

Short Physical Performance Battery (SPPB) 'how to' guide

The SPPB is an objective measure of balance, lower extremity strength and functional capacity in older adults

Materials required:

- Stopwatch
- Chair with backrest
- Tape measure

Procedure:

The Short Physical Performance Battery consists of 3 tests, (Balance, Gait speed, Chair stand) and all tests should be performed in the same order as presented in this protocol.

Balance test

- The participant must be able to stand unassisted without the use of a cane or walker. You may help the participant to get up.

Instruction to participant:

"Let's begin the evaluation. I would like you to stand in different positions to test your balance. If you cannot do a particular stance, or if you feel it would be unsafe to try to do it, tell me and we'll move on to the next one. Please don't do anything you feel unsafe in attempting."

The balance tests stances are shown in the figure below:



Source: https://www.physio-pedia.com/Short_Physical_Performance_Battery#/media/File:Screenshot_2022-11-30_at_09.31.30.png

A. Side by side Stand

(Demonstrate) "I want you to try to stand with your feet together, side-by-side, for about 10 seconds" You may use your arms or bend your knees but try not to move your feet. Please hold the position until we tell you to stop.

Stand next to the participant to help him/her into the side-by-side position.

Supply just enough support to the participant's arm to prevent loss of balance.

When the participant has his/her feet together, ask "**Are you ready?**"

Then let go and begin timing as you say, "**Ready, begin.**"

Stop the stopwatch and say "**Stop**" after 10 seconds or when the participant steps out of position or grabs your arm.

B. Semi-Tandem Stand

(Demonstrate) Now I want you to try to stand with the side of the heel of one foot touching the big toe of the other foot for about 10 seconds. You may put either foot in front, whichever is more comfortable for you.

Repeat instructions above.

C. Tandem Stand

(Demonstrate) "Now I want you to try to stand with the heel of one foot in front of and touching the toes of the other foot for about 10 seconds. You may put either foot in front, whichever is more comfortable for you.

Repeat instructions above.

Gait Speed test

- Mark a 4m course on a flat surface.

Instructions to participant:

"Now I am going to observe how you normally walk. If you use a cane or other walking aid and you feel you need it to walk a short distance, then you may use it."

A. First Gait Speed test

"This is our walking course. I want you to walk to the other end of the course at your usual speed, just as if you were walking down the street to go to the store."

Demonstrate

"Walk all the way past the other end of the tape before you stop. I will walk with you. Do you feel this would be safe?"

Have the participant stand with both feet touching the starting line.

When I want you to start, I will say: "Ready, begin." When the participant acknowledges this instruction say: "Ready, begin."

Press the start/stop button to start the stopwatch as the participant begins walking. Walk behind and to the side of the participant.

Stop timing when one of the participant's lead foot is completely across the end line.

B. Second Gait Speed test

"Now I want you to repeat the walk. Remember to walk at your usual pace and go all the way past the other end of the course."

Repeat instructions above.

Chair Stand test

- Patient position: Sitting in the middle of the chair (against wall) with back straight and feet flat on the floor and hip width apart. Patients should have their hands placed on opposite shoulders crossed at the wrists.
- Prior to test completion the clinician should demonstrate the sit to stand procedure.

Instruction to participant:

"Do you think it would be safe for you to try to stand up from a chair without using your arms?"

If yes then explain and demonstrate procedure

First, fold your arms across your chest and sit so that your feet are on the floor; then stand up keeping your arms folded across your chest.

“When I say 1, 2, 3, GO begin standing up and sitting down again as quickly as you can. I will count each full sit to stand out loud and you should complete 5 as quickly as you can. Are you ready to start?” Once the patient says yes, start the test by saying “1, 2, 3, GO”.

Stop the stopwatch when participant has straightened up completely for the fifth time

How to measure:

- The clinician times 5 completed sit to stands
- If the patient has to use their arms to stand stop the test.
- Incorrectly executed stands i.e., not standing fully, are not counted

Scoring:

Scoring for each balance test:

Side-Side	Points	Semi-Tandem	Points	Tandem	Points
Held for 10 sec	1 point	Held for 10 sec	1 point	Held for 10 sec	2 points
Not held for 10 sec	0 points	Not held for 10 sec	0 points	Held for 3 to 9.99 sec	1 point
Not attempted	0 points	Not attempted	0 points	Held for < than 3 sec	0 points
				Not attempted	0 points

Balance test scores

Side by side Test Score _____

Semi-tandem Test Score _____

Tandem Test Score _____

Total _____

Scoring Gait speed test:

1. Time for 4 meters. _____ sec (measure to two decimal places)
2. If participant did not attempt test or failed, circle why in table below. Otherwise allocate a score using the table below

Tried but unable to complete	1
Participant could not walk unassisted	2
Not attempted, you felt unsafe	3
Not attempted, participant felt unsafe	4
Participant unable to understand instructions	5
Other (Specify)	6
Participant refused	7
Aids for walk (None, Cane other)	

Scoring

Completion time (4m)	Points
>8.70 sec	1
6.21-8.70 sec	2
4.82-6.20 sec	3
<4.82 sec	4
≥60 sec	0

Comments _____

Scoring for chair stand test:

Participant unable to complete 5 chair stands or completes stands in >60 sec	0 points
If chair stand time is 16.70 sec or more	1 point
If chair stand time is 13.70 to 16.69 sec	2 points
If chair stand time is 11.20 to 13.69 sec	3 points
If chair stand time is 11.19 sec or less	4 points

Scoring for Complete Short Physical Performance Battery Test scores

Total Balance Test Score _____
 Gait Speed Test Score _____
 Chair Stand Test Score _____
 Total _____

Classification of limitations based on SPPB score:

Score	Classification
0-3	Severe limitations
4-6	Moderate limitations
7-9	Mild limitations
10-12	Minimal limitations

Example Cut Point:

low physical performance	≤8 points
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* Select the most appropriate cut point for the population you are working with

Key references:

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2. Guralnik JM, Ferrucci L, Simonsick EM, Salive ME, Wallace RB. Lower-extremity function in persons over the age of 70 years as a predictor of subsequent disability. *N Engl J Med*. 1995 2;332(9):556-61. doi: 10.1056/NEJM199503023320902.
3. Pavaiani R., Guralnik J., Brown J.C., di Bari M., Cesari M., Landi F., Vaes B., Legrand D., Verghese J., Wang C., et al. Short physical performance battery and all-cause mortality: Systematic review and meta-analysis. *BMC Med*. 2016;14:215. doi: 10.1186/s12916-016-0763-7
4. Short physical performance battery (SPPB) guide [Internet]. sppbguide.com. Available from: <https://sppbguide.com/smart-phone-app>