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Cardiovascular endurance and body mass index among boys & girls: A comparative study

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Abstract

This study was designed to investigate the comparison of health related physical fitness components among school boys & girls. A sample of 24 students, 9-14 years of age group has been selected randomly from both gender. In which 12 subject were boys & 12 subjects were girls. Only two most required health related physical fitness components (Cardiovascular endurance & Body Mass Index) were taken. The mean & S.D of Cardiovascular endurance for boys 48.47 & for girls 46.29 whereas mean & S.D of Body Mass Index for boys 19.86 & for girls 20.82 respectively. The statistical analysis revealed that there is no significant difference in cardiovascular endurance & body mass index among boys & girls.

Keywords: Cardiovascular Endurance, Body mass index.

Introduction

Physical fitness, participation in physical activity, fundamental motor skills and body composition are important contributors to the health and the development of a healthy lifestyle among children and youth. It has been seen through many scientific research studies that significant health problems encountered in adulthood often have their roots in health behaviors initiated during childhood and adolescence. People achieve physical fitness through exercise which CDC defines as “a subcategory of physical activity that is planned, structured, repetitive and purposive in the sense that improvement or maintenance of one or more components of physical fitness is the objective.

Rogers (1955) has said that physically unfit boys and girls, at all level of intelligence, have greater difficulty in continuing mental effort and remaining mentally alert. He believes that the potential for learning depends upon both intelligence and physical fitness. According to Rogers, Physical fitness is a human quality, basic to the meeting of life’s problems. It is true that a person looks, feels and work effectively or efficiently depending upon his physical fitness in life situation. No two individuals are alike. Individual differences make every physical education class a heterogeneous group. Therefore no one programme of physical education can be ideal for all. Unless the strength and weakness of the individual are known to the teacher.

Cardiorespiratory fitness is a major component of health related fitness and depends on a large number of phenotypes associated primarily with cardiac, vascular and respiratory functions. Measurement of submaximal exercise capacity and maximal aerobic power are generally performed to assess cardiorespiratory fitness. Cardiovascular endurance is the ability of the circulatory and respiratory systems to adjust and to recover from the effect of exercise or work. Body Mass Index (BMI) is a ratio of total body weight to height. Several ratios has been proposed but one used most frequently. Weight (in kilograms) divided by height (in meters) square [weight, kg/ht, m², (kg/m²)]. Calculated BMI can then be compared against standard value to determine whether the individual has acceptable body weight, is overweight or is obese. Risk of increased rate of mortality from high value of body mass index (BMI) is described by a J- shaped curve. BMI value from 15 to 24.9 represents no excess mortality risk and over 40 a high risk of mortality. Participation in sports is one of the common traits of human character and it starts to develop from the very beginning of childhood. The characteristics of an athlete mainly depend upon physical fitness, having components like muscular strength and endurance, cardio- respiratory endurance, flexibility, speed, power,

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agility, balance etc. But, these components, may vary in sportspersons involving different sports activities. The purpose of the present investigation was to compare the body mass index and cardiovascular endurance of boys & girls.

The purpose of the research was to discover answers to questions through the application of scientific procedures. The main aim of research was to find out the truth which was hidden and which has not been discovered as yet.

The main objectives of the present study conducted in school were:

- 1) To compare the cardiovascular endurance among boys & girls.
- 2) To compare the body mass index among boys & girls.
- 3) To identify the most preferable methods of reducing the difference in both groups if find.

Keeping in view the objective of the study, it was framed that there would be proper difference in the cardiovascular endurance and body mass index among boys and girls.

- 1) The study was delimited to 9-14 years age group only.
- 2) The study was delimited to only cardiovascular endurance and body mass index.
- 3) The data was collected from the Manav Rachna International School, Faridabad district of Haryana State.

Methodology

Subjects

The data was collected randomly selected N-12 boys & N-12 girls of Manav Rachna International School from Faridabad district of Haryana. Their age was 9-14 years age group.

Tools

All the important and required information was given to participants. The physical fitness battery included only 2 required components of health related fitness for subjects suitability in field conditions, specifically for ease of administration without extensive equipment. All tests were administered during the school day. The following test were administered on all the subjects, when they were not busy and ready to give their response to conduct the tests by the investigator. These test are given below:

S.No.	Test	Parameter	Unit
1.	Harvard Step test	Cardiovascular endurance	Pulse of all 3 half minute counts (from 1 to 1.5, 2 to 2.5 and 3 to 3.5 minutes)
2.	Weight & Height	Body Mass Index	Kg/m ²

Statistical Analysis

The values of mean, standard deviations of all the variables was computed on SPSS and ‘T’ test was applied to find out significance of differences between the scores of the selected variables and groups. To test the hypothesis the significance level was set at .05 percent.

Results

Table 1: Comparison of Cardiovascular Endurance among boys & girls

Group	N	Mean	Std. Dev.	Mean Diff.	Df	T value	Tabulated value
BOYS	12	48.47	8.37	2.184	22	0.22	1.71*
GIRLS	12	46.29	5.10				

Table 2: Comparison of Body Mass Index among boys and girls

Group	N	Mean	Std. Dev.	Mean Diff.	Df	T value	Tabulated value
BOYS	12	19.86	3.10	0.96	22	0.19	1.71*
GIRLS	12	20.82	2.18				

* Significance at .05 level.

Discussion

- A. There is no significance difference in cardiovascular endurance among boys & girls as calculated value of ‘t – 0.22’ found insignificant at .05 level.
- B. There is no significance difference in body mass index among boys & girls as calculated value of ‘t – 0.19’ found insignificant at .05 level.
- C. In hypothesis it was framed that there would be difference in the cardiovascular endurance & body mass index among boys & girls but after result our hypothesis is rejected so we can concluded that boys & girls are always different at every level but in regard of fitness (cardiovascular endurance & body mass index) at this age boys & girls have same growth pattern due to which we don’t find any difference.

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