

Importance Of Body Composition For Physical Fitness

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Introduction

Body Composition component of one Health Related Physical Fitness is very important and hence an exhaustive explanation is essential.

There are three major structural components one muscle and fat portion are dealt with utmost seriousness. The lean body weight portion and the relative fat portion in the total body weight of a person are more importantly considered in Health Related Physical Fitness. Lean body weight is derived by subtracting the fat weight of the person from the total body weight, through in L.B.W. portion is deducted from body weight attain the lean body weight of a person.

Total body weight = muscle body weight + storage fat.

Lean body weight = muscle weight + bone + essential fat (around 3% of the weight).

There are two components of fat stored in the body. They are which is found inherently in the marrow of bones as well as in the heart, lungs, liver, spleen, kidneys, intestines, muscles and lipid rich tissues throughout the central nervous system. This essential fat is required for normal physical functioning. The other component of fat called the storage fat consists of fat that accumulates in adipose tissue. This nutritional reserve includes the fatty tissues that protect the various internal organs from trauma, as well as the larger subcutaneous fat volume deposit beneath the skin surface.

The lean body weight in males and the minimal weight in females in composed chiefly of essential fat, muscle and bone. The density of a reference man with 12% storage fat 1.070 g. cc^{-1} . This is in addition to the approximately 3% essential fat. The density of the lean body weight is 1.09 g. cc^{-1} . If the total fat of the reference man is 15% (storage plus essential fat) then the density of the hypothetical fat free body attains the upper limit of 1.100 g. cc^{-1} . For the reference female, the average body density is 1.040 g. cc^{-1} at a body fat percentage of 27%, of this about 12% is considered to be essential. The density of the minimal weight of 107 lb is 1.070 g. cc^{-1} . In actual practice, densities of 1.075 to 1.080 g. cc^{-1} are rarely exceeded by the leanest, healthy and normal female. The upper and lower limits of body density in the population are approximately 0.93 g. cc^{-1} in the very obese and 1.10 g. cc^{-1} in the leanest males.

Criterion Of Obesity

Percent body fat as the measurement to determine the status of obesity and health risks.

A person fat content is generally evaluated in terms of the percentage of body weight that is fat (percent body fat) or in relation to the size and number of individual fat cells.

Obesity

Obesity can be defined as excessive enlargement of the body is total amount of fat.

To understand the status of obesity of a person, two terms called 'Normal range of body fat average value of body fat' are essential. The average value of the body fat is the percentage of body fat that is approximately sufficient to the person of recommended age and sex. The normal range of body fat indicates the range of percentage value that may be allowed to be higher or lower than the average value of fat. If the body fat percentage of a person is less than the range value prescribed, which compared to the average value of that specific aged person, the persons' fat status is called as obese.

For men and women aged 17 to 50 years, this variation range is approximately 5% body fat. Using this statistical boundary, cover fatness would then correspond to body fat that exceeds the average value plus 5% for example, in young men whose body fat average 15% of body weight, the borderline for obesity would be 20% of body fat. For older men, whose average fatness is approximately 25% obesity would be defined as a body fat content in excess of 30%. For young women, aged 17 to 27 years obesity would correspond to a body fat content in excess of 30% for older women aged 27 to 50 years the borderline between the average and obesity would be about 37% body weight.

Standards for over fatness or obese.

Men = above 20%

Women = above 30%

It should be kept in mind that there is a gradation in obesity, that progresses from the upper limit of normal 20% for men and 30% for women to as high as 50% to 70% of body weight in massively obese people. This group includes people who weight in the range of 375 to 600 *** or higher. In this situation, the body fat often exceeds lean body weight and obesity may be life threatening.

Health Risk Of Obesity

Through it is really difficult to percent all the risks involved in the obesity. It is fairly easy to say the indirect effect of obesity on the health status of an individual. An America, National Institute of Health, concluded that the obesity should be viewed as a disease in itself because there are multiple biologic hazards at surprisingly low levels of excess fat that represent only 5 to 10 lb above the desirable body weight. In fact, it is now argued rather convincingly, that obesity is a powerful heart disease risk that may be equal to that of smoking, elevated blood lipids and hypertension. It also appears that the distribution of adipose tissue, independent of total body fat alters the health risks of obesity. For example, high ratios of waist to hip circumferences are associated with an increased risk for death and illness. This may be due to the fact that fat in the abdominal area is more active metabolically than fat located in the hips and thighs.

Although there is little agreement to the exact cause or causes of obesity, there is considerable information regarding the associations between excessive body fatness and a number of health risks, clearly, obesity is associated with multiple atherogenic traits and an excessive fat accumulation contributes to an increases risk of disease.

The following are the health related correlates of obesity.

1. Impairment of cardio function due to an increase in the hearts mechanical work, and to left ventricular dysfunction.
2. Hypertension or high blood pressure.
3. Diabetes, as about 80% of adult on set diabetes are over weight individuals.
4. Penal dysfunction and illness.
5. Gall bladder disease and dysfunction.
6. Pulmonary disease and impaired function due to the added effort to move the chest wall.
7. Problems in administration of anesthetics during the surgeries.
8. Osteoarthritis, degenerative joint diseases and gout.
9. Several types of cancer (example a severely obese post menopausal women has a five fold greater than normal risk of developing the cancer of the uterine lining).
10. Abnormal plasma lipid and lipoprotein concentrations.
11. Menstrual irregularities in women.
12. Enormous physiological burden.

Weight reduction with accompanying fat loss often normalizes serum cholesterol and triglyceride and has a beneficial effect on blood pressure. In fact the normally observed relationship between age and blood pressure is partially explained by the tendency to gain weight with age. Although, being too fat may not be a primary heart disease risk, it's role as a secondary contributory factor cannot be denied or understand.

Important Points On Body Composition

1. Away to determine and classify is to measure the size and number of fat cells. A dispose tissue increase in two ways.
 - a. Exciting fat cells are enlarged or filled with more fat this process is called hypertrophy of the fat cells, and
 - b. Total number of fat cell is increased this process is called Hyperplasia of fat cells.
2. Excessive quantity of adipose tissue in obesity, occur by the process of fat cell Hyperplasia per comparison, a non obese person has approximately 25 to 30 billion Fat cells in the extremely obese person may be a high as 260 billion cells.
3. Adipose cells number increased fairly rapidly during one first year year of life, being about three times greater at this point than at birth. It is believed that most of the fat cells existing prior to birth are formed during the last trimester of the pregnancy. Beyond age 1, cells number increased gradually to the age of about 10, like cell size, there is significant cell hyperplasia one growth spurt in adolescence until adulthood, therefore there is generally little further increase in cell number.
4. In terms of body fat, percent fat increase from about 16% of body weight at birth to become 24% to 30% of weight at 1 year, then by age 6, body fat decrease to about 14% of body weight.
5. Research in animal suggests that attention in fat cells size and number can be achieved in two ways.
 - A. Mortification of early nutrition.
 - B. Exercise
6. Extreme obese humans show a large increase in the number of fat cells and to a lesser extent, an increase in the size of individual fat cell. When obese adults lose body weight, the number of fat cells remains unaltered and the decrease in total body fat is achieved almost exclusively by a reduction in fat cell size. So, becoming obese is definitely is a high risk factor throughout the life.
7. It is possible that the introduction of a diet or exercise program during the early stage of growth may aid in controlling the proliferation of new fat cells and the filling up of previously dormant ones. Programs of exercise and weight control began later in life and maintained thereafter can be effective in lowering the body total quantity of fat. If exercise and dietary intervention is discontinued, then the existing adipose tissues mass is likely to increase again by expansion cellular volume. Early presentation of obesity through exercise and diet, rather than correction of obesity once it is present, may be the most effective method to curb the grossly obese or over fat condition.
8. Exercise stimulates the mobilization of fatty acids through hormones delivered through the blood to act on the fat deports throughout the body. The areas of greatest fat concentration probably supply the greatest amount of this energy. There is simply no evidence, that fatty acid are released to a greater degree from the fat reds directly over the exercising muscles.
9. What is becoming increasingly clear is that people who maintain physically active lifestyle or who become involved in endurance exercise programs maintained a desirable level of body

composition. Evidence is accumulating to suggest, the contention that exercise may be more effective than dieting for long term weight control.

10. Regular aerobic exercise even without dietary restriction favorable changes in body weight and composition. The effectiveness of an exercise program for weight lost is linked to the degree of obesity, at the start. As a general rule, persons who are obese weight and fat more rapidly than normal counterparts. In addition, exercise provides significant. Positive spin off in that it alters the body composition (reduces fat and maintenance or even small increase in lean tissue) in such a way that the resting level of energy expenditure is increased that reduces the body's tendency to store calories.

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