



Body-Composition Analysis for Women's Health

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Our everyday conversations on diet and fitness usually tend to focus on the amount of weight that we want to gain or most importantly to lose. What we overlook is that our body-composition is completely different, even if we are of the same sex and body weight. A sedentary lifestyle, welfare, and the culture of bad eating habits due to easy access to unhealthy fast foods are responsible for excessive weight gain and widespread obesity, especially among women worldwide. Obesity is a complex dynamic disease, which involves the interaction of many factors including genetic, metabolic, behavioral, and environmental influences. According to estimates by WHO, the prevalence of obesity worldwide has increased dramatically during the last four decades, with more than two billion overweight adults, of these, are over 650 million obese patients. If this trend persists, it is estimated that by 2030 a majority of the world's adult population will be overweight and/or obese. Numerous studies by our research group concerning Egyptian and Italian populations showed that having skeletal muscle mass (SMM) has many advantages: getting stronger, reducing the risk of injury, supporting a healthy lifestyle in older age, as muscle generally tends to weaken. In a study by the National Institute of Health, it has been shown that a sedentary lifestyle accelerates the deterioration of muscle strength from 16.6% for people aged below 40 to 40.9% for those over 40 years, who showed also bone loss thus increasing the risk of falling and breaking bones. Not to mention that the accompanying rise in percent body fat (PBF) in these people increases the risk of encountering chronic diseases, such as hypertension, insulin resistance, diabetes mellitus, cardiovascular diseases (CVD), and certain cancers, which incurs a 30% increase in the costs of medical care for obese patients as compared to normal-weight people.

The serious social and psychological implications of obesity affecting women of almost all ages and socioeconomic levels are a major contributor to the global burden of chronic diseases and disabilities. In the last issue of AS Women's Health 3(3); 2021, we have reviewed the effects of obesity on women's health. We showed that obese women with body mass index (BMI) over 30 kg/m² may suffer from menstrual and ovarian disturbances, an increased risk of developing polycystic ovarian syndrome (PCOS), and a higher tendency to insulin resistance that make them susceptible to developing diabetes in older age. Obese women tend also to have a higher risk of early pregnancy loss, fetal developmental abnormalities, pregnancy-induced hypertension, thromboembolic disease, a higher risk of complications during labor and postpartum, and an increased incidence of ovarian, breast, and endometrial cancers. We concluded with the golden advice of "lifestyle modification" for losing weight before the commencement of any pharmacological treatment of infertility in PCOS obese women.

Physicians/dieticians usually rely on a body-composition assessment of the systemic, nutritional, metabolic, and health status of their patients during the process of the diagnosis and treatment of various diseases. Measuring body-composition provides a quantitative description of the amount and distribution of fat, muscle, bone, and water in the body and helps identify areas to work on to improve overall physical health and fitness level. The bioelectrical impedance (BIA), which measures the opposition to the flow of a weak electric current through electrodes attached to the hands and feet of a subject, is one of the most precise and reliable techniques for measuring body composition. BIA instruments are preferred in medicine, sports medicine, and nutritional assessment because

they are safe, fast, and easy to perform. Measuring body-composition will give you and your treating physician invaluable information about SMM, PBF, and regional fat distribution, as follows:

- SMM is an important component reflecting the human body's long-term health, which is responsible for posture, mobility, and strong immunity. A body-composition analyzer gives precise numerical estimates of segmental (i.e., upper limbs, trunk, and lower limbs) and total contents of SMM, thus a physician/dietician can prescribe a suitable protocol for building more muscle or correcting imbalances to ensure the patient has a healthy muscle mass balance.
- PBF is a more correct measure of human health than body weight or BMI since it quantifies the exact fat content of the viscera and total body weight. It is estimated for a healthy body fat level, PBF should be within 10 - 20% for males, and 18 - 28% for females.
- Total body water component, which is divided into extracellular water and intracellular water. With a body-composition analyzer, a physician can identify any changes in the balance between these two components, which is critical for good health, and address them to maintain a healthy balance.

Thus, having numerical estimates of body-composition enables you and your treating physician to; 1) define a baseline of which body component you need to lose, gain, or maintain; 2) set a realistic training program to improve your body composition and monitor its achievement; 3) calculate the personal daily caloric intakes to create a specialized nutritional plan, and finally 4) measure body fat distribution and PBF to focus on the fat loss of a predetermined region, not only weight loss. Wishing you all a mental resolve to maintain your bodyweight fit to stay in good shape and good health.

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