

**WEIGHT**

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## WEIGHT

### 1. Background and rationale

Weight is measured in kilograms using a standard balance beam scale. Body weight and body mass index (a mathematical function of weight and height) are important determinants of body composition and will be used to address the following research questions: 1) How does weight, independent of change in lean mass, affect the risk of disability in old age? 2) To what degree is weight loss associated with a decline in physical function? 3) To what extent is body mass index (weight/stature<sup>2</sup>) a reasonable proxy for total body fatness in the elderly? 4) What is the impact of specific health conditions on weight? 5) Does weight increase, decrease, or have no substantial impact on mortality risk following an acute health event?

### 2. Equipment and supplies

- Standard balance beam scale that can be read from front and back.

#### 2.1 Maintenance

- When not in use, rest the counterweight (larger weight) in the far right position.
- The top weight should rest in the left or zero position.
- The counterweight should always be lifted carefully before it is moved across the beam. This prevents wear on the notches, which could lead to erroneous readings.
- Keep the scale on a level surface and move it as little as possible.

#### 2.2 Calibration

At the beginning of the study, and then yearly, the scale calibration should be checked by a local Department of Weights and Measures. If this is not possible, inform the Health ABC Coordinating Center.

Scale calibration should be checked monthly against known weights. Each center should have a 50 kg weight (alternatively: two 25 kg weights or two 50 lb weights) for this purpose. (If these are not certified calibration weights, e.g., body building weights, their exact weight should be determined by the local Department of Weights and Measures.)

- Put both the top and bottom counterweights in the zero position. With no weight on the platform, the beam should “float.” Then put the known weights on the scale, and adjust the counterweights until the beam “floats.”
- If the beam does not “float” at zero with no weight on the platform, or if the measurement of the known weight is off by more than  $\pm 1$  kg, the scale may need to be repaired or replaced.

Perform calibration check for linearity once per month. Linearity is checked by weighing a volunteer and recording the weight. With the person still standing on the scale, add 5 kg (10 lb [4.5 kg]) using the test weight; then add 10 kg (25 lb [11.4 kg]); 15 kg (35 lb [15.9 kg]); and finally 20 kg (50 lb [22.7 kg]). The scale should reflect the volunteer's weight plus the added weight within  $\pm 0.2$  kg. Record calibration measurements on the calibration form and retain in your records. Carry out the procedure on persons of different weights during the study so that you will accumulate a profile of the linearity of the scale throughout a range of weights.

### 3. Safety issues and exclusions

Occasionally, the second measurement will not be obtained if a participant has great difficulty stepping up onto the scale and the examiner determines that a second measurement would not be safe for the participant. If a second measurement is not obtained for safety reasons, fill the bubble next to Measurement 2 on the data collection form that reads: "Measurement 2 not done because of concerns about participant safety."

### 4. Participant and exam room preparation

Study participants will be encouraged to empty their bladders and/or bowels prior to the measurement.

Script: "The measurement that we are about to take is more accurate if you use the bathroom before we measure you. If you need to use the bathroom, it is down the hall."

Weight is measured without shoes or heavy jewelry; pockets must be emptied of keys and other heavy objects.

Ideally, the scale should be positioned so that the examiner can stand behind the beam facing the participant, and can move the beam weights without reaching around the participant. When standing behind the scale, however, be aware that the scale markings must be read right to left. To be sure weight is read correctly, it is best to double-check the weight from in front of the scale.

### 5. Detailed measurement procedures

- 1) Before the participant steps onto the scale, lift the counterweight and position it all the way to the right. The top weight should be all the way to the left at the zero position.

The participant should stand quietly in the center of the platform, facing the balance beam, with their weight equally distributed on both feet, and not touching or supporting themselves on anything.

- 2) If a participant requires support from a cane while being weighed, weigh yourself with and without the participant's cane, etc., to determine its weight. Subtract the weight of the aid

from the participant's weight before recording. In the event that it is necessary for the examiner to support the participant during weighing, provide the minimum support that is safe.

- 3) Adjust the counterweight, and then the top weight, until the beam is evenly balanced.
- 4) Weight is recorded to the nearest 0.1 kg, and should be recorded immediately after the measurement, before converting to pounds.
- 5) Participant steps off the scale and examiner repeats steps 1 – 4 for a second measurement (unless examiner is concerned about participant safety, in which case, only one measurement is made).
- 6) A chart for converting kilograms to pounds should be mounted near the scale, so that participants can be told their weight in pounds.

Script: “In order to measure your weight, please remove your shoes and heavy jewelry, and empty your pockets. Please step forward onto the center of the scale.”

## **6. Procedures for performing the measurement at home (if applicable)**

A portable scale is used to perform the weight measurement in the participant's home. The weight is measured and recorded in pounds during the home visit.

## **7. Follow-up/reporting to participants**

Weight will be included on the Participant Results report given to the participant at the time of the visit.

## 8. Quality assurance

### 8.1 Training requirements

No special qualifications or experience are required to perform this assessment. Training should include:

- Read and study manual
- Attend Health ABC training session on techniques (or observe administration by experienced examiner)
- Practice on other staff or volunteers (Goal: minimize differences between repeat measurements)
- Discuss problems and questions with local expert or QC officer

### 8.2 Certification requirements

- Complete training requirements
- Demonstrate calibration check procedures for scale
- Conduct exam on two volunteers:
  - According to protocol, as demonstrated by completed QC checklist

### 8.3 Quality assurance checklist

- Participant encouraged to use bathroom prior to measurement
- Measurement made without shoes or heavy jewelry
- Examiner stands in front of participant, if feasible
- Examiner double-checks weight by standing behind participant after the initial measurement
- Ensures that participant stands still in center of platform
- Immediately records weight on data collection form to nearest 0.1 kg
- Participant steps off the scale, examiner performs the necessary steps to take a second measurement (if safe for participant) and a second measurement is made and recorded
- Correctly completes form
- Reviews form for completeness
- Tells participant weight in pounds (and kilograms)

## 9. Reference

1. Lohman TG, Roch AF, Martorell R, eds. Anthropometric Standardization Reference Manual. Human Kinetics Books, Champaign, Illinois, 1988.

10. Data collection form



HABC Enrollment ID #	Acrostic	Visit Year	Staff ID#
H <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	● 16	<input type="text"/> <input type="text"/>

**WEIGHT**

*Examiner Note: Weight is measured without shoes, heavy jewelry, or wallets.*

1. Measurement 1:    .  kg

2. Measurement 2:    .  kg

Measurement 2 not done because of concerns about participant safety.