Comparative Study on Selected Physical Fitness Components among the Physical Education Students of Different Universities in West Bengal State

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Abstract:
Background: The purpose of the study was to comparative study on selected physical fitness components among the physical education students of different universities in West Bengal State.
Procedure: For the present study adopted was on the basis of random group design. Equal numbers of tasks were assigned randomly to five groups of twenty subjects each. The first group was trained Visva-Bharati University Group, the second group with Calcutta University Group and the third group with Kalayani University Group. For comparisons of this study Analysis of variance (ANOVA) using for statistical treatment.
Finding: Here it is clearly observed that the results showed that there was significant difference between the physical education students of different universities in agility and cardio vascular efficiency. The mean differences in other variables studied, explosive power, were not significantly.
Conclusion: The following conclusions were arrived on comparison of physical fitness variable agility and cardio vascular efficiency between Visva Bharati University, Kalyani University and Calcutta University proved that there was significant differences between the physical education students and the students of Visva Bharati was significantly better than other two university students. Though there was mean differences between the groups in explosive power, the mean difference was not statistically significant and it was concluded that there was no significant differences between physical education students of all the universities.
Keywords: Physical fitness components, Sports, Gymnastic, Dance, Exercise Paired.

I. Introduction

Evaluation of human life started with the movement. The importance of physical education and activity was recognized by Plato when he said "Lack of activity destroys the good conditions of every human being which movement and methodical physical exercise save it and preserve it" When the human movement in confined with the universal drive to play, the combination forms one of the most powerful education media in physical education. The word physical education is derived from two separate words 'physical' and 'education'. The plain dictionary meaning of word physical is relating to body; it may be physical strength, physical endurance, physical fitness, physical appearance or physical health.

The word education means systematic instructions or training or preparation for life or for some particular task. Physical Education is an education of and through human movement where many of the educational objectives are achieved by means of big muscle activities involving sport, game, gymnastic, dance and exercise. (Barrow, 1983). Vigorous exercises properly adhered to on a regular basis appears to have much potential for adding more life to our years and probably more years to your life. (Morehouse and Miller, 1976).

This aspect of physical fitness concerns with the development of qualities necessary to function efficiently and maintain a healthy life style.The components of healthy related fitness are cardio respiratory endurance, muscular strength and endurance, flexibility and body composition. (Tanored, 1987).

II. Methodology

The Design and assessment of outcome variables: Subject will be selected randomly from between physical education students of Visva Bharati University, Kalyani University and Calcutta University, were assessed using identical testing protocols. Individual participant testing sessions were performed at the University ground and completed within 3 hour. The test included measurements of cardio vascular endurance, explosive power, and agility. All participants were instructed to perform each test to maximum affected and verbal encouragement was provided throughout each test. All participants were tested in a specific order so as to standardize the testing process: cardio vascular endurance, explosive power and agility. Standardized procedures were followed for each of the assessment tests and are published in detail else-where.. Explosive power was evaluated using a vertical jumping and using a wall and recorded by miter Explosive power was measured by using standing broad jump and the distance between starting line and nearest point of landing provide the score of the test, it was

recorded to the nearest 0.01 meter. Agility was assessed the pre-agility shuttle run and timed was recorded to the nearest 0.01 seconds. To measure the cardio respiratory endurance through Physical Efficiency Index.

Statistical analysis: The data which were collected from subjects were treated statistically. To find out the significance in differences among the physical education students of Visva Bharati University, Calcutta University and Kalyani University, one way Analysis of Variance (ANOVA) was used to find out the significant difference among the groups. To find out the paired mean difference, the Scheffe's post test was used.

III.   Results And Discussion

On the basis of collected data on cardio vascular endurance, explosive power, and agility, presented in the below tables. This chapter deals with the analysis of data collected from the samples under study. This research was to compare the selected physical components among physical education students of different University in West Bengal. To achieve the purpose of this study, 20 physical education students from Viswa Bharati University, 20 physical education students from Kalyani University and 20 physical education students from Calcutta University were selected. The subjects were selected at random; the selected subjects were measured of their agility, explosive power, and cardiovascular endurance.

Data were collected from the subjects to compare selected physical fitness components. The differences between the different university physical education students were subjected to statistical treatment to find out the significance. The subjects were compared on selected criterion variables among different universities in West Bengal state. The selected criterion variables such as agility, explosive power, cardiovascular endurance, were measured from the selected three University physical education students. The analysis of variance (ANOVA) was used to find out the significant difference if any, between the groups on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as appropriate

Result on Agility:

Agility was measured through 4 x 10 meter shuttle run among the different University physical education students. The statistical analysis comparing the differences between different university physical education students in the physical fitness variable, agility is presented in Table I.

Table I: Showing the Analysis of Variance on the Means obtained in from Different University Physical Education Students in Physical Fitness Variable Agility (Scores in Seconds)

	University Physical Education Students			Source of Variance	Sum of Squares	df	Mean Squares	F
	Culcutta	Kalyani	Visva Bharati					
Means	10.28	10.27	9.69	Between	4.64	2	2.32	13.09*
				Within	10.11	57	0.18	

Table F-ratio at 0.05 level of confidence for 2 and 59 (df) =3.15.
* Significant at 0.05 level

Since there was significant differences among the Physical Education Students of different Universities Scheffe's post hoc analysis was made through computation of Scheffe's confidence interval, which is presented in Table II.

Table II: Showing Means, Mean Differences and the Required Value of Scheffe's Confidence Interval (Scores in Seconds)

University Physical Education Students			MEAN DIFFERENCE	C. I.
CALCUTTA	KALYANI	VISVA BHARATI		
10.28	10.27		0.02	0.33
10.28		9.69	0.60*	0.33
	10.27	9.69	0.58*	0.33

* Significant at 0.05 level.

Discussion on Agility:

The required Scheffe's Confidence interval value to be significant at 0.05 level was 0.33 and the differences between physical education students of Viswa Bharati University and Calcutta University and Viswa Bharati University and Kalyani University were found to be significant.. There was no significant difference between Calcutta University and Kalyani University physical education students in agility.

The obtained mean values in agility as measured by 4 x 10 meter shuttle run among different university physical education students are presented through bar diagram for better understanding of the results.

Result on Explosive Power:

Explosive power was measured through standing broad jump among the different University physical education students. The statistical analysis comparing the differences between different university physical education students in the physical fitness variable, explosive strength is presented in Table III.

Table III: Showing the Analysis of Variance on the Means obtained in from Different University Physical Education Students in Physical Fitness Variable Explosive Power (Scores in Meters)

	University Physical Education Students			Source of Variance	Sum of Squares	df	Mean Squares	F
	Culcutta	Kalyani	Visva Bharati					
Means	2.17	2.13	2.20	Between	0.04	2	0.02	0.64
				Within	1.68	57	0.03	

Table F-ratio at 0.05 level of confidence for 2 and 59 (df) =3.15.
Not Significant at 0.05 levels

Discussion on Explosive Power:

The presented in Table IV shows that there was no significant difference between the Calcutta, Kalyani and Visva Bharati University physical education students, as they obtained F value of 0.64 was less than the required F value of 3.15 to be significant at 0.05 levels.

Results on Cardio Vascular Endurance:

Cardio vascular endurance was measured through Physical Efficiency Index measured through Harvard Step Test among the different University physical education students. The statistical analysis comparing the differences between different university physical education students in the physiological fitness variable, cardio vascular endurance is presented in Table IV.

Table IV: Showing the Analysis of Variance on the Means obtained in from Different University Physical Education Students in Physiological Variable Cardio Vascular Endurance (Score in numbers)

	University Physical Education Students			Source of Variance	Sum of Squares	Df	Mean Squares	F
	Culcutta	Kalyani	Visva Bharati					
Means	81.71	80.85	84.26	Between	126.10	2	63.05	6.90*
				Within	521.20	57	9.14	

Table F-ratio at 0.05 level of confidence for 2 and 59 (df) =3.15.
* Significant at 0.05 level

Since there was significant differences among the Physical Education Students of different Universities Scheffe's post hoc analysis was made through computation of Scheffe's confidence interval, which is presented in Table V.

Table V: Showing Means, Mean Differences and the Required Value of Scheffe's Confidence Interval in Cardio Vascular Endurance (Score in Numbers)

University Physical Education Students			MEAN DIFFERENCE	C. I.
CALCUTTA	KALYANI	VISVA BHARATI		
81.71	80.85		0.86	2.40
81.71		84.26	-2.55	2.40
	80.85	84.26	-3.41	2.40

* Significant at 0.05 level.

Discussion on Cardio Vascular Endurance

The required Scheffe's Confidence interval value to be significant at 0.05 level was 2.40 and the differences between physical education students of Visva Bharati University and Calcutta University and Visva Bharati University and Kalyani University were found to be significant.. There was no significant difference between Calcutta University and Kalyani University physical education students in cardio vascular endurance.

The obtained mean values in cardio vascular endurance among different university physical education students are presented through bar diagram for better understanding of the results.

Discussion on the findings on Physical Fitness Variables:

To compare the selected physical fitness variables among physical education students of Visva Bharati University, Calcutta University and Kalyani University in West Bengal, the investigator selected Agility and explosive power. The obtained results presented in Tables I to III proved that there existed significant differences between the physical education students studying in different Universities in West Bengal.

The Visva Bharati University physical education students have scored better in agility followed by Kalyani University and then Calcutta University. The mean differences were found to be significant in favors of Viswa Bharati University students as the obtained F value was greater than the required F value and the post hoc analysis through Scheffe's Confidence Interval also proved that significant differences were due to the mean scores of Visva Bharati University physical education students.

When analyzing explosive power, the results proved that there were no significant differences between the groups as the obtained F value was less than the required value to be significant.

Similarly, the results presented in Tables IV and V proved that significant differences existed between the groups in cardio vascular endurance and the Scheffe's Confident Interval calculated and presented, proved that Viswa Bharati Physical Education students are better than other university students in West Bengal.

The comparison studies between different sports disciplines, athletes, non athletes, age groups, sex proved that regular exercises, training, sports activities improves agility and explosive power of an individual. Since the Visva Bharati University physical education students involved themselves more actively in sports and physical education programs comparing to other University physical education students in West Bengal, this study showed significant differences in agility, however in explosive power there was no significant differences between the groups.

IV. Conclusions

Within the limitations and delimitations of this study, the following conclusions were arrived at:
1. Comparison of physical fitness variable agility between Visva Bharati University, Kalyani University and Calcutta University proved that there was significant differences between the physical education students and the students of Visva Bharati was significantly better than other two university students.
2. Though there was mean differences between the groups in explosive power, the mean difference was not statistically significant and it was concluded that there was no significant differences
3. The mean difference between the physical education students of Visva Bharati University, Kalyani University and Calcutta University in West Bengal was statistically significant in cardio vascular endurance. It was concluded that Visva Bharati University students were significantly better than other two university students.

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