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Analysis of Cardiorespiratory Endurance and Flexibility in College Students from Jammu and Kashmir

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ABSTRACT

The motive of this investigation was to determine the comparative study of selected physical fitness variables among Kashmir region college level students and Jammu region college level students of Jammu and Kashmir. This study aimed to compare specific aspects of physical fitness among male college students from the Jammu and Kashmir regions, focusing on students from both Jammu and Kashmir divisions. A total of 1,200 participants—600 from 15 colleges in the Kashmir region and 600 from 15 colleges in the Jammu region—were selected through random sampling methods. The research concentrated on two key fitness indicators: cardiorespiratory endurance and flexibility. To assess these variables, the Harvard Step Test was employed to measure cardiorespiratory endurance, while the Sit and Reach Test was used to evaluate flexibility. Statistical analysis was conducted using an independent samples t-test to determine whether significant differences existed between the two regional groups. The level of significance was fixed at 0.05. The analysis revealed that students from the two regions differed significantly in terms of their physical fitness performance, with clear statistical distinctions observed in the measured variables.

Keywords: Flexibility, Cardio respirator endurance and Jammu and Kashmir

Introduction

Physical fitness encompasses a person's capacity to perform various physical activities efficiently and without experiencing excessive exhaustion. It is a key contributor to maintaining overall well-being and enhancing life quality. Extensive research over the past twenty years has consistently emphasized the value of engaging in regular physical activity as a cornerstone of a healthy lifestyle. Conversely, a lack of physical movement—commonly referred to as a sedentary lifestyle—has been strongly associated with an elevated risk of chronic diseases, such as heart conditions and metabolic disorders. Data from national health surveys reveal that a large portion of doctor visits involve vague issues like chronic fatigue, often attributed to physical inactivity.

Frequent participation in moderate to intense physical exercise not only boosts fitness levels but also supports mental clarity and emotional stability. Inactive lifestyles and inadequate fitness levels can lead to a range of health problems and reduce the ability to manage day-to-day responsibilities effectively. Lifelong engagement in physical activity is known to dramatically reduce the likelihood of life-threatening conditions, including cardiovascular diseases and strokes. Regular workouts help manage body weight, enhance blood cholesterol profiles by raising high-density lipoproteins (HDL), and stabilize blood pressure. The advantages of maintaining a high level of fitness throughout life are both substantial and well-substantiated.

Given these facts, it becomes crucial to introduce structured fitness programs from an early age. Instilling healthy activity habits during childhood and adolescence can help counteract the downward trend in youth fitness levels. Alarming increases in childhood obesity and inactivity demand immediate attention and intervention through behavioral and lifestyle adjustments.

Methodology

This investigation engaged 1,200 male college students, aged between 18 and 23 years, from various institutions across the Jammu and Kashmir regions. The sample included 600 students from 15 colleges in the Kashmir division and another 600 from 15 colleges in the Jammu division. Participants were chosen through a process of random sampling to ensure objectivity and representativeness.

Two principal aspects of physical fitness—cardiorespiratory endurance and flexibility—were evaluated in the study. Cardiorespiratory capacity was assessed using the Harvard Step Test, a reliable method for measuring aerobic endurance. Flexibility was measured through the Sit and Reach Test, which is commonly used to gauge lower back and hamstring flexibility. To analyze the collected data, an independent samples t-test was employed, allowing for comparison between the two regional groups. The statistical threshold for determining significance was set at the 0.05 level.

Tests selection

S.NO	Variables	Test items	Measurement unit
1	Cardio respirator endurance	Harverd step test	
2	Flexibility	Sit and Reach test	CM

Results

Table 1Comparison of Flexibility (Sit and Reach) among Kashmir region college students and Jammu region college students

Region	No. of students	Mean	S.D	M.D	't' value
Kashmir	600	17.607	2.891	5.385	4.544
Jammu	600	22.992	4.151		

From the table1 it is clear that there is significant difference between means of Kashmir region students and Jammu region students because mean of Kashmir region students is 17.607 which are lesser than the mean of Jammu region students which is 22.992 and therefore their mean difference is 5.385. Before applying 't' test, standard deviation was calculated where standard deviation of Kashmir region students was found as 2.891 and standard deviation of Jammu region students was found as 4.151. Therefore significant difference were found between Kashmir region students and Jammu region students because value of calculated 't' was 4.544 which is greater than tabulated 't' was 1.96 at 0.05 level of significance i.e., significant difference was found between Kashmir region students and Jammu region students. Accordingly it seems that the flexibility (sit and reach) of Jammu region students are found to be better than the Kashmir region students of Jammu and Kashmir.

Graph-I Graphical Representation of Flexibility (sit and Reach) Mean Difference between Kashmir region college students and Jammu region college students

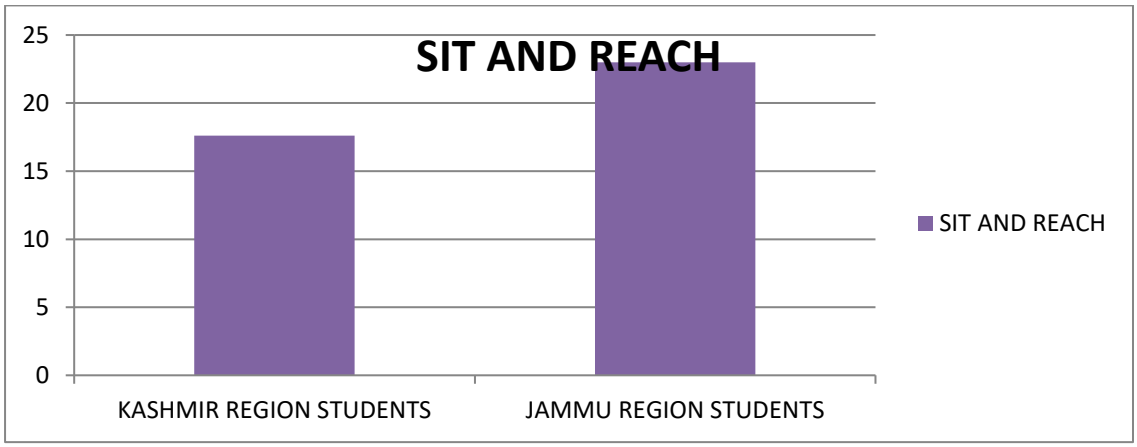
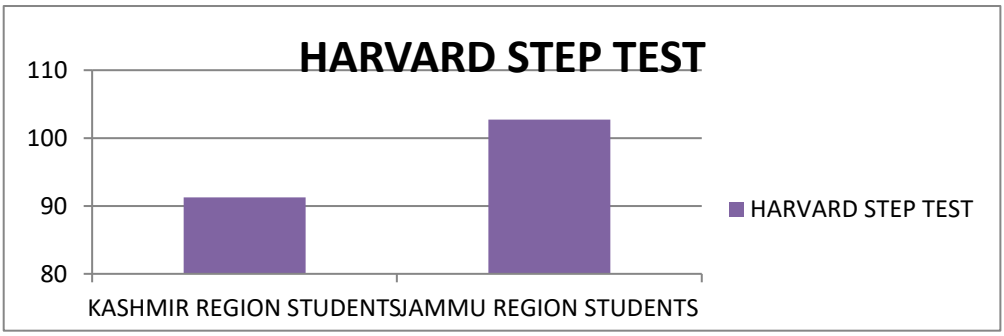


Table 2 Comparison of Cardio Respirator Endurance (Harvard Step Test) among Kashmir region college students and Jammu region college students

Region	No. of students	Mean	S.D	M.D	't' value
Kashmir	600	91.243	6.153	11.479	9.099
Jammu	600	102.722	7.363		

As per the Table 2 that there is significant difference between means of Kashmir region students and Jammu region students because mean of Kashmir region students is 91.243 which is lesser than the mean of Jammu region students which is 102.722 and therefore mean difference is 11.479. Before applying 't' test, standard deviation was calculated where standard deviation of Kashmir region students was found as 6.153 and standard deviation of Jammu region students was found as 7.363. Therefore significant difference were found between Kashmir region students and Jammu region students because value of calculated 't' was 9.099 which is greater than tabulated 't' was 1.96 at 0.05 level of significance i.e., significant difference was found between Kashmir region students and Jammu region students. Hence it is seems that the cardio respirator endurance (Harvard step test) of Jammu region students are found to be better than the Kashmir region students of Jammu and Kashmir.

Graph-II Graphical Representation of Cardio Respirator Endurance (Harvard Step Test) Mean Difference between Kashmir region college students and Jammu Region college students



Findings

Based on the analysis and interpretation of the gathered data, the following outcomes were derived:

A notable difference was identified in the flexibility levels between college students from the Kashmir region and those from the Jammu region.

Similarly, a significant variation was observed in cardiorespiratory endurance between students of the two regions.

Discussion of Finding

The results indicate that in terms of cardiorespiratory endurance, there exists a statistically significant disparity between students from Kashmir and Jammu. The mean score for the Kashmir region was 91.243, which is lower than the Jammu region's mean score of 102.722. The computed t-value was 9.099, which exceeds the critical t-value of 1.96 at the 0.05 significance level, confirming a significant difference.

Regarding flexibility, the analysis also revealed a substantial difference. The average flexibility score for students from Kashmir was 17.607, whereas students from Jammu recorded a mean of 22.992. The calculated t-value stood at 4.544, which is again greater than the critical value of 1.96, indicating a meaningful statistical difference between the two groups.

Justification of Hypothesis

The findings suggest that there is a significant variance in flexibility between students from the two regions. Therefore, the researcher's initial hypothesis is partially validated. Likewise, the difference in cardiorespiratory endurance between students from Kashmir and Jammu supports the research assumption, leading to a partial confirmation of the hypothesis.

Conclusion

The researcher originally hypothesized that there would be a substantial difference in the physical fitness variable of flexibility among college students from Jammu and Kashmir. Following statistical evaluation, it was concluded that such a difference does indeed exist, as the calculated t-value surpassed the critical value at the 0.05 level of significance. Hence, the research hypothesis is confirmed.

In terms of cardiorespiratory endurance, the study also revealed a considerable difference between the two regions' students. The hypothesis that a disparity would exist in this fitness aspect has been substantiated through the analysis. The t-value being greater than the tabulated threshold at the 0.05 level supports this conclusion.

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