

STUDY OF ENDURANCE PERFORMANCE IN RELATION TO PERCENT BODY FAT ON 10 TO 14 YEARS OLD SCHOOL-GOING BOYS

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INTRODUCTION

Main interest for the study of body composition is interest in body fat and its influence on health and physical performance. Research on physical performance capacity of obese person found that excess fat is detrimental to physical performance and work capacity (Tyagi, 2001). Excess body fat is related to injury, non adherence to training and overall reduced athletic performance of jumping, agility and endurance activities. But the average percent of body fat values differ from activity to activity. Some people might feel and perform better at a higher or lower body fat percentage than others of the same age and sex. An increasing volume of research is trying to focus on establishment of optimum body fat levels for effective participation in various activities. Barbara et. al, (2002) in their study reported that fat mass negatively impacts some domains of physical performance and overall functioning. Body fat contributes no strength advantage and limits endurance, speed, and movement through space. In other study it has also been reported that the average performance of the athletes decreases dramatically as the body fat increases above 10% in males and 19% in females (McLeod, 1983). The present study was conducted to find out the relationship between percentage body fat (PBF) with the performance of strength-endurance and cardio vascular endurance on 10 to 15 years boys. The purposes of this study were to establish the relationship between PBF with strength-endurance and cardio vascular endurance on 10 to 14 years school going boys.

MATERIALS AND METHODS

A total of 210 school boys from different schools of CoochBehar district were selected randomly as subjects for the present study. The age of the subjects was ranged from 10 to 15 years. Percent Body Fat (PBF), Strength endurance and Cardio vascular endurance was the measuring criteria for this study. PBF was measured by standard equation developed by Lohman et al. (1982), Strength endurance was measured by 1 min bend knee sit up test and Cardio vascular endurance was measured by 9 min run for distance test (AAHPERD, 1984). Single group design was used in this study. All parameters of this study were measured by standard tests. Mean and SD were calculated for PBF, Strength-endurance and Cardio vascular endurance separately. PBF was taken as independent variable and Coefficient of Correlation (r) was calculated with Strength-endurance and Cardio-vascular endurance by Pearson's Product Moment method using standard statistical software. Significance was measured on both 0.05 and 0.01 level of confidence in this study.

RESULT

The range, mean value and standard deviation of PBF, Strength-endurance and Cardio vascular endurance were presented in Table-1. It indicated that minimum and maximum value of PBF were 1.39 and 45.78 respectively. The minimum and maximum values of Strength-endurance and Cardio vascular endurance were 0 and 37 times min^{-1} , 1049 yard and 2305 yard respectively. The mean value of PBF, Strength-endurance and Cardio vascular endurance scores were 9.24 ± 4.77 , 18.995 ± 7.45 and 1665.10 ± 210.53 respectively.

**TABLE-1:
DESCRIPTIVE STATISTICS OF PBF, STRENGTH-ENDURANCE AND CARDIO VASCULAR ENDURANCE**

Statistical parameters	PBF	Strength-endurance	Cardio vascular endurance
Min	1.39	0	1049
Max	45.78	37	2305
Mean	9.24	18.995	1665.10
SD	± 4.77	± 7.45	± 210.53

To calculate coefficient of correlation (r), PBF was considered as independent variable and r were calculated with Strength-endurance and Cardio vascular endurance separately. Computed r values with each dependent variable were presented in Table-2.

**Table-2:
COMPUTED COEFFICIENT CORRELATION (R VALUES) FOR STRENGTH-ENDURANCE AND CARDIO VASCULAR ENDURANCE WITH PERCENT BODY FAT AMONG SCHOOL GOING BOYS**

	Strength-endurance	Cardiovascular endurance
PBF	-0.24**	-0.198**
N	210	210

** Significant at both 0.05 and 0.01 level.

DISCUSSION ON FINDINGS

Table-2 reveals that coefficient of correlation (r-value) between PBF with strength-endurance and cardio vascular endurance were -0.24, -0.198 respectively which is indicated that PBF had negative relationship with strength-endurance and cardio vascular endurance. Table-2 also indicated that negative values of coefficient of correlation (r) are statistically significant for both strength-endurance and cardio vascular endurance. From this finding it may be interpreted that

PBF has significant negative correlation with strength endurance and cardio vascular endurance for 10 to 15 years old boys. This might be due to the fact that excess fat weight does not have any positive contribution to motor performance and those boys had more fat were lesser performer in strength endurance and cardio vascular endurance. González-Gross *et.al*, (2003) conducted a study on Spanish adolescence and reported a negative association between body fat and physical fitness. Ortega *et al*. (2008) reported in their study that Cardio-respiratory fitness levels are associated with total and abdominal adiposity. Ara *et al*. (2007) reported in their study that maximal oxygen uptake ($VO_{2\max}$) was significantly related to adiposity in both sexes.

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Sani Pl try to make graph with the values of Mean and SD