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Relationship of Cardio Respiratory and Muscular Fitness with Body fat Percentage of Adolescents

Physical Education

KEYWORDS : Muscular Fitness, Cardio Respiratory Fitness, and Body Fat Percentage.

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ABSTRACT

The purpose of the study was investigating the relationship of body fat percentage with cardio respiratory fitness and muscular fitness of adolescents. For the purpose of this study forty male adolescent athletes has been selected from Department o Physical Education university of Allahabad by using purposive random sampling technique. The average age of the students were ranged from 18 to 23 years. Findings pertaining to the study resolved with significant relationship of muscular fitness and cardio respiratory fitness with body fat percentage. For testing the significance of muscular and cardio-respiratory fitness of body fat percentage variables of adolescents' product movement correlation was employed. The level of significance was set at 0.05 levels. Negative correlation was found above both the selected variable body fat percentage.

Introduction:

In modern days adolescents showing very low interest in physical activities due to the growing use of computers, increased time watching television and decreased physical education in schools, all contribute to children and adolescents living a more sedentary lifestyle. Another major factor contributing to the childhood obesity epidemic is the increased sedentary lifestyle of children is the increased sedentary lifestyle of children. School-aged children spend most of their day in school where their only activity comes during breaks or physical education classes. Only 50 percent of children 12 to 2 1 years of age regularly participate in rigorous physical activity, while 25 percent of children report no physical activity. The average child spends two hours a day watching television, but 26 percent of children watch at least four hour of television per day. Ortega et, al (2007) physical fitness in childhood and adolescence: a powerful marker of health. Health promotion policies and physical activity programs should be designed to improve cardio respiratory fitness, but also two other physical fitness components such us muscular fitness and speed and agility. Schools may play an important role by identifying children with low physical fitness and by promoting positive health behaviors such as encouraging children to be active, with special emphasis on the intensity of the activity. Today environment plays a major role in shaping the habits and perceptions of children and adolescents. The prevalence of television commercials promoting unhealthy food and eating habits is a large contributor. In addition, children are surrounded by environmental influences that demote the importance of physical activity. Today, it is estimated that more money is spent on food outside home, at restaurants, cafeterias, sporting events, etc. In addition, as portion sizes have increased, when people eat out they tend to eat a larger quantity of food calories than when they eat at home. Beverages such as carbonated soft drinks and juice boxes also greatly contribute to the adolescents' obesity epidemic. It is not uncommon for a bottle of cola to be marketed toward children, which contains approximately 400 calories. The consumption of cola by Children has increased throughout the last 20 years by 300 percent. Scientific studies have documented a 60 percent increase risk of obesity for every regular soft drink consumed per day. Box drinks, juice, fruit drinks and sports drinks present another significant problem. These beverages contain a significant amount of calories and it is estimated that 20 percent of children who are currently overweight are overweight due to excessive caloric intake from beverages. To most people obesity is synonymous with excess weight medical professionals define overweight as excess body weight that includes muscle, bone, fat and water, obesity specifically refers to an excess of body fat. Some people, such as body-builders or other athletes with a lot of muscle, can be overweight without being obese. Obesity is now regarded as a chronic disease caused by a complex set of factor. Recognized since 1985 as a disease with serious health implications. Obesity is leading cause of preventable death, second only to cigarette smoking. Obesity has been established as a major risk factor for hypertension, cardiovascular disease, diabetes mellitus and some cancers in both men and women. It affects a large percentage of or urban population, and its prevalence is increasing. On third of the adult population is estimated to be obese. Hancox. (2004) according to the heart and stroke foundation of Canada, almost one in four Canadian children, between the ages of 7 and 12 are obese because television viewing encourages a sedentary lifestyle and also contributes to childhood obesity by aggressively marketing junk food to young audiences. Canadian Pediatric Society found that most advertisement on children's Television shows are for fast food, candy and pre-sweetened cereals.

Methodology:

For the purpose of this study forty male adolescent athletes has been selected from Department of Physical Education university of Allahabad by using purposive random sampling technique. The average age of the students were ranged from 18 to 23 years. Findings pertaining to the study resolved with significant relationship of muscular fitness and cardio respiratory fitness with body fat percentage. Rockport One Mile Test, Wet Spiro meter, 4 Level Abdominal Test, Skin Fold Measurement test were used. In order to find out the relationship of muscular and cardio respiratory fitness with body fat percentage in adolescents was calculated by using Pearson's Product Moment Correlation, Interpretation of results, discussion and recommendations Analysis of data, thus involves the breaking of the complex factor in to the purpose of interpretation. . The level of significance was set at 0.05.

Results and Discussion:

Table -1

Relationship of Body Fat Percentage with Muscular Fitness

Variables	Mean	S.D.	Df	R-value
Body fat percentage	0.69	0.52	39	-0.88*
Muscular fitness	12.57	2.82		P<.01

The r- Value significant at 0.1 levels $_{r.01}$ (39) =.393

The perusal of table No: 1 indicates the mean scores of body fat percentage and muscular fitness, which was 0.6976 and 12.575 respectively and the standard deviation, was 0.5242 and 2.8274 respectively. The value of r is -0.88, which indicate that there is an existence of negative correlation between the body fat percentages with muscular fitness. As shown in table no:1 the obtained value of 'r' that is-0.88247 was higher than the tabular value of 0.393 for the selected degree of freedom (df-39) and level of significance (0.01) which indicates that the two selected variables i.e. body fat percentage and muscular fitness are closely re-

lated with each other. Which can be further explained that person with low level of muscular fitness can be pretend that the higher level of body fat percentage.

Table -2
Relationship of Vo2Max with Body Fat Percentage

Variables	Mean	S.D.	Df	R-value
Body fat percentage	0.69	0.52	39	-0.91424*
VO_2	80.82	9.46		P<.01

The r- Value significant at 0.1 levels $_{r.01}$ (39) =.393

The table- 2 showing that the mean scores of VO2max and body fat percentage. Which is 80.82 and 0.69 and the standard deviation, was 9.46 and 0.52 respectively. The value of r is -0.91424, which indicate that there is, and existence of negative correlation between the body fat percentage and Vo2max. As shown in table no.2 the obtained value of 'r' that is -0.91424 was higher than the tabular value of 0.393 for the selected degree of freedom (df=39) and level of significance (0.01). This indicates that the two selected variables i.e. body fat percentage and Vo2max are closely related with each other. Which can be further explained that a person who have low level of Vo2max it can be pretend that may the higher level of body fat percentage. Therefore which states that there will not be any significant relationship between cardio-respiratory fitness and body fat percentage of male adolescents was rejected in case of ability of utilization of oxygen during exercise, which is one of the most important variables of cardio-respiratory fitness.

Table 3
Relationship of Vital Capacity with Body Fat Percentage

Variables	Mean	S.D.	Df	R-value
Body fat percentage	0.6976	0.5242	39	-0.92*
Vital Capacity	3.8825	0.4012		P<.01

The r- Value significant at 0.1 levels $_{r.01}$ (39) =.393

The perusal table no 3 the mean scores of vital capacity and body fat percentage, which was 3.88 and 0.69 and the standard deviation is 0.40 and 0.52 respectively. The value of r is 0.92, which indicates that there is an existence of positive correlation between the body fat percentage and vital capacity. As shown in table no. 3 the obtained value of 'r' that is 0.92 is higher than the tabular value of 0.393 for the selected degree of freedom (df=39) and level of significance (0.01). This indicates that the two selected variables i.e. body fat percentage and vital capacity is closely related with each other. Which can be further explained that adolescents with low level of vital capacity then it can be pretend the higher level of body fat percentage. Therefore which states that there will not be any significant relationship between cardio-respiratory fitness and body fat percentage of male adolescents was rejected in case of vital capacity, which is one of the most important components of lung capacities as well as cardio-respiratory fitness. The findings pertaining to the study resolved with significant relationship between body fat percentage with muscular fitness and cardio respiratory fitness of male adolescents. As muscular fitness is a product of various bio-chemical factors associated to human muscles. Some of them are i.e. number of myofibrils present in the muscles, muscle glycogen store, aerobic and anaerobic capacity of muscles, neuromuscular facilitation and number of motor units etc. therefore any change in the associated factors of muscular fitness directly affects the body fat percentage of human beings. Cardio respiratory fitness deals with the fitness of human heart and lungs. This can be estimated by measuring various cardiac, efficiencies like stroke volume, cardiac output, resting heart rate etc along with various lung capacities like vital capacity, tidal volume, residual volume, respiratory rate etc. therefore any change in the associated factors of cardio respiratory fitness directly affects the body fat percentage of human beings.

Conclusion:
On comparing the relationship the difference in the mean scores of muscular fitness and body fat percentage, which was 12.575 and 0.6976 respectively and the standard deviation, was 2.8274 and 0.5242 respectively. The value f r is -0.88247, which indicate that there is an existence of negative correlation between the body fat percentage and muscular fitness. The relationship the difference in the mean scores of Vo2max and body fat percentage, which was 80.8230 and 0.6976 respectively and the standard deviation, was 9.4696 and 0.5242 respectively. The value of r is-0.91424, which indicate that there is an existence of negative correlation between the body fat percentage and Vo2max the relationship the difference in the mean scores of vital capacity and body fat percentage. Which was 3.8825 and 0.6976 respectively and the standard deviation, was 0.4012 and 0.5242 respectively. The value of r is 0.92234, which indicates that there is, and existence of positive correlation between body fat percentage and vital capacity. In the light of the findings of this study the following implications can be drawn. The importance of muscular fitness and cardio-respiratory fitness has been well recognized by several researchers. The present research has tried to find out the relationship of muscular and cardio respiratory fitness with body fat percentage of adolescents. It is suggested and recommended that significant relationship between body fat percentage with muscular fitness and cardio respiratory fitness of male adolescents.

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