

## Body Composition

Americans are getting fatter! Since 1960, the number of adults with a body composition that is classified as obese has doubled. More than 50% of American adults are now categorized as obese. The first step in formulating a weight control program is to appraise your body composition. Looking at a height and weight chart will not help because it does not give you enough information. You must assess your body composition: 1) lean body mass or fat free weight; and 2) body fat. A healthy body composition is one that has a high proportion of lean mass and an acceptable level of body fat appropriate for the age and sex of the individual.

Lean body mass includes bones, muscle, connective tissue, organ tissue and teeth (water is included in this category as well.) Skeletal muscle is a high-energy tissue that helps to control fat levels. Total body fat includes both essential and storage fat.

**Essential fat** is present in the heart, lungs, bone marrow, liver, spleen, kidneys, intestines, muscles and lipid-rich tissues throughout the central nervous system. It is required to sustain normal body functions. In females, essential fat also includes “sex-characteristic” fat, biologically crucial to childbearing and other hormone-related functions. The percentage of essential fat is about 12% for women and 3% for men. It is considered unhealthy to drop below this percentage. Some body fat is necessary. Fat creates body contour and cushioning, and transports the fat-soluble vitamins. It provides insulation and protection for the internal organs.

**Storage fat** accumulates in adipose tissue sites throughout the body, mainly under the skin (subcutaneous) and around internal organs. Storage fat does not differ between men and women, except that men tend to store it around the waist while women tend to store it more in the hips and thighs. Excess fat requires the heart to pump harder and at higher pressures simply because the arterial circuit is longer (fat requires circulation). Excessive storage fat is linked to many health problems such as coronary heart disease, hypertension, strokes, diabetes, cancer, gall bladder disease, and back problems.

Body fat is a reservoir of available fuel for energy needs. When we eat an excess number of calories, the body converts the “*fuel*” into a storable form: fat. When we eat an insufficient number of calories, the body takes some of the stored fat and metabolizes it into available fuel.

What is the ideal body composition? It is generally agreed that for good health it should be 18-25% for women and 10-18% for men.

Since health hazards can develop when recommended fat levels are exceeded, it is advisable to determine one’s healthy fat level and healthy weight (body weight at which there seems to no harm to human health).The chart illustrates that acceptable fat percentage is 15-19 for males and 21-25 for females. Obesity is defined as having more than 25% of body weight as fat for men and more than 33% of body weight as fat for women.

There are various ways to measure body composition:

- 1) Hydrostatic (underwater) weighing: This technique measures body density while the body is submerged. It is based on the premise that muscle sinks and fat floats. The more a body weighs underwater, the less fat it is likely to have. This type of procedure requires special equipment.
- 2) Bioelectrical impedance is an index of the total water contained in the human body. The body’s fat-free weight contains much of the body’s water content. By sending a small electric current through the body, estimation can be made of the lean body mass. This type of measurement might reflect an overestimate of body fat for very lean individuals and an underestimate of body fat for obese individuals.

- 3) **Skinfold Analysis:** Percent fat is determined by measuring the body's stores of subcutaneous fat (fat deposited right under the skin). A caliper is used to measure fat folds at a minimum of 3 or 4 sites on the body. The measurements are added, and then a formula is applied based on gender and age. An approximate percentage of body fat is determined from the formula. This is an economical and practical method of measuring body composition. Depending on the technician, the calibration of caliper, and the correct formula, body composition can be assessed within 3-5% of actual body fat.

Remember, just knowing your weight is not always a good indicator of healthy weight. You need to know what percentage of your total weight is body fat. Skinfold measurement can provide you with that information. If the percentage exceeds the recommended levels, then you are overfat! Perhaps your weight has changed very little in the last 10 years but you are estimated as being overfat. Do not panic! With time and patience you can make constructive changes in your body composition. You may not need to lose weight. You may need to gain lean tissue and lose fat!

The only way to reduce fat is to create a negative energy balance: take in fewer calories (energy in) than you use up through exercise and metabolism (energy out). The best way to gain lean and lose fat is through exercise. Aerobic exercise is the most effective way to rid yourself of excess fat. Resistance and strength training are the best ways to increase lean tissue.

#### **Classification of Percent Body Fat**

<b>Male Body Fat Percentage</b>	<b>Classification</b>	<b>Female Body Fat Percentage</b>
<5	Very Lean	<11
5-9	Excellent	10-17
10-14	Good	18-20
15-17	Fair	21-25
18-22	Poor	25-29
>23	Very Poor	>30