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## Impact of body mass index and gender on selected cardiorespiratory and psychological variables among the adolescence boys and girls students of Kollam District in Kerala

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### Abstract

Now a day's childhood obesity have increased dramatically during the past and now represents one of the most pressing national and international public health priorities. This will lead to greater risk of adult obesity, cardio related diseases; diabetic's etc. this will affect the quality of life. On this current status the study was to analyze the impact of BMI and Gender on selected cardiorespiratory and psychological variables among the adolescence boys and girls students of Kollam district in Kerala. The age of the subjects ranged from 13 to 14 years, studying in standard VIII and IX. The data were collected in all the schools and randomly by lot method only Two Hundred (200) students were selected for each group and total strength for 400 students. In which 200 girls and 200 boy's adolescence students were selected for the study. The statistical tools used for these are described here. 2 X2 factorial designs was applied by using SPSS 20 version to determine the impact of the study which was the most appropriate technique. The significance of difference was set at 0.05 level of confidence.

**Keywords:** 2x2 factorial design, body mass index

### Introduction

To develop the students' personality, leadership, physical skills, fitness, sportsmanship and cooperation, many co-curricular activities have been introduced as part of their education. Co-curricular activities are conducted outside the classroom like games, music, craft, scouting, etc. Such activities are carried out as part of curriculum to provide the necessary curricular values and play a vital role in generating educational values. Similarly physical education in schools was earlier considered to be an extra-curricular activity and was pushed to the back seats, whereas now it is revamped as a co-curricular activity. Though Kerala state is high literacy state, the status of Cardio- respiratory and Psychological variables have to be analysis for adolescent group. As the author belongs to the native of Kollam district wish to analysis the impact of Body weight on the cardio - respiratory and Psychological variable. Thus this topic was choose as his area.

### Selection of Subjects

To achieve the purpose results four hundred subjects were taken from two different board (state board and C.B.S.E) schools in Kollam district of Kerala State. The age of the subjects ranged from 13 to 14 years, studying in standard VIII and IX. The data were collected in all the schools and randomly by lot method only Two Hundred (200) students were selected for each group and total strength for 400 students. In which 200 girls and 200 boy's adolescence students were selected for the study.

### Statistical Procedure

The present study was pay attention on finding the impact on BMI and gender on the cardiorespiratory and psychological variables among the adolescent boys and girls students. The statistical tools used for these are described here. 2 X2 factorial designs was applied by using SPSS 20 version to determine the impact of the study which was the most appropriate

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technique. The significance of difference was set at 0.05 level of confidence.

## Variables and Criterion Measures

Sl. No.	Variables	Test Items	Unit of Measurements
<b>Cardiorespiratory Variables</b>			
1.	Resting Pulse Rate	Pulse Rate Monitor (manual)	In beats/min
2.	Breath Holding Time	Nose Clip	In Seconds
<b>Psychological Variables</b>			
3.	Aggression	Questionnaire	Buss-Perry (1992)

The subjects were directed to assemble and the procedure of taking measurements in the criterion variables was demonstrated prior to actual trials of measurements. In this case subjects' reliability, testers' reliability and the instrument reliability were determined prior to the data collection procedure. Physical variables and cardiorespiratory variables were assessed during resting condition and psychological variables were collected by questionnaire.

### The Formulated Hypothesis in the Present Study Are Tested As Follows

Hypothesis -1 stated that BMI would have significant effect on cardiorespiratory variables among the adolescence boys and girls school students.

Testing the Hypothesis-1 the result obtained on the cardiorespiratory variables namely heart rate and breath holding time would not have significant relationship on the body mass index. Hence the formulated hypothesis was rejected.

Hypothesis-2 states that Body Mass Index would have significant effect on psychological variables among the adolescence boys and girls school students.

Testing the Hypothesis-2 The result obtained on the psychological variables namely aggression would have significant relationship on the body mass index. Hence the formulated hypothesis was accepted.

Hypothesis-3 states that gender would have significant effect on cardiorespiratory variables among the adolescence boys and girls school students.

Testing the Hypothesis-3 The result obtained on the cardiorespiratory variables namely heart rate and breath holding time would not have significant relationship on the gender. Hence the formulated hypothesis was rejected.

Hypothesis-4 states that gender would have significant effect on psychological variables among the adolescence boys and girls school students.

Testing the Hypothesis-4 The result obtained on the psychological variables namely aggression would have significant relationship on the gender. Hence the formulated hypothesis was accepted.

Hypothesis-5 states that Interaction between Gender and BMI on selected cardiorespiratory and psychological variables may be significant.

Testing the Hypothesis-5 The formulated hypothesis in this study was rejected since no significant interaction was formed in between Gender and BMI on selected cardiorespiratory (Resting Pulse Rate and Breath Holding Time) and psychological (Physical Aggression, Verbal Aggression, Anger and Hostility)

### Conclusions

Based on the findings derived on cardiorespiratory and psychological variables due to the impact of Body Mass Index and gender, the following conditions have been made.

In studying the influence of gender on cardiorespiratory

variables, the obtained results explained that boys and girls were found to be similar in resting heart rate and Breath holding time from the results it were concluded that physical, biological, and cognitive change that begin during adolescent age and continue throughout the period. This age group experience dramatic physical growth and development and continue till the end of that period invariable in gender. Since the subjects belongs to the early adolescence and this variable may have changes during the late adolescence age. Following this while analyze the results on psychological variables, Gender has significant impact on physical aggression, verbal aggression, hostility and total aggression. The gender based analysis explained that boys were found to the high in the components of aggression namely physical, verbal, anger, hostility and total aggression. The obtained results lead to conduct that, the means and method to complete their needs, and responsible over their day to day life activities may be the source for the dominance of boys on their aggressive behavior compared to girls. Following this studying the results derived from influence of Body Mass Index on cardiorespiratory and psychological variables no significant influence was found on cardiorespiratory variables namely resting heart rate and breath holding time between the students of below normal and normal. From the results, it was concluded that as the subjects are in earlier adolescence stage, the physiological response to the change in the BMI of the below normal and normal may be a significant source for the similarities exist on cardiorespiratory variable. Further, in analyzing the influence of Body Mass Index on psychological variables, BMI has significant impact over the components of aggression. In this present study, the students who are normal with reference to BMI were found to be higher in physical, verbal, anger and hostility compared to the students of below normal in BMI. The results of this leads to conclude that weight, related change over the physiological changes over the period of adolescence stage may be the significant factor for dominance of students of BMI (normal) compared to BMI below normal students.

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