

Name of Instrument: **Functional Reach Test**

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**Privacy Use Cost:** \$

**Public Use Cost:** \$

**Year Developed:** 1990

**Where to obtain Instrument:**

- Contact author
- Other: [www.arom.com](http://www.arom.com)

**Description of the Instrument**

- Functional Reach test is a measure of balance and is the difference, in inches, between arm's length and maximal forward reach, using a fixed base of support.
- This test can be used to detect balance impairment, change in balance performance over time, and in the design of modified environments for impaired older persons.
- The test utilizes a force platform, an electronic system for measuring functional reach or a 48-inch measuring device or "yardstick".
- A reach of less than or equal to 6 inches predicted fall

**Form of instrument:**

- Risk/Hazard Assessment Tool

**Method of delivery:**

- In-person interview/assessment

**Relevance to injury/ Percentage of the instrument specific to injury**

- To assess balance that may contribute to risk of falling among the elderly.

**Time to administer or complete the instrument**

- 1-2 minutes

**Methods of data analyses:**

- Quantitative

**Setting/sample instrument used in:**

- Volunteers, age 21-87 years, were recruited from 3 resources: a) employees at the Duke University Medical Center and the Durham Veterans Administration Hospital; b) students of the Duke University Physical Therapy Program; and c) the Duke Aging Center registry of community-dwelling elderly.

**Was it pilot tested?** No

**Pilot test sample:****Reliability Measures**

- Test-retest reliability  $r = .89$
- Interrater agreement on reach measurement = .98

**Validity Measures**

Functional Reach Test was strongly associated with measurements of centre of pressure excursion  $r = .71$  and the  $R^2$  using linear regression was .51.

Additional testing completed by Eagle et al. (1999) on a sample of elderly inpatients indicated the following:

- Sensitivity (ability to detect falls when they are present) = 76%
- Specificity (ability to identify correctly the absence of falls) = 34%
- Positive Predictive Value (how well test predicted compared to actual number of falls) = 33%
- Negative Predictive Value (how well negative test correctly predicts absence of falls) = 77%
- Accuracy (overall rate of agreement between the test and the actual number of falls) = 46%
- Prevalence (ratio of the number of people who have fallen divided by the total number of people at risk for falling) = 30%

**Reference**

Duncan, P.W., Weiner, D.K., Chandler, J. & Studenski, S. (1990). Functional reach: a new clinical measure of balance. Journal of Gerontology: MEDICAL SCIENCES, 45(6), M192-M197.

**Other References**

Eagle, J., Salamara, S., Whitman, D., Evans, L.A., Ho, E., & Olde, J. (1999). Comparison of Three Instruments in Predicting Accidental Falls in Selected Inpatients in a General Teaching Hospital. Journal of Gerontological Nursing, 25(7), 40-45.

Whitney, S.L., Poole, J.L., & Cass, S.P. (1999). A Review of Balance Instruments for Older Adults. The American Journal of Occupational Therapy, 52(8), 666-671.

**Keywords:** falls, fall prevention, elderly, seniors, assessment.