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Original article

BODY COMPOSITION AS AN INDICATOR TO PREDICT OF PHYSICAL FITNESS TESTS FOR STUDENTS WHO WISH TO ENROLL IN THE PHYSICAL EDUCATION AND KINESIOLOGY DEPARTMENT

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Abstract

Aim: Physical fitness has been shown to be an important predictor of health, body composition is one of the most important physiological factors to affect fitness and physical activity is the most important environmental factor. The objective of this study was to investigate identify the Body Composition as an indicator to predict of physical fitness tests for Students who wish to enroll in the Physical Education and Kinesiology department.

Methods: sample contains (128) Students. Selected from who wish to enroll in the Physical Education and Kinesiology department. Age (19.23 2.7 years). Physical fitness was assessed by exercise tests (power, strength, strength endurance, agility, speed, and coordination). Three body composition indicators were used: sum of four skinfolds (4SF), waist adjusted for height (W/h) and body mass index (BMI).

Results: sum of four skinfolds (4SF) was the best-predicted fitness among the students to explaining 92% of the fitness variance. In addition, all body composition variables similarly predicted fitness among the students.

Conclusion: The relationship between body composition and fitness is strong. Nevertheless, physical activity affects skinfold in students.

Keywords: body composition, physical fitness, physical education

Introduction

Characterization of objects operated intellectual minds of scientists since ancient times. In addition, the pursuit of scientists to find better ratings that can be described objects in the light of which adopted these ratings on the body components, especially fat tissue. Moreover, divided patterns objects accordingly to the three patterns known (thin - muscle - fat) adopted the lists of height and weight in the body characterization, is that this method does not give the real data about the nature of objects in terms of the degree of thinness or obesity or muscle.

The variables of body weight is not necessary to be linked to the change in the increase or decrease fat tissue, in particular, unless it is the direct measurement of the amount of body fat or muscle.

It is noteworthy Christopher (1995) that the body composition contains a total of various tissues and connective tissues.

In addition, refers Crowe et al. (1999) that the most appropriate divisions of body composition and body fat is its size without fat or tissue that remains after the exclusion of the amount of fat and symbolized by the symbol (LBM).

The human body consists of (Fat mass) and (Fat-free mass). Fat is made up parts of the muscle, bone, and soft tissue of non-muscle, body fat divided to (Essential fats) and (Stored fats). In addition, there are basic grease in the bone marrow, and about Heart, lungs, liver, spleen, kidneys and intestines, and in the nervous system.as well as to the pelvic area and breasts in women. The basic grease necessary for many Physiological functions in the body, as an increase in men of about 5.3% Of body mass, and this percentage rises to 12% among women. The grease stored Accumulate in the body and stored in (Adipose tissues) in two regions two main under the skin, and viscera.

The functions of the body fat is provide the largest inventory of energy inside the body, especially during endurance physical effort, where the muscles working derives about 50% of its energy from fat during physical effort low to moderate intensity. (It can to provide grease stored in the body at a young non-obese energy to more than 100 Continuous hours of physical effort). the functions of fat, especially those under Skin, it provides thermal insulation, and the internal grease contribute to the protection devices Vital in the body such as the brain, heart, liver, kidneys

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and spleen of Concussion and shocks. Finally, working as a carrier for fat-soluble vitamins in fat (vitamins A, D, E, K), and some of the fat derivatives other functions such as the construction of cell walls and manufacture of vitamin D and the formation of hormones.

Body composition evaluate is the analysis of the distribution of various tissues, organs, and body components (Misra et al., 1997). Determine lean body mass and fat mass ratio is important for cardiovascular diseases, diabetes type II and dyslipidemia. Moreover, this relationship may point to the characteristics regarding the performance in physical activities, as well as changes that may reveal the physiological responses of some training (Chatterjee et al., 2002).

Body composition testing determines how much of your body is and is not fat. The non-fat part of your body is called lean tissue, which includes your muscle, water, bone and organs. Lean tissue is known as metabolically active tissue, the tissue that burns calories all day. The leaner tissue you have, the higher your resting metabolic rate will be. The fat part is body fat. Body fat is a storage form of energy and therefore has a very low-calorie demand.

Studies examining the body components of fats and muscles and bones of the interest of scientists has received in recent years. However, beyond that to examine the changing scene in the basic components of the body under the influence of practice where they give the possibility of judgment on the functional processes. and morphological which is made in the human body, more specifically and deeper as the increase in muscle mass and strength accompanied by clear changes in the level of muscular effort as well as fat as they reflect more effectively the training status of the individual.

It has become reach a decent body composition a key objective for many training programs in order to get rid of excess or obesity in order to increase muscle mass.

The objective of this study was to investigate identify the Body Composition as an indicator to predict of physical fitness tests for Students who wish to enroll in the Physical Education and Kinesiology department.

Methods

Participation

Sample contains (128) Students. Selected from who wish to enroll in the Physical Education and Kinesiology department. Age (19.23 2.7 years). Physical fitness was assessed by exercise tests (power, strength, strength endurance, agility, speed, and coordination). Three body composition indicators were used: sum of four skinfolds (4SF), waist adjusted for height (W/h) and body mass index (BMI).

Anthropometric measurements

The anthropometric measurements taken were skinfold thickness, body mass, and height, which were obtained by the same assessor.

A brief clinical history, demographic, anthropometric, and clinical profiles were recorded. The same physician recorded the anthropometric measurements according to the methods described earlier. Briefly, height (to the nearest 0.5 cm), weight (to the nearest 0.1 kg), waist and hip circumferences, and skinfold thickness measurements at four sites (biceps, triceps, subscapular, and suprailiac) were obtained. Central skinfold thickness (sum of subscapular and suprailiac skinfold thicknesses), peripheral skinfold thickness (sum of biceps and triceps skinfold thicknesses), sum of four skinfold thickness (4SF), and central: peripheral skinfolds ratio (C: P ratio) were calculated. The reproducibility of the skinfold thickness measurement was assessed for all individual skinfolds and the coefficient of variation for the measurement error was estimated as <10%.

The body mass index (BMI; weight (kg)/height (m2)) accepted as the standard index for the definition of overweight and obesity, and its ability for the screening of excess body fat in adolescents. Skinfold

thickness and other anthropometric measures are often used as 'field' methods to predict total body fat in adolescents, either at population or at individual level.

Height: measured in the supine position with the picometers.

Exercise tests

Subjects were assessed before and after an 8-week training program Tests followed a general warm-up that consisted of running, calisthenics, and stretching.

Vertical Jump Test (VJ): The subject stands side on to a wall and reaches up with the hand closest to the wall. Keeping the feet flat on the ground, the point of the fingertips is marked or recorded. This is called the standing reach height. The athlete then stands away from the wall, and leaps vertically as high as possible using both arms and legs to assist in projecting the body upwards. Attempt to touch the wall at the highest point of the jump. The difference in distance between the standing reach height and the jump height is the score. The best of three attempts is recorded.

Seated Medicine Ball Throw (SMBT): The subject sits with their back to a wall, on a mat facing the area to which the ball is to be thrown, and with the feet extended and slightly apart. The ball is held with the hands on the side and slightly behind the center. The ball is brought to the chest, and then thrown vigorously out as far as possible. The back should remain in contact with the wall at all times. Three attempts are allowed. The distance from the wall to where the ball lands are recorded. The measurement is recorded to the nearest 10 cm. The best result of three throws is used.

Static strength test (LS) (BS): A back dynamometer was used to measure the static leg strength. The subjects stood on the dynamometer platform and crouched to the desired leg bend position, while strapped around the waist to the dynamometer. At a prescribed time, they exerted a maximum force straight upward by extending their legs. They kept their backs straight, head erect and chest high. Three trials were allowed to the subjects and the best score was taken. Subjects had a rest between the trials.

Statistical analysis

All statistical analyses were calculated by the SPSS statistical package. The results are reported as means and standard deviations (SD). Differences between two groups were reported as mean difference ±95% confidence intervals (meandiff ± 95% CI). Regression was used to determine the correlation between fitness parameters and the body composition. The $p<0.05$ was considered as statistically significant.

Results

Table 1. Age, Anthropometric Characteristics and physical variables of the Groups (Mean ± SD)

Variables	Mean	Standard Deviation	coefficient of skewness
Age (years)	18.12	1.23	1.05
Height (cm)	169.5	6.34	0.37
Weight (kg)	77.32	5.7	0.45

Table 1 shows the age and anthropometric characteristics of the subjects. There were no significant differences were observed in the age and anthropometric characteristics and for the subjects in the groups.

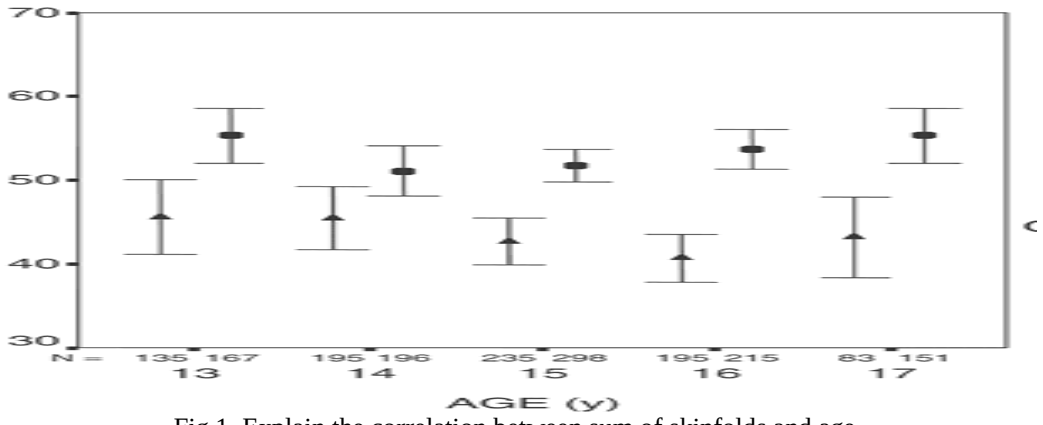

Fig 1. Explain the correlation between sum of skinfolds and age

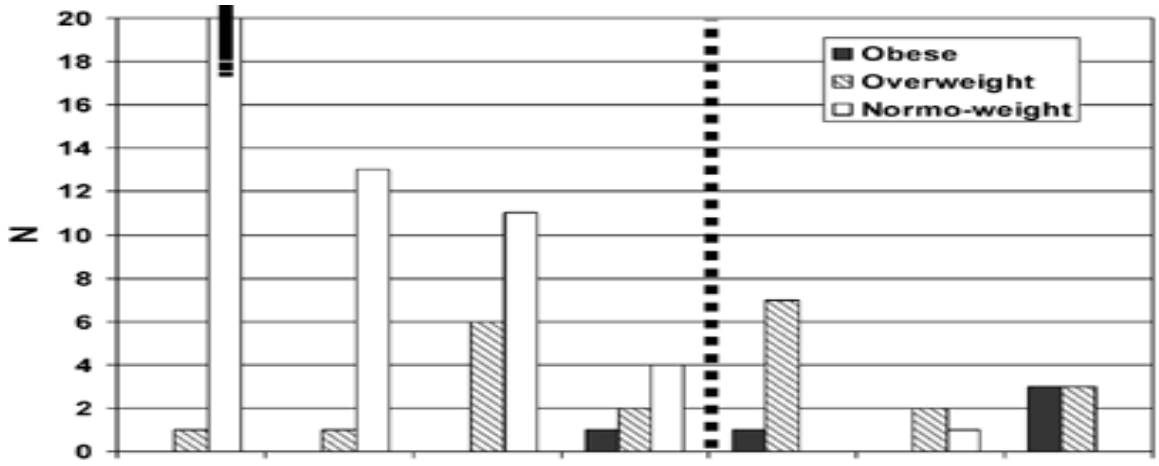

Fig 1. Explain he correlation between physical tests and fat percentage

Discussion

The researcher attributed to predict the physical fitness tests for Students who wish to enroll in the Physical Education and Kinesiology department in light of body composition.

LBM = (25.76) + (0.851× body mass) + sum of skinfolds × age – 1.978

The researcher believes that increasing the proportion of fat in a sample Find rates cited by scientists Christopher, (1995) (26) It is between 10-15% of male adults and studies

Troup & Reese (1983) (40) and that the most important results indicated that the proportion of fat between 5-16% may be due to the young age of the sample and the non-arrival of most of them to the stage of puberty.

And is supported by what was said Lamb, (1984) (36) in this that the total size of the fat cells when young people than by increasing the amount Fat stored in each cell fatty and this is called Hypertrophy or by increasing the number of cells in the adipose tissue, which is called the tissue Hyperplasia

This increase in the number of fat cells be until the age of 16 years from the age of the individual and this explains the reasons for the increase a little fat rate among individuals the study sample**.**

And the reasons for the improvement in the variables of the percentage of fat and the weight of the fat Yi researchers that this was due to the impact of confrontational exercises to increase muscle size, and consumption of fat necessary for the performance of energy production**.**

In this regard, Lamb points out, (1984) (36) that athletic training only leads to a decrease in the size of fat cells and not in number, and this explains the significant decline in the proportion of fat and weight have a budding research sample

We did not attempt to analyze the lifestyle profile as a possible determinant of the observed anthropometry and insulin resistance in the present study. However, we recently reported nearly 2/3rd of 659 subjects of ESAY study to be sedentary in a preliminary communication, Dhingra et al. (2002). which may be responsible for some of the adverse anthropometric and metabolic variables in the present study. An imbalanced dietary profile, including high saturated fat and low dietary fiber intake, has also been recorded in the ESAY study cohort Chatterjee et al. (2002) and may constitute other potential determinants for the adverse anthropometric and metabolic data shown by us.

Conclusion

Determination of body composition from skinfold measurements is based on the fact that a large proportion of total body fat is stored directly underneath the skin. Therefore, by measuring body composition by underwater weighing in a large number of people and by obtaining skinfold measurements in these same subjects, it is possible to develop equations to predict percentage body fat from simple skinfold measurements. There are some issues using skinfolds to estimate percentage body fat for a number of reasons, including distribution of body fat varies with age, sex, race, and athletic activity**.**

Reasonably accurate prediction of % body fat from skinfolds therefore requires that the equation used for a given person to have been developed using a similar subject population. This has led to a huge number of "population specific" equations, many of

which are probably based on too few subjects to be of any value.

Aknowledgements

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References

Chatterjee A, Dhingra V, Khanna N, Sanduja S, Sharma R, Guleria R, Pandey RM, Talwar KK, 2002, Prevalence of imbalanced diet in urban adolescents and young adults of Northern India (Abstract). J Assoc Physicians India; 50: 1522.

Christopher MN, 1995, Weight Principles & practice, A&C Black Publishing. London.

Cole TJ, Freeman JV, Preece MA, 1990, Body mass index reference curves for the UK.

Crowe SE, Babing Ton JP, Tammer DA, Stayer JM, 1999, The relationship of strength and dray and power, swimming power and swim performance, medicine and science in sports and exercise

Dhingra V, Chatterjee A, Guleria R, Sharma R, Pandey RM, Talwar KK, Misra A, 2002, Adverse physical activity pattern in urban adolescents (Abstract). J Assoc Physicians India; 50: 1521.

Misra A, Garg A, Abate N, Peshock RM, Stray-Gundersen J, Grundy SM, 1997, Relationship of anterior and posterior subcutaneous abdominal fat to insulin sensitivity in nondiabetic men. Obes Res; 5: 93–99.

Reilly JJ, Methven E, McDowell ZC et al., 2003, Health consequences of obesity.

Tanner JM, Whitehouse RH, 2010, Revised standards for triceps and subscapular skinfolds in British children.