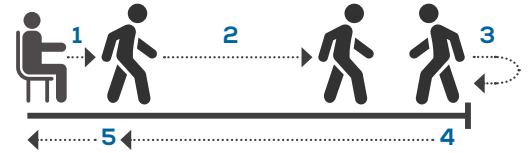
**Description:** Timed test to assess mobility, balance, walking ability, and fall risk in older adults. Designed to be tested while patient is walking at comfortable speed.

**Supported Use:** CDC recommended STEADI test protocol for balance function.<sup>vi</sup>

**Cut-Off Score:**  $\geq 12$  seconds indicates risk of falls for community-dwelling elderly.<sup>xii</sup>

**Minimally Clinically Important Difference (MCID):** Not established in community-dwelling elderly.

### Timed Up and Go (TUG) Test:



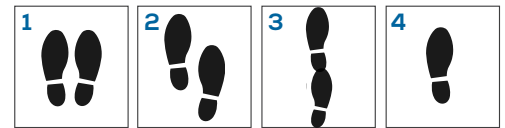
## 4 Stage Balance Test

**Description:** Timed test assessing ability to maintain standing positions that get progressively harder and are performed with eyes open. Stages are passed if the patient can hold the stance for 10 seconds.

**Supported Use:** CDC-recommended STEADI test protocol for balance function.<sup>vi</sup>

**Cut-Off Score:** An inability to maintain tandem stance for 10 seconds with eyes open is associated with higher risk of falling.<sup>xiii, xiv</sup>

**Minimally Clinically Important Difference (MCID):** Not established.



## References

- i S Lin, J.H., Hsu, M., Hsu, H., Wu, H., & Hsieh, C. (2010). Psychometric comparisons of 3 functional ambulation measures for patients with stroke. *Stroke*, 41 9, 2021-5 .
- ii Moore, J. L., Potter, K., Blankshain, K., Kaplan, S. L., O'Dwyer, L. C., & Sullivan, J. E. (2018). A Core Set of Outcome Measures for Adults With Neurologic Conditions Undergoing Rehabilitation: A CLINICAL PRACTICE GUIDELINE. *Journal of neurologic physical therapy* : JNPT, 42(3), 174-220. doi:10.1097/NPT.0000000000000229
- iii Wrisley D. M., Marchetti G. F., Kuharsky D. K., Whitney S. L. (2004). Reliability, internal consistency, and validity of data obtained with the functional gait assessment. *Phys. Ther.* 84 906-918.
- iv Diane M. Wrisley, Neeraj A. Kumar, Functional Gait Assessment: Concurrent, Discriminative, and Predictive Validity in Community-Dwelling Older Adults, *Physical Therapy*, Volume 90, Issue 5, 1 May 2010, Pages 761-773, <https://doi.org/10.2522/ptj.20090069>
- v Marianne Beninato, Arlene Fernandes, Laura S. Plummer, Minimal Clinically Important Difference of the Functional Gait Assessment in Older Adults, *Physical Therapy*, Volume 94, Issue 11, 1 November 2014, Pages 1594-1603, <https://doi.org/10.2522/ptj.20130596>
- vi Materials for Healthcare Providers | STEADI - Older Adult Fall Prevention | CDC Injury Center. (n.d.). Retrieved from <https://www.cdc.gov/steadi/materials.html>
- vii Hardy, S. E., Perera, S., Roumani, Y. F., Chandler, J. M. and Studenski, S. A. (2007). Improvement in Usual Gait Speed Predicts Better Survival in Older Adults. *Journal of the American Geriatrics Society*, 55: 1727-1734. doi:10.1111/j.1532-5415.2007.01413.x
- viii Fritz, S. & Lusardi, M. (2009). White Paper: Walking speed: the sixth vital sign. *Journal of Geriatric Physical Therapy*, 32(2), 2-5. doi:10.1519/00139143-200932020-0000
- ix Perera, S., Mody, S. H., Woodman, R. C. and Studenski, S. A. (2006). Meaningful Change and Responsiveness in Common Physical Performance Measures in Older Adults. *Journal of the American Geriatrics Society*, 54: 743-749. doi:10.1111/j.1532-5415.2006.00701.x
- x Lajoie, Y., & Gallagher, S. (2004). Predicting falls within the elderly community: Comparison of postural sway, reaction time, the Berg balance scale and the Activities-specific Balance Confidence (ABC) scale for comparing fallers and non-fallers. *Archives of Gerontology and Geriatrics*, 38(1), 11-26. doi:10.1016/s0167-4943(03)00082-7
- xi Teresa Steffen, Megan Seney, Test-Retest Reliability and Minimal Detectable Change on Balance and Ambulation Tests, the 36-Item Short-Form Health Survey, and the Unified Parkinson Disease Rating Scale in People With Parkinsonism, *Physical Therapy*, Volume 88, Issue 6, 1 June 2008, Pages 733-746, <https://doi.org/10.2522/ptj.20070214>
- xii Alexandre TS, Meira DM, Rico NC, Mizuta SK. Accuracy of timed up and go test for screening risk of falls among community-dwelling elderly. *Rev Bras Fisioterapia*. 2012;16(5):381-8.
- xiii Murphy MA, Olson SL, Protas EJ, Overby AR. Screening for Falls in Community-Dwelling Elderly. *Journal of Aging and Physical Activity* 2003 Jan;11(1):66-80. [doi: 10.1123/japa.11.1.66]
- xiv Shubert TE, Schrodt LA, Mercer VS, Busby-Whitehead J, Giuliani CA. Are scores on balance screening tests associated with mobility in older adults? *J Geriatr Phys Ther* 2006;29(1):35-39. [Medline: 16630375]