Body Fat Testing 101

Body composition is a valuable assessment that measures your percent of lean body mass (muscle, bone, and organs - metabolically active) compared to your percent of fat mass (adipose tissue - not metabolically active). Basically, it measures your risk for obesity. Too much body fat increases your risk for heart disease, high blood pressure, diabetes, cancer, knee pain, back pain, and other musculoskeletal problems.

Most people are not excited to get their body fat tested and don't want to hear the possibly dreaded percentage when the test is completed. However, body fat testing is an important component of fitness testing. Knowing your results will help you set realistic goals if you need to lose weight (see chart).

Classification	Women (% of fat)	Men (% of fat)
Essential fat	10-13%	1-3% Men
Athletes	14–20%	6-13%
Fitness	21–24%	14–17%
Average	25–31%	18–24%
Obese	32%+	25%+

*Source: ACE Lifestyle & Weight Management Consultant Manual

Below are several methods of body fat testing:

Hydrostatic (underwater) weighing is known as the "gold standard" and is considered the most accurate. This test is based on the concept that fat floats. So, someone with a higher percentage of body fat will be lighter in the water than someone with a lower percentage. The client is fully submerged in water for this test. Available at research institutions, colleges and universities.

Dual-energy X-ray absorptiometry (DEXA) uses low levels of radiation to measure body fat, muscle, and bone mineral. This client has to lie still on a full-body X-ray table for 10-20-minutes. This test has a very low margin of error. Available in clinical settings.

Body Pod is a chamber device that measures the air displaced by the client inside the chamber to measure body volume. Test takes about 5-8 minutes. Clients are to breathe normal and remain still to have accurate results. Pods are expensive and may be hard to find. Available at research labs and some athletic (pro and college) facilities.

Near-infrared interactance is based on the principals of light absorption. A probe is placed on the client's bicep. The probe emits an infrared light, which passes through both fat and muscle and is reflected back to the probe. Results are based on manufacturers prediction equations and are not considered very accurate. Available at health clubs and weight loss centers.

Bioelectrical impedance analysis is one of the quickest forms of body fat testing. It uses a device that sends a mild electrical current (that you do not feel) through the body to estimate total body water and measure lean body mass. The machine can be either hand-held or a flat scale-like machine with medal plates that you stand on barefoot. Test can be inaccurate if protocol is not

strictly followed (hydration, recent exercise, meal timing, caffeine use, alcohol consumption, menstrual cycle, and accurate data entry into computer all impact results). Available at most health clubs and hospital-based wellness program.

Skinfold caliper analysis has been widely used and involves pinching the skin (using a caliper) at selected sites of the body to measure skin and subcutaneous fat thickness (fat under the skin). Measurement sites are different for men and women. The "pinch" does not hurt. Even though this is a very common form of testing, it can be inaccurate if the examiner has poor technique or lack of experience. Examiners are considered accurate after they have tested over 100 people. Available at health clubs, schools, colleges, and hospital-based wellness programs.

Do-It-Yourself Methods (these last 2 tests tell you the category you are in, not your percentage of body fat):

Waist-to-hip ratio is an easy form of assessment based on the idea that when a greater amount of fat is stored in the abdominal area relative to the extremities, a person is at greater risk for disease and metabolic disorders. To measure for this test, stand with your feet together. Have someone else measure your waist at your belly button and your hips at the widest part of your buttocks. Divide your waist circumference by your hip circumference. Men should be .90 or less with a waist smaller than 40". Women should be .80 or less with a waist smaller than 35". Men higher than .95 and women higher that .86 are considered at risk.

Body Mass Index (BMI) is the most common formula used to measure your risk for obesity. It's based on the relationship between height and weight. The recommended BMI range is 18.5 to 24.9. Overweight is defined as 25 to 29.9. Obese is a BMI of 30 or more. Calculate BMI by dividing weight in pounds (lbs) by height in inches (in) squared and multiplying by a conversion factor of 703. Example: Weight = 150 lbs, Height = 5'5" (65") Calculation: $[150 \div (65)^2] \times 703 = 24.96$. Or, make it easy on yourself by using one of the many charts found online (search BMI calculator).

Keep in mind that all of the methods above have varying percentages of error. Tests are to give you a general idea of where you stand and are not exact. You might have a better peace of mind by having two different types of testing conducted, then compare the results. If the test has a protocol to follow, make sure you adhere to precisely it to ensure as much accuracy as possible. Having your body fat tested and knowing if you are at risk for obesity is an important step in your journey to wellness. It's not a test that should scare or discourage you. View it as a tool to help motivate you to achieve success!

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