

Framingham Heart Study

Manual of Procedures

MOP-version 1.0

August 22, 2018

Research Examination Center

Generation 3, Omni 2, NOS Cohorts Examination 3

Section #2 Anthropometrics

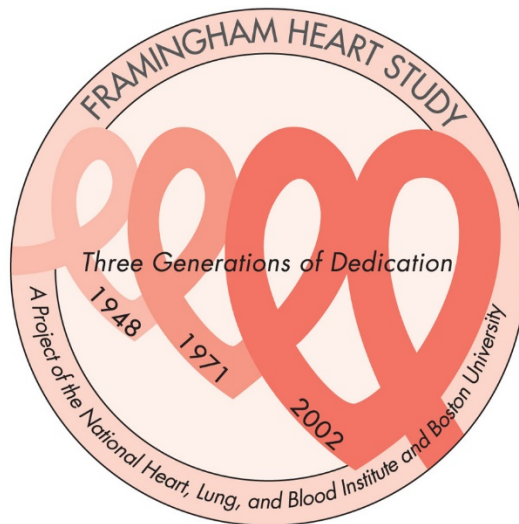


Table of Contents

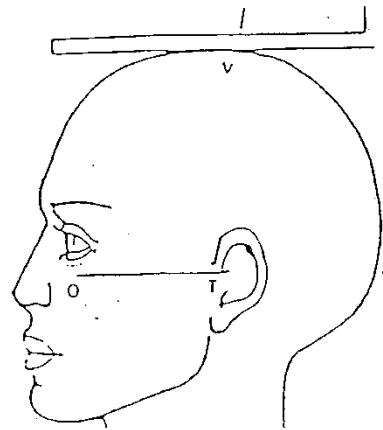
1.0	Standing Height Measurement Protocol	4
2.0	Weight Measurement Protocol.....	6
3.0	Equipment and Calibration For Height and Weight.....	7
4.0	Annual/Monthly/Daily Height and Weight Equipment Calibration Protocol	8
5.0	Training and Certification of Staff	12
6.0	Quality Control.....	13
7.0	Waist Girth at Umbilicus.....	16
8.0	Hip Circumference Measurement	18
9.0	RedCaP Measurement Pages	22

1.0 Standing Height Measurement Protocol

1. Participant should be barefoot or wearing thin socks. Ask participant to stand erect with his/her back to vertical mounted stadiometer.
2. Heels should be together and against the vertical ruler, both feet flat on the floor, with weight distributed evenly across both feet. Check to make sure both feet are back against the wall.
3. Participant faces straight ahead with his/her head positioned in the Frankforhorizontal plane (see next page). The lower margin of the bony orbit (the socket containing the eye) should be on the same horizontal plane as the most forward point in the supratragal notch (the notch just above the anterior cartilaginous projections of the external ear).
4. Ask participant to let arms hang freely by the sides of the trunk, palms facing the thighs. Ask participant to inhale deeply and maintain a fully erect position.
5. Bring the level down snugly (but not tightly) on top of participant's head.
6. Record measurement to the **nearest 1/4 inch, rounding down.**

Standing Height Measurement

FRANFORT PLANE FOR MEASURING BODY HEIGHT



ORBITALE: Lower margin of eye socket

TRACION: Notch above tragus of ear or at upper margin of zygomatic bone at that point

FRANFORT PLANE: Orbitale-tracion horizontal line

2.0 Weight Measurement Protocol

1. Ask participant to wear FHS gown for measurement if he/she brought a heavy gown from home ask them to remove it. The participant should remove slippers or shoes.
2. Prior to asking participant to step onto the scale, lift the counter poise and position it at zero.
3. Ask the participant to step onto the scale, facing measurement beam.
4. Instruct the participant to stand in the middle of the scale platform with head erect and eyes looking straight ahead. Weight should be equally distributed on both feet and the participant should not touch or support him/herself.
5. With the participant standing still in the proper position lift the counterweight (larger weight) and slide it to the right until the beam approaches balance.
6. Adjust the top poise until the beam is evenly balanced.
7. Have the participant step off the scale. The technician should stand directly in front of the scale and read the weight with eyes level to the point of measurement.
8. Record the weight to the nearest pound; **round up if ≥ 0.5 , round down if < 0.5 .**
9. If deviations from the protocol occur record it as a protocol modification.

3.0 Equipment and Calibration For Height and Weight

1. Scale to measure body weight in lbs.:
Worcester Scale Co., Inc.
228 Brooks Street
Worcester, MA
508-853-2886

2. Weights to calibrate scale: One 50 lb weight and two 25 lb weights
Worcester Scale Co., Inc. (See address above)

3. Accu Hite Stadiometer
Quick Medical
425-831-5963
888-345-4858

4.0 Annual/Monthly/Daily Height and Weight Equipment Calibration Protocol

<u>Activity</u>	<u>Daily</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Yearly</u>
Scale				
Zero Reading	X			
50# Weight			X	
Professionally Calibrated				X
Stadiometer				
Check Level			X	

1. Scales: **Annually/Monthly/Daily (during clinic)**

Protocol:

Daily:

- a. To balance scale, move both poises to zero. If not balanced, turn balance screw to right or left until scale balances.

Monthly:

- b. Once a month scales are to be calibrated.
- c. Set both poises at zero
- d. Place a 50 lb weight onto the scale.
- e. Set bottom poise to 50 (top poise at 0).
- f. If scale is balanced then calibration is done.
- g. If not balanced, turn balance screw to right or left until scale balances.
- h. Set top poise to 50 (bottom poise at 0)
- i. If scale is balanced then calibration is done.
- j. If not balanced, turn balance screw to right or left until scale balances..
- k. Mark the date in the calibration log book located in the clinic office.
- l. Scales must be certified on a yearly basis. This information can be found in the Clinic Equipment Book located in the clinic office.

2. Stadiometers: **Monthly**

Protocol:

- a. Using the purple measuring tape located in the Center Float Desk drawer.
- b. Line up against the meter to determine correct marker points.
- c. Make sure to move up and down at different spots along the meter.

- d. If lines do not match up then a new stadiometer must be ordered.
- e. Check the Level in the end of the sliding piece.
- f. If level is uneven then it needs to be adjusted.
- g. Mark date in calibration log book once a month.

**SCALE and STADIOMETER
Monthly Calibration Log
Room #**

Year	JAN.	FEB.	MARCH	APRIL	MAY	JUNE
Stadiometer						
Scale						

Year	JULY	AUG	SEPT	OCT	NOV	DEC
Stadiometer						
Scale						

5.0 Training and Certification of Staff

New Staff

- Given Protocol to read, understand, ask questions to Supervisor
- Protocol is demonstrated by Supervisor
- New Staff observes other Techs performing Protocol
- New Staff practices Protocol on staff and volunteers
- New Staff performs Protocol on participant with Supervisor or Certified Tech observing
- When Supervisor feels New Staff is proficient in Protocol, Supervisor will certify New Staff
- Certified New Staff will perform Protocol on own
- Certification date is noted in Certification Log

Recertification of Staff

- Occurs when there is a major deviation on Supervisor Observations or a new study with a new protocol is introduced into the exam
- Protocol is demonstrated by Supervisor
- Staff observes other Techs performing Protocol
- When Supervisor feels Staff is proficient in Protocol, Supervisor will recertify Staff
- Recertification date is noted in Certification Log

6.0 Quality Control

In order to maintain the quality of the data, every 6 weeks, each technician that performs anthropometric measures must complete quality control measurements.

This is done for:

- 1) Waist and Hip
- 2) Height and Weight

Height and Weight

Each technician, paired with another technician and out of each other's view, performs each height and weight measurement.

Height: Record in inches rounded down to the nearest $\frac{1}{4}$ inch

Weight: Record in whole pounds recorded to nearest pound. Round up if ≥ 0.5 , round down if < 0.5

If the difference in height is more than .25 inches, the measurement is repeated.

If the difference in weight is more than 1 pound, or the average of .5 pound, the measurement is repeated.

Supervisor Observations performed quarterly

QC Reports with summary of measurements done by technician prepared quarterly by Data Management

Date: _____

Tech ID# _____

Supervisor: _____

Participant _____

**Standing Height Measurement
Supervisor Checklist**

Check that each procedure is carried out correctly. Check yes if correct or no if incorrect. Provide an explanation of the incorrect item. Items are presented in the sequence of the examination procedure, but may require confirmation before or after the exam.

Yes	No	Standing Height Measurement
		The participant should be barefoot or wearing thin socks so positioning of the body can be seen. Ask participant to stand erect with his/her back to vertical mounted stadiometer.
		Heels should be together and against the vertical ruler, both feet flat on the floor, with weight distributed evenly across both feet. Check to make sure both feet are back against the wall.
		Participant faces straight ahead with his/her head positioned in the Frankfort horizontal plane. The lower margin of the bony orbit (the socket containing the eye) should be on the same horizontal plane as the most forward point in the supratragal notch (the notch just above the anterior cartilaginous projections of the external ear).
		Ask participant to let arms hang freely by the sides of the trunk, palms facing the thighs. Ask participant to inhale deeply and maintain a fully erect position.
		Bring the level down snugly (but not tightly) on top of participant's head. Use an extension board for proper measurement of severely kyphotic subjects.
		Record measurement to the nearest 1/4 inch, rounding down.

Yes	No	Deviations
		Did the tech perform any minor deviations?
		Did the tech perform any major deviations?
Comments/Corrections/Deviations:		
Supervisor Initials:		
Date:		

Date: _____

Tech ID# _____

Supervisor: _____

Participant _____

**Weight Measurement
Supervisor Checklist
Clinic**

Check that each procedure is carried out correctly. Check yes if correct or no if incorrect. Provide an explanation of the incorrect item. Items are presented in the sequence of the examination procedure, but may require confirmation before or after the exam.

Yes	No	Weight Measurement
		Ask participant to wear FHS gown for measurement if he/she brought a heavy gown from home. The participant should remove slippers or shoes.
		Prior to asking the participant to step onto the scale, lift the counter poise and position it at zero.
		Ask the participant to step onto the scale, facing measurement beam.
		Instruct the participant to stand in the middle of the scale platform with head erect and eyes looking straight ahead. Weight should be equally distributed on both feet, and participant should not touch or support him/herself.
		With the participant standing still in the proper position, lift the counterweight (larger weight), and slide it to the right until the beam approaches balance.
		Adjust the top poise until the beam is evenly balanced.
		Have the participant step off the scale. The technician should stand directly in front of the scale and read the weight with eyes level to the point of measurement.
		Record the weight to the nearest pound; round up if ≥ 0.5, round down if < 0.5.

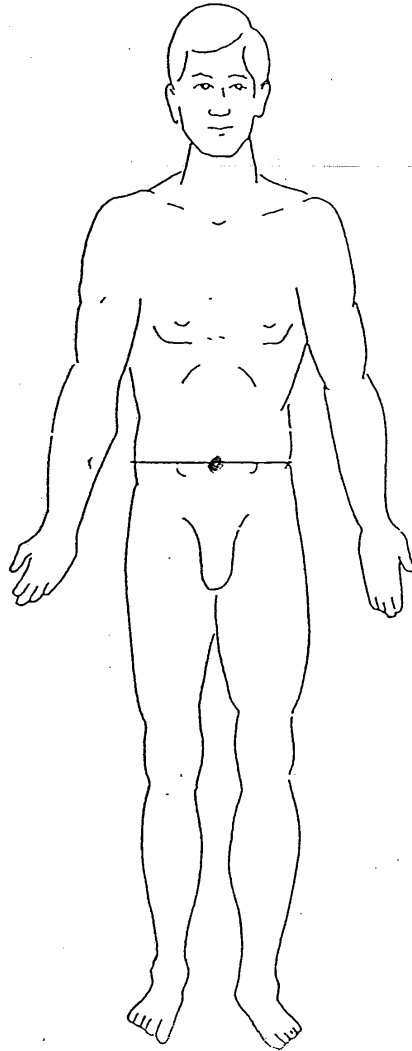
Yes	No	Deviations
		Did the tech perform any minor deviations?
		Did the tech perform any major deviations?
Comments/Corrections/Deviations:		
Supervisor Initials		
Date:		

7.0 Waist Girth at Umbilicus

1. Participant stands erect, arms hanging loosely at sides, feet together and weight equally distributed on both feet, facing straight ahead. The technician will take the gown from the back and place it over the left shoulder of the participant. The technician will ask the participant to cross their arms over their chest with hands at shoulders and hold the gown in place
2. Apply anthropometric tape at the level of the umbilicus. Roll underpants down below umbilicus if underwear is covering umbilicus.
3. Apply tape snugly but not tightly.
4. Make sure the tape is horizontal and not twisted, checking from both the front and back by using 2 mirrors mounted to the wall.
5. Before recording measurement ask the participant to fully relax their shoulders.
6. Record measurement **to the nearest 1/4 inch, rounding down.**

--

Waist Girth

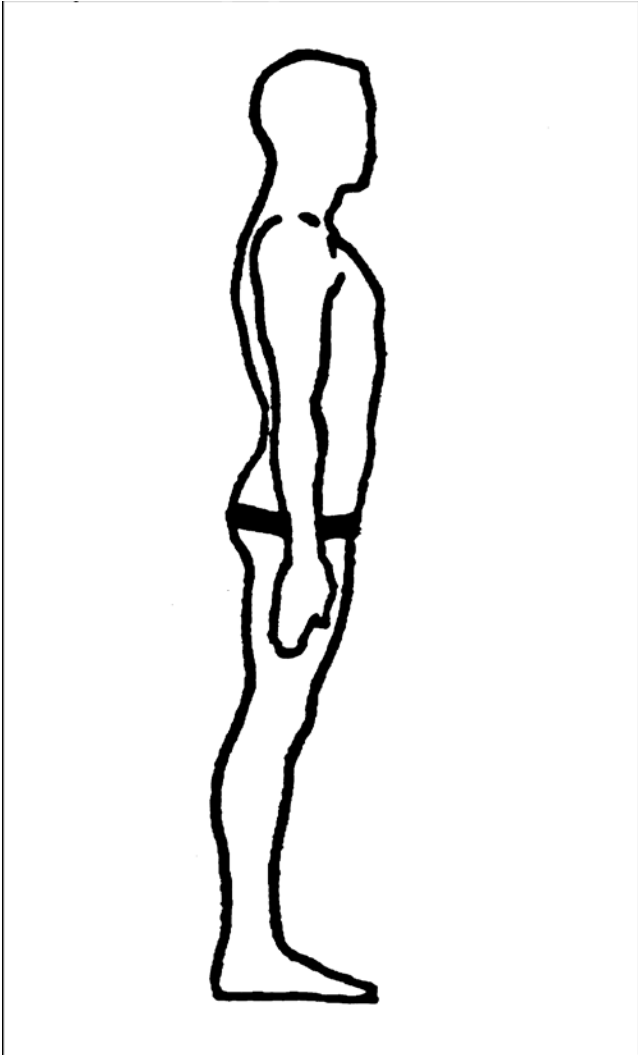


Waist Girth at level
of umbilicus.

8.0 Hip Circumference Measurement

1. Participant stands erect, arms hanging loosely at sides, feet together and weight equally distributed on both feet, facing straight ahead. The technician will take the gown from the back and place it over the left shoulder of the participant. The technician will ask the participant to cross their arms over their chest with hands at shoulders and hold the gown in place.
2. The examiner stands on the participants left side and applies the measuring tape around the maximum extension of the buttocks (see figure on next page).
3. The examiner should be squatting or kneeling so that their eyes are at the level of the maximum extension of the buttocks.
4. Make sure the tape is horizontal and not twisted, checking from both the front and back by using 2 mirrors mounted on the wall.
5. The zero end of the tape is held under the measurement value.
6. Apply tape snugly but not tightly.
7. Record measurement **to the nearest ¼ inch, rounding down.**
8. If the participant is wearing baggy underpants then the examiner stands in back and gathers the side seams together and places the thumb in the fabric to make a fold.

--



Anthropometrics

Check that each procedure is carried out correctly. Check yes if correct or no if incorrect. Provide an explanation of the incorrect item. Items are presented in the sequence of the examination procedure, but may require confirmation before or after the exam.

	No	Hip Circumference
		Participant stands erect, arms hanging loosely at sides, feet together and weight equally distributed on both feet, facing straight ahead. The examiner tells the participant that she is going to open the robe and place it over the ppt left shoulder. The examiner then asks the ppt to cross arms over chest to hold the robe, standing up straight but shoulders relaxed, weight equally distributed on both feet, facing straight ahead
		The examiner stands on the participants left side and applies the measuring tape around the largest part of the buttocks.
		The examiner then adjusts the sides of the tape and checks the front and sides of the tape measure is horizontal
		The zero end of the tape is held under the measurement value
		Apply tape snugly but not tightly
		Record measurement to the nearest ¼ inch, rounding down

Yes	No	Waist Girth Measurement
		Participant is asked to stand erect with head facing straight ahead. The examiner tells the participant that she is going to open the robe and place it over the ppt left shoulder. The examiner then asks the ppt to cross arms over chest to hold the robe, standing up straight but shoulders relaxed.
		The examiner places the anthropometric tape at the level of the umbilicus, underneath the gown. If underwear is covering the umbilicus, the examiner rolls down the under below the umbilicus.
		Tape is applied snugly but not tightly.
		The examiner checks the tape that it is placed horizontal and not twisted. It is checked from both the front and back using 2 mirrors mounted to the wall.
		Measurement is recorded to the nearest ¼ inch, rounding down.

Yes	No	Deviations
		Did the tech perform any minor deviations?
		Did the tech perform any major deviations?
Comments/Corrections/Deviations:		
Supervisor Initials:		
Date:		

9.0 RedCaP Measurement Pages

Confidential

Intertech Quality Control_fix
Page 1 of 1

Tech1 Measurement Page

Record ID _____
FHS_IDTYPE_ID (double check) _____
(for example 3-0009 or 3-1234)
Tech1 ID Number _____
Measurement Date _____

Intertech QC Measurements - Height and Weight

Each tech paired with another tech and out of each other's view, performs each height and weight measurement. If the difference in height is more than .25 inches, the measurement is repeated by tech2. If the difference in weight is more than 1 pound, the measurement is repeated by tech2.

Height Measurement (rounded down to nearest 1/4 inch) _____
Repeated Height Measurement _____
Weight Measurement (recorded to nearest pound) _____
(round up if ≥ 0.5 , round down if < 0.5)
Repeated Weight Measurement _____

Intertech QC Measurements - Waist and Hip

Each tech paired with another tech and out of each other's view performs each measurement. Measurements with a difference of $> .50$ in. on the umbilicus waist measurement are repeated. Measurements with a difference of $> .50$ in. on the hip (Buttocks) Circumference are repeated.

Umbilicus Waist Measurement (inches) _____
(to next lower 1/4 inch)
Repeated Umbilicus Waist Measurement _____
Hip Circumference (inches) _____
(to next lower 1/4 inch)
Repeated Hip Circumference _____

Tech2 Measurement Page

Record ID _____

FHS_IDTYPE_ID: [idtype_id_tech1]

Tech2 ID Number _____

Measurement Date _____

Intertech QC Measurements - Height and Weight

Each tech paired with another tech and out of each other's view, performs each height and weight measurement. If the difference in height is more than .25 inches, the measurement is repeated by tech2. If the difference in weight is more than 1 pound, the measurement is repeated by tech2.

Height Measurement (rounded down to nearest 1/4 inch) _____

Repeated Height Measurement _____

Weight Measurement (recorded to nearest pound) _____
(round up if ≥ 0.5 , round down if < 0.5)

Repeated Weight Measurement _____

Intertech QC Measurements - Waist and Hip Circumference

Each tech paired with another tech and out of each other's view performs each measurement. Measurements with a difference of $> .50$ in. on the umbilicus waist measurement are repeated by tech2. Measurements with a difference of $> .50$ in. on the hip (Buttocks) Circumference are repeated by tech2.

Umbilicus Waist Measurement (inches) _____
(to next lower 1/4 inch)

Repeated Umbilicus Waist Measurement _____

Hip Circumference (inches) _____
(to next lower 1/4 inch)

Repeated Hip Circumference _____

Comparison Page

Record ID _____

Comparison after Tech 2 Measures

Difference between heights (inches) _____
(should be ≤ 0.25 inch)

Alert! Difference between heights is > 0.25 inch.
Click YES. Tech2 repeats the measurement. Yes
 No

Difference between weights (pounds) _____
(should be ≤ 1 lb)

Alert! Difference between weights is > 1 lb. Click
YES. Tech2 repeats the measurement. Yes
 No

Difference between waist measurement (inches) _____
(should be ≤ 0.5 inch)

Alert! Difference between waist measurements is $>$
 0.50 inch. Click YES. Tech2 repeats the measurement. Yes
 No

Difference between hip measurements (inches) _____
(should be ≤ 0.5 inch)

Alert! Difference between hip measurements is > 0.50
inch. Click YES. Tech2 repeats the measurement. Yes
 No

Comparison After Tech 2 Repeats Measurements

Alert! Difference between heights is still > 0.25
inch. Click YES. Tech1 repeats the measurement. Yes
 No

Alert! Difference between weights is still > 1 lb.
Click YES. Tech1 repeats the measurement. Yes
 No

Alert! Difference between waist measurements is still
 > 0.50 inch. Click YES. Tech1 repeats the
measurement. Yes
 No

Alert! Difference between hip measurements is still $>$
 0.50 inch. Click YES. Tech1 repeats the measurement. Yes
 No