# BESTest
## Balance Evaluation – Systems Test
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**TEST NUMBER/SUBJECT CODE** _____     **DATE** _____

**EXAMINER NAME**          _____

### EXAMINER Instructions for BESTest
1. Subjects should be tested with flat heeled shoes or with shoes and socks off.
2. If subject must use an assistive device for an item, score that item one category lower

### Tools Required
- Stop watch
- Measuring tape mounted on wall for Functional Reach test
- Approximately 60 cm x 60 cm (2 X 2 ft) block of 4-inch, medium-density, Tempur® foam
- 10 degree incline ramp (at least 2 x 2 ft) to stand on
- Stair step, 15 cm (6 inches) in height for alternate stair tap
- 2 stacked shoe boxes for obstacle during gait
- 2.5 Kg (5-lb) free weight for rapid arm raise
- Firm chair with arms with 3 meters in front marked with tape for Get Up and Go test
- Masking tape to mark 3 m and 6 m lengths on the floor for Get Up and Go

### SUMMARY OF PERFORMANCE:  CALCULATE PERCENT SCORE

| Section I: | _____/15  x 100  =  _____ | **Biomechanical Constraints** |
|---|---|---|
| Section II: | _____/21  x 100 =  _____ | **Stability Limits/Verticality** |
| Section III: | _____/18  x 100 =  _____ | **Transitions/Anticipatory** |
| Section IV | _____/18  x 100 =  _____ | **Reactive** |
| Section V: | _____/15  x 100 =  _____ | **Sensory Orientation** |
| Section VI: | _____/21 x 100 =  _____ | **Stability in Gait** |

| TOTAL: | _____/108 points =  _____ | **Percent Total Score** |
|---|---|---|

# BESTest- Inter-rater Reliability
## Balance Evaluation – Systems Test

Subjects should be tested with flat heeled shoes or shoes and socks off.  If subject must use an assistive device for an item, score that item one category lower. If subject requires physical assistance to perform an item score the lowest category (0) for that item.

**I. BIOMECHANICAL CONSTRAINTS**                                **SECTION I: _____/15 POINTS**

1. BASE OF SUPPORT
      (3) Normal: Both feet have normal base of support with no deformities or pain
      (2) One foot has deformities and/or pain
      (1) Both feet has deformities OR pain
      (0) Both feet have deformities AND pain

2. CoM ALIGNMENT
      (3) Normal AP and ML CoM alignment and normal segmental postural alignment
      (2) Abnormal AP OR ML CoM alignment OR abnormal segmental postural alignment
      (1) Abnormal AP OR ML CoM alignment AND abnormal segmental postural alignment
      (0) Abnormal AP AND ML CoM alignment

3. ANKLE STRENGTH & RANGE
      (3) Normal: Able to stand on toes with maximal height and to stand on heels with front of feet up
      (2) Impairment in either foot of either ankle flexors or extensors (i.e. less than maximum height)
      (1) Impairment in two ankle groups (eg; bilateral flexors or both ankle flexors and extensors in 1 foot)
      (0) Both flexors and extensors in both left and right ankles impaired (i.e. less than maximum height)

4. HIP/TRUNK LATERAL STRENGTH
      (3) Normal: Abducts both hips to lift the foot off the floor for 10 s while keeping trunk vertical
      (2) Mild: Abducts both hips to lift the foot off the floor for 10 s but without keeping trunk vertical
      (1) Moderate: Abducts only one hip off the floor for 10 s with vertical trunk
      (0) Severe: Cannot abduct either hip to lift a foot off the floor for 10 s with trunk vertical or without
          vertical

5. SIT ON FLOOR AND STANDUP                          *Time_____ secs*
      (3) Normal:  Independently sits on the floor and stands up
      (2) Mild:  Uses a chair to sit on floor OR to stand up
      (1) Moderate:  Uses a chair to sit on floor AND to stand up
      (0) Severe:  Cannot sit on floor or stand up, even with a chair, or refuses

**II. STABILITY LIMITS**                                **SECTION II: _____/21 POINTS**

6. SITTING VERTICALITY AND LATERAL LEAN

| | | Lean | | | Verticality |
|---|---|---|---|---|---|
| Left | Right | | Left | Right | |
| (3) | (3) | Maximum lean, subject moves upper shoulders beyond body midline, very stable | (3) | (3) | Realigns to vertical with very SMALL or no OVERSHOOT |
| (2) | (2) | Moderate lean, subject's upper shoulder approaches body midline or some instability | (2) | (2) | Significantly Over- or under-shoots but eventually realigns to vertical |
| (1) | (1) | Very little lean, or significant instability | (1) | (1) | Failure to realign to vertical |
| (0) | (0) | No lean or falls (exceeds limits) | (0) | (0) | Falls with the eyes closed |

7. FUNCTIONAL REACH FORWARD     *Distance reached: _____ cm OR_____inches*
(3)     Maximum to limits: >32 cm (12.5 in )
(2)     Moderate:  16.5 cm - 32 cm (6.5 – 12.5 in)
(1)     Poor:  < 16.5 cm (6.5 in)
(0)     No measurable lean – or must be caught


8. FUNCTIONAL REACH LATERAL     *Distance reached: Left _____ cm (_____in) Right _____ cm (_____in)*
<u>Left</u>     <u>Right</u>
(3)      (3)    Maximum to limit: > 25.5 cm (10 in)
(2)      (2)    Moderate: 10-25.5 cm (4-10 in)
(1)      (1)    Poor: < 10 cm (4 in)
(0)      (0)    No measurable lean, or must be caught

**III. TRANSITIONS- ANTICIPATORY POSTURAL ADJUSTMENT     SECTION III. _____/18 POINTS**
9. SIT TO STAND
(3) Normal: Comes to stand without the use of hands and stabilizes independently
(2) Comes to stand on the first attempt <u>with</u> the use of hands
(1) Comes to stand after <u>several attempts</u> or requires minimal assist to stand or stabilize or requires touch of
     back of leg or chair
(0) Requires moderate or maximal assist to stand


10. RISE TO TOES
(3)  Normal: Stable for 3 sec with good height
(2)  Heels up, but not full range (smaller than when holding hands so no balance requirement)
      -OR- slight instability & holds for 3 sec
(1)  Holds for less than 3 sec
(0)  Unable


11. STAND ON ONE LEG
<u>Left</u>                *Time in Sec:_____*          <u>Right</u>                          *Time in Sec: _____*
(3)  Normal: Stable for > 20 s                         (3)  Normal: Stable for > 20s
(2)  Trunk motion, OR 10-20 s                        (2)  Trunk motion, OR 10-20 s
(1)  Stands 2-10 s                                           (1)  Stands 2-10s
(0)  Unable                                                      (0)  Unable

12. ALTERNATE STAIR TOUCHING     *# of successful steps: _____     Time in seconds: _____*
(3)  Normal: Stands independently and safely and completes 8 steps in < 10 seconds
(2)  Completes 8 steps (10-20 seconds) AND/OR show instability such as inconsistent foot placement,
      excessive trunk motion, hesitation or arhythmical
(1)  Completes < 8 steps – <u>without</u> minimal assistance (i.e. assistive device) OR > 20 sec for 8 steps
(0)  Completes < 8 steps, even <u>with</u> assistive devise


13. STANDING ARM RAISE
(3) Normal: Remains stable
(2) Visible sway
(1) Steps to regain equilibrium/unable to move quickly w/o losing   balance
(0) Unable, or needs assistance for stability

**IV. REACTIVE POSTURAL RESPONSE**                    SECTION IV: _____/18 POINTS

14. IN PLACE RESPONSE- FORWARD
(3)  Recovers stability with ankles, no added arms or hips motion
(2)  Recovers stability with arm or hip motion
(1)  Takes a step to recover stability
(0)  Would fall if not caught OR requires assist OR will not attempt

15. IN PLACE RESPONSE- BACKWARD
(3)  Recovers stability at ankles, no added arm / hip motion
(2)  Recovers stability with some arm or hip motion
(1)  Takes a step to recover stability
(0)  Would fall if not caught -OR- requires assistance -OR- will not attempt

16. COMPENSATORY STEPPING CORRECTION- FORWARD
(3)  Recovers independently a single, large step (second realignment step is allowed)
(2)  More than one step used to recover equilibrium, but recovers stability independently OR 1 step with imbalance
(1)  Takes multiple steps to recover equilibrium, or needs minimum assistance to prevent a fall
(0)  No step, OR would fall if not caught, OR falls spontaneously

17. COMPENSATORY STEPPING CORRECTION- BACKWARD
(3)  Recovers independently a single, large step
(2)  More than one step used, but stable and recovers independently OR 1 step with imbalance
(1)  Takes several steps to recover equilibrium, or needs minimum assistance
(0)  No step, OR would fall if not caught, OR falls spontaneously

18. COMPENSATORY STEPPING CORRECTION- LATERAL

| Left | Right |
|------|-------|
| (3) Recovers independently with 1 step of normal length/width (crossover or lateral OK) | (3) Recovers independently with 1 step of normal length/width (crossover or lateral OK) |
| (2) Several steps used, but recovers independently | (2) Several steps used, but recovers independently |
| (1) Steps, but needs to be assisted to prevent a fall | (1) Steps, but needs to be assisted to prevent a fall |
| (0) Falls, or cannot step | (0) Falls, or cannot step |

**V. SENSORY ORIENTATION**                    SECTION V: _____/15 POINTS

19. SENSORY INTEGRATION FOR BALANCE (MODIFIED CTSIB)

| A -EYES OPEN, FIRM SURFACE | B -EYES CLOSED, FIRM SURFACE | C -EYES OPEN, FOAM SURFACE | D -EYES CLOSED, FOAM SURFACE |
|------|------|------|------|
| Trial 1 _____sec | Trial 1 _____sec | Trial 1 _____sec | Trial 1_____sec |
| Trial 2 _____sec | Trial 2 _____sec | Trial 2 _____sec | Trial 2 _____sec |
| (3) 30s stable | (3) 30s stable | (3) 30s stable | (3) 30s stable |
| (2) 30s unstable | (2) 30s unstable | (2) 30s unstable | (2) 30s unstable |
| (1) < 30s | (1) < 30s | (1) < 30s | (1) < 30s |
| (0) Unable | (0) Unable | (0) Unable | (0) Unable |

20. INCLINE- EYES CLOSED
Toes Up
(3)  Stands independently, steady without excessive sway, holds 30 sec, and aligns with gravity
(2)  Stands independently 30 SEC with greater sway than in item 19B -OR- aligns with surface
(1)  Requires touch assist -OR- stands without assist for 10-20 sec
(0)  Unable to stand >10 sec -OR- will not attempt independent stance

**VI. STABILITY IN GAIT**                                    **SECTION V: _____ /21 POINTS**

21. GAIT – LEVEL SURFACE                                                *Time_____secs.*
    (3)  Normal: walks 20 ft., good speed (≤ 5.5 sec), <u>no evidence of imbalance.</u>
    (2)  Mild: 20 ft., slower speed (>5.5 sec), <u>no evidence of imbalance</u>.
    (1)  Moderate: walks 20 ft., evidence of imbalance (wide-base, lateral trunk motion, inconsistent step path)
         – at any preferred speed.
    (0)  Severe: cannot walk 20 ft. without assistance, or severe gait deviations OR severe imbalance

22. CHANGE IN GAIT SPEED
    (3) Normal: Significantly changes walking speed without imbalance
    (2) Mild: Unable to change walking <u>speed</u> without imbalance
    (1) Moderate: Changes walking speed but with signs of imbalance,
    (0) Severe: Unable to achieve significant change in speed AND signs of imbalance

23. WALK WITH HEAD TURNS – HORIZONTAL
    (3)  Normal: performs head turns with no change in gait speed and good balance
    (2)  Mild: performs head turns smoothly with reduction in gait <u>speed</u>,
    (1)  Moderate: performs head turns with imbalance
    (0)  Severe: performs head turns with reduced speed AND imbalance AND/OR will not move head within
         available range while walking.

24. WALK WITH PIVOT TURNS
    (3) Normal: Turns with feet close, <u>FAST</u> (< 3 steps) with good balance.
    (2) Mild: Turns with feet close SLOW (>4 steps) with good balance
    (1) Moderate: Turns with feet close at any speed with mild signs of <u>imbalance</u>
    (0) Severe: Cannot turn with feet close at any speed and significant <u>imbalance</u>.

25. STEP OVER OBSTACLES                                        *Time_____sec*
    (3)  Normal: able to step over 2 stacked shoe boxes without changing speed and with good balance
    (2)  Mild: steps over 2 stacked shoe boxes but slows down, with good balance
    (1)  Moderate: steps over shoe boxes with <u>imbalance</u> or touches box.
    (0)  Severe: cannot step over shoe boxes AND slows down with imbalance or cannot perform with
    assistance.

26. TIMED "GET UP & GO"                          *Get Up & Go: Time _____sec*
    (3)  Normal: Fast (<11 sec) with good balance
    (2)  Mild: <u>Slow</u> (>11 sec with good balance)
    (1)  Moderate: Fast (<11 sec) with <u>imbalance</u>.
    (0)  Severe: Slow (>11 sec) <u>AND</u> imbalance.

27. Timed "Get Up & Go" With Dual Task          *Dual Task: Time _____sec*
    (3) Normal: No noticeable change between sitting and standing in the rate or accuracy of backwards counting
     and no change in gait speed.
    (2) Mild:  Noticeable slowing, hesitation or errors in counting backwards OR slow walking (10%) in dual task
    (1) Moderate: Affects on BOTH the cognitive task AND slow walking (>10%) in dual task.
    (0) Severe: Can't count backward while walking or stops walking while talking