

Name:

PE 9A: Fit or Fat

In-Class Activity 2: Body Composition

This activity takes you through different body composition protocols to determine your body fat levels. High or dangerously high body fat may be associated with other problems such as diabetes, arthritis, high blood pressure and heart disease and may warrant having functions such as blood glucose, lipids, and pressure checked.

Objectives

Learn acceptable ranges for safe and potentially unsafe levels of body fat. Learn different body composition protocols and use them to determine body fat levels.

Preparation

Wear clothes that allow access to upper arms, thighs, back, armpit, and abdomen. Try to avoid heavy exercise, diuretics (caffeine, alcohol, diuretic pills), eating and too much water intake before class. Wash off lotions or creams on your hands and feet. Work with 1 or 2 partners.

Materials

Weight Scale	Height Measure	Electrical Impedance Machine
Skinfold Calipers	Calculator	Electrode Contacts
Water-Based Pen	Tape Measure	

Body Mass Index (BMI) Procedures

BMI is calculated by dividing your body weight (in kg) by your height (in square meters). For example, a 130 lb person (59 kg), who is 5 feet, 3 inches tall (1.6 m) would have a BMI of $59\text{kg} \div 1.6\text{ m}^2$ or 23 kg/m^2 . Use the provided scale to measure your body weight and height.

- 1 Convert your body weight to kilograms: _____ lb \div 2.2 lb/kg = _____ kg
- 2 Convert your height into meters: _____ inches \times 0.0254m/in = _____ meters
- 3 Square your height measurement: _____ meters² = _____ m²
- 4 BMI = weight \div height²: _____ kg \div _____ m² = _____ kg/m²
- 5 BMI(kg/m²) Category (circle your correct category)
20-24.9 Desirable range for adult men and women
25-29.9 Grade 1 obesity (moderate)
30-40 Grade 2 obesity (serious)
> 40 Grade 3 obesity (morbid)

Bioelectrical Impedance

CCSF has different bioelectrical impedance machines. Choose one that you like and follow its instructions.

Machine Used _____

Record your electrical impedance body fat percentage here: _____%

Skinfold Calipry

Type of Calipers _____ Partners _____

We will use a 7-site calipry protocol. Your partners (recommend same sex) locate and mark sites and will measure one site. All measurements are taken from the right side of the body from a standing position. Pinch on the natural fold of the skin and pull gently with no muscle tissue included. Hold calipers perpendicularly to the fold and measure 1cm from your fingers and halfway between the base and crest of the fold. Allow tips to close on the fold and let the reading settle 1-2 seconds. Measure to nearest 1/2 mm. Repeat measurement after tissue has normalized. If measurements aren't within 2 mm of each-other, repeat measurement again.

The Sites

- ❖ Pectoral: Arm down at side. Diagonal fold midway between armpit and nipple for men, and one third the distance between armpit and equivalent position for women.
- ❖ Axillary: Shoulder flexed. Vertical fold at the mid-axillary line (down the side of your torso) measured at the level of the xiphoid process (the point on the front of your sternum).
- ❖ Tricep: Stand straight, arms at side. Vertical fold on back of arm midway between shoulder and elbow.
- ❖ Subscapular: Stand straight, arms at side. Diagonal fold just under and to the inside of the shoulder blade.
- ❖ Abdominal: Stand straight, abdomen relaxed. Vertical fold even with the belly button, and 2cm over.
- ❖ Suprailiac: Stand straight with arms comfortably at sides. Diagonal fold just above the hip bone along the midline of the side of the torso.
- ❖ Femoral: Measure from the crease of the hip (bending hip helps). Vertical fold midway between hip crease and top of knee cap.

Calipry Measurements

Your partners will take measurements of your tricep skinfold in order to become acquainted with calipry use. Have your partners measure until they come up with consistent measurements.

Tricep Skinfold Measurements taken by: _____

Measurement 1: _____ Measurement 2: _____ Measurement 3: _____

See me to have the rest of your skinfolds measured and tabulated. Your skinfold measurements are:

Pectoral _____ Subscapular _____ Suprailiac _____
 Axillary _____ Abdominal _____ Femoral _____
 Tricep _____

Body fat percent: _____

Standard Body Fat Ranges

	Low Body Fat	Optimal Range	Moderately High	High Body Fat	Dangerously High
WOMEN	<15%	15-25%	26-30%	31-35%	> 35%
MEN	<10%	10-20%	21-25%	26-31%	> 31%

Results

BMI Category _____

Body Fat Percent (average or "best guess" of the two methods) _____

if impedance and calipry are within 2% of each-other, use their average, if not, see me

Body fat classification _____

Tell me how you interpret your results. In other words, do you think your body fat level is a big concern for you? Why or why not?