



## Functional Test Normative Data

### 6 minute walk test

#### Purpose:

Assesses distance walked over 6 minutes as a submaximal test of aerobic capacity/endurance

#### Age matched Norms:

- 60- 69 yrs: M= 572 m (1876.64 ft) , F= 538 m (1765.1ft)
- 70-79 yrs: M= 527m (1729 ft), F=471 m (1542.28 ft)
- 90-89 yrs: M= 417 m (1368.11 ft), F = 392 m (1286.1 ft)

#### MCID

- COPD: 54 meters (177.17 ft)
- Geriatrics and Stroke: 50 meters (164.04 ft)
- SCI: Overall - .10 m/s. Slow - .11 m/s. Fast - N/A
- Stroke: 34.4 m (112.86 ft)

#### MDC

- Alzheimer's disease: 33.47 m (198.81 ft)
- COPD: MDC= 54 m (177ft)
- Geriatrics: 58.21 m (190.98 ft)
- Osteoarthritis: 61.34 m (201.25 ft)
- Parkinsonism: 82 m (269 ft)
- SCI: 45.8 m (150ft) or 22% change
- Stroke: Chronic - 36.6 m (120 ft) or 13% change.  
Subacute - 60.98 m (200.01 ft)

### FGA

#### Purpose:

Assesses postural stability during various walking tasks

#### Age matched Norms

- 40-49 years= 28.9/ 50-59 years=28.4
- 60-69 years=27.1/70-79 years=24.9
- 80/89 years=20.8

MCID: Vestibular disorders: 8 points

MDC: Parkinsons: 0.61, Stroke: 4.2 points

#### Cut-offs:

Community dwelling older adults

- ≤22/30 : predict falls (Sensitivity 85%, Specificity 86%)
- ≤20/30 (unexplained falls in the next 6 months)  
(Sensitivity 100%, Specificity 76%)

Parkinson's

- 15/30 (identify fallers in Parkinson's)

### 9 hole peg test

#### Purpose:

Measure finger dexterity

#### Age matched Norms

- Healthy adults
  - All males 18.99 seconds
  - All females: 17.67 seconds
- MS: (Dominant side) 17.81 seconds  
(Non-dominant side) 18.49 seconds

MCID: Not established

#### MDC:

- Stroke: 32.8 seconds
- Parkinson's disease: 2.6 seconds for dominant; 1.3 seconds for non-dominant hand

### Berg balance scale

Purpose: Assess static balance and fall risk in adults

#### Age Matched norms: (Age/ M/ F)

- 60-69 years/ 55 / 55
- 70-79 years/ 54 / 53
- 80-89 years / 53/ 50

Normative Data: OA Mean BBS score one week

postoperative = 34 (8); 5-7 weeks postoperatively = 50 (6)

MCID: not established

#### MDC:

- Community Dwelling Older Adults - Age (MDC)  
0-24 (4.6)/ 25-34 (6.3)/35-44 (4.9)/45-56 (3.3)
- Institutionalized Older Adults: 8 points
- Parkinson's: 5 points
- Acute Stroke:
  - Entire Group: 6.9
  - Individuals who ambulate with assistance: 8.1
  - Individuals with stand-by-assistance: 6.0
  - Individuals who ambulate independently: 6.3
- Chronic Stroke: 2.5

#### Cut-Offs:

- <45 (greater risk of falls)
- History of falls and BBS ≤ 51 or no history of falls and BBS  
≤ 42 predictive of falls (91% sensitivity, 82% specificity)
- Score ≤ 40 associated with almost 100% fall risk
- 80-83 years / 53/ 50
- Stroke: 45/56

### 5 times sit to stand test

#### Purpose

- A measure of functional lower limb muscle strength
- May be useful in quantifying functional change of transitional movements

MCID: Vestibular disorders: > or equal to 2.3 seconds

#### MDC:

- Healthy adults: 4.2 seconds
- Stroke: 3.6 seconds
- Children w/ CP: .06 (Average of three trials)

#### Cut-offs:

- Community dwelling older adult: > or equal to 12 seconds requires further assessment for falls risk
- Parkinson's: > 16 seconds (fallers)
- Stroke: 12 seconds
- Vestibular: To identify balance dysfunction
  - Entire sample: 13 sec
  - Younger(< 60 years): 10 sec
  - Older(> 60 years): 14.2 sec



**4 square step test**

Purpose:

Test of dynamic balance that clinically assesses the person's ability to step over objects forward, sideways, and backwards

Age matched Norms:

- Acute stroke: 20.8 seconds- 17.5 seconds
- Older adults/geriatrics: 32.6 seconds (multiple fallers)/ 17.6 seconds (non-fallers)
- Parkinson's: On Drug time: 9.6 secs/ Off Drug time: 11 .02 secs

MCID: Not established

MDC: Not established

Cut off scores (for falls risk)

- Older adults/Geriatric: > 15 seconds
- Vestibular: > 12 seconds
- Transtibial amputations: >24 seconds at risk for falls
- Acute stroke: failed attempt or > 15 seconds
- Parkinson's disease: < 9.68 seconds

**10MWT (m/s)**

Purpose: Assess gait speed over a short duration

Age-matched norms:

Preferred

Age	male	female
20s	1.39	1.41
30s	1.46	1.42
40s	1.46	1.39
50s	1.39	1.40
60s	1.36	1.30
70s	1.33	1.27
Maximal		
20s	2.53	2.47
30s	2.45	2.34
40s	2.46	2.12
50s	2.07	2.01
60s	1.93	1.77
70s	2.08	1.74

MCID:

- Geriatrics .13m/s
- Stroke .14m/s
- SCI .06 m/s
- TBI: Change is reflected in .15 and .25 m/s increase in comfortable and fast-paced walking speed respectively

MDC:

- Hip Fractures: .17 m/s
- Parkinson's Disease: Comfortable Gait Speed: .18 m/s  
Fastest Gait Speed: .25 m/s
- SCI: Change of .13 m/s

Cut-off scores:

- <.4m/s likely household ambulator
- .4-.8m/s limited community ambulator
- >.8m/s community ambulator

**Single leg Stance (seconds)**

Purpose: Assess balance on one limb

Age-matched norms:

Age	male EO/EC	female EO/EC
18-39	43.2/10.2	43.5/8.5
40-49	40.1/7.3	40.4/7.4
50-59	38.1/4.5	36.0/5.0
60-69	28.7/3.1	25.1/2.5
70-79	18.3/1.9	11.3/2.2
80-99	5.6/1.3	7.4/1.4

MCID: Not established

MDC: Not established

**DGI**

Purpose: Assess ability to modify balance while walking

MCID: Community dwelling elderly 1.9 points

MDC: Community dwelling elderly 2.9 points

Cut-Offs:

- Community dwelling elderly <19
- MS <12
- Parkinson's <19

**Timed Up and Go (seconds)**

Purpose: Assess mobility, balance, falls risk

Age-matched norms:

Age	Male	Female
60-69	8	8
70-79	9	9
80-89	10	11

MCID: not established

MDC:

- Chronic CVA(2.9s)
- Parkinson's(4.85s)
- Alzheimers (4.09s)
- SCI (3.9s)

Falls risk cut-off:

- Community dwelling adults > 13.5s
- Older stroke >14s
- Frail elderly >32.6s
- LE amputees >19
- Parkinson's > 11.5s
- Hip OA >10s
- Vestibular disorders >11.1s



**Functional Reach (inches)**

Purpose: Assess pts stability with maximal reaching outside BOS

Age Matched norms: (Age/ M/ F)

Age	Males	Females
20-40	16.7 + 1.9	14.6 + 2.2
41-69	14.9 + 2.2	13.8 + 2.2
70-87	13.2 + 1.6	10.5 + 3.5

MCID: not established

MDC: Diagnosis(MDC)

- Parkinson's(9cm)
- Stroke(2.67cm)

Likelihood of falling:

- If unable to reach, 8x more likely
- If reaches< 6", is 4x more likely
- If reaches 6--1 0", 2x more likely
- If reaches> 10", unlikely to fall

**Montreal cognitive Assessment (MOCA)**

Purpose: to screen for mild cognitive impairment

MCID: Not established

MDC: Not established

- Cut-off scores:
- Healthy adults >26
- Mild Cognitive Impairment <26
- Alzheimer's <26
- Parkinson's <22.2

**Balance Error Scoring System**

**(BESS test) (# errors)**

Purpose: Assess static postural stability (designed for mild head injury population)

Age-matched norms:

Age	Male	Female
20-29	10.4	11.9
30-39	11.5	11.4
40-49	12.4	12.7
50-54	13.6	15.1
55-59	16.4	16.7
60-64	17.2	19.3
65-69	20.0	19.9

MCID: Young Athletes: 3 points

MDC: Athletes: Intrarrater (7.3), Interrater (9.3)

**30 second sit to stand test (#stands)**

Purpose: Measure of functional lower extremity strength in older adults

Age-matched norms (Community Dwelling Elderly)

- 60-69 14
- 70-79 12.9
- 80-89 11.9

Cut-off scores:

Age	Male	Female
60-64	17	15
65-69	16	15
70-74	15	14
75-79	14	13
80-84	13	12
85-89	11	11
90-94	9	9

MCID: for pts with hip OA 2.0-2.6

MDC: not established

**5x sit to stand test (seconds)**

Purpose: Measure of functional lower extremity strength in older adults

Cut-off scores (fall risk):

- Community dwelling older adults > 12s
- Recurrent falls >15s
- Parkinson's >16s
- Stroke >12s
- Vestibular Disorders in Elderly (>60) >15s

MCID: for vestibular disorders 2.3s

MDC: elderly 4.2s, stroke 3.6s