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Shekhar Mondal
Research Scholar,
Department of Physical
Education, Visva-Bharati
University, Santiniketan-741235,
India.

Analysis of physical fitness between Bangladesh and Indian primary school going boys

Shekhar Mondal

Abstract

The purpose of this study was to find out the physical fitness level between Bangladesh and Indian primary school going boys aged 7 to 9 years old. All of the subjects live at village. All of 300 primary school going boys were born in daily labour or peasant family. The study was conducted on 148 Bangladeshi boys and 152 Indian boys for the comparison of selected physical fitness variables. The selected variables for the study were flexibility (sit and reach test) lower body explosive strength (standing broad jump), and cardiovascular endurance (Reduced cooper test). T-test was used to find out the significant difference among different disciplines. It was concluded that there was significant differences between Bangladeshi and Indian boys in flexibility (sit and reach test), lower body explosive strength (standing broad jump). The significance difference was not found on cardiovascular endurance variable. Bangladeshi boys have better lower body explosive strength and cardiovascular endurance than Indian boys. Indian boys have slightly higher BMI and flexibility than Bangladeshi boys.

Keywords: BMI, cardiovascular endurance, explosive strength, flexibility.

1. Introduction

The children in the southwest of England had less body fat percentage and showed greater upper body strength than children in the northwest, while children in the northwest demonstrated greater explosive strength than those in the southwest. Overall the results of these tests were somewhat mixed. However, if we are to assume that fitness levels could be a factor to account for the inequalities in health in different areas of the country (Boyle SE, 2014) [3]. The overweight and obese children performed worse in cardiorespiratory fitness, muscle explosive strength, and speed compared with normal weight children (Shang, *et al.* 2010) [9]. Children who do regular physical activity have greater muscle strength (Grund A, *et al.* 2000) [12]. BMI significantly influences cardiorespiratory fitness levels for both boys and girls. The children who are physically active have a significantly higher cardiorespiratory fitness level than those who are inactive (Hsieh, *et al.* 2014) [13]. Iranian boys were better than Iranian girls in height, weight, standing long jump and sit-up items. The girls, also, had higher scores than boys in percentage of body fat. The urban children were better than rural in weight, standing long jump and sit-up. The rural girls had lower scores in handgrip rather than other groups. Correlation results showed that height positively and weight negatively had a correlation with running and jumping tasks. Weight had a positive correlation with handgrip item. The results are discussed in positive effect of better living condition on growth and fitness on the children in rural areas (Dana A *et al.* 2011) [4].

German children's superiority in strength is present from the age of 6 years ($p < 0.001$ for the Push-Ups and $p < 0.05$ for the Long Jumping), to the age of 10 years ($p < 0.001$ and $p < 0.01$, respectively). However, their superiority in coordination ability was observed only in school aged children ($p < 0.05$ and $p > 0.05$, respect to 6 and 10 years old). With maturation from six to ten years, the achievement level for both populations show a positive improvement in the coordination and strength, and reduction in the flexibility ($p < 0.001$), with a higher rate of increase for the German children, except boys in the Push-Ups. Therefore, more strength-oriented physical activities before the age of 6 years and coordination-oriented activities between 6 and 8 years are recommended for Egyptian PE curriculum (Karim OA, *et al.* 2015) [7]. Physical activity is an important for improving cardiorespiratory fitness. Several studies have demonstrated that more active children have better cardiorespiratory fitness than inactive ones (Boddy, *et al.* 2011) [11]. Daily level of physical activity is not significantly related to BMI in urban children from an economically privileged setting (ML Baard and JM McKersie,

Correspondence:
Shekhar Mondal
Research Scholar,
Department of Physical
Education, Visva-Bharati
University, Santiniketan-741235,
India.

2014) [2]. The Croatian students have a higher body-mass, have higher BMI values and score better on tests of flexibility. Lithuanian students achieved better results in the repetitive strength test. Boys are taller, heavier and had higher BMI values as well as achieved better results in tests of explosive power and muscle endurance, while girls were more flexible. Boys from Lithuania scored highest in all tests except in flexibility compared to boys in Croatia (Novak, *et al.* 2015) [8]. Tanzanian and Norwegian children attained similar relative V'O2max in the cycle ergometer test. The comparison was hampered by differences in altitude and the poor cycle ergometer skills in the Tanzanian children, both of which probably underestimated their V'O2max. (Aandstad A, *et al.*) [1]. Weight bearing physical fitness, cardiorespiratory fitness and physical activity progressively decreased as the BMI increased and conversely, sedentary activities increased as the BMI increased (Esmailzadeh & Ebadollahzadeh, 2012) [5]. The overweight and obese adults had much lower levels of cardiorespiratory fitness as compared to their normal weight counterparts. Given the upward trend in the prevalence of overweight and obesity, it is important to help overweight and obese people to become fit and reach their healthy weight. (Hung, *et al.* 2014) [6].

The mobility performance scores of children originating from the less privileged socially and financially area, were higher thus leading us to assume that a free physical activity of ludic nature provides richer motor experiences than an organized athletic activity (Tsapakidou A, *et al.* 2014) [10].

1.1 Purpose of the study

The purpose of this study was to assess and to compare the selected physical fitness components between Indian and Bangladeshi primary school going boys aged 7 to 9 years old.

2. Methodology

2.1 Selection of Subjects

148 of primary school going boys from Bagerhat district in Bangladesh and 152 of primary school going boys from Purulia and Midnapur district in West Bengal were selected aged 7 to 9 years old. All subjects were arranged in a

randomly. Total subjects were 300 and all of the subjects live at village. All of 300 primary school going boys were born in daily labour or peasant family. 152 Indian primary school going boys who went to school also play in the fields in the afternoon. 148 Bangladeshi primary school going boys were involved in games and also they help their parents in the field for cultivation.

2.2 Selection of the Variables and criterion measures.

Following variables were selected for the purpose of the study:

2.2.1 BMI

2.2.2 Sit and reach test for flexibility (in Centimetres).

2.2.3 Standing broad jump for lower body explosive strength (in Centimetres).

2.3.4 Reduced cooper test for Cardiovascular Endurance (in Meters).

2.3 Statistical Techniques.

Mean, Std. Deviation and t-test were used to find the significant difference between the two groups. The level of significance was set at 0.05. The data was calculated by using SPSS statistical software.

3. Result and findings of the study

Descriptive statistics such as Mean, Standard Deviation, Std. Error Mean and 'T'-test were used as statistical analyses. A perusal of Table-1, Table-2 and Table-3 indicate a statistical result of this study. The mean of age and BMI of Indian boys were 7.97 years and 14.61 kg/m². On the other hand, the mean of age and BMI of Bangladeshi boys were 7.96 years 14.38 kg/m² respectively. The mean of age and BMI has been given in the Table-1. The mean values of flexibility, explosive strength, and cardiovascular Endurance of Indian boys are 23.75 cm, 134.35 cm and 1057.09 m respectively. On the other hand, the mean values of flexibility, explosive strength and cardiovascular endurance of Bangladeshi boys are 23.25 cm, 146.28 cm and 1087.07 m respectively presented in the Table-2. The statistical analysis of 'T' test has shown in the Table-3.

Table 1

	1=India,2=Bangladesh	N	Mean
Age	1	152	7.97
	2	148	7.96
BMI	1	152	14.61
	2	148	14.38

Table 2: Group Statistics

	1=India,2=Bangladesh	N	Mean	Std. Deviation	Std. Error Mean
Sit and reach test	1	152	23.75	4.512	.366
	2	148	23.25	4.079	.335
Standing broad jump	1	152	134.35	20.827	1.689
	2	148	146.28	19.820	1.629
Cooper reduced test	1	152	1057.09	103.217	8.372
	2	148	1087.07	120.305	9.889

Table 3: Analysis of t-test

	Lemene's t-test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (t-tailed)	Mean difference	Std. Error difference	95% confidence Interval of the difference	
								Lower	Upper
Sit and reach test Equal Variances Assumed Equal Variances not Assumed	2.554	.111	1.013	298	.312	.503	.497	-.475	1.481
1.014			296.373	.311	.503	.496	-.473	1.480	
Standing broad jump Equal Variances Assumed Equal Variances not Assumed	.620	.432	-5.079	298	.000	-11.928	2.348	-16.550	-7.307
-5.083			297.845	.000	-11.928	2.347	-16.547	-3.310	
Reduced cooper test Equal Variances Assumed Equal Variances not Assumed	6.142	.014	-2.319	298	.021	-29.982	12.931	-55.429	-4.535
-2.314			288.803	.021	-29.982	12.957	-55.484	-4.480	

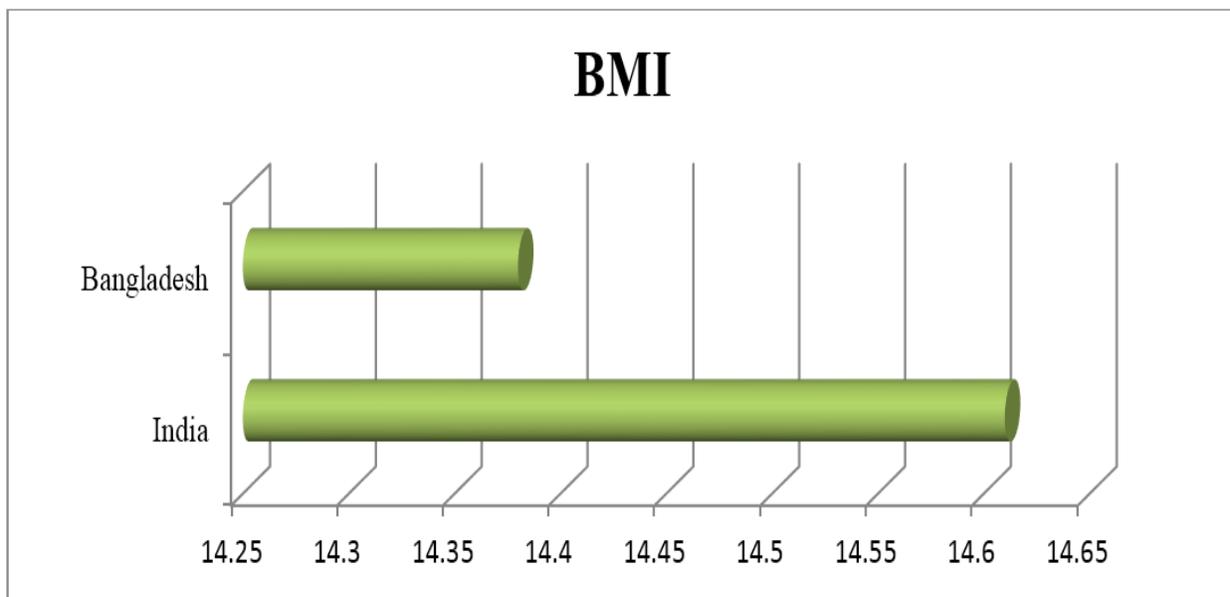


Fig-1: Graphically comparison of mean differences of BMI between Bangladesh and Indian boys.

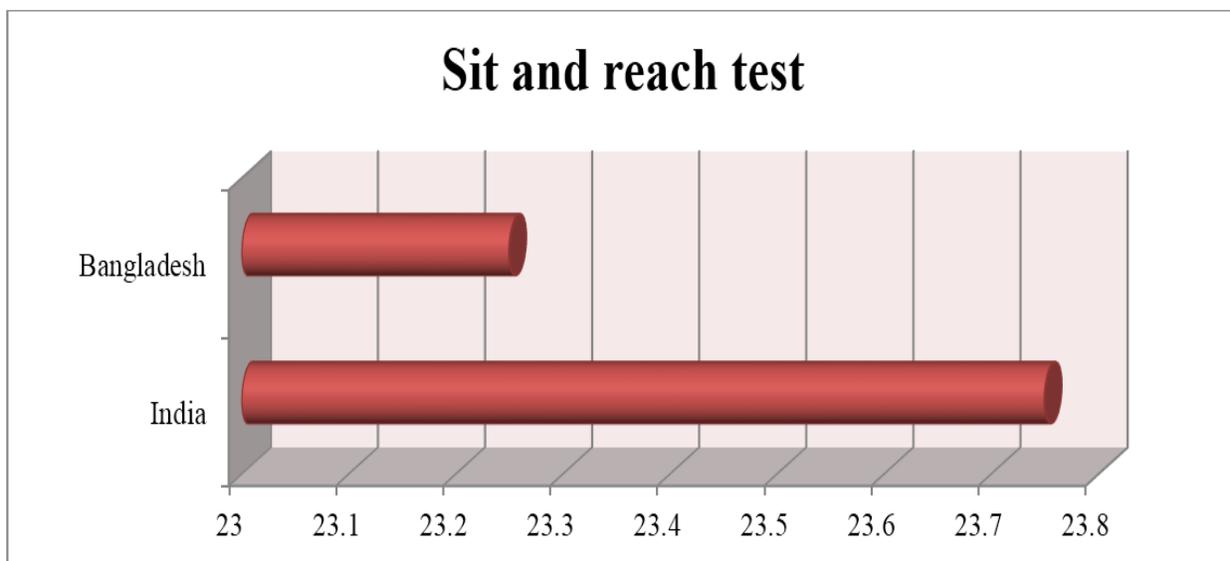


Fig-2: Graphically comparison of mean differences of flexibility between Bangladesh and Indian boys.

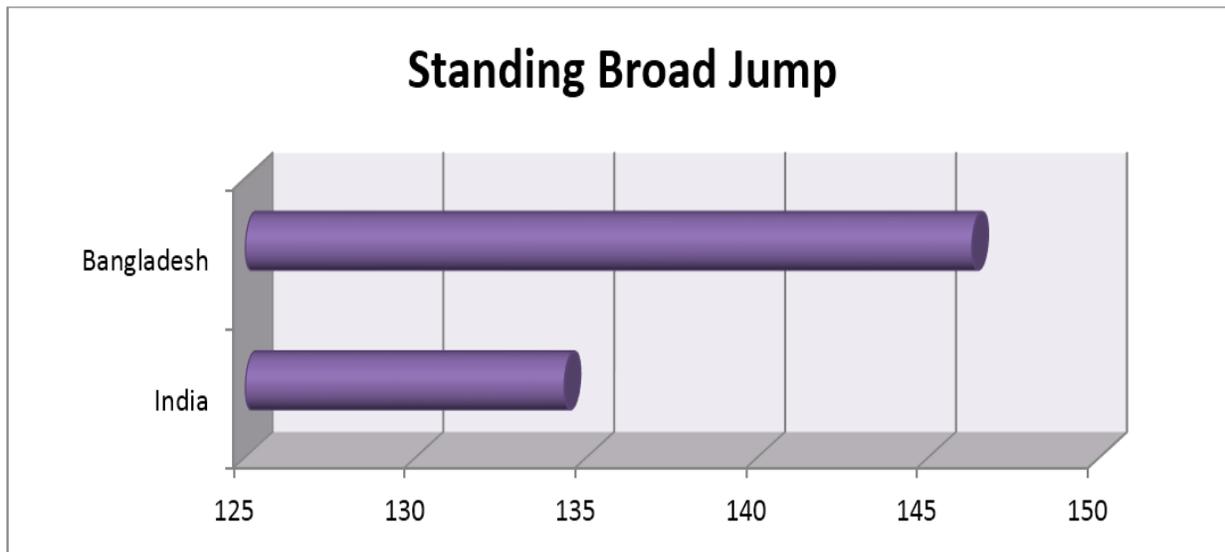


Fig-3: Graphically comparison of mean differences of lower body explosive strength between Bangladesh and Indian boys.

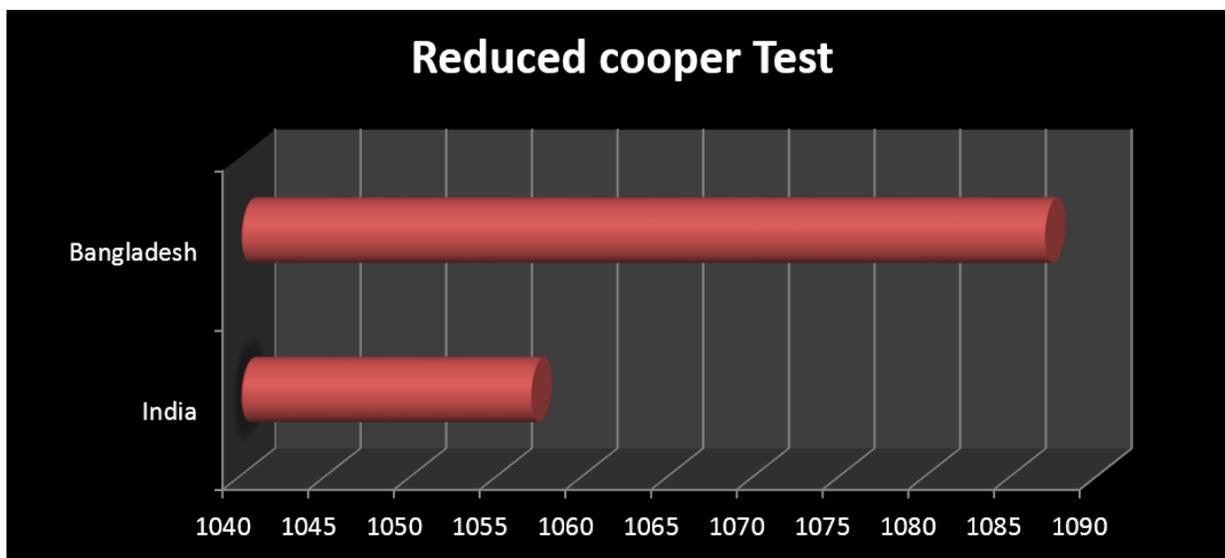


Fig 4: Graphically comparison of mean differences of cardiovascular Endurance between Bangladesh and Indian boys.

4. Discussion

The results of the present study showed significant differences in flexibility and explosive strength between Indian and Bangladeshi boys. The significance difference was not found on cardiovascular endurance variable. Graphically comparison of mean differences of BMI and Flexibility between Indian and Bangladeshi boys is presented in Fig-1 and Fig-2 respectively. Indian boys have slightly higher BMI values and score slightly better on tests of flexibility than Bangladeshi boys (Novak, *et al.* 2015) [8]. The Comparison of mean difference of lower body explosive strength has shown in Fig-3. Bangladeshi boys were significantly longer than Indian boys in both the distance of standing broad jump (146.28 cm versus 134.35 cm) and the distance of reduced cooper test (1087.07 m versus 1057.09 m). Graphically comparison of mean differences of cardiovascular Endurance between Indian and Bangladeshi boys has shown in Fig-4. Bangladeshi boys have better lower body explosive strength and cardiovascular endurance than Indian boys due to BMI values (Grund A, *et al.* 2000; Hsieh, *et al.* 2014) [12, 13]. Weight bearing physical fitness, cardiorespiratory fitness and physical activity progressively decreased as the BMI increased and conversely,

sedentary activities increased as the BMI increased (Esmailzadeh & Ebadollahzadeh, 2012; Shang, *et al.* 2010) [5, 9]. Primary school going boys of Bangladesh were involved in games and also they help their parents in the field for cultivation. So they are more active than Indian primary school going boys who were born in daily labour or peasant family (Boddy, *et al.* 2011 [11]; Grund A, *et al.* 2000) [12].

5. Conclusion

According to the results and discussion of this study indicate that Bangladeshi boys have better lower body explosive strength and cardiovascular endurance than Indian boys. Indian boys have slightly higher BMI and flexibility than Bangladeshi boys.

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