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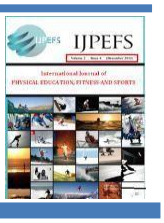

Full Length Article

A Comparative Study on Selected Physical Fitness Components between Bangladeshi Primary School Going Boys and Girls

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Abstract: The purpose of this study was to compare the selected health related physical fitness components between Bangladeshi primary school going boys and girls aged 7 to 9 years old. The study was conducted on 148 boys and 156 girls for the comparison of selected health related physical fitness variables. The selected variables for the study were flexibility (sit and reach test) lower body explosive strength (standing broad jump), upper body strength endurance (flex arm hang) 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 boys and girls in flexibility (sit and reach test), lower body explosive strength (standing broad jump) and upper body strength endurance (flex arm hang).The significance difference was not found on cardiovascular endurance variable. Bangladeshi girls have better flexibility than boys but boys have better lower body explosive strength, upper body strength endurance and cardiovascular endurance than girls.

Keywords: Flexibility; Explosive strength; Strength endurance; Cardiovascular endurance; BMI.

Introduction

The overall prevalence of overweight and obese children in southern Taiwan is higher than in other Asian countries. Also, boys performed significantly better on cardiorespiratory fitness tests than girls did. Additionally, 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. Given the high prevalence of childhood obesity, improving the cardiorespiratory fitness level of children could dramatically improve public health. Further studies should elucidate such complex relationships by incorporating a level of physical activity and including data on dietary intake, puberty, and socioeconomic status [1]. Physical activity is an important for improving cardiorespiratory fitness. Several studies have demonstrated that more active children have better cardiorespiratory fitness than inactive ones [2].

Gender influences the association between cardiorespiratory fitness and childhood obesity. Health professionals should design programs to address childhood obesity by recognizing the correlation between gender, BMI and cardiorespiratory fitness, especially in geographical areas with a high prevalence of obesity. These would help alleviate chronic diseases and future problems caused by obesity [3]. Participation in physical sports activity during

leisure time may positively influence cognitive performance in adolescents [4].

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. Girls from Lithuania are thinner, have lower BMI and achieve better results in repetitive test of strength than girls in Croatia. Age was shown as a significant factor in the increase in all tested variables [5].

Overweight and obese children were less fit and watched more TV than their normal weight counterparts. Fat mass did not correspond to TEE (total energy expenditure) AEE (Activity-related energy expenditure) or PAL (physical activity level). Muscle strength was not associated with Fat mass in young children, but was inversely associated with Fat Mass in older children. Cross-sectional data are consistent with the idea that increased fitness and reduced physical inactivity may prevent children from being overweight [6].

The comparison of flexibility in the Czech population aged 18-59 years was to compare flexibility. The values of isometric strength were obtained using a sit and reach test (measuring of maximal reach in sit). In comparison with previous standards of sit-and-reach test were the results higher than average. Higher level of flexibility reached women, sporting people and younger age. The most decreasing flexibility was described among young men. The reached results were affected by body characteristics [7].

Macedonian Children of both sexes who belong to the underfed group achieve better results in the test endurance in pull-ups in terms of children with normal body weight. Boys in all tests for estimating the level of the physical fitness show better results except foot the deep sitting bend in which girls show better results [8].

Women have greater mean flexibility than men across most of the age ranges and different levels of education although there were no significant differences between the sexes. Flexor muscle performance increases until the age of 12 which coincides with primary level education. It progressively decreases from this age onwards. Older university students were the least flexible, which indicates that flexibility decreases with age, with the exception of the age ranges that included sportsmen or women who were responsible for peaks in flexibility in the results [9].

In physically inactive pupils, boys performed better in motor tests which required strength whereas girls achieved significantly better results in flexibility tests. In the case of both sexes, flexibility of the spine was negatively correlated with body height [10].

The handgrip strength was greater in the male gender while maturation differences showed a similar pattern favoring the pubertal period. The flexibility of the pubertal girls was significantly better than their male counterparts. The duration of physical activity was significantly longer in the males than female children. The duration of light activity among girls was longer than that of boys whereas the duration of Moderate-Vigorous Physical Activity in boys was significantly longer than that of girls. On the other hand the duration of Moderate-Vigorous Physical Activity among the prepubertal children was significantly higher than that of children in the pubertal period [11]. In the physical performance tests requiring moving the body, power and strength, the boys generally performed higher than the girls. Girls were superior to boys in the tests of flexibility [12].

Chinese boys performed better than girls, and the older children performed better than their younger counterparts for all physical fitness tests. Physical fitness parameters including standing broad jump, 50 m sprint, and 50m*8 shuttle run were tested. No significant difference in all three physical fitness tests were found between children with underweight and with normal weight, and they both performed better than their counterparts with overweight and obese in all three physical fitness tests. An inverse association of obesity with cardiorespiratory fitness, muscle explosive strength, and speed was identified among Chinese children [13].

Purpose of the study

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

Methodology

Selection of Subjects

148 primary school going boys and 156 primary school going girls from Bagerhat district in Bangladesh were selected aged 7 to 9 years old. All subjects were arranged in a randomly. Total subjects were 304 and all of the subjects live at village. All of 304 primary school going students were born in daily labour or peasant family.

Selection of the Variables and criterion measures

Following variables were selected for the purpose of the study:

1. Reduced cooper test for Cardiovascular Endurance (in Meters).
2. Standing broad jump for lower body explosive strength (in Centimetres).
3. Flex arm hang for upper body strength endurance (in Seconds).
4. Sit and reach test for flexibility (in Centimetres).
5. BMI.

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

Result and findings of the study

A perusal of Table-1, Table-2 and Table-3 indicate a statistical result of this study. Mean, Standard Deviation, Std. Error Mean and 'T'-test were used as statistical analyses which were presented in these Tables. The mean of age, weight and height of Bangladeshi boys were 7.96 years, 23.23 kg and 126.71 cm but the mean of age, weight and height of girls were 7.96 years 21.99 kg and 125.85 cm respectively. BMI of Bangladeshi boys and girls are 14.38 kg/m2 and 13.83 kg/m2 respectively. The mean and SD of age, height, weight and BMI of Bangladeshi children has been given in the Table-1. The mean values of flexibility, explosive strength, strength endurance and cardiovascular Endurance of boys are 23.25 cm, 146.28 cm 26.03 sec and 1087.07 m. On the other hand, the mean values of flexibility, explosive strength, strength endurance and cardiovascular Endurance of girls are 24.47 cm, 133.46 cm 17.05 sec and 1029.23 m respectively presented in the Table-2.

Table-1 Group Statistics

	1=Boys,2=Girls	N	Mean	Std. Deviation	Std. Error Mean
Age	1	148	7.96	.669	.055
	2	156	7.96	.735	.059
Weight	1	148	23.23	4.623	.380
	2	156	21.99	4.762	.381
Height	1	148	126.71	8.075	.664
	2	156	125.85	9.622	.770

Table-2 Group Statistics

1=Boys,2=Girls		N	Mean	Std. Deviation	Std. Error Mean
Reduced cooper test	1	148	1087.07	120.305	9.889
	2	156	1029.23	83.644	6.697
Standing broad jump	1	148	146.28	19.820	1.629
	2	156	133.46	19.326	1.547
Flex arm hang	1	148	26.03	15.641	1.286
	2	156	17.05	13.934	1.116
Sit and reach test	1	148	23.25	4.079	.335
	2	156	24.47	4.605	.369
BMI	1	148	14.38	1.944	.160
	2	156	13.83	1.749	.140

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
Reduced cooper test Equal Variances Assumed Equal Variances not Assumed	23.597	.000	4.887 4.843	302 260.738	.000 .000	57.837 57.837	11.834 11.943	34.549 34.319	81.124 81.354
Standing broad jump Equal Variances Assumed Equal Variances not Assumed	.049	.825	5.710 5.707	302 300.171	.000 .000	12.822 12.822	2.245 2.247	8.403 8.400	17.240 17.244
Flex arm hang Equal Variances Assumed Equal Variances not Assumed	2.926	.088	5.293 5.277	302 293.757	.000 .000	8.983 8.983	1.697 1.702	5.643 5.632	12.322 12.333
Sit and reach test Equal Variances Assumed Equal Variances not Assumed	2.317	.129	-2.443 -2.451	302 300.600	.015 .015	-1.221 -1.221	.500 .498	-2.205 -2.202	-.237 -.241
BMI Equal Variances Assumed Equal Variances not Assumed	1.026	.312	2.605 2.598	302 294.689	.010 .010	.552 .552	.212 .212	.135 .134	.969 .970

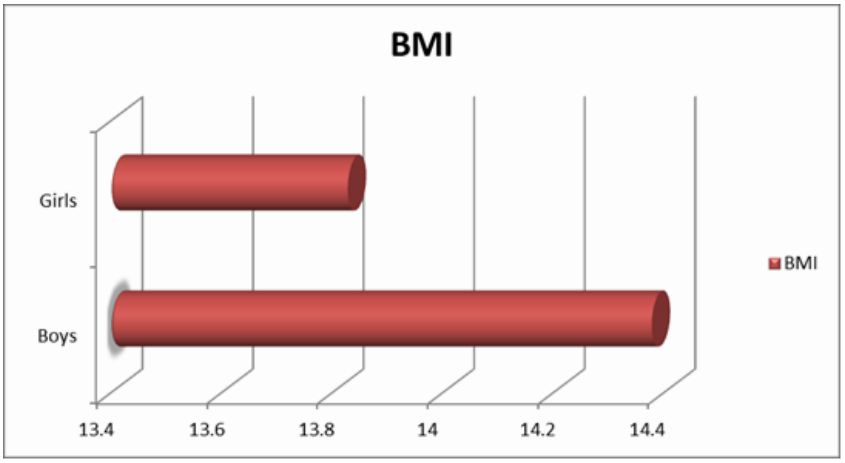

Figure-1: Graphically comparison of mean differences of BMI between boys and girls.

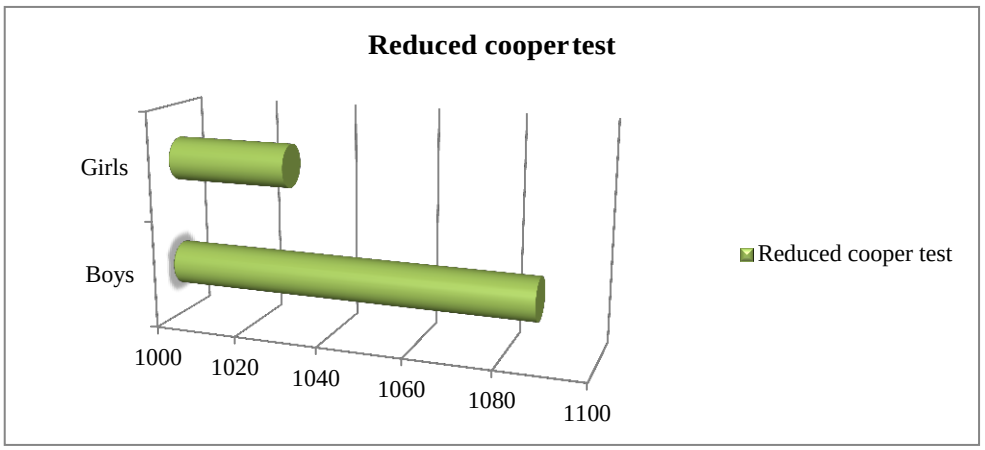

Figure-2: Graphically comparison of mean differences cardiovascular Endurance between boys and girls.

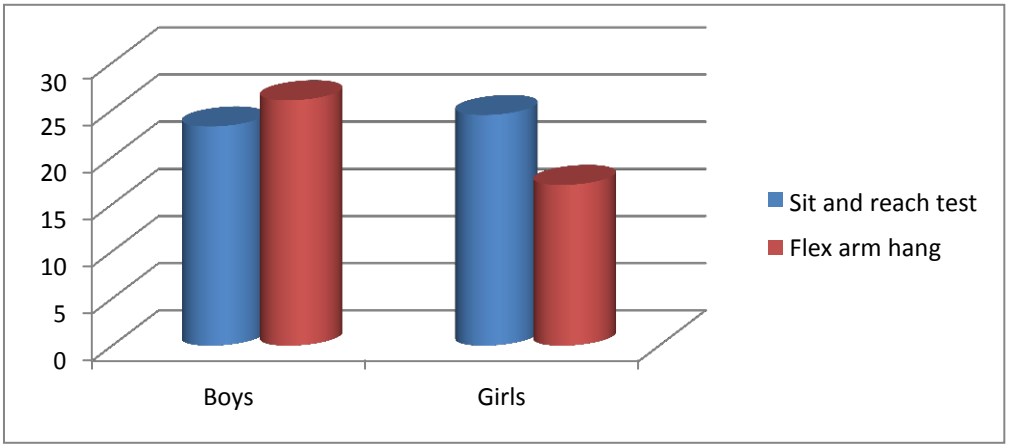

Figure-3: Graphically comparison of mean differences flexibility and upper body strength endurance between boys and girls.

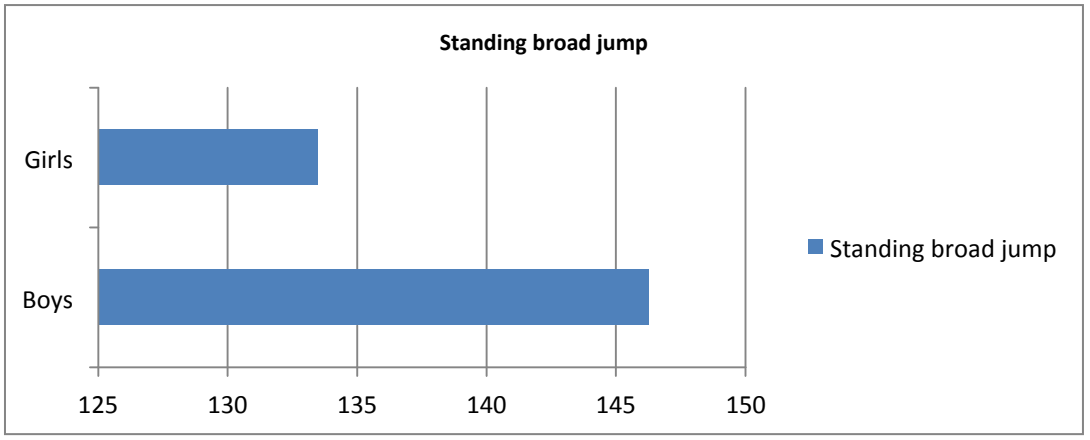

Figure-4: Graphically comparisons of mean differences lower body strength endurance between boys and girls.

Discussion

The statistical findings of the present study revealed that Bangladeshi girls have lesser weight than boys. BMI of girls have lesser than boys. The comparison of mean difference of BMI between boys and girls has given in Figure-1. The result of the present study revealed that significance differences were found on flexibility, lower body explosive strength and upper body strength endurance but the significance difference was not found on cardiovascular endurance presented in 'T' test of Table-3. The Comparison of mean difference of explosive strength endurance has showed in Figure-4. Boys were significantly longer than girls in both the distance of standing broad jump (146.28 cm versus 133.46 cm) and the time of upper body strength endurance (26.03 sec versus 17.05 sec). Boys have better lower body explosive strength and upper body strength endurance than girls [12, 13]. Graphically comparison of mean differences flexibility and upper body strength endurance between boys and girls are presented in Figure-3. Flexibility of boys and girls is 23.25 cm versus 24.75 cm. Girls have better flexibility than boys [7, 9, 10, 12]. Boys are taller, heavier and had higher BMI values as well as achieved better results in tests of explosive strength and muscle endurance than girls [5]. 148 Bangladeshi primary school going boys were more involved in games than girls and also they help their parents in the field for cultivation. So the boys are more physically active than girls [1, 2]. Participation in physical sports activity may positively influence cognitive performance in adolescents [4]. The comparison of mean difference of cardiovascular endurance between boys and girls is presented in Figure-2. The distance of reduced cooper test of boys and girls is 1087.07 m versus 1029.23 m. The cardiovascular endurance in boys is also better than girls [1].

Conclusion

On the basis of the result it can be concluded that Bangladeshi boys have better lower body explosive strength, upper body strength endurance and cardiovascular endurance than Bangladeshi girls. Bangladeshi girls have lower BMI than boys but girls have better flexibility than boys.

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