



CATCH-ON

A HRSA GERIATRIC WORKFORCE ENHANCEMENT PROGRAM
www.catch-on.org

Mobility References

1. Allan, L. M., Ballard, C. G., Rowan, E. N., & Kenny, R. A. (2009). Incidence and prediction of falls in dementia: A prospective study in older people. *PLoS ONE*, 4(5), e5521.
2. American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. (2019). *Journal of the American Geriatrics Society*, 67(4), 674–694.
3. Berg, K. O., Wood-Dauphinee, S. L., Williams, J. I., & Maki, B. (1992). Measuring balance in the elderly: Validation of an instrument. *Canadian Journal of Public Health*, 83(SUPPL. 2).
4. Bergen, G., Stevens, M.R., & Burns, E.R. (2016). Falls and fall injuries among adults aged ≥65 years — United States, 2014. *Morbidity and Mortality Weekly Report*, 65(37), 993-998.
5. Butler, S. S. (2018). Social networks and social isolation among lgbt older adults. In *Social Isolation of Older Adults: Strategies to Bolster Health and Well-Being* (pp. 181–195). Springer Publishing Company.
6. CDC.gov (2020). STEADI – Older Adult Fall Prevention. Retrieved March 26, 2020, from <https://www.cdc.gov/steady/>
7. CDC.gov (2020). Home and Recreational Safety. Retrieved March 25, 2020, from <https://www.cdc.gov/homeandrecreationalafety/falls/fallcost.html>
8. Colcombe, S., & Kramer, A. F. (2003). Fitness effects on the cognitive function of older adults: A meta-analytic study. *Psychological Science*, 14(2), 125–130.
9. Coussement, J., de Paepe, L., Schwendimann, R., Denhaerynck, K., Dejaeger, E., & Milisen, K. (2008). Interventions for preventing falls in acute- and chronic-care hospitals: A systematic review and meta-analysis. *Journal of the American Geriatrics Society*, 56(1), 29–36.
10. Dionyssiotis, Y. (2012). Analyzing the problem of falls among older people. In *International Journal of General Medicine*, 5, 805–813.
11. Evans, D., Hodgkinson, B., Lambert, L., & Wood, J. (2001). Falls risk factors in the hospital setting: A systematic review. *International Journal of Nursing Practice*, 7(1), 38–45.



CATCH-ON

A HRSA GERIATRIC WORKFORCE ENHANCEMENT PROGRAM
www.catch-on.org

12. Fick, D. M., Inouye, S. K., Guess, J., Ngo, L. H., Jones, R. N., Saczynski, J. S., & Marcantonio, E. R. (2015). Preliminary development of an ultrabrief two-item bedside test for delirium. *Journal of Hospital Medicine*, 10(10), 645–650.
13. Florence, C. S., Bergen, G., Atherly, A., Burns, E., Stevens, J., & Drake, C. (2018). Medical Costs of Fatal and Nonfatal Falls in Older Adults. *Journal of the American Geriatrics Society*, 66(4), 693–698.
14. Ganz, D. A., Bao, Y., Shekelle, P. G., & Rubenstein, L. Z. (2007). Will my patient fall? *Journal of the American Medical Association*, 297(1), 77–86.
15. Grimby, G., & Saltin, B. (1983). The ageing muscle. *Clinical Physiology (Oxford, England)*, 3(3), 209–218.
16. Groessl, E. J., Kaplan, R. M., Rejeski, W. J., Katula, J. A., King, A. C., Frierson, G., Glynn, N. W., Hsu, F. C., Walkup, M., & Pahor, M. (2007). Health-Related Quality of Life in Older Adults at Risk for Disability. *American Journal of Preventive Medicine*, 33(3), 214–218.
17. Haddad, Y. K., Bergen, G., & Florence, C. S. (2019). Estimating the Economic Burden Related to Older Adult Falls by State. *Journal of Public Health Management and Practice*, 25(2), E17–E24.
18. Kim, T. N., & Choi, K. M. (2013). Sarcopenia: Definition, Epidemiology, and Pathophysiology. *Journal of Bone Metabolism*, 20(1), 1.
19. King, M. B., & Tinetti, M. E. (1995). Falls in Community-Dwelling Older Persons. *Journal of the American Geriatrics Society*, 43(10), 1146–1154.
20. Lakatos, B. E., Capasso, V., Mitchell, M. T., Kilroy, S. M., Lussier-Cushing, M., Sumner, L., Repper-Delisi, J., Kelleher, E. P., Delisle, L. A., Cruz, C., & Stern, T. A. (2009). Falls in the general hospital: Association with delirium, advanced age, and specific surgical procedures. *Psychosomatics*, 50(3), 218–226.
21. Morse, J. M. (2002). Enhancing the safety of hospitalization by reducing patient falls. *American Journal of Infection Control*, 30(6), 376–380.
22. Nasreddine, Z., Phillips N., Bédirian V., et al. (2005). The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society*, 53(4):695-9.



CATCH-ON

A HRSA GERIATRIC WORKFORCE ENHANCEMENT PROGRAM
www.catch-on.org

23. Pohl, J. S., Cochrane, B. B., Schepp, K. G., & Woods, N. F. (2018). Falls and social isolation of older adults in the national health and aging trends study. *Research in Gerontological Nursing*, 11(2), 61–70.
24. Poon, I. O., & Braun, U. (2005). High prevalence of orthostatic hypotension and its correlation with potentially causative medications among elderly veterans. *Journal of Clinical Pharmacy and Therapeutics*, 30(2), 173–178.
25. Predovan, D., Fraser, S. A., Renaud, M., & Bherer, L. (2012). The effect of three months of aerobic training on stroop performance in older adults. *Journal of Aging Research*.
26. Rantanen, T. (2013). Promoting mobility in older people. *Journal of Preventive Medicine and Public Health*, 46(Suppl 1), S50.
27. Renaud, M., Maquestiaux, F., Joncas, S., Kergoat, M. J., & Bherer, L. (2010). The effect of three months of aerobic training on response preparation in older adults. *Frontiers in Aging Neuroscience*, 2, 148.
28. Rossiter-Fornoff, J. E., Wolf, S. L., Wolfson, L. I., & Buchner, D. M. (1995). A cross-sectional validation study of the FICSIT common data base static balance measures. *Frailty and Injuries: Cooperative Studies of Intervention Techniques. The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, 50(6), M291-7.
29. Rubenstein, L. Z., & Josephson, K. R. (2002). The epidemiology of falls and syncope. *Clinics in Geriatric Medicine*, 18(2), 141–158.
30. Scheffer, A. C., Schuurmans, M. J., van Dijk, N., van der Hooft, T., & de Rooij, S. E. (2008). Fear of falling: measurement strategy, prevalence, risk factors and consequences among older persons. *Age and Ageing*, 37(1), 19–24.
31. Shumway-Cook, A., Baldwin, M., Polissar, N. L., & Gruber, W. (1997). Predicting the probability for falls in community-dwelling older adults. *Physical Therapy*, 77(8), 812–819.
32. Shumway-Cook, A., Brauer, S., & Woollacott, M. (2000). Predicting the Probability for Falls in Community-Dwelling Older Adults Using the Timed Up & Go Test. *Physical Therapy*, 80(9), 896–903.
33. Stevens, J. A., Corso, P. S., Finkelstein, E. A., & Miller, T. R. (2006). The costs of fatal and non-fatal falls among older adults. *Injury Prevention*, 12(5), 290–295.



CATCH-ON

A HRSA GERIATRIC WORKFORCE ENHANCEMENT PROGRAM
www.catch-on.org

34. Tinetti, M. E. (2003). Preventing falls in elderly persons. *New England Journal of Medicine*, 348(1), 42–49.
35. Tinetti, M. E., Speechley, M., & Ginter, S. F. (1988). Risk Factors for Falls among Elderly Persons Living in the Community. *New England Journal of Medicine*, 319(26), 1701–1707.
36. U.S. Department of Health and Human Services. *Physical Activity Guidelines for Americans*, 2nd edition. Washington, DC: U.S. Department of Health and Human Services; 2018.
37. van Dijk, P. T., Meulenbergh, O. G., van de Sande, H. J., & Habbema, J. D. (1993). Falls in dementia patients. *The Gerontologist*, 33(2), 200–204.
38. Vellas, B. J., Wayne, S. J., Romero, L., Baumgartner, R. N., Rubenstein, L. Z., & Garry, P. J. (1997). One-leg balance is an important predictor of injurious falls in older persons. *Journal of the American Geriatrics Society*, 45(6), 735–738.
39. Vestibular Disorders Association. About Vestibular Disorders. Retrieved March 25, 2020, from <https://vestibular.org/understanding-vestibular-disorder>.
40. von Bonsdorff, M., Rantanen, T., Laukkanen, P., Suutama, T., & Heikkinen, E. (2006). Mobility limitations and cognitive deficits as predictors of institutionalization among community-dwelling older people. *Gerontology*, 52(6), 359–365.
41. Webber, S. C., Porter, M. M., & Menec, V. H. (2010). Mobility in older adults: a comprehensive framework. *The Gerontologist*, 50(4), 443–450.
42. Yeom, H. A., Fleury, J., & Keller, C. (2008). Risk Factors for Mobility Limitation in Community-Dwelling Older Adults: A Social Ecological Perspective. *Geriatric Nursing*, 29(2), 133–140.



CATCH-ON

A HRSA GERIATRIC WORKFORCE ENHANCEMENT PROGRAM
www.catch-on.org

Fall Risk Screening Measures

STEADI Assessment⁶

- Simple fall risk assessment tool that help stratify fall risk
- Make sure to communicate with the appropriate physician(s) regarding a patient who is screening at high risk for falls

Berg Balance Scale^{3,31}

- 14-item scale designed to measure balance of the older adult in a clinical setting with a score from 0 to 56
- Score of less than 45 is associated with increased fall risk
- Score of less than 40 has a 100% association with falls

Timed Up and Go (TUG)¹⁴

- Time it takes to ambulate 3 meters starting from a seated position with appropriate assistive device and then returning back to the seated position
- Time of 12 seconds or higher is associated with fall risk

30-second Chair Stand Test³²

- Number of times a patient to stand without arm support from a seated position in 30 seconds
- Unable to complete any sit to stand is associated with high fall risk

4-State Balance Test^{28,38}

- Balance testing in increasingly challenging positions including parallel, semi-tandem, tandem, and single-leg stand
- Unable to perform tandem leg stand for 10 seconds is associated with falls
- Unable to stand on 1 leg unassisted for 5 seconds is associated with fall with injury



CATCH-ON

A HRSA GERIATRIC WORKFORCE ENHANCEMENT PROGRAM
www.catch-on.org

Additional Resources

1. [AAPMR: What is the Difference Between Physical Therapy and Physiatry?](#)
2. Covinsky, K.E., Pierluissi, E., Johnston, C.B. (2001). Hospitalization-Associated Disability: “She Was Probably Able to Ambulate, but I’m Not Sure.” *Journal of the American Medical Association*, 306(16):1782–1793.
3. [Health Research & Educational Trust: Facts about Falls in Hospitals](#)
4. [Hospital Elder Life Program: Mobility Change Package](#)
5. [John Hopkins Early Mobility Toolkit](#)
6. [Regional Geriatric Program of Toronto: Mobility Toolkit](#)