



# PHYSICAL FUNCTION TESTS



ID NUMBER:

FORM CODE: 

P	F	X
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DATE: 9/21/2021  
Version 4.0

## ADMINISTRATIVE INFORMATION

0a. Completion Date: 

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Month		Day		Year					

0b. Staff ID: 

<input type="text"/>	<input type="text"/>	<input type="text"/>
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0c. Type of visit:   
 Full..... F  
 Abbreviated Clinic..... A → **Go to item 7**

## A. CHAIR STANDS

(This section for Full Clinic visit only)

### Single Chair Stand

**“This is a test of strength and stability in your legs in which you stand up from a chair without using your arms. Fold your arms across your chest, like this, and stand when I say GO, keeping your arms in this position. Any questions? Ready, Go!”**

- |                            |                          |   |                     |
|----------------------------|--------------------------|---|---------------------|
| 1. Participant Refused     | <input type="checkbox"/> | → | <b>Go to item 3</b> |
| Not attempted, unable      | <input type="checkbox"/> | → | <b>Go to item 3</b> |
| Attempted, unable to stand | <input type="checkbox"/> | → | <b>Go to item 3</b> |
| Rises using arms           | <input type="checkbox"/> | → | <b>Go to item 3</b> |
| Stands without using arms  | <input type="checkbox"/> |   |                     |

### Repeated Chair Stands

**“This time I want you to stand up five times as quickly as you can, keeping your arms folded across your chest.” With the next instruction, cross your arms over your chest and then rise while emphasizing “full standing position,” and sit while emphasizing “all the way down: **“When you stand up, come to a full standing position each time, and when you sit down, sit all the way down each time. I will demonstrate two chair stands to show you how it is done.”** Do two chair stands quickly; count as you stand each time. Then begin the test. **“When I say GO stand five times in a row, as quickly as you can, without stopping. Stand up all the way and sit all the way down each time. Ready, Go!”** Start timing with “Go” and stop with the last stand or maximum of 1 minute.**

- |  |                          |   |  |
|--|--------------------------|---|--|
| 2. Participant Refused                 | <input type="checkbox"/> | → | <b>Go to item 3</b>                          |
| Not attempted, unable                  | <input type="checkbox"/> | → | <b>Go to item 3</b>                          |
| Attempted, unable to complete 5 stands | <input type="checkbox"/> | → | Number completed: 0 <input type="checkbox"/> |
|  |                          |   | 1 <input type="checkbox"/>                   |
|  |                          |   | 2 <input type="checkbox"/>                   |
|  |                          |   | 3 <input type="checkbox"/>                   |
|  |                          |   | 4 <input type="checkbox"/>                   |

Completes 5 stands  → Enter time for 5 stands: 

<input type="text"/>	<input type="text"/>	.	<input type="text"/>	<input type="text"/>
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## B. STANDING BALANCE

(This section for Full Clinic visit only)

**“I’m going to ask you to stand in several different positions that test your balance. I’ll demonstrate each position and then ask you to try to stand in each position for 10 seconds. I’ll stand next to you to provide support if you lose your balance. Do you have any questions?”** For the balance tests, begin timing when (s)he lets go of your arm. Stop timing if (s)he takes a step, touches something for support, or reaches 10 seconds.

### Semi Tandem Stand

**“First, I would like you to try to stand with the side of the heel of one foot touching the big toe of the other foot for 10 seconds. Please watch while I demonstrate. You may put either foot in front. You can use your arms, bend your knees or move your body to maintain your balance. Try to hold your feet in position until I say stop. If you lose your balance, take a step like this. Hold onto my arm while you get in position.”** Allow the participant to hold onto your arm to get balanced. **“When you are ready, let go.”**

- |  |   |  |
|--|---|--|
| 3. Participant Refused                           | <input type="checkbox"/> <sub>1</sub> →             | <b>Go to item 4</b>  |
| Not attempted, unable                            | <input type="checkbox"/> <sub>2</sub> →             | <b>Go to item 4</b>  |
| Unable to attain position or hold for one second | <input type="checkbox"/> <sub>3</sub> →             | <b>Go to item 4</b>  |
| Holds position $\geq 1$ but less than 10 seconds | <input type="checkbox"/> <sub>4</sub> → Enter time: | <input type="text"/> . <input type="text"/> <input type="text"/> → <b>Go to item 4</b> |
|  |   | Seconds    Hundredths  |
| Holds position for 10 seconds                    | <input type="checkbox"/> <sub>5</sub> →             | <b>Go to item 5</b>  |

### Side-by-side Stand (only if could not do Semi-Tandem for 10 seconds)

**“Now, I would like you to try to stand with your feet together, side-by-side, for 10 seconds. You can use your arms, bend your knees or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I tell you to stop. Hold on to my arm while you get in position. When you are ready, let go.”**

- |  |   |  |
|--|---|--|
| 4. Participant Refused                           | <input type="checkbox"/> <sub>1</sub> →             | <b>Go to item 7</b>  |
| Not attempted, unable                            | <input type="checkbox"/> <sub>2</sub> →             | <b>Go to item 7</b>  |
| Unable to attain position or hold for one second | <input type="checkbox"/> <sub>3</sub> →             | <b>Go to item 7</b>  |
| Holds for $\geq 1$ but less than 10 seconds      | <input type="checkbox"/> <sub>4</sub> → Enter time: | <input type="text"/> . <input type="text"/> <input type="text"/> → <b>Go to item 7</b> |
|  |   | Seconds    Hundredths  |
| Holds for 10 seconds                             | <input type="checkbox"/> <sub>5</sub> →             | <b>Go to item 7</b>  |

### Tandem Stand

**“Now I would like you to try to stand with the heel of one foot in front of and touching the toes of the other foot for 10 seconds. Please watch while I demonstrate. You may put either foot in front. You can use your arms, bend your knees or move your body to maintain your balance. Try to hold your feet in position until I say stop. If you lose your balance, take a step like this. Hold onto my arm while you get in position. When you are ready, let go.”**

#### Trial 1

- |  |   |  |
|--|---|--|
| 5. Participant Refused                           | <input type="checkbox"/> <sub>1</sub> →             | <b>Go to item 7</b>  |
| Not attempted, unable                            | <input type="checkbox"/> <sub>2</sub> →             | <b>Go to item 7</b>  |
| Unable to attain position or hold for one second | <input type="checkbox"/> <sub>3</sub> →             | <b>Go to item 7</b>  |
| Holds position $\geq 1$ but less than 10 seconds | <input type="checkbox"/> <sub>4</sub> → Enter time: | <input type="text"/> . <input type="text"/> <input type="text"/> |
|  |   | Seconds    Hundredths  |

Holds position for 10 seconds

<sub>5</sub> → **Go to item 7**

**Trial 2, "Let's try this one more time."**

- 6. Participant Refused
- Not attempted, unable
- Unable to attain position or hold for one second
- Holds position  $\geq 1$  but less than 10 seconds
- Holds position for 10 seconds

<sub>1</sub>  
<sub>2</sub>  
<sub>3</sub>  
<sub>4</sub> → Enter time: .  
Seconds Hundredths  
<sub>5</sub>

**C. 4 METER WALK**

Ask participants who arrive with walking aids if they think they can do this short walk without the device. **"I'm going to ask you to do a short walk over this 4 meter course two times. You will walk at your normal or usual pace for both trials. I will demonstrate. Place your feet with your toes behind, but just touching the starting line, like this. Walk a few steps past the finish line."** Walk to the other end of the course at your usual pace, making certain you walk past the finish line before slowing or stopping. Start timing with participant's first movement, and stop timing when the first foot completely crosses an imaginary plane extending vertically up from the finish line/tape.

**Normal Pace Walk**

**"Do you have any questions? When I say "Go", please walk at your normal pace. Remember to walk a few steps past the finish line. Ready? Go."**

**Trial 1**

- 7. Participant Refused
- Not attempted, unable to walk
- Completes with walking aid
- Completes without walking aid

<sub>1</sub> → **Go to item 9**  
<sub>2</sub> → **Go to item 9**  
<sub>3</sub> → .  
Seconds Hundredths  
<sub>4</sub> → .  
Seconds Hundredths

**Trial 2**

- 8. Participant Refused
- Not attempted, unable to walk
- Completes with walking aid
- Completes without walking aid

<sub>1</sub> → **Go to item 9**  
<sub>2</sub> → **Go to item 9**  
<sub>3</sub> → .  
Seconds Hundredths  
<sub>4</sub> → .  
Seconds Hundredths

**D. GRIP STRENGTH**

(This section for Full Clinic visit only)

**"The next test I'll ask you to do is the grip strength test. This device is used to measure the strength in your hand. Before starting, I will ask you a few questions to make sure it is safe for you to do this test."**

9. Do you have any pain or arthritis in either hand or wrist?

Yes ..... <sub>Y</sub>  
 No ..... <sub>N</sub> → **Go to item 10**

a. In which hand or wrist is the pain or arthritis?

Right..... <sub>R</sub>

Left ..... <sub>L</sub>

Both..... <sub>B</sub>

b. Has the pain or arthritis in your hand(s) or wrist(s) gotten worse recently?

Yes ..... <sub>Y</sub>

No..... <sub>N</sub>

c. Will the pain or arthritis in your hand(s) or wrist(s) keep you from squeezing as hard as you can?

Yes ..... <sub>Y</sub>

No..... <sub>N</sub>

10. Have you had any surgery on either hand or wrist in the past 3 months?

Yes ..... <sub>Y</sub>

No ..... <sub>N</sub> → Go to Test

a. Was the surgery on your right, left or both hands or wrists?

Right..... <sub>R</sub> → Test left side only

Left ..... <sub>L</sub> → Test right side only

Both..... <sub>B</sub> → Do not test

**“Which hand is your preferred or best hand to test for maximum strength?”** This response determines which hand is tested unless this side was excluded in the previous screening questions. Record response. **“Please extend that arm in front of your body and rest it on the table with your arm straight and wrist on the mouse pad.”** Demonstrate proper positioning of the dynamometer then place wrist strap around the participant’s wrist and position participant. (S)he should be seated facing a table at shoulder level with arm extended in front of participant approximately 90° and resting on the table with the elbow held straight (180°). The dynamometer must be perpendicular to the table and hanging off the table edge during testing. Adjust the grip until correct position attained. Allow one submaximal practice trial to determine if the participant understands the procedure and that the grip size is appropriate. **“Are the bars the right distance apart for a comfortable grip? Now try it once just to get the feel of it. For this practice, just squeeze gently. It won't feel like the bars are moving, but your strength will be recorded.”** Show dial to participant then reset to zero. **“You’ll do this two times. When I say “squeeze”, squeeze as hard as you can. Ready? Squeeze! Squeeze! Squeeze! Now, stop.”**

11a. Hand used:     <sub>R</sub> Right     <sub>L</sub> Left

11b. Trial 1   kg     Allow 15 to 20 sec rest in between trials

Reset to zero. **“Now, one more time. Squeeze as hard as you can. Ready. Squeeze! Squeeze! Squeeze! Now, stop.”**

11c. Trial 2   kg

11d. Completion Status:

Did 1 trial..... <sub>A</sub>

Did 2 trials ..... <sub>B</sub>

Excluded ..... <sub>C</sub>

Unable to do..... <sub>D</sub>



## INSTRUCTIONS FOR THE PHYSICAL FUNCTION (PFX) FORM

### I. General Instructions

This form is completed at the clinic visit only. The PFX is collected in its entirety at the ARIC clinic visit for the non-ACHIEVE participants and at the ACHIEVE/BHFU annual visits for the ARIC/ACHIEVE shared participants.

Prior to training for the “Physical Function” Exam form, all examiners should complete the online training module for the National Institute on Aging Short Physical Performance Battery (SPPB) as described in ARIC Manual 32. Note that the video does not include training on grip strength. The video should be reviewed prior to initial training session and every 6 months. Details on downloading the video can be found at this website by clicking “Instructions - pdf”. “CD (Download and Execute) – (exe)” contains the video material to be downloaded.

In general, since motivation and level of understanding can have a significant impact on performance, each component of the exam should be administered strictly according to the protocol. Do not provide additional description or encouragement beyond the key points provided by the standard scripts.

Allow the participant to rest between tests if out of breath or fatigued during the assessments.

### II. Detailed Instructions for each Item

- 0a. Enter the date on which the participant was seen in the clinic.
- 0b. Enter the staff ID for the person who completed this form.
- 0c. Item 0c and accompanying instructions only apply to the ARIC visit form. Enter the type of visit: full clinic visit or abbreviated clinic visit. If it is a full clinic visit, go to question 1 and begin chair stands. If it is an abbreviated clinic visit, go to question 7 and begin the 4-meter walk; in the abbreviated clinic visits, the chair stands, balance tests and grip strength will not be offered.

#### A. SPPB Chair Stands

Walking aids are not allowed. This task is only offered in the full clinic visit.

##### Single chair stand:

Question 1: Record completion status of the single chair stand. A demonstration of this test is not required. If the participant stands without using arms, go to question 2. Otherwise, go to question 3.

##### Repeated Chair Stands

Question 2: This test should be demonstrated. Record completion status. If the participant attempted but was unable to complete 5 stands, record the number completed. If the participant completed 5 chair stands, record the time in seconds and hundredths of seconds (00.00).

#### B. SPPB Standing Balance

Walking aids are not allowed. This is only offered in the full clinic visit. Read the script and demonstrate each task. Start timing when the participant lets go of your arm. Stop the

stopwatch if they take a step or grab for support. Record to 0.01 second how long participant is able to hold this position. Say, "STOP" after 10 seconds.

Question 3: Record completion status of the semi-tandem stance. If the participant held the stance for 1 second or more but less than 10 seconds, record the time in seconds and hundredths of a second (0.00), then go to question 4. If the position was held for the full 10 seconds, record "Holds position for 10 seconds", skip question 4 and go to question 5. If the participant held the semi-tandem stand for 10 seconds, also score the side-by-side stand as "held for 10 seconds".

If the participant feels it would be unsafe to try, probe for the reason, and reassure the participant that you will help them into the position. If they still feel they should not attempt it, record, "Participant refused" or "Not attempted, unable" (whichever is appropriate) for this and the more difficult stands and go on to the next test.

Question 4: This question is skipped if the participant held the position in question 3 for 10 seconds. Record the completion status of the side-side-by stance then go to question 7. If the participant held the stance for 1 second or more but less than 10 seconds, record the time in seconds and hundredths of a second (0.00), then go to question 7.

Question 5: If the participant is unable to hold the semi-tandem stand for at least 10 seconds, do not attempt the tandem stand in question 5. For those who held the semi-tandem stance in question 3 for 10 seconds, continue with question 5. Record the completion status of the tandem stand. If the participant held the stance for 1 second or more but less than 10 seconds, record the time in seconds and hundredths of a second (0.00), then offer a second attempt. (Question 6). If the position was held for the full 10 seconds, record "Holds position for 10 seconds", skip question 6 and go to question 7.

Question 6: This is a second attempt at the tandem stance if the time holding the tandem stance was 1 second or more but less than 10 seconds. Record completion status. Go to question 7.

### **C. SPPB Four Meter Walk**

Two timed walks measure the time taken to walk 4 meters on a pre-marked course at the participant's usual pace. Make certain participants begin the walk with toes at the start line and that they walk past the finish line before slowing or stopping. If necessary, participants may use walking aids, such as a walker or cane. Ask participants who arrive with walking aids if they think they can do this short walk without the device, as many with aids will be both comfortable and capable of doing the walks without a walking aid.

Read the script, demonstrate, then have the participant perform the task. Start timing with the participant's first movement. Follow along a few paces behind and a little to the side of the participant. Stop timing when the first foot completely crosses an imaginary plane extending vertically up from the ending line/tape.

Question 7: Record completion status of the first 4-meter walk. For those who complete the task, record the time to the nearest 0.01 second in the appropriate line, either "Completes with walking aid" or "Completes without walking aid".

Question 8. Now repeat the usual pace walk and record the completion status. For those who completed the walk, record the time to the nearest 0.01 second in the appropriate area, depending on whether or not they used a walking aid.

### **D. Grip Strength**

Grip strength is only offered in the full clinic visit. Read the script to the participant. Assess fit of the dynamometer and adjust if necessary. Position the participant, demonstrate use and allow one submaximal practice trial. Ask each question in questions 9-10. The only exclusion criteria is surgery in both hands in the past 3 months.

Question 9: Ask about pain or arthritis in either hand or wrist; if "Yes", go to question 9a. If "No", go to question 10. Questions 9a, 9b, and 9c query the participant on affected side, recent exacerbation, and perception of effect it may have on grip strength.

Question 10: Ask the participant about surgery on the hands or wrists in the past three months. If s/he has not had surgery, go to question 11. If s/he has had surgery, go to question 10a (determine laterality).

Question 11a. Record which hand the participant is using to obtain maximum strength. This is typically the dominant hand.

Question 11b. Record the kilograms from the first trial, rounding to the nearest 2 kg. If exactly between two even numbers on dynamometer, round up. Reset to zero.

Question 11c. Record the kilograms from the second trial.

Question 11b. Record the completion status.