Database of Knowledge Translation Tools
Assessment Summary

1. Short Physical Performance Battery (SPPB), 65+

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Date Published: *Enter date the KTT was published in database*

2. Instrument Description and Administration Instructions

Purpose of the assessment: Evaluates lower limb function in older adults. (Guralnik, Simonsick et al. 1994) A total of three items include:

- Balance test: Standing balance, side-by-side stand, semi-tandem stand and tandem stand for about 10 seconds.
- Gait speed: Time to walk 4 meters at the subject´s habitual pace
- Chair stand: Stand up and sit down 5 times as quickly as possible (start in sitting, stop in standing)

Type of assessment:

- Test for physical function of lower extremity
- Performance-based functional test, and is used as an outcome measure
- Clinician-rated
- Predicts a gradient risk of fall risk, mortality, nursing home admission, mobility and disability.

Administration instructions: Full testing instructions are retrieved from http://www.mcroberts.nl/wp-content/uploads/2016/11/SPPB_form.pdf

- It is recommended that the instructions are rehearsed
- Patients performs three tasks
- Each task is rated on an ordinal scale of 0 to 4.
- Maximum score is 12, minimum is 0
- 4 meter walking is done twice, the faster of the two walks is registered

The Norwegian translation and standardization procedures are retrieved from: SPPB på norsk (Bergh S, Lyshol H et al. 2013) In the appendix, a m/s calculation for walking, as well as an alternative test for sit-to-stand (STS) where the person is allowed to rise and sit with the use of chair handles, has been added. While these are additions, they are not scored and do not change the total score of the SPPB. However, the STS information can inform decision-making. The 4 MWT can be used separately as a gait speed test.(Bergh S, Lyshol H et al. 2013)

Standardization procedures (as described on www.mcroberts.nl above):

- Perform the tests in the same order as they are presented in the protocol.
- *Balance:* demonstrate the task, then support one arm while participants position their feet, then release the support and begin timing.
- *Walking speed:* demonstrate the walk, have the participant stand with both feet touching the starting line, then start the stopwatch as the participant begins walking. A walking aid may be used during the walking test. Walking should be performed at the patient's normal pace.
- *Chair stand:* the straight-backed chair is placed next to a wall. Ask the participant to fold their arms across their chest and stand up once. If successful, ask the participant to stand up 5 times as quickly as possible. Time from the initial sitting position to the final standing position. A chair with armrests should be used.

ICF Domain: Activity

Measurement Area: Physical function

3. Considerations for Clinical Use

Indications for use:

- Assessment of overall physical functioning (Freiberger, de Vreede et al. 2012)
- Assessment of lower extremity physical performance status (Ostir, Markides et al. 1998, Guralnik, Ferrucci et al. 2000)
- Assess a patient´s change over time (Soares Menezes, Auger et al. 2017)
- Prognostic information about falls, incident disability, hospital admission and all-cause mortality (Veronese, Bolzetta et al. 2014, Pavasini, Guralnik et al. 2016)

Considerations:

- The knowledge expert group recommends calculating gait speed from the 4mwt. Instructions are provided in the administration instructions above.
- A minimum clinical important difference (MCID) for the SPPB is 1 point (Perera, Mody et al. 2006)
- A MCID for the 4mwt is 0,10 m/s (Perera, Mody et al. 2006)

Recommended assessment:

- In the field of performance-based functional tests, SPPB is the recommended choice in older community-dwelling persons (Freiberger, de Vreede et al. 2012)
- SPPB presents the best balance between mobility coverage, measurement properties and applicability to acute care or intensive geriatric rehabilitation unit (Soares Menezes, Auger et al. 2017)
- SPPB is a predictor of long term disability or institutionalization (Gawel, Vengrow et al. 2013)
- SPPB scores of <= 6 are associated with a higher fall rate in older people of both genders (odds ratio 3,46 to 3,82, described below)(Veronese, Bolzetta et al. 2014)

Knowledge Expert group recommendation: *Pending*

4. Interpretation of Results

Standard Error of Measurement (SEM):

Frail elderly (Norwegian version of the SPPB):

- SPPB summary score: SEM = 0,28 points(Olsen and Bergland 2017)
- Balance Subscore: SEM = 0,51 points(Olsen and Bergland 2017)
- Walking Subscore: SEM = 0,23 points(Olsen and Bergland 2017)
- STS Subscore: SEM = 0,39 points(Olsen and Bergland 2017)
- 4mwt: SEM = 0,14 m/s (Olsen and Bergland 2017)

Older adults, including stroke rehabilitation:

- SPPB summary score : SEM = 1,42 points(Perera, Mody et al. 2006)
- 4 mwt: SEM = 0,06 m/s (Perera, Mody et al. 2006)

Minimum Detectable Change (MDC):

Frail elderly:

- Norwegian SPPB
  - Summary score: MDC_{95} = 0,8 and MDC_{90} = 0,7(Olsen and Bergland 2017)
  - Balance Subscore: MDC_{95} = 1,4 and MDC_{90} = 1,2(Olsen and Bergland 2017)
  - Walking Subscore: MDC_{95} = 0,6 and MDC_{90} = 0,5(Olsen and Bergland 2017)
  - STS Subscore: MDC_{95} = 1,1 and MDC_{90} = 0,9(Olsen and Bergland 2017)
  - 4mwt : MDC_{95} = .39 m/s and MDC_{90} = 0,33 m/s (Olsen and Bergland 2017)
- Hip-fracture patients: MDC_{90} = 3,42(Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)

Minimal Clinical Important Difference (MCID):
Older adults, including stroke rehabilitation:
SPPB summary score, substantial meaningful change = 1 point(Perera, Mody et al. 2006)

- SPPB summary score, substantial meaningful change:
  - .99 points with an anchor to walk 1 block (~200 meters)(Perera, Mody et al. 2006)
  - 1.88 points with an anchor to go up/down a flight of stairs(Perera, Mody et al. 2006)
- 4 mwt, substantial meaningful change = .08 to .11 m/s, depending on the anchor(Perera, Mody et al. 2006)

Normative Values: The SPPB score categories are 0 – 6 (low score), 7 – 9 (middle score), and 10 – 12 (high score) points. (Guralnik, Simonsick et al. 1994, Guralnik, Ferrucci et al. 2000)

Cut-off scores:
SPPB score </= 10:

- Predicts all-cause mortality (systematic review and meta-analysis; association between poor performance on the SPPB an all-cause mortality remains highly consistent regardless of follow-up length, participant age, and geographic area)(Pavasini, Guralnik et al. 2016)
- Future declines in mobility (Odds ratio 3.38, 95% confidence interval 1.32 – 8.65 compared to those who score a 12; sensitivity = .69; specificity = .84; defined by the loss of the ability to walk 400 m)(Vasunilashorn, Coppin et al. 2009)

Frailty in high functioning adults with normal mobility (Verghese and Xue 2010)

SPPB score	Sensitivity	Specificity
≤4	1.9	100
≤6	3.8	96.8
≤8	51.9	69.6
≤10	100	0

An SPPB score < 5:

- predictive of 12 month mortality (Poor area under the curve = .66; sensitivity = .66; specificity = .62;(Corsonello, Lattanzio et al. 2012))
- predictive of 12 month functional decline (Poor area under the curve = .69; sensitivity = .60; specificity = .69 (Corsonello, Lattanzio et al. 2012))
- predictive of 12 month re-hospitalization (Poor area under the curve = .49; sensitivity = .42; specificity = .63(Corsonello, Lattanzio et al. 2012))

5. Clinical Utility

Cost: Free
Equipment required: Stopwatch, measuring tape and a standard height chair (make note about the height)
Number of items: 3

Time to administer: 10- 15 minutes (Freiberger, de Vreede et al. 2012)
Training required: Yes

6. Application to specific patient diagnoses

Populations reviewed in this summary:
Older people, community dwellers, hospitalized older adults, people discharged from hospital, people with dementia, hypertension, diabetes, prior diagnosis of cardiovascular disease, previous diagnosis of cerebrovascular disease, and hip fracture.

7. Psychometric Properties:

Reliability: (excellent = >0.75; adequate = 0.4 to 0.74; poor <0.4)

Test-retest reliability: (see cutoff scores above)

- Community-dwelling persons: retest = 5-6 weeks, excellent reliability (ICC = 0.92)(Ostir, Volpato et al. 2002)
  - Balance: adequate reliability (ICC = 0.71)
  - Wlak: excellent reliability (ICC 0.86)
  - Chair-stand: excellent reliability (ICC 0.76)
- Community-dwelling persons: retest = 12-13 weeks, excellent reliability at (ICC = 0.88)(Ostir, Volpato et al. 2002)
- Community-dwelling persons: retest = 19-20 weeks, excellent reliability at (ICC = 0.91)(Ostir, Volpato et al. 2002)
- Community-dwelling persons: excellent reliability (ICC = 0.88 - 0.92)(Ostir, Volpato et al. 2002, Mijnarends, Meijers et al. 2013)
- Community-dwelling persons: retest = 6 months, excellent reliability (ICC = 0.76)(Ostir, Volpato et al. 2002)
- Community-dwelling persons: retest = 36 months, adequate reliability (ICC = 0.51)(Ostir, Volpato et al. 2002)

- Frail elderly with dementia: excellent test-retest reliability (ICC = 0.84)(Olsen and Bergland 2017)
- Frail elderly with no dementia: excellent test-retest reliability (ICC = 0.91)(Olsen and Bergland 2017)
- Frail elderly summary score: excellent reliability (ICC = 0.92)(Olsen and Bergland 2017)

Internal consistency:

- Community – dwelling persons; poor to excellent internal consistency (r = 0,67 – 0,83)(Freiberger, de Vreede et al. 2012)
- Community-dwelling persons; adequate internal consistency (r = 0,76)(Guralnik, Simonsick et al. 1994)

Sensitivity to change:

- Hip-fracture patients; *Large effect size (*Cohen´s d = 1,18) (Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)

Validity:

Predictive validity:

Falls		
Score	Odds Ratio	Interpretation
SPPB 0 – 6 vs 12	3,46	**Women** with score 0-6 are 3,46 times more likely to be recurrent fallers(Veronese, Bolzetta et al. 2014)
SPPB 0 – 6 vs 12	3,82	**Men** with score 0-6 is 3,82 times more likely to be recurrent fallers(Veronese, Bolzetta et al. 2014)
Gait speed < 0,75 m/sec	2,11	**Women** with a gait speed < 0,75 m/s is 2,11 times more likely to be recurrent fallers (Veronese, Bolzetta et al. 2014) (not significant in men)
Chair-stand >16,7 sec	1,94 women 2,75 men	Taking longer than 16,7 sec to complete five times chair-stand; 1,94 times more likely **woman** to be a recurrent faller and 2,75 times more likely for a **man**(Veronese, Bolzetta et al. 2014)
Semi-tandem for 10 sec	2,33	**Women** not able to maintain a semi-tandem position for more than 10 sec were 2,33 times more likely to be recurrent fallers(Veronese, Bolzetta et al. 2014)
Mobility Impairment: Defined as functional status and/or physical performance		
Score	Odds Ratio	Interpretation
SPPB ≤ 7 vs. 12	32.14	score ≤ 7 is 32 times more likely to have a mobility impairment(Vasunilashorn, Coppin et al. 2009, Freiberger, de Vreede et al. 2012)
SPPB = 8 vs. 12	9,16	score 8 is 9 times more likely to have a mobility impairment(Vasunilashorn, Coppin et al. 2009, Freiberger, de Vreede et al. 2012)
SPPB = 9 vs. 12	9,11	score 9 is 9 times more likely to have a mobility impairment(Vasunilashorn, Coppin et al. 2009, Freiberger, de Vreede et al. 2012)
SPPB = 10 vs. 12	4,23	score 10 is 4 times more likely to have a mobility impairment(Vasunilashorn, Coppin et al. 2009, Freiberger, de Vreede et al. 2012)
Mobility Related Disability		
Score	Odds Ratio /Relative Risk	Interpretation
SPPB 1-4 vs. 9-11	OR=4,8	score 1-4 is 4 times more likely to have a mobility related disability(Ostir, Markides et al. 1998, Freiberger, de Vreede et al. 2012)
SPPB 5-8 vs. 9-11	OR=2,4	score 5-8 is 2 times more likely to have a mobility related disability(Ostir, Markides et al. 1998, Freiberger, de Vreede et al. 2012)
SPPB 4-6 vs.10-12	RR=2,9 – 4,9*	score 4-6 is 3-5 times more likely to have a mobility related disability (Guralnik, Ferrucci et al. 2000, Freiberger, de Vreede et al. 2012)
SPPB 7-9 vs.10-12	RR=1,5-2,1	score 7-9 is 1,5-2 times more likely to have a mobility related disability (Guralnik, Ferrucci et al. 2000, Freiberger, de Vreede et al. 2012)
At 1 year follow up		
SPPB 4-6 vs.10-12	RR=5,0	score 4-6 is 5 times more likely to have a mobility related disability (Guralnik, Ferrucci et al. 1995, Freiberger, de Vreede et al. 2012)

SPPB 7-9 vs.10-12	RR=2,1	score 7-9 is 2 times more likely to have a mobility disability (Guralnik, Ferrucci et al. 1995, Freiberger, de Vreede et al. 2012)
At 4 years follow up		
SPPB 4-6 vs.10-12	RR= 4,9	score 4-6 is 4-5 times more likely to predict disability 4 years later (Guralnik, Ferrucci et al. 1995, Freiberger, de Vreede et al. 2012, Gawel, Vengrow et al. 2013)
SPPB 7-9 vs.10-12	RR=1,8	score 7-9 is 1,8 times more likely to have a mobility related disability (Guralnik, Ferrucci et al. 1995, Freiberger, de Vreede et al. 2012)
ADL Disability		
Score	Relative Risk	Interpretation
SPPB 4-6 vs. 10-12	3,4 – 7,4*	Score 4-6 is 3-7 times more likely to have ADL disability (Guralnik, Ferrucci et al. 2000, Freiberger, de Vreede et al. 2012)
SPPB 7-9 vs. 10-12	1,2-2,0*	Score 7-9 is 1-2 times more likely to have ADL disability (Guralnik, Ferrucci et al. 2000, Freiberger, de Vreede et al. 2012)
At 1 year follow up		
SPPB 4-6 vs. 10-12	5,7	Score 4-6 is 5,7 times more likely to have ADL disability (Guralnik, Ferrucci et al. 1995, Freiberger, de Vreede et al. 2012)
SPPB 7-9 vs. 10-12	2,1	Score 7-9 is 2,1 times more likely to have ADL disability (Guralnik, Ferrucci et al. 1995, Freiberger, de Vreede et al. 2012)
At 2 years follow up		
SPPB 1-4 vs. 9-11	6,2	Score 1-4 is 6,2 times more likely to have ADL disability (Ostir, Markides et al. 1998, Freiberger, de Vreede et al. 2012)
SPPB 5-8 vs. 9-11	2,0	Score 5-8 is 2 times more likely to have ADL disability (Ostir, Markides et al. 1998, Freiberger, de Vreede et al. 2012)
At 4 years follow up		
SPPB 4-6 vs. 10-12	4,2-7,1	Score 4-6 is 4-7 times more likely to have ADL disability (Guralnik, Ferrucci et al. 1995, Freiberger, de Vreede et al. 2012)
SPPB 7-9 vs. 10-12	1,3-1,6	Score 7-9 is 1,3-1,7 times more likely to have ADL disability (Guralnik, Ferrucci et al. 1995, Freiberger, de Vreede et al. 2012)
Institutionalization		
Score	Relative Risk	Interpretation
SPPB $\leq$ 5	3,4 (males) 2,8 (females)	Males with a score of 5 or less are 3,4 times more likely to be institutionalized. Females with a score of 5 or less is 2,8 times more likely to be institutionalized (Guralnik, Simonsick et al. 1994, Gawel, Vengrow et al. 2013)
SPPB + 1 point	NA	Each 1 point increase in the baseline SPPB score has 21% relative decrease in the risk of nursing home placement, and a 5% decrease in the risk of hospitalization (Miller, Wolinsky et al. 2008, Gawel, Vengrow et al. 2013)
General Health Improvement		
	Odds Ratio	Interpretation

SPPB	0,80	SPPB was significantly associated with functional decline after discharge from acute care hospitals (Corsonello, Lattanzio et al. 2012)
Patients perception	2,03	Patients are 2 times more likely to of having a 12 week Global Assessment of Improvement score >= 8 for a 1 SD increase in performance/self-report score (Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)
Investigator´s perception	2,85	Patients are 2,85 times more likely to of having a 12 week Global Assessment of Improvement score >= 8 for a 1 SD increase in performance/self-report score (Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)
Mortality		
Score	Hazard Ratio /Odds Ratio	Interpretation
SPPB +1 point	NA	Each 1 point increase in the baseline SPPB score has 12% relative decrease in the risk of death (Miller, Wolinsky et al. 2008, Gawel, Vengrow et al. 2013)
SPPB = 0 - 4	NA	The lower scores were more frequently observed in patients who died during follow-up (65,7%) compare to survivors (38,3%) (Corsonello, Lattanzio et al. 2012)
SPPB = 5 - 8	HR = 0,70	SPPB score qualified as an independent predictor of mortality after discharge from acute care hospitals (Corsonello, Lattanzio et al. 2012)
SPPB = 9 - 12	HR = 0,47	SPPB score qualified as an independent predictor of mortality after discharge from acute care hospitals (Corsonello, Lattanzio et al. 2012)
SPPB =7-9 vs 10-12	OR = 1,50	Score 7-9 have 1,5 times the risk of all-cause mortality (Pavasini, Guralnik et al. 2016)
SPPB =4-6 vs 10-12	OR = 2,14	Score 4-6 have 2,14 times the risk of all-cause mortality (Pavasini, Guralnik et al. 2016)
SPPB =0-3 vs 10-12	OR = 3,25	Score 0-3 have 3,25 times the risk of all-cause mortality (Pavasini, Guralnik et al. 2016)

*Range for different sites.

Concurrent validity: (excellent > .6; adequate is .31 to .59; poor $\leq$ .30)

- ADL-disability;
  - Excellent correlation with overall function (r = 0.65)(Freiberger, de Vreede et al. 2012)
  - Excellent correlation with basic lower extremity function (r = 0.63)(Freiberger, de Vreede et al. 2012)
  - Excellent correlation with advanced lower extremity function (r = 0.67)(Freiberger, de Vreede et al. 2012)
  - Adequate correlation with disability component limitation (r = 0.37)(Freiberger, de Vreede et al. 2012)
  - Adequate correlation with personal care (r = 0.55)(Freiberger, de Vreede et al. 2012)

- Mobility:
  - Excellent correlation with gait speed (r = 0.84)(Freiberger, de Vreede et al. 2012)
  - Excellent correlation with physical mobility (r = 0.65)(Freiberger, de Vreede et al. 2012)

- Excellent correlation with physical performance (r = 0.71)(Freiberger, de Vreede et al. 2012)
- Excellent correlation with 400-m walk and mobility disability (r =0.74, AUC = 0.75)(Mijnarends, Meijers et al. 2013)

- Strength and Power:
  - Adequate correlation with lower extremity power (r = 0.55)(Freiberger, de Vreede et al. 2012)
  - Adequate correlation with leg extensor strength (r = 0.44)(Freiberger, de Vreede et al. 2012)
  - Adequate correlation with grip strength (r = 0.37)(Freiberger, de Vreede et al. 2012)

- Health-related Quality of Life, SF-36;
  - Adequate to excellent correlation with physical function (r = 0.48 – 0,67)(Freiberger, de Vreede et al. 2012)
  - Excellent correlation with role physical (r = 0.60)(Freiberger, de Vreede et al. 2012)

- Self–reported vs. performance-based measures(Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)
  - Excellent correlation between the SPPB total score and the AM-PAC Physical Mobility (r = .65)(Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)
  - Excellent correlation between the SPPB total score and the SF-36 Physical Function (r = .65)(Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)
  - Adequate correlation between the SPPB total score and the SF-36 LE Strength (r = .44)(Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)
  - Adequate correlation between the SPPB total score and the SF-36 LE Power (r = .55)(Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)
  - Poor to adequate correlation between the SPPB and other SF-36 (non-physical) domains (.27 to .50)(Latham, Mehta et al. 2008, Freiberger, de Vreede et al. 2012)

Floor and ceiling effects: (Excellent = No floor/ceiling effects; Adequate = Floor/ceiling effects in less than < 20% of population; Poor = floor/ceiling effects for > 20% of population)

- Floor effects:
  - Community-dwelling persons: Excellent/adequate (no to minimal) floor effects = 0 - 7% (Freiberger, de Vreede et al. 2012)
  - Older people with and without dementia: Adequate (minimal) floor effect for summary score = 6.6% scored 0(Olsen and Bergland 2017)
  - Older people with and without dementia: Poor (substantial) floor effect on balance subscale = 27,9 % scored 0 points (test 1 and 2), and chair-stand = 49 % (test 1) and 59% (test 2) scored 0 points (Olsen and Bergland 2017)
- Ceiling Effects:
  - Community-dwelling persons: Excellent/adequate (no to minimal) ceiling effects = 2-16%(Freiberger, de Vreede et al. 2012)
  - Older people with and without dementia: Adequate (minimal) ceiling effect for summary score = 1,6 % scored 10 (Olsen and Bergland 2017)

8. Documentation and Clinical Decision-Making Tips:

Components to include in documentation: Total score, subscores, how results informed decision-making

9. Links to other relevant resources:

Websites:

English instructions and score sheet;
http://www.mcroberts.nl/wpcontent/uploads/2016/11/SPPB_form.pdf
Norwegian instructions and score sheet:SPPB på norsk

Online presentations: Short Physical Performance Battery (SPPB)

10. Sample:

Study sample:

- Corsonello et al., 2012: N = 506 patients discharged from acute care hospitals, aged 70 years or more.
  CASP: 11/11 points.
- Freiberger et al., 2012 (systematic review): N =78 articles, 12 instruments. CASP: 9/10 points.
- Gawel et al., 2013 (systematic review): 5 articles, 3 evaluated the capability of the SPPB to predict long term disability and 2 used the SPPB to predict hospitalization. CASP: 10/10 points.
- Guralnik et al., 2000: n= 4588, all white and Hispanic community-dwelling people, non-disabled at baseline. CASP: 11/12 points.
- Guralnik et al., 1995: N = 1122 with no disability, able to walk 0,8 km and climb stairs without assistance, living in the community, 71 years or older. CASP: 11/11 points.
- Guralnik et al., 1994: N = 5000, community-dwelling older adults age 71+. CASP: 12/12 points.
- Latham et al., 2008: N = 108 people with a hip fracture. Inpatient and out patient rehabilitation facilities in Norway, The United Kongdom, Sweden, Israel, Germany, the United States, Denmark and Spain. CASP: 12/12 points.
- Mijnarends et al., 2013 (systematic review): N = 62 articles, measurement properties of tools to measure muscle mass, strength, and physical performance. CASP: 9/10.
- Miller et al., 2008: N= 998 community dwelling African Americans, aged 49 – 65. CASP: 11/11 points.
- Olsen and Bergland, 2017: N= 61, mean age 88 years, 82 % women, people with dementia (n= 24) and without dementia (N= 37). CASP: 11/12 points.
- Ostir et al., 1998: N = 3050 noninstitutionalized Mexican Americans aged 65 – 99. CASP: 12/12 points.
- Ostir et al., 2002: N = 1002 moderate to severely disabled older women, 65+. CASP: 12/13 points.
- Pavasisini et al., 2016 (systematic review and meta-analysis): 17 studies, N= 16534, mean age 76 years. 47 % had hypertention, 9 % diabetes, 39 % prior diagnosis of cardiovascular disease and 5 % had previous diagnosis of cerebrovascular disease. CASP: 10/10 points.
- Perera et al., 2006: 3 data sets, Older persons with mild to moderate mobility limitations N= 100, community-dwelling older adults N = 457, stroke survivors N= 100. CASP: 12/13 points.
- Soares Menezes et al., 2017 (systematic review): Older adults during hospitalization. CASP: 10/10 points.
- Vasunilashorn et al., 2009: N = 542 who completed 400 m walk at baseline, aged 65 and older.
  CASP: 11/12 points.
- Verghese et al., 2010: N = 539 high functioning, community living, older adults, aged 70 and older. CASP: 10/11 points.
- Veronese et al., 2014: N = 2710 older-aged people. CASP: 13/13 points.

. "Short Physical Performance Battery Protocol and Score Sheet." from http://www.mcroberts.nl/wp-content/uploads/2016/11/SPPB_form.pdf.
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