Appendix 1. The CDC algorithm

Reference:
Available from: http://www.cdc.gov/steady/
Appendix 2. The Brief BESTest

| Section I. Biomechanical Constraints |
|--------------------------------------|
| Item 1: Hip/Trunk Lateral Strength    |
| “Rest fingertips in my hands while you lift your leg to the side and hold, keep trunk vertical. You will hold for 10 s.” |
| Count 10 s, watch for straight knee; if they use moderate force on your hands, score as “without keeping trunk vertical.” | (3) Normal (10 s with trunk vertical) |
| (2) Mild (10 s without trunk vertical) |
| (1) Moderate (1 hip abducts with trunk vertical) |
| (0) Severe (neither hip, 10 s and vertical or not vertical) |

| Section II. Stability Limits         |
|--------------------------------------|
| Item 2: Functional Reach Forward     |
| “Stand normally; lift both arms straight in front of you; reach as far forward as you can with arms parallel to the ruler without lifting your heels.” |
| 2 attempts                          |
| Observe that patient does not lift heels, rotate trunk, or project scapula. Watch for vertical initial alignment. Record best reach. | (3) >32 cm (12.5 in) |
| (2) 16.5–32 cm (6.5–12.5 in)         |
| (1) <16.5 cm (6.5 in)                |
| (0) No measurable lean or must be caught | Trial 1 (cm or in) |
| Trial 2 (cm or in)                   |

| Section III. Transitions—Anticipatory Postural Adjustment |
|----------------------------------------------------------|
| Items 3 and 4: Stand on One Leg Left and Right           |
| “Look ahead; hands must stay on hips; bend one leg behind you; stand on 1 leg as long as you can for up to 30 s. Do not let your lifted leg touch the other leg.” |
| Allow 2 attempts; record best attempt; record time up to 30 s (stop timer if hands off hips or leg on floor or leg touches supporting leg). | (3) Normal (stable ≥ 20 s) |
| (2) Trunk motion OR 10–20 s                             |
| (1) Stand 2–10 s                                      | Left Seconds |
| (0) Unable                                              |
| Right Seconds                                          |

| Section IV. Reactive Postural Response                   |
|----------------------------------------------------------|
| Items 5 and 6: Compensatory Stopping—Lateral, Left and Right |
| “Stand with feet nearly together; lean into my hands; I will remove my hands; do whatever necessary to keep balance, trying to take 1 step.” |
| Note: Stand next to and behind participant. Place hand on greater trochanter and brace yourself to hold the person’s weight shifted to supported leg. | (3) Recover with 1 side/crossover step |
| (2) Several steps to recover independently |
| (1) Steps but needs assist to prevent fall |
| (0) No step OR falls | Left |
| Right |

| Section V. Sensory Orientation                          |
|----------------------------------------------------------|
| Item 7: Stance With Eyes Closed, on Foam Surface         |
| “Stand on foam with your eyes closed, your hands on your hips, and your feet close but not touching. Start by looking straight ahead, and I will start timing when you close your eyes. Stay as stable as possible and try to keep your eyes closed for the entire time. The goal is 30 s.” |
| Two trials, if necessary. Patient must step off foam between trials. | (3) 30 s stable |
| (2) 30 s unstable                                     |
| (1) ≤30 s                                              |
| (0) Unable                                             |
| Total 1 (s)                                            |
| Total 2 (s)                                            |

| Section VI. Stability in Gait                           |
|----------------------------------------------------------|
| Item 8: Timed “Up & Go” Test                            |
| “When I say ‘go,’ stand up and walk quickly but safely to the tape, turn, and walk back and sit in chair.” |
| Start with back against chair, stop timing when buttocks hit the chair; chair should have arms to push from, if necessary. Imbalance might include trips or lateral/forward stumbles or crossovers. | (3) Fast, <11 s, good balance |
| (2) Slow, >11 s, good balance                          |
| (1) Fast, <11 s, imbalance                             |
| (0) Slow, >11 s, imbalance                            |
| Time (s)                                                |

**Reference:**
Padgett PK, Jacobs Jv Fau - Kasser SL, Kasser SL. Is the BESTest at its best? A suggested brief version based on interrater reliability, validity, internal consistency, and theoretical construct. (1538-6724 (Electronic))
# STARD Checklist for Reporting of Studies of Diagnostic Accuracy

*(January 2003 version)*

| Section and Topic                  | Item No | Recommendation                                                                 | Reported On Page No |
|-----------------------------------|---------|--------------------------------------------------------------------------------|---------------------|
| **TITLE/ABSTRACT/KEYWORDS**       | 1       | Identify the article as a study of diagnostic accuracy (recommend MeSH heading 'sensitivity and specificity'). | Page 1              |
| **INTRODUCTION**                  | 2       | State the research questions or study aims, such as estimating diagnostic accuracy or comparing accuracy between tests or across participant groups. | Page 3              |
| **METHODS**                       |         |                                                                                |                     |
| **Participants**                  | 3       | The study population: The inclusion and exclusion criteria, setting and locations where data were collected. | Page 4              |
|                                   | 4       | Participant recruitment: Was recruitment based on presenting symptoms, results from previous tests, or the fact that the participants had received the index tests or the reference standard? | Page 4              |
|                                   | 5       | Participant sampling: Was the study population a consecutive series of participants defined by the selection criteria in item 3 and 4? If not, specify how participants were further selected. | Page 4              |
|                                   | 6       | Data collection: Was data collection planned before the index test and reference standard were performed (prospective study) or after (retrospective study)? | Page 4-5            |
| **Test methods**                  | 7       | The reference standard and its rationale.                                      | Page 5-6            |
|                                   | 8       | Technical specifications of material and methods involved including how and when measurements were taken, and/or cite references for index tests and reference standard. | Page 5-6            |
|                                   | 9       | Definition of and rationale for the units, cut-offs and/or categories of the results of the index tests and the reference standard. | Page 5-6            |
|                                   | 10      | The number, training and expertise of the persons executing and reading the index tests and the reference standard. | Page 5-6            |
|                                   | 11      | Whether or not the readers of the index tests and reference standard were blind (masked) to the results of the other test and describe any other clinical information available to the readers. | Page 5-6            |
| **Statistical methods**           | 12      | Methods for calculating or comparing measures of diagnostic accuracy, and the statistical methods used to quantify uncertainty (e.g. 95% confidence intervals). | Page 7              |
|                                   | 13      | Methods for calculating test reproducibility, if done.                         | Page 7              |
| **RESULTS**                       | 14      | When study was performed, including beginning and end dates of recruitment.     | Page 4              |
| **Participants**                  | 15      | Clinical and demographic characteristics of the study population (at least information on age, gender, spectrum of presenting symptoms). | Page 8              |
|                                   | 16      | The number of participants satisfying the criteria for inclusion who did or did not undergo the index tests and/or the reference standard; describe why participants failed to undergo either test (a flow diagram is strongly recommended). | Page 8+ flow        |
| **Test Results**                  | 17      | Time-interval between the index tests and the reference standard, and any treatment administered in between. | NA                  |
|                                   | 18      | Distribution of severity of disease (define criteria) in those with the target condition; other diagnoses in participants without the target condition. | NA                  |
|                                   | 19      | A cross tabulation of the results of the index tests (including indeterminate and missing results) by the results of the reference standard; for continuous results, the distribution of the test results by the results of the reference standard. | Page 7-8            |
|                                   | 20      | Any adverse events from performing the index tests or the reference standard. | Page 7-8            |
| **Estimates**                     | 21      | Estimates of diagnostic accuracy and measures of statistical uncertainty (e.g. 95% confidence intervals). | Page 7-8            |
|                                   | 22      | How indeterminate results, missing data and outliers of the index tests were handled. | Page 7              |
|                                   | 23      | Estimates of variability of diagnostic accuracy between subgroups of participants, readers or centers, if done. | NA                  |
|                                   | 24      | Estimates of test reproducibility, if done.                                    | NA                  |
| **DISCUSSION**                    | 25      | Discuss the clinical applicability of the study findings.                     | Page 8-10           |

For more information, visit [http://www.stard-statement.org](http://www.stard-statement.org).