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A comparative study on physiological variables among rural and urban high school children's

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Abstract
The research found the differences in physiological characteristics between urban and rural adolescents attending secondary school in the Raichur District. The sample for this study consisted of 60 urban students and 60 rural students. The age spanned 14 to 16 years. The physiological variable test was collected through the physiological variables breathing frequency (Respiratory rate), breath-holding time, and respirations. The data was analysed using a t-test. A comparison of the current data revealed that school children from rural and urban areas of Raichur District After comparing the present data, it was found that the rural and urban school children of Raichur District.

Keywords: Breathing frequency (respiratory rate), breath holding time, resting heart rate

Introduction
The study of living organisms encompasses physiology, which specifically explores exercise physiology, the body's response to physical activity. Aspects of physiology involve warm-ups, conditioning, and cool-downs, and the effects of exercise on the muscular, digestive, circulatory, and respiratory systems. The respiratory rate, or breathing rate, measures the number of breaths a person takes per minute, typically while at rest. A normal respiratory rate for an adult at rest is between 12 to and 18 breaths per minute, while rates below 12 or above 25 breaths per minute may signal an underlying health issue. Breath-holding time, the length of time a person can voluntarily hold their breath, generally ranges from 30 to 90 seconds. Individuals can engage in breath-holding exercises to expand their lung capacity, and existing training protocols provide assistance in learning to prolong the duration of breath-holding. Meanwhile, the resting heart rate, which is the frequency at which the heart beats per minute while a person is at rest, such as when they are seated or reclined, typically ranges from 60 to 100 beats per minute for children's.

Purpose of the Study
The primary objective of this research was to examine and contrast the physiological characteristics of children attending schools in rural and urban areas. Determine the Breath Holding Time, Resting heart rate, and Heart Rate. To identify and compare all variables and assess the disparities between rural and urban school children in Raichur District.

Objectives of the Study
The study has been devised to test the following objectives
1. To find out whether there was any significant difference in the mean scores of select breathing frequency for the sample of Urban and Rural school Boys.
2. To find out whether there was any significant difference in the mean scores of select Breath Holding Time for the sample of Urban and Rural school Boys.
3. To find out whether there was any significant difference in the mean scores of select Resting heart rate for the sample of Urban, Rural and Tribal area school Boys.

Materials and Methods

2.1 Subject: The study has been conducted on 60 students. The subjects were students of Raichur district rural and urban students. The age of the subjects ranged between14-18 years. The study was restricted to only physiological variables.

2.2 Procedure: The procedure involves measuring three key physiological parameters: Breathing Frequency, or Respiratory rate, Breath Holding Time, and Resting heart rate, specifically Pulse Rate. The breathing frequency is measured by counting the number of times the chest or abdomen rises within a one-minute period. The recorded time in seconds a person can sustain without breathing is referred to as Breath Holding Time. The resting pulse rate is refers to the number of heart beats per minute detected at the radial artery while a person is completely relaxed. The pulse rate is the heart beats per minute measured at the radial artery, typically with the aid of a stopwatch. For Descriptive statistics, including the mean and standard deviation, were employed to analyze the data, and an independent't'-test was conducted using SPSS software to ascertain the significant differences between the groups. The chosen level of significance was 0.05.

2.3 Reliability of data: The reliability of data was censured by establishing the instrument reliability, tester, competency, and reliability of test and subject's reliability.

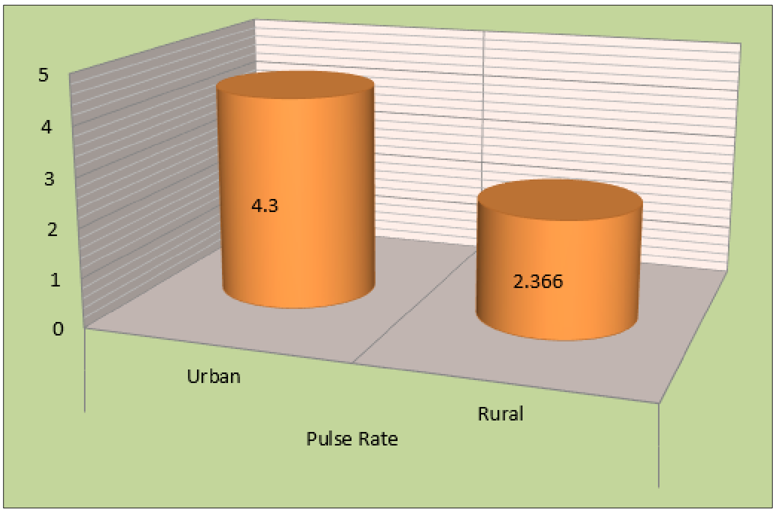
3.1 Statistical analysis: The t-test statistical technique was used to find out the Comparison of physiological variables between Rural and Urban school children's.

Findings: The comparisons of Pulse Rate between Rural and Urban school children's are presented in Table-1.

Table 1: Showing Comparison between Pulse Rate of Rural and Urban school children's

Variable	group	Sub	Mean	Std. Deviation	Std. Error Mean	Std. E. D	T	M. D	F	Sig.
Pulse Rate	Urban	60	4.300	.765	.098	.1734	11.14	1.933	4.14	.000
	Rural	60	2.366	1.013	.142					

Table 1 indicates the smallest disparity exists between the average pulse rates of urban and rural school children, with the mean pulse rate among urban school children being 4.3000 and among rural school children being 2.3667. The mean difference of 1.93333 indicates a significant difference in pulse rate, with urban school-going children having a higher mean score then than rural school-going children., In addition, the standard error difference was 0.1734 for urban school-going children, who have high pulse rates. The data was re-analyzed using the 't' test. Standard deviation was. Calculated prior to performing the't' test. The standard deviation for urban students is 0.765, while that for rural students is 1.013. The standard error for their combined results was which determined to be 1734. Research showed that there is no considerable disparity in the pulse rates of rural and urban schoolchildren, as the calculated 't' value of 11.145 is lower than the tabulated't' value of 2.000 at a 0.00 level of significance. The mean pulse rate rates of urban and rural school children are illustrated graphically in figure 1.



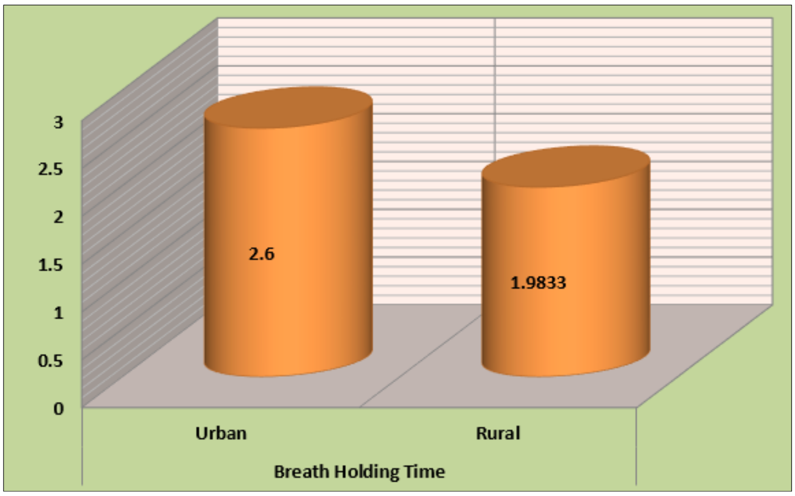
Graph 1: Graphical representation of mean values illustrating the difference between the mean pulse rates of urban and rural school children

Table-2 The comparisons of Breath Holding Time between Rural and Urban school children's are presented in

Variable	Group	Sub	Mean	Std. D	Std. E. M	Std. E. D	T	M. Def	F	Sig.
Breath Holding Time	Urban	60	2.600	1.122	.144	.193	3.15	0.616	1.691	.002
	Rural	60	1.983	1.016	.131					

Table 2: A Comparative Analysis of Breath Holding Times between School Children from Rural and Urban Areas. The data indicates that the smallest statistical difference exists between the mean Breath Holding Times of urban and rural schoolchildren. Specifically, the urban schoolchildren's mean was 2.6000, whereas the rural schoolchildren's mean

was 1.9833. The mean disparity is 0.6166, indicating that urban school-going children have a significantly higher Breath Holding Time compared to rural school-going children. The standard error of difference was 0.1955, suggesting that urban children possess a greater capacity of for Breath Holding Time. The data was re-analyzed using a test. Standard deviation was calculated prior to conducting the test. The standard deviation for urban students is 1.12295, while that for rural students is 1.01667. The combined standard error was determined to be 0.1955. No significant disparity exists between the breath-holding times of rural and urban school children, as the calculated 't' value of 3.153 is below the tabulated't' value of 2.000 at a 0.02 level of significance. The graphical representation in figure-2 illustrates the mean scores of urban and rural school children for breath-holding time.

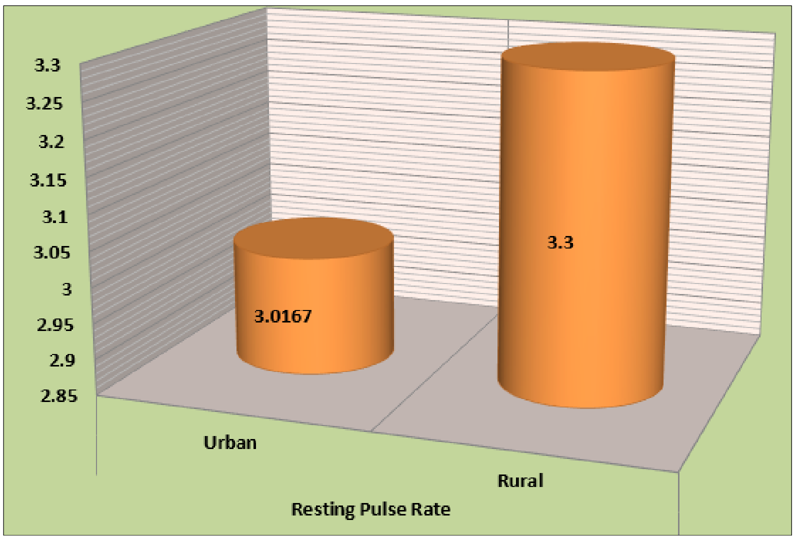


Graph 2: Graph Showing Difference between Means of Breath Holding Time Urban and Rural school children's

Table 3: Showing Comparison between Resting Pulse Rate of Rural and Urban school children's

Variable	Group	Sub	Mean	Std. D	Std. E. Mean	Std. E. D	T	M. Deference	F	Sig.
Resting Pulse Rate	Urban	60	3.016	1.467	.189	.2301	-1.231	-0. 283	3.350	.221
	Rural	60	3.300	1.013	.130					

Table-3 This table shows that there is the least significant difference between the means of Resting Pulse Rate among Urban and rural school children's, the mean value of urban school children's is 3.0167and rural school children's mean value is 3.3000. Rural school mean difference in Resting Pulse Rate was -0.2833, signifying that the difference is not statistically significant. Notably, significant differences were found, with rural school children exhibiting higher mean scores compared to their urban counterparts. The standard error difference of .2301 indicates that rural school-going children have a higher pulse rate. The data was again further analyzed by employing the 't' test. Standard Deviation was calculated prior to conducting the 't' test. The standard deviation of urban students is 1.46706, while that of rural students is 1.01347. The standard error of their combined outcome was calculated to be 1734 A statistical analysis revealed that no substantial disparity exists in the resting pulse rates of rural and urban schoolchildren, as the calculated't' value (-1.231) falls below the tabulated't' value (2.000) at a confidence level of 0.221.The mean scores of urban and rural schoolchildren on resting pulse rates are visually represented in Figure 3.



Graph 3: Graph Showing Difference between Means of Resting Pulse Rate Urban and Rural school children's

Result and conclusions

Final results and summary of findings

The study yielded the following key findings and conclusions. No statistically significant difference exists in the pulse rate between rural and urban school children. Breath Holding Time does not differ significantly between rural and urban school children. A notable disparity exists in the Resting Pulse Rate between rural and urban school children. Rural school children showed a significant improvement in their Resting Pulse Rate results.

From the above study following conclusions were drawn

1. There is no substantial distinction in Pulse Rate between rural and urban school children.
2. There is no substantial variation in Breath Holding Time between rural and urban schoolchildren.
3. A notable disparity exists in the resting pulse rate between rural and school children.
4. Rural school children showed a significant improvement in their Resting Pulse Rate.

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