

- R. I find myself snacking when I watch the television.
- Always    5                      4                      3                      2                      1                      Never

**Scoring:**

1. Enter the numbers you have circled to the test questions in the following spaces, putting the number you circled to question A over line A, to question B over line B, and so on.
2. Total the three scores on each line to get your totals. For example, the sum of your scores over lines (A, G, and M) gives you your score on "Stimulation"; lines (B, H, and N) give you the score on "Handling," and so on.

| <u>Totals</u>                                           |  |  | <u>Topic</u>                     |
|---------------------------------------------------------|--|--|----------------------------------|
| $\frac{\quad}{A} + \frac{\quad}{G} + \frac{\quad}{M} =$ |  |  | Stimulation                      |
| $\frac{\quad}{B} + \frac{\quad}{H} + \frac{\quad}{N} =$ |  |  | Handling                         |
| $\frac{\quad}{C} + \frac{\quad}{I} + \frac{\quad}{O} =$ |  |  | Pleasurable Relaxation           |
| $\frac{\quad}{D} + \frac{\quad}{J} + \frac{\quad}{P} =$ |  |  | Crutch: tension reduction        |
| $\frac{\quad}{E} + \frac{\quad}{K} + \frac{\quad}{Q} =$ |  |  | Craving: psychological addiction |
| $\frac{\quad}{F} + \frac{\quad}{L} + \frac{\quad}{R} =$ |  |  | Habit                            |

Scores can vary from 3 to 15. Any score 11 and above is high; any score 7 and below is low.

**Interpretation:** The six factors measured by this instrument describe one or another way of experiencing or managing certain kinds of feelings.

- Three of these feeling and/or states represent the positive feelings people get from eating:
  - (1) a sense of increased energy or *stimulation*;
  - (2) the satisfaction of *handling* or manipulating things; and
  - (3) the enhancing of *pleasurable feelings* by reducing the state of tension or feelings of anxiety, anger, and shame, for example.
- The fourth indicates the way you use food as a "crutch" to deal with stress and anxiety.
- The fifth is a complex pattern of increasing and decreasing "craving" for eating that represents a *psychological addiction* to food.
- The sixth, *habit*, is eating that occurs in an absence of feeling--purely automatic or habitual eating.

## Introduction

Dr. Albert Behnke (1977) has developed the idea of a reference man and woman based on physical dimensions of thousands of individuals. These observations are summarized in Figure 2-1.

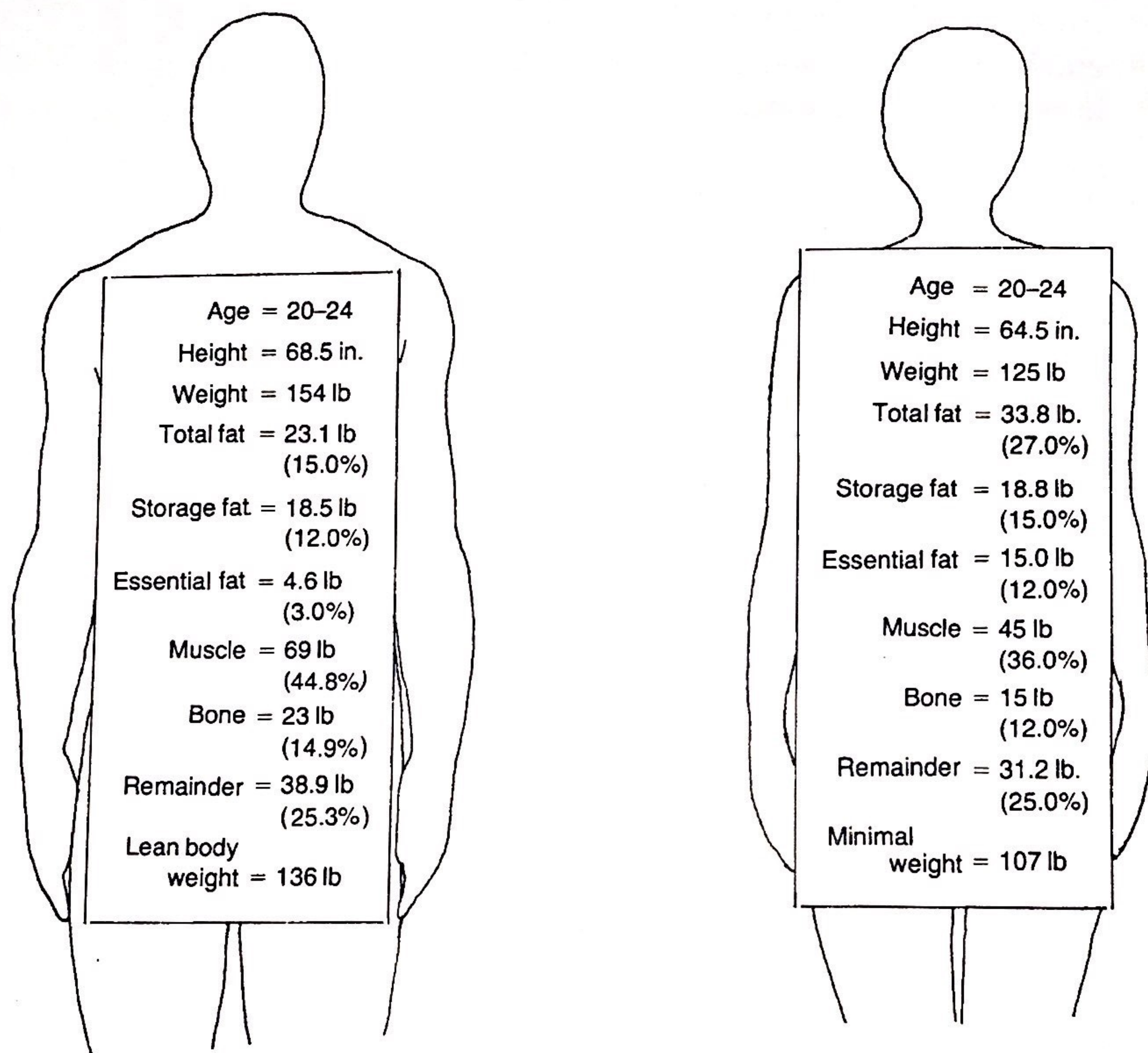


Figure 2.1. Body composition of a reference man (left) and reference woman (right).

Many of these findings are to be expected considering the physical differences between men and women; however, the actual and relative amounts of fat may be somewhat surprising. Before exploring this, we should differentiate between essential fat and storage fat. The former is fat stored in the marrow of bone and in the heart, lung, liver, spleen, kidneys, intestine, and part of the nervous system. Storage fat is fat that accumulates in adipose tissue. This collects around internal organs to protect them, and deposits beneath the skin to provide fuel during fasting or starvation. The relative and actual amounts of storage fat for men and women are quite similar, representing 12% of the total body weight for men (18.5 lb.) and 15% for women (18.8 lb.). Essential fat however, represents only about 3% of the reference man but about 12% of the reference woman. This is present in the breasts and other organs and probably functions in reproduction.

A score of 11 or above on any factor indicates that this factor is an important source of satisfaction for you. The higher your score (15 is the highest), the more important a particular factor is in your eating and the more useful the discussion of that factor can be in your attempt to cut down on eating.

If you do not score high on any of the six factors, chances are that you are not an excessive eater. If so, cutting down your food and energy (Calorie) intake should be easy.

If you score high on several categories, you apparently get several kinds of satisfaction from eating and will have to find several solutions. Certain combinations of scores may indicate that reducing food intake will be especially difficult.

Those who score high on both factor 4 and factor 5, “reduction of negative feelings and cravings,” may have a hard time cutting down on food intake. However, there are ways to do it; many excessive eaters represented by this combination have been able to cut down on food intake. Others who score high on factors 4 and 5 may find it useful to change their patterns of eating and cut down the food intake at the same time. They can try to eat foods that are lower in energy (Kcal) contents, such as carrots, fresh fruits, rice cakes, unbuttered popcorn; or to substitute exercise and other physical activities for eating, i.e. take a walk instead of eating if you feel stressed, anxious, or have a craving to eat. If you still have the desire to eat after the walk or exercise, you may then sit down and eat the food item in a moderate amount and enjoy it by eating while seated in a proper eating area, e.g. dining room table. After several months of trying this solution, you may find it easier to develop a habit pattern of food intake that would alter your lifestyle and the way you eat rather than “dieting.”

You must make a decision to cut down your energy and food intake either by: (1) substituting appropriate volumes of less fattening foods for foods that are high in energy content, which are currently a part of your diet; or (2) reducing or eliminating low nutrient density, high energy food (like “junk” snack food) from your diet without substituting them with other food.

Don’t let food control you, instead, you need to control what goes into your body by letting your mouth be the gate and your hands be the vehicles that carry the food to the gate.

For each man and woman there exists a limiting weight below which a person cannot go without endangering their health. In men, this is the **lean body weight**, which is equivalent to the total body weight minus the 12% that is storage fat. For real, not reference, people, the quantity of storage fat can vary considerably; however, its quantity can change through exercise and diet. This "lean body weight" includes the 3% essential fat. For women in good health, the limiting weight includes approximately 12% essential fat and is called the **minimal weight**. For the reference woman, this is 107 lb., which is the total body weight minus the 18 lb. of storage fat.

It is important to keep in mind that what we are considering in this lab is not "ideal weight" but rather the composition of your bodies' weight. Even though we will calculate your "ideal weight," this weight will be used as a general reference weight range for your height. Researchers have observed that while human beings differ greatly from one another with regard to body weight, individuals are incredibly consistent in their weight over a given lifetime. All of us can be healthier and happier if we stop battling with our bodies and accept a weight range that is physiologically appropriate. This physiologically appropriate weight has been called "setpoint weight".

This theory proposes that "underweight" and "overweight" should be understood in terms of being above or below an individual's setpoint weight, a weight that our bodies will physiologically defend and as adults includes a predetermined amount of fat. The amount depends on genetic factors, diet, and level of exercise. Several factors appear to affect an individual's setpoint. These include:

1. Body type is genetically determined.
2. Regular aerobic exercise may lower setpoint weight.
3. Yo-yo dieting, losing and gaining large amounts of weight, lowers basal metabolic rate, making it more difficult to maintain a lower weight.
4. Diets high in refined carbohydrates, simple sugars, and fats may promote relatively high setpoint weights.
5. An individual's hypothalamus vigorously defends genetically predetermined body type.

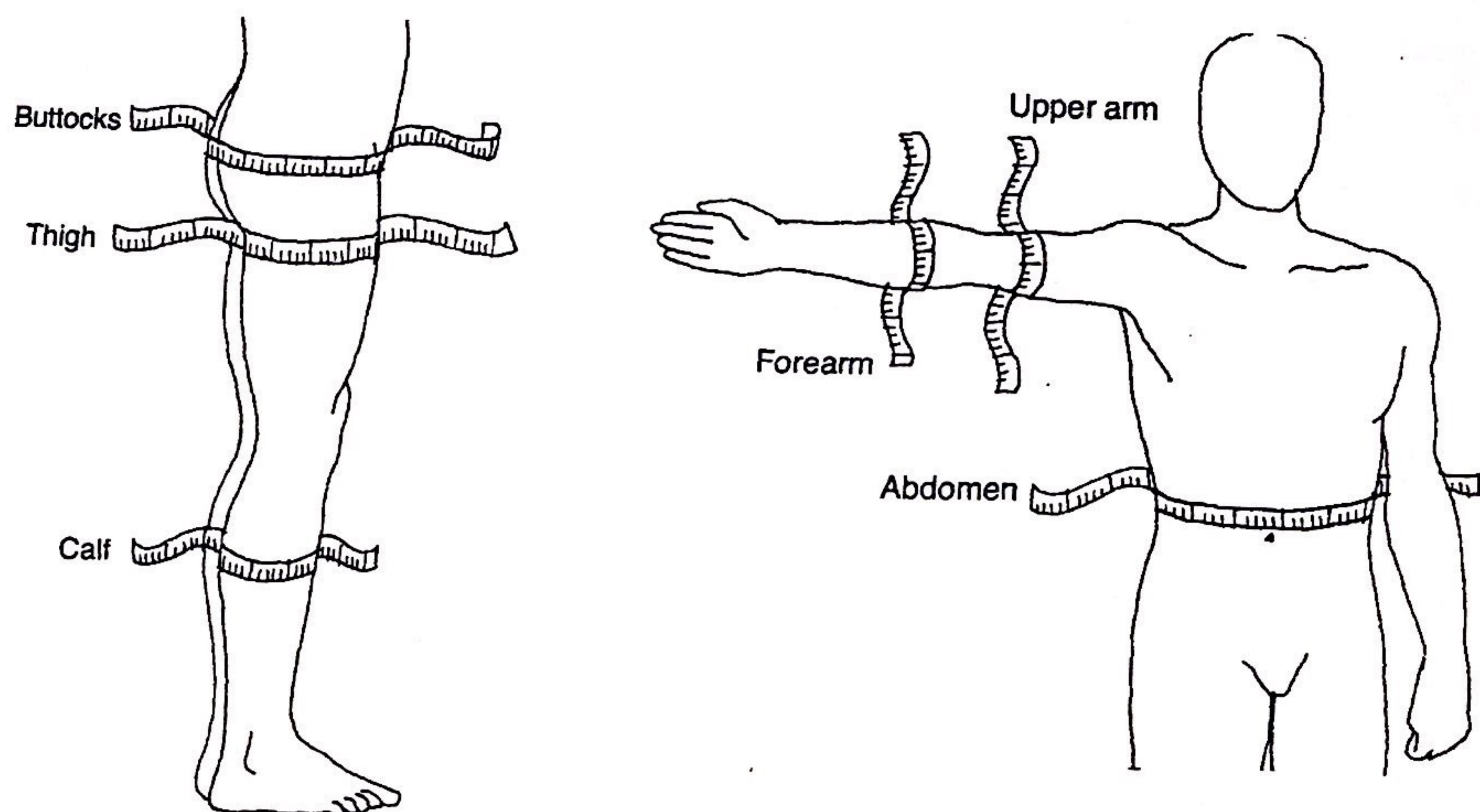
**Note:** In considering **healthy weight maintenance** and life style changes as opposed to **weight control**, the activities in this lab are designed to help you assess the quality of your body composition, exercise, and nutrition lifestyle. However, due to the limitations of the equipment and the person doing your assessment, the measurements obtained in this lab are at best an approximate body composition. An assumption can be supported that percent of body fat is a reliable indication of those habits that are indicative of healthy weight maintenance.

### Calculation of Lean Body Weight from Circumference Measurements

A variety of means have been developed to assess the relative amounts of fat and lean body weight. One such procedure is the measurement of the circumference of selected sites on the body.

The sites used for men and women are described in the Figure 2.6 below. To take the measurements, apply the anthropometric tape lightly to the skin surface so it is taut but not tight. Take two measurements at each site and use the average value.

Figure 2.6. Example measurement sites with a tape for men and women.



Notes on the instructions given for estimating the amount of fat in your body: Use Tables 2.4, 2.5, 2.6 or 2.7 (pgs. 2-19 through 2-22) for determining your measurement sites; constants A, B, and C; and your age constant.

#### Measurement Sites for:

##### Young Women (17-26)

1. Abdomen
2. Right thigh
3. Right forearm

Use constants from Table 2.4

##### Young Men (17-26)

1. Right upper arm
2. Abdomen
3. Right forearm

Use constants from Table 2.6

##### Older Women (> 26)

1. Abdomen
2. Right thigh
3. Right calf

Use constants from Table 2.5

##### Older Men (> 26)

1. Buttocks
2. Abdomen
3. Right forearm

Use constants from Table 2.7

## Electrical Impedance Method of Body Composition Analysis

Having calculated your percent of body fat using the circumference method, it must be noted that the equation to predict percent body fat from circumferences may result in large errors when applied to certain individuals. For example, athletic men and women who regularly engage in strenuous physical training or very large or very small individuals who could be visually classified as very obese or very thin.

A more accurate method for measurement of ratio of body fat to lean body weight involves the use of the measurement of subcutaneous fat by the Electrical Impedance Method. The theory behind the method is straightforward. Three percent of the body's water resides in fat tissue while 73 to 75 percent of the body's water resides in the lean tissue. Because the body's water acts as a conductor, the resistance of the body to current flow is principally a function of the geometry of the lean tissue. That is, it is a function of the length of travel of the current through the lean tissue and the cross-sectional area of the lean tissue. Thus, measurement of the body's resistance provides information on the lean mass and subsequently of body composition.

Keep in mind the testing conditions and that results will be most valid if:

1. Subject's height and weight have been accurately measured.
2. Subject has not consumed food for 4 to 5 hours.
3. Subject has not consumed products containing caffeine for 4 to 5 hours.
4. Subject has not exercised for 12 hours.
5. Subject has abstained from alcohol for 24 hours.

### Exercise 6. Electrical Impedance Method

Your instructor will demonstrate measurement of body fat by the Electrical Impedance Method. Instructions for the procedure will be placed near the equipment.

1. Record your body fat percentages as indicated.

Skinfold method: \_\_\_\_\_ % (See pg. 2-12)

Circumference method: \_\_\_\_\_ % (See pg. 2-17)

Electrical Impedance method: \_\_\_\_\_ %

2. Were there large differences (greater than a range of 5%) in your percent of body fat using the skinfold method, body circumference method, and the Electrical Impedance method?