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Speed and strength assessments of boys belonging to different socio-economic groups

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Abstract

The purpose of the study was carryout speed and strength assessments of boys belonging to different socio-economic groups. The subjects for the study were 500 boys studying in different schools of Delhi. Using appropriate testing procedures, Speed (50m dash) as well as Strength (Legs Explosive Strength) of the subjects was tested. The data was analyzed using descriptive as well as Analysis of Variance (F-test). Scheffe's Test was applied in case the F-ratio was significant. In respect of Speed, the study concluded that boys belonging to high and middle socio-economic groups are significantly better as compared to boys belonging to low socio-economic groups. The differences are significant at 0.05 level of confidence. No significant difference has been seen in the same variable between high and middle socio-economic groups. With regard to Legs Explosive Strength the findings reveal that the boys belonging to high socio-economic group are significantly higher as compared to boys belonging to low socio-economic group. The difference is significant at 0.05 level of confidence. No significant difference has been seen in this variable between high and middle as well as middle and low socio-economic groups.

Keywords: Speed, strength, socio-economic groups

Introduction

Complete physical preparation of a sports person requires development of all important motor components namely strength speed, endurance, flexibility, agility, coordination, balance etc because performance in all games and sports is supported by these variables. A broad critical survey reveals that the sports participation from upper social levels are large in number than those belonging to the lower social levels. There may be many causes for this. Obviously the well to do sections have greater leisure, ample resources and easier access to all the essential facilities, that the socio-economic back ground potent and decisive factor in impelling youngsters to choose sports activities and also to choose certain kinds of sports. Apparently, all the players seems to be equally competent but a careful critical in depth analysis of the factor on the bases of certain objective observations and findings reveals that the choice of the sports by youngsters is not a simple phenomenon but it is deeply connected with the socioeconomic background of the sportsman.

The socio-economic status of an individual may influence his opportunity, his desire to excel, his choice of activity and his success. The home environment often influences his motivation to succeed in sports and the degree of this success in this endeavour leads to inner satisfaction. The socio-economic status has been recognized as a decisive factor in sports participation of the various kinds of sportsmen, because it is the factor that exercises a decisive influence on any individual's physical fitness, performance and achievement in sports. The higher the social level of sports person the higher is the degree of excellence which he or she achieves in sports. Socio-economic factors play a vital role in an individual's physical fitness and performance in sports. Socio-economic status also influences on habitual physical fitness and physical activity. The socio-economic status plays major role in shaping the fitness performance of an individual sports person and achievement in sports. The social class to which the youngster belongs definitely influences on both his physical fitness and sports activity. Psychologically speaking it also influences personality development. This influence of socio- economic back ground of sports persons continues to be present throughout one's life.

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Selection of Subjects

The subjects for the study were 500 boys whose age ranged between 14 to 16 years. The selection of subjects was done at random. They were studying in the following schools of Delhi.

1. Kamal Model Public School, Mohan Garden, Delhi
2. Angel Public School Delhi, Vasundhara Enclave, Delhi
3. Government Boys Seniors Secondary School, Mangolpuri Delhi
4. Government Boys Seniors Secondary School, Najafgarh Delhi

Due permission was sought from the school authorities before collection of necessary data pertaining selected variables. The Socio-economic Questionnaire developed and standardized by Kuppu Swamy was administered to the subjects in their respective schools. Based on the norms the subjects were divided into three socio-economic status groups' i.e. high

socio-economic status, middle socio-economic status and low socio-economic status.

Selection of Variables

The variables selected in the study were as follows

Table 1: The variables selected in the study

S. No.	Variable	Test	Unit of Measurement
1	Speed	50m dash	Second
2	Leg Strength	Standing Broad Jump	Meter

For testing the significance of difference in the selected variables among subjects belonging to three socio-economic groups' one-way analysis of variance was applied. The level of significance chosen was 0.05 level of confidence, which was considered adequate for the purpose of the study.

Findings

Table 2: Descriptive statistics of Speed for Boys Belonging to Selected Socio-economic Groups

		N	Mean	Std. Deviation	Std. Error
Speed	High Socio Economic	119	10.1391	1.65826	0.15201
	Middle Socio Economic	178	9.7759	1.75693	0.13169
	Low Socio Economic	203	9.2733	1.74138	0.12222
	Total	500	9.6583	1.75872	0.07865

Table 2 presents the descriptive analysis of Speed of boys belonging to High Socio-economic, Middle Socio-economic and Low Socio-economic groups. The mean and standard deviation values of speed for High Socio-economic, Middle Socio-economic and Low Socio-economic groups are $M = 10.1391$, $SD = 1.65826$; $M = 9.7759$, $SD = 1.74138$; $M = 9.2733$, $SD = 1.74138$ respectively.

The means and standard deviations in respect of boys with regard to Speed are presented in Fig.1.

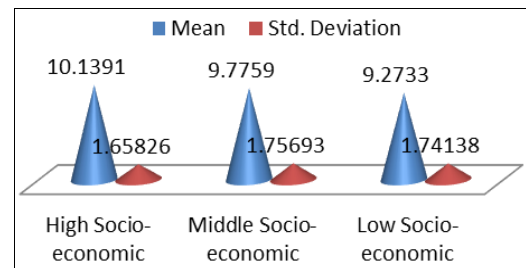


Fig 1: Means and SD of Speed for Boys

Table 3: Anova of Speed for Boys Belonging to Different Socio-economic Groups

		Sum of Squares	df	Mean Square	F	Sig.
Speed	Between Groups	60.065	2	30.033	10.062*	.000
	Within Groups	1483.391	497	2.985		
	Total	1543.457	499			

*Significant at 0.05 level $F(2 \text{ and } 497) = 3.01$

The analysis of data in table 3 clearly shows that the F-ratio of 10.062 is statistically significant at 0.05 level of confidence. The F-ratio obtained is more than the table value of 3.01 with 2 and 497 degrees of freedom. In order to find out variance in

different socio-economic groups with respect to Speed, Scheffe's test was applied and data pertaining to this is presented in the following table.

Table 4: Post-hoc Comparison of Speed for Boys using the Scheffe's Test

Dependent Variable	(I) Socio- economic Status	(J) Socio economic Status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Speed	High Socio- economic	Middle Socio- economic	0.36318	0.2045	.208	-0.1391	0.8654
		Low Socio- economic	0.86582*	0.1994	.000	0.3761	1.3555
	Middle Socio- economic	High Socio- economic	-0.36318	0.2045	.208	-0.8654	0.1391
		Low Socio- economic	0.50265*	0.1774	.019	0.0671	0.9382
	Low Socio- economic	High Socio- economic	-0.86582*	0.1994	.000	-1.3555	-0.3761
		Middle Socio- economic	-0.50265*	0.1774	.019	-0.9382	-0.0671

Analysis of data in table 4 shows that the Speed of boys belonging to High and Middle Socio-economic groups is significantly higher as compared to boys belonging to Low Socio-economic groups. The differences are significant at

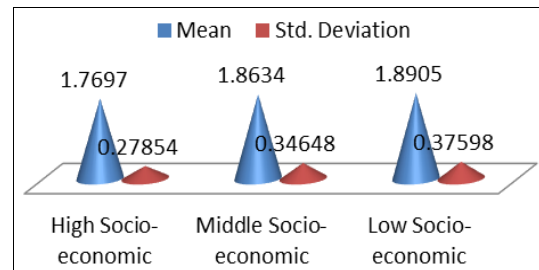
0.05 level of confidence. No significant difference has been seen in this variable between High and Middle Socio-economic groups.

Table 5: Descriptive statistics of Explosive Leg Strength for Boys Belonging to Selected Socio-economic Groups

		N	Mean	Std. Deviation	Std. Error
Explosive Leg Strength	High Socio- economic	119	1.7697	0.27854	0.02553
	Middle Socio- economic	178	1.8634	0.34648	0.02597
	Low Socio- economic	203	1.8905	0.37598	0.02639
	Total	500	1.8521	0.34701	0.01552

Table 5 presents the descriptive analysis of Explosive Leg Strength of boys belonging to High Socio-economic, Middle Socio-economic and Low Socio-economic groups. The mean and standard deviation values of Explosive Leg Strength for High Socio-economic, Middle Socio-economic and Low Socio - economic groups are $M = 1.7697$, $SD = 0.27854$; $M = 1.8634$, $SD = 0.34648$; $M = 1.8905$, $SD = 0.37598$ respectively.

The means and standard deviations in respect of boys with regard to Explosive Leg Strength are presented in Fig. 2.

**Fig 2:** Means and SD of Explosive Leg Strength for Boys**Table 6:** ANOVA of Explosive Leg Strength in respect for Boys Belonging to Different Socio-economic Groups

		Sum of Squares	df	Mean Square	F	Sig.
Explosive Leg Strength	Between Groups	1.131	2	.565	4.765*	.009
	Within Groups	58.958	497	.119		
	Total	60.088	499			

*Significant at 0.05 level $F(2 \text{ and } 497) = 3.01$

The analysis of data in the above table clearly shows that the F-ratio of 4.765 is statistically significant at 0.05 level of confidence. The F-ratio obtained is more than the table value of 3.01 with 2 and 497 degrees of freedom. In order to find

out variance in different socio-economic groups with respect to Explosive Leg Strength, Scheffe's test was applied and data pertaining to this is presented in the following table.

Table 7: Post-hoc Comparison of Explosive Leg Strength for Boys using the Scheffe's Test

Dependent Variable	(I) Socio- economic Status	(J) Socio- economic Status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Explosive Leg Strength	High Socio- economic	Middle Socio- economic	-.09376	0.0407	.072	-0.1939	0.0064
		Low Socio- economic	-.12081*	0.0397	.010	-0.2184	0.0232
	Middle Socio- economic	High Socio- economic	0.09376	0.0407	.072	-0.0064	0.1939
		Low Socio- economic	0-.02705	0.0353	.747	-0.1139	0.0598
	Low Socio- economic	High Socio- economic	0.12081*	0.0397	.010	0.0232	0.2184
		Middle Socio- economic	0.02705	0.0353	.747	0.0598	0.1139

Analysis of data in table 7 shows that the Explosive Leg Strength of boys belonging to Low Socio-economic group is significantly higher as compared to boys belonging to High Socio-economic group. The difference is significant at 0.05 level of confidence. No significant difference has been seen in this variable between High and Middle as well as Middle and Low Socio-economic groups.

Discussion of findings

The research studies already completed with respect to performance of different socio-economic groups in respect of Motor Fitness Components show that socio-economic status is an important factor that influences on participation in games and sports. The research studies have reported that people with higher socio-economic status are more likely to engage in physical activity than those belonging to lower socio-economic groups and subjects who belong to higher socio-economic groups have a significantly better performance in some of the motor components namely speed, agility, explosive strength, rhythm ability etc. because of the fact that higher socio-economic status could provide the adolescents better facilities in terms of sport equipment's acquisition, participation in sport sessions involving extracurricular activities as well as good awareness of their parents regarding the importance of having good fitness. In

addition, a well-balanced diet comprising of carbohydrates, proteins, fats, vitamins, minerals and fiber in proper proportion as well as quality might help in the proportionate development of the body and that might also be one of the factor ensuring better motor fitness status of subjects belonging to higher socio-economic status. The present findings are not fully in agreement with studies already completed by Pavon *et al.* (2010) [5] and Kodli (2016) [2]. Their studies have reported a positive association between socio-economic status and Speed as well as strength performance. In the light of this there is a need to conduct further research in the same area in order to arrive at definite conclusions.

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