

Assessment of Motor Performance Status of Naihati Narendra Vidyaniketan Boy Students of 14-16 Years Age Group in North 24 Parganas District of West Bengal

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Abstract

In this investigation an attempt has been made to find out the motor performance status of school boys of Naihati Narendra Vidyaniketan in the North 24 parganas district of West Bengal, India. For this reason, 90 male students of 14, 15 and 16 years age group were considered as subjects. The subjects were selected randomly for this purpose and were assessed for their motor performance status. The motor performance parameters were restrained to Height, Weight, Agility, Leg Explosive Strength, Speed, Coordination and Endurance using standardized tests and procedures. The data on the motor performance parameters were analyzed by applying ANOVA to find out significant differences if any among the age groups and Bonferroni corrections post hoc test. The level of significance to assess the statistical values obtained was set at 0.05 and also 0.01 level of confidence. The research findings ensure statistically considerable age difference on selected variables and it implies that age differences influence almost all motor performance parameters.

KEYWORDS- Motor Performance and 14, 15 & 16 years boys

Introduction:

Now a day, physical education is a mandated part of the school curriculum that too particularly in the state of West Bengal, India and it is obligatory to assess and report the level of school students fitness or performance. As such, the priority for physical education is seen as providing opportunities for students to engage in enjoyable physical activity to become physically fit, and to learn generalizable motor and behavioral skills (Mckenzie,2003). Yet, participation in physical education was reduced by substitutions of other activities for physical education and student exemptions.

Each individual has his own unique heredity and nature and will travel along that highway at his own rate of progress and will attain the size, shape, capacity and developmental status which are uniquely his own at each stage of the life career. Performance means to get into action as much higher degree as possible. There are four major groups of factor that are responsible for athletic performance. (i) Genetic traits. (ii) Acquisition of specific skills, (iii) Specific type and level of physical fitness, (iv) General psychological fitness. Sports performance is a unity of execution and result of sports action or a complex sequence of sports action measured or evaluated according to agreed and socially determined norms. The general anthropometric measures are depending upon the genetic factor, one inherited from his ancestors who ultimately influence the athletic performance. Performance related fitness, is necessary for the execution of sports skill. Speed, strength, power, endurance, balance, co-ordination, agility, reaction time

etc., are the components of performance related fitness. It is for the performers who targeted for a goal.

The Purpose of the study

- 1) To observe the motor ability status of the 14, 15 and 16 years group of boys.
- 2) To analysis and compare the age wise differences, if any, the selected motor performance variables among the 14, 15 & 16 years boys.
- 3) To study the relationship between selected motor performance variables of said age group boys.

Methodology

Subjects

The subjects of the present study were selected randomly from the school Naihati Narendra Vidyaniketan, 24 Pgs (N),WB, India. Thirty students of each age group's i.e. total 90 boy's students were randomly selected for this purpose.

Criterion Measured

Parameters	Measured by
1) Height (cm)	Stadiometer
2) Weight (kg)	Weighing machine (portable)
3) Leg Explosive Strength (cm.)	Standing Broad Jump
4) Speed (sec)	50 mt Run
5) Coordination(no.of times in 30s)	Wallpass
6) Endurance (min)	600 yd Run & Walk

Statistical Procedure

The data on the growth and motor performance parameters were analyzed by applying ANOVA to find out significant differences if any among the various age groups and Bonferroni corrections post hoc test.

Results & Discussion

Discussions were made on the basis of the findings of the present study and compared with available literatures.

Table-1 : Mean and SD of Motor performance components of 14, 15 & 16 years boys.

Variables	Descriptive	Age Groups		
		14 years	15 years	16 years
	N	30	30	30
Height	Mean	151.03	155.94	160.10
	SD	5.95	5.60	4.35
Weight	Mean	38.02	40.17	49.06
	SD	6.41	4.23	4.96
4 × 10 m Shuttle Run	Mean	11.20	11.49	11.44
	SD	0.46	0.59	0.40

Standing Broad Jump	Mean	171.37	180.13	194.65
	SD	15.92	11.43	11.27
50 mt Run	Mean	8.36	8.70	8.18
	SD	0.72	0.48	0.49
Wallpass	Mean	26.10	25.57	26.27
	SD	1.12	1.61	1.04
600 yd Run & Walk	Mean	2.26	2.23	2.22
	SD	0.06	0.05	0.04

Fig. 1-7 :Graphical Representation of Mn and SD of Motor performance components among the groups.

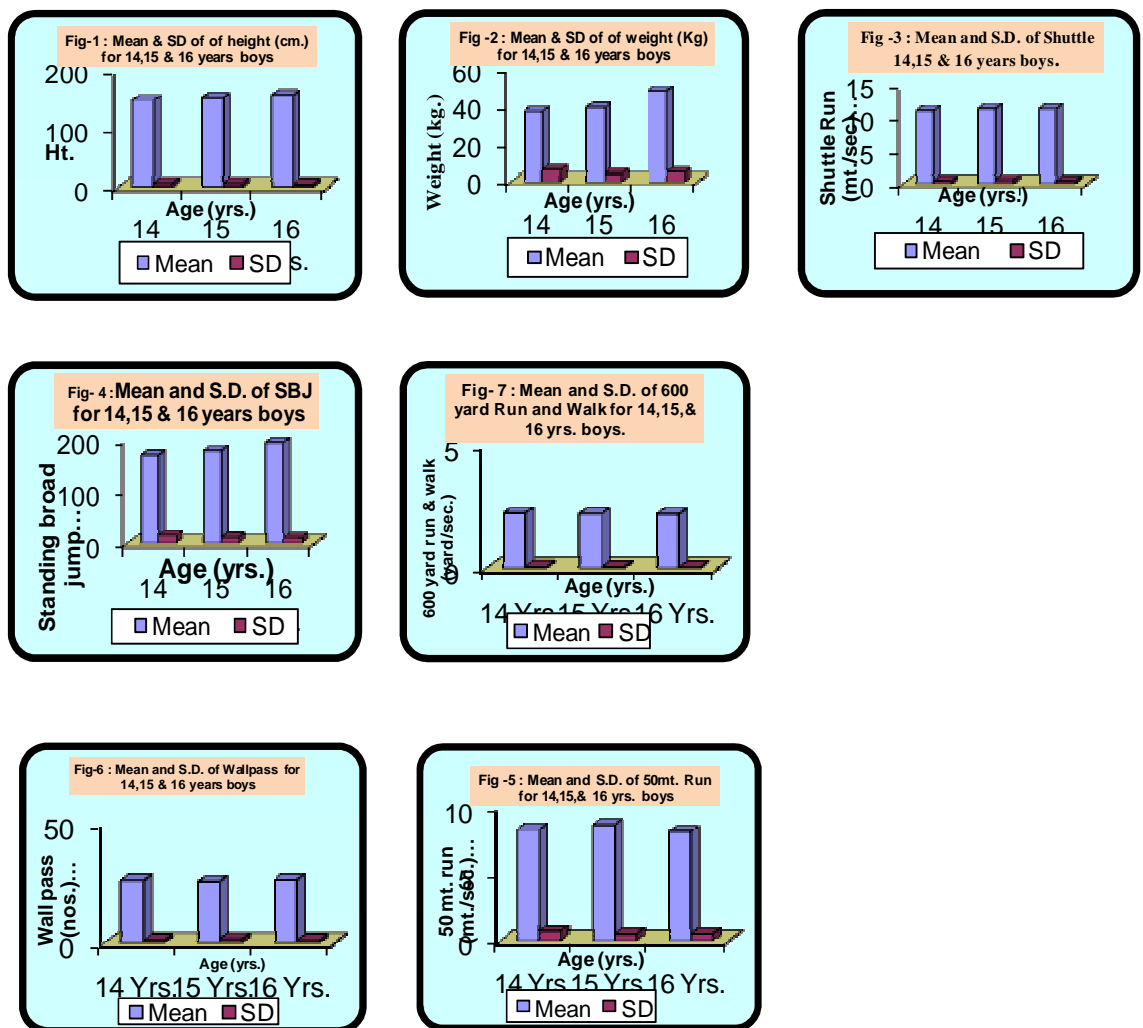


Table-2 : Analysis of Variance of motor performance components of 14, 15 & 16 years boys.

Variables	SOV	Sum of squares	Df	Mean square	F
Height	Between grp.	3582.66	4	895.67	14.93**
	Within grp.	8461.27	141	60.01	
Weight	Between grp.	2850.87	4	712.72	14.24**
	Within grp.	7058.42	141	50.06	
4 × 10 m Shuttle Run	Between grp.	13.47	4	3.37	11.21**
	Within grp.	42.36	141	0.30	
SBJ	Between grp.	50887.69	4	12721.92	62.03**
	Within grp.	28919.68	141	205.10	
50 mt Run	Between grp.	32.59	4	8.15	20.42**
	Within grp.	56.25	141	0.40	
Wallpass	Between grp.	250.54	4	62.63	16.91**
	Within grp.	522.15	141	3.70	
600 yd Run & Walk	Between grp.	0.06	4	0.01	5.14**
	Within grp.	0.40	141	0.00	

* Sig. at 0.05 levels

** Sig. at 0.01 levels, NS –Not significant, $F_{0.05(4,141)} = 2.44$, $F_{0.01(4,141)} = 3.46$

The descriptive statistics represented in Table-1 reveals that all the variables confined to this study improved with age of school boys except shuttle run, 50m run, wallpass and endurance. It was observed that mean score of height of 16 years boys was relatively higher than 14 & 15 years boys. Teeple and Massey (1976) had shown that the average height of 10, 11 and 12 years old boys were 143.6, 147.6 and 152.4 cm respectively. Grassi et al. (2006) studied the relations between aerobic fitness and somatic growth of Italian adolescents and found that standing height was significantly increased with age. Higher the age higher was the height. So it may be inferred that the height was related to the age of the subjects.

Higher the age, higher was the body weight. 16 years group were better among the group. Barabas and Eiben (1993) observed that 10, 11, 12 years old Hungarian boys carried the weight of 36.16, 35.39 and 39.49 Kg. Teeple and Massey (1976) found that the mean weight of 10, 11 and 12 years old boys were as 36.3, 39.5 and 44.3 Kg. respectively. Shephard (1982) had shown that the average body mass of 10, 11 and 12 years boys as 32.6, 35.2 and 38.3 Kg.

From the present study it was revealed that better performance in agility was observed in 14 years group. Clarke (1971) opined from a study of shuttle run that the performance increased in a straight line rise from ages 8 to 14 years. The increase in speed ability of boys may due to rapid improvement of explosive leg strength and movement frequency. Among the three 15 years group took the maximum time followed

by 16 and 14 years. It means 14 years group boys were more agile than all other groups which might be the result of academic stress, lack of motivation, sports performance saturation, gain in body mass, so on and so forth that needs to be investigated further. Analyzing the present study it may be concluded that this study was in agreement with the findings of the above researcher.

Higher the age higher was the jumping ability. Chauhan et al. (1987) reported that age had been found to be positive and significant relationship with performance of standing broad jump. Slaughter et al. (1982) and Sodhi & Singh (1987) had shown the similar results. Analyzing the present study it may be concluded that this study was in agreement with the findings of the above researchers. So, from the findings of the present study it may be concluded that leg explosive Strength of boys increases with the increase in age which corroborates with the findings of Chatterjee et al. (1992). Carron and Baily (1974) and Ellis, et al. (1975) have also reported that maximum increase in motor performance resulted during occurrence of peak height and weight velocity i.e; 16 years boys.

In 50m run 16 years boys performed better than the other groups. Winter (1976) and Koinzer (1978) reported that sprint performance depends upon leg strength and leg length. It may be seen from Table-1 that 16 years boys had better leg strength with the advancement of age and these aspects possibly influenced the significant improvement in speed performance. According to Sing (1979) motor ability was best trainable in the time period in which it showed the maximum rate of growth. So, leading study was in close proximity to other researchers.

Analyzing the present study it was observed that 16 years boys had performed better than the other groups and 15 years group performed lower score than other groups. Barnekow-Bergkvist et al. (1998) found that performance in physical tests; height, weight and physical activity at the age of 16 contributed best of explain adult physical performance and physical activity. Therefore, it may be inferred that the wallpass performance score was related to the age of the subjects.

In the present study 16 years boys showed better performance than other groups. So it can conclude that 16 years boys were better than 15 years and 15 years boys were better than 14 years boys. Lower the score higher was the performance. Slaughter et al. (1982) has shown that the average 600 yard run performance in seconds of 9.0-9.9, 10.0-10.9 and 11.0-11.9 years old American boys were 154.7, 157.8 and 142.9 seconds respectively.

Table-2 shows that statistically significant difference exists among different ages on height, weight, agility, leg explosive strength, 50m, wallpass and cardiorespiratory endurance as the obtained $F(4,141) = 14.93, 14.24, 11.21, 62.03, 20.42, 16.91$ and 5.14 respectively. Since three different age categories were considered in this study, the statistical analysis was further continued to post hoc test using Bonferroni corrections to find out the paired mean differences and it was given in Table-3.

Table-3 : Post hoc test on motor performance components of 14, 15 & 16 years boys

Age(yrs.)		Height	Weight	4×10m Shuttle Run	SBJ	50m Run	Wallpass	600yd. R & W
I	J							
14	15	4.91*	2.15NS	0.29*	8.77*	0.35*	0.53NS	0.03*
	16	9.07**	11.04**	0.24NS	23.29**	0.17NS	0.17NS	0.04**
15	16	4.16*	8.89**	0.05NS	14.52**	0.52**	0.70NS	0.01NS

From Table-3, it is understood that almost each of the paired mean differences on height and Standing broad jump varied between ages. It is also found that the adjacent age categories didn't vary considerably between them with regard to weight, speed and endurance, while the agility and coordination of the boys aged 14-16 and 15-16 years were not good enough as it is supposed to be. The results of the present study exhibit a mixed trend influence of sports participation. The age was a very important factor for the growth and development during pre-pubertal stage. Of the seven motor performance components two tests were related to strength and obviously the performance was found to be influenced by higher limb length and better developed musculature. Speed and coordination were also related to limb length, general musculature and neuromuscular coordination, which are definitely influenced by the advancement of age. The remaining motor performance is related to lean body mass, general musculature, aerobic capacity and certain psychological state of mind (willingness to accept pain) and development of all of which are influenced by advancement of age. Therefore, it is obvious that 14 years boys group will have less motor quality than that of 15 and 16 years group because of structural and functional differences with the higher age groups. The major increment in most of the motor quality variables occurred during their maximum spurt in height and weight. . In the present study the improvement in speed ability was also found significant at 16 years age. Ellis (1981) and Carron & Bailey (1974) have also reported that the maximum increase in motor performance resulted during the occurrence of peak height and peak weight velocity. The morphological status had played significant role in motor performance of the higher age groups. Winter (1976) has specifically mentioned that rapid increase in strength is largely limited to maximum strength and explosive strength. Some other factors like social and economic factors (Snyder, 1970), intensity of habitual physical activity, participation in extramural and physical education program etc. might be the underlying reason which affected strength performances of lower extremities. Harre (1979), Ludwig and Hirtz (1981) and Demeter (1981) have also reported that agility improves rapidly before puberty, after which the improvement slows down. From the foregoing discussion on motor performance and comparing the mean scores of 14, 15 and 16 year's old boys, it appeared that most of the motor performance capacity had a close relation with age.

Conclusions:

The present study had its own limitation. However, taking this in to account, of following specific conclusions may be drawn on the basis of the findings. The conclusions were drawn dimension and parameter wise.

Height :

- 1) Significant difference exists among the three groups and higher the age, higher was the height.
- 2) 16 years boys had significantly higher height than 14 and 15 years boys.

Weight :

- 3) Weight was related to the age of the subjects. 16 years boys were relatively higher weight than other two groups. Weight of the groups may be arranged as 16>15>14.
- 4) Higher the age, higher was the weight. Maximum spurt was observed in 16 years group.

Agility :

- 5) 14 years group were more agile than all other groups.
- 6) Three groups were significantly different from each other in Shuttle run performance.

Leg explosive strength :

- 7) Higher the age, higher was the leg explosive strength. Maximum spurt were observed in 16 years group.
- 8) Mean difference between the groups in respect of standing broad jump was highly significant. Jumping ability of the groups may be arranged as 16>15>14.

50m Run :

- 9) 16 years boys performed better than the other groups. This increase in speed ability of boys may due to rapid improvement of leg explosive strength and movement frequency.
- 10) Mixed trend were observed among the groups.

Wallpass :

- 11) Wallpass performance score was related to the age of the subjects.
- 12) 16 years boys performed slightly better than others. Mean scores of Wall pass were statistically different and groups may be placed as 16>14>15.

600yd Run and Walk :

- 13) Better endurance performance was observed in 16 years groups.
- 14) Significant mean differences were observed among five means.

Recommendations :

1. The present study was delimited only to male students; the same type of study may be made with female students.
2. Similar investigation may be done using different growth and motor performance parameters other than those used in the study. Psychological and Physiological parameters which were not considered in the present study.
3. Similar study may be conducted on large samples and age groups other than those used in the study.
4. A comparative study can be undertaken using the same parameters of Indian and foreign subjects.

5. Similar study may be done using tribal and non tribal boys and girls.
6. An interested researcher may prepare norms on height and weight for various age group boys on the basis of valid tests, on boys and girls of each district of West Bengal for proper evaluation.

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