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Analysis of gross motor skill performance among high school boys

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Abstract

The purpose of the present study was to analyze the selected gross motor skill performances of tribal, non-tribal and coastal area high school students in Kerala. To achieve the purpose of the study, a total of 750 students were selected from the government and aided schools in Kerala. The age of the subjects ranged from 14 to 15 years. The selected boys and girls were divided in to three groups as per the tribal, non-tribal and coastal area students. Each group consisted of 250 subjects.

The gross motor skill performances variables for the study were throw for distance and jump for distance. One-way analysis of variance (ANOVA) was used for each variable separately to find out the significant difference among tribal, non-tribal and coastal area students. The level of significance was fixed at 0.01 levels. Wherever F ratio was found to be significant, post-hoc comparison (Duncan's test) was used to find out which pair of the groups shown more significant difference.

Keywords: Gross motor skill, throw for distance, jump for distance

Introduction

Motor skills develop in the first eighteen years of life, although in girls their development tends to stabilize around puberty. Strength and power rapidly increase in proportion to muscle mass under the influence of hormonal activity. The daily use of motor activities, games and physical education must allow children to acquire a set of motor skills i.e. gross motor skill development. Children continue to build on and improve gross motor skills during middle childhood. In general, boys develop these skills slightly faster than girls do, except for skills involving balance and precise movements such as skipping, jumping and hopping. At this age, children run faster and jump higher than previously possible. For children, these figures are average for children for this age range and will not apply to individual children.

Betual Bayazit (2015) [3] conducted a study to investigate the effect of basketball basic skills training on gross motor skills development of female children in Turkey. 40 female children took part voluntarily for the study. Basketball basic skills test was used to improve the gross motor skills of the female children in the study. Also, observation form was used to determine changes with respect to the gross motor skills of the female children in the study. Locomotor, manipulative and balancing training in Basketball Basic Skills Test lasted for 90 min a day, 2 days a week for 12 weeks. To analysis the data collected from the pretest and posttest, descriptive statistics and paired sample 't' test were used. The level of significance was selected to be 0.05. The researcher came to the conclusion that for all the parameters there was a significant difference between pretest and posttest.

Nafiseh Khalaj and Saidon Amir (2013) [4] carried out a study to investigate the mastery of gross motor skill development of preschool obese children. For the study, 40 obese children and 40 normal weight children with age ranging from four to six were selected. Using test of Gross Motor Development second edition, Gross motor skills were assessed, and 12 gross motor skills including six object control and six locomotor skills were assessed. The one way ANOVA was used in this study. It is revealed that, between obese and normal weight children, there was a significant difference at the 0.05 level. It is concluded that the obese children have poor gross motor skill performance compare to their normal weight peers.

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Purpose of the study

The purpose of the study was to find out gross motor skill performances of tribal, non-tribal and coastal area high school boys.

Hypotheses

There may be a significant difference among tribal non-tribal and coastal area high school boys gross motor skill performance.

Selection of subjects

To achieve the purpose of the study, a total of 750 students were selected from the government and aided schools in Kerala.

Selection of variables and criterion measures

The following variables are selected for the purpose of the study

Gross motor skill performance

1. Throw for Distance: Cricket ball Throw (In Meters)
2. Jump for Distance: Standing Broad Jump (In Meters)

Criterion measures

The criterion measures for the selected variables used are

1. Throw for distance was used to test the throwing ability and the score was recorded by using measuring tape in meters and centimeters.
2. Jump for distance was used to test the horizontal jumping ability and the score were recorded by using measuring tape in meters and centimeters.

Analysis of Data and Results of the study

In the present study, One Way Analysis of Variance (ANOVA) was used to find out whether there is any significant difference among tribal non-tribal and coastal area high school students gross motor skill performances. The ‘F’ ratio was used to find out whether there is any significant variation on throw for distance and jump for distance. The level of significance was fixed at 0.01level. Wherever F ratio was found to be significant, post-hoc Comparison (Duncan’s test) was used to find out which pair of the groups shows more significant difference.

Throw for distance

Comparative scores of tribal, non-tribal and coastal area high school boys in Kerala with respect to their throw for distance are given in Table 1.

Table 1: Comparative level of tribal, non-tribal and coastal area high school boys in relation to the variable: Throw for distance

Variable	Level	coastal		Non-Tribal		Tribal	
		N	%	N	%	N	%
Throw for distance	Low	40	16	38	15.2	36	14.4
	Average	158	63.2	164	65.6	166	66.4
	High	52	20.8	48	19.2	48	19.2

The Table 1 states that the high school boys of coastal area (63.2%), non-tribal area (65.6%) and tribal area (66.4%) have average level of throw for distance. Whereas the high school boys of coastal area (16%), non-tribal area (15.2%) and tribal area (14.4%) have low level in terms of throw for distance. The high school boys of coastal area (20.8%), non-tribal area (19.2%) and tribal area (19.2%) have relatively higher level of throw for distance.

Mean scores of tribal, non-tribal and coastal area high school boys in relation to the variable; Throw for distance

In order to test whether there exist any significant difference in the tribal, non-tribal and coastal area high school boys’ gross motor skill performance variable: Throw for distance, the data obtained were analyzed and compared by using one-way ANOVA and the obtained ‘F’ ratio was tested for significance. The details of analysis are presented in the Table 2.

Table 2: Analysis of variance for the comparison of throw for distance among tribal, non-tribal and coastal area Boys

Variable	Source of variation	Sum of Squares	df	Mean Square	F
Throw for distance	Between Groups	21480.42	2	10740.20	131.71*
	Within Groups	60909.30	747	81.54	
	Total	82389.72	749	10821.74	

*Significant at 0.01 level.

Table value of F

F (2, 747) at 0.01 level = 4.63

As per the Table 2 the result obtained from ANOVA shows that there is significant difference among the tribal, non-tribal and coastal area high school boys on the variable: Throw for distance, the F- value is 131.71 which is greater than 4.63 at 0.01 level. Hence the Hypothesis formulated in the present study; there may be a significant difference among the tribal, non-tribal and coastal area high school boys on gross motor skill performance variable:

Throw for distance is accepted.

To find out which pair of the groups shows more significant difference the investigator used ‘Post hoc comparisons (Duncan’s Test) and the results are shown in Table 3.

Table 3: Mean scores of Duncan’s Multiple Range test for tribal, non-tribal and coastal area high school boys’ Throw for distance

Variables	Number	Subset for Alpha = 0.05		
		1	2	3
Non-Tribal	250	45.55		
Coastal	250		46.65	
Tribal	250			57.41

From the Table 4.39 it is clear that there is significant difference among tribal, non-tribal and coastal area high school boys’ gross motor skill performance variable: Throw for distance. The Duncan’s Test reveals that the tribal area high school boys (57.41) have higher mean score than the other boys belong to coastal and non-tribal areas. This is illustrated in Figure 1.

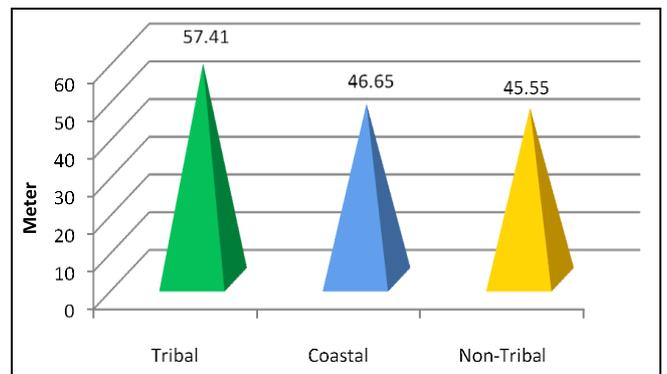


Fig 1: Mean scores of tribal, non-tribal and coastal area high school boys’ gross motor skill performance variable; Throw for distance (in meter).

Jump for distance

Comparative scores of tribal, non-tribal and coastal area high school boys in Kerala with respect to their jump for distance are given in Table 4.

Table 4: Comparative level of tribal, non-tribal and coastal area high school boys in relation to the variable: Jump for distance

Variable	Level	coastal		Non-Tribal		Tribal	
		N	%	N	%	N	%
Jump for distance	Low	0	0	0	0	0	0
	Average	148	59.2	150	60	138	55.2
	High	102	40.8	100	40	112	44.8

The Table 4 states that the high school boys of coastal area (59.2%), non-tribal area (60%) and tribal area (55.2%) have average level of jump for distance. Whereas the high school boys of coastal area (0%), non-tribal area (0%) and tribal area (0%) have low level in terms of jump for distance. The high school boys of coastal area (40.8%), non-tribal area (40%) and tribal area (44.8%) have relatively higher level of jump for distance.

Mean scores of tribal, non-tribal and coastal area high school boys in relation to the variable; Jump for distance.

In order to test whether there exist any significant difference in the tribal, non-tribal and coastal area high school boys' gross motor skill performance variable; Jump for distance, the data obtained were analyzed and compared by using one-way ANOVA and the obtained 'F' ratio was tested for significance. The details of analysis are presented in Table 5.

Table 5: Analysis of variance for the comparison of jump for distance among tribal, non-tribal and coastal area Boys

Variable	Source of variation	Sum of Squares	df	Mean Square	F
Jump for distance	Between Groups	1.38	2	0.69	12.64*
	Within Groups	40.91	747	0.05	
	Total	42.29	749	0.74	

*Significant at 0.01 level.

Table value of F

F (2, 747) at 0.01 level = 4.63

As per the Table 5 the result obtained from ANOVA shows that there is significant difference among the tribal, non-tribal and coastal area high school boys on the variable: Jump for distance, the F- value is 12.64 which is greater than 4.63 at 0.01 levels. Hence the Hypothesis formulated in the present study; there may be a significant difference among the tribal, non-tribal and coastal area high school boys on gross motor skill performance variable:

Jump for distance is accepted.

To find out which pair of the groups shows more significant difference the investigator used 'Post hoc comparisons (Duncan's Test) and the results are shown in Table 6.

Table 6: Mean scores of Duncan's Multiple Range test for tribal, non-tribal and coastal area high school boys' Jump for distance

Variables	Number	Subset for Alpha = 0.05		
		1	2	3
Non-Tribal	250	1.89		
Coastal	250		1.91	
Tribal	250			2.01

From the Table 6 it is clear that there is significant difference among tribal, non-tribal and coastal area school boys' gross

motor skill performance variable: Jump for distance. The Duncan's Test reveals that the tribal area high school boys (2.00) have higher mean score than the boys belong to coastal and tribal areas. This is illustrated in Figure 2.

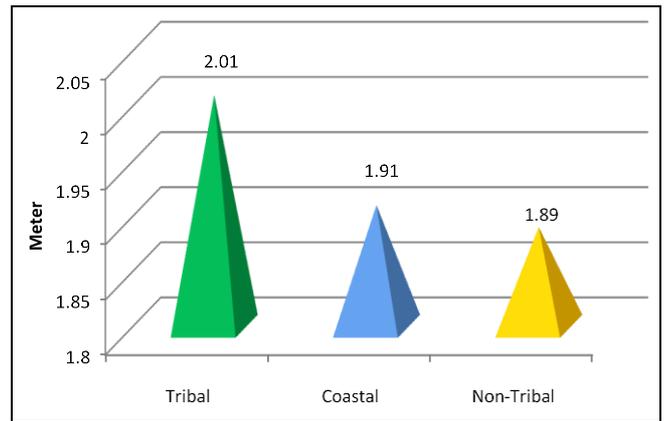


Fig 2: Mean scores of tribal, non-tribal and coastal area high school boys' gross motor skill performance variable; Jump for distance (in meter)

Findings

1. It has been found that there is a significant difference in throw for distance of tribal, non-tribal and coastal area high school boys in Kerala. Tribal area boys are reported to have higher mean throw for distance score than coastal and non-tribal area. Non-tribal area students are reported to have lower level of mean throw for distance score than coastal and non-tribal area students.
2. It has been found that there is a significant difference in jump for distance of tribal, non-tribal and coastal area high school boys in Kerala. Tribal area boys are reported to have higher mean jump for distance score than coastal and non-tribal area. Non-tribal area students are reported to have lower level of mean jump for distance score than coastal and non-tribal area students.

Conclusion

The high school students belonging to the tribal area exhibited better gross motor skill performances such as throw for distance and jump for distance when compared with the students from non-tribal and coastal area high school boys. Non-tribal area students exhibited lesser performance in jump for distance and throw for distance.

Suggestions and Recommendation

The result of the present study can be used to find out the differences among the students of tribal, non-tribal and coastal areas. Hence, it may be used to identify talents and bring out the potentials at their vital young age for the better performance and achievements in sports and games. The new findings of the study may help coaches, physical education teachers and other sports administrators understand the relevance of each regional division and its environment conditions. Eventually they can find out a suitable test mechanism and valid manner for each region

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