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Physical fitness differentials between boys of government and private schools

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Abstract

The present study was carried out to find out the differences of selected physical fitness variables between government and private school boys of Amritsar district of Punjab. A total of 384 school boys participated in the study. The variables selected in this study were speed, agility, coordination, balance, reaction time, handgrip strength, endurance, explosive power, flexibility, % body fat. The purposive sampling technique was used to select the participants. Unpaired t-test was employed to find the mean differences. Results revealed that both groups differ significantly on the variables coordination, balance, handgrip strength and % body fat whereas no significant differences were assessed on the variables viz. speed, agility, reaction time, endurance, explosive power and flexibility. In conclusion, government school boys were better on some selected variables viz. coordination, balance, handgrip strength and % body fat.

Keywords: Speed, agility, coordination, handgrip strength, endurance, flexibility

1. Introduction

Physical fitness means the functional capacity of a person to perform certain kinds of tasks requiring muscular activity (Fleishman, 1964) [3]. Apart from athletes, non-athletes too need physical fitness for upholding of a healthy body and mind (Morteza *et al.*, 2011) [6]. Physical wellbeing during adulthood is largely the consequence of childhood physical fitness (Sallis *et al.*, 1992) [7]. Numerous studies over the globe have been reported the significance of physical fitness during the childhood (Campbell and Pohndof, 1961) [1], (Sloan, 1966) [8], (Ishiko, 1978) [4]. The most critical place for attaining the physical fitness during childhood are schools as overall personality and behavioral tendencies of a child are very much shaped in the schools. A study done by Chaudri, D. *et al.* (2002) [2] confirmed that students who reside in strict discipline conditions; habitual of regular physical activity and uniform diet were more physically fit than those of who reside at their homes or in lenient environment. This is the point at which a dynamic way of life ought to be set up. Fitness starts during childbirth and ought to proceed all through a person's life. Physical activity and wellness practices ought to be typical and essential piece of everyone's life. Physical fitness results in health gains and general wellbeing and it is fundamental for full and energetic living. In this way, School physical education programmes could play a critical role in bringing about the better results pertaining to childhood physical fitness. The mind boggling nature of physical fitness can best comprehended as far as its parts, such as, speed, agility, coordination, cardio-respiratory endurance, strength, reaction time, explosive power flexibility, body composition etc. Notwithstanding these segments of physical fitness there are numerous different variables which add to physical fitness including heredity, lifestyle, nutritional food, hygiene, ecological and atmosphere components and so forth. Keeping in the view the importance of physical fitness during childhood and to explore the present scenario, this study is intended to find out the differences of physical fitness between government and private school boys of Amritsar district of Punjab.

2. Methodology

2.1 Selection of subjects

The present study was conducted on a total of 384 male students of age group 11-14 from various private and government schools of Amritsar district.

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The total sample consists of 207 boys of private and 177 from government schools. The purposive sampling technique was used to select the sample. The variables and their respective tests are presented in table I.

2.2 Statistical analysis

Descriptive statistics of both groups are presented as means and standard deviation. Unpaired t-test was applied to compare the means of variables between both groups and each age group from 11-14 year. Alpha level was set at 0.05.

3. Results and discussion

Table II depicts the mean, standard deviation, t-values and p-values of selected physical fitness variables of private and government school boys. With respect to the variable coordination, mean and standard deviation of private and government school boys were 16.18±3.71 and 17.23±4.51 respectively. Results of t-test ($t=2.46, p<0.05$) shows that both groups differ significantly on the variable coordination and boys from government schools had better coordination than private school boys. Similarly, comparison of both groups on the variable balance reveals significant difference between both group ($t=3.52, p<0.05$). Mean and standard deviation of private and government school boys was 16.78±5.92 and 18.77±5.55 respectively, these results shows that government school boys have better balance than private school boys. Likewise, both groups differ significantly when compared on the variable handgrip strength ($t=8.52, p<0.05$). Mean and standard deviation of private and government school boys were 10.40±2.31 and 12.87±3.36 respectively which confirm that government school boys have better hand grip strength than the private school boys. Further, significant difference was noticed on the variable % body fat ($t=4.13, p<0.05$). Mean and standard deviation of private and government school boys were 19.97±4.51 and 18.04±4.56 respectively. These results confirm that private school boys have more body fat % than government school boys. Meanwhile, no significant differs were assessed on the variables speed, agility, reaction time, endurance, explosive power and flexibility.

Table III shows the results of t-tests of selected physical fitness variables between the private and government school boys of age 11 years. Results reveal significant differences on two variables viz. handgrip strength and endurance. The mean and standard deviation for handgrip strength in private and government school boys were 10.80±2.16 and 12.22±3.18 respectively. The attained scores ($t=2.19, p<0.05$) signified significant difference between the two groups. It can be inferred from the above results that government school boys have better handgrip strength than private schools boys of age 11 years. Correspondingly, the mean and standard deviation for endurance in private and government school group were 172.53±13.38 and 161.52±15.20 respectively. The obtained results ($t=3.38, p<0.05$) reveal significant difference between both groups. Accordingly, it can be inferred from above findings that government school boys had have better endurance than private school boys of 11 year age group. At the same time, no significant differences were seen on other variables viz. speed, agility, coordination, balance, reaction time, explosive power, flexibility and % body fat.

Table-IV presents the results of comparison of selected physical fitness variables between private and government school boys of age 12 years. The results revealed significant differences on two parameters viz. handgrip strength and % body fat. The mean and standard deviation for handgrip strength in private and government school boys were

10.49±2.63 and 13.07±3.78 respectively. The obtained scores ($t=4.09, p<0.05$) signified significant difference between the two groups. It can be inferred from the above results that government school boys have better handgrip strength than private schools boys of age 12 years. Similarly, the mean and standard deviation for % body fat in private and government school group were 20.12±3.67 and 18.08±5.30 respectively. The obtained results ($t=2.30, p<0.05$) revealed significant difference between both groups. Accordingly, it can be elicited from above findings that government school boys have has less body fat % than private school boys of 12 year age group. At the same time, no significant differences were seen on other variables viz. speed, agility, balance, coordination, reaction time, explosive power, flexibility and endurance.

Table-V exhibits the results of t-tests on selected physical fitness variables between private and government school boys of age 13 years. The results revealed significant differences on three parameters viz. coordination, balance and handgrip strength. The mean and standard deviation for coordination in private and government school group were 15.71±3.49 and 17.60±4.66 respectively. The obtained results ($t=2.37, p<0.05$) disclosed significant difference between both groups in 13 years age group. It can be interpreted from the above scores that boys of government schools were better on the variable coordination. Furthermore, the mean and standard deviation for balance in private and government school boys were 16.31±5.89 and 18.95±5.01 respectively. The obtained scores ($t=2.55, p<0.05$) showed significant difference between the two groups. It can be inferred from the above results that government school boys have better balance than private schools boys of age 13 years. Similarly, the mean and standard deviation for handgrip strength in private and government school group were 10.52±2.46 and 12.78±3.09 respectively. The obtained results ($t=4.23, p<0.05$) revealed significant difference between both groups. Hence, it can be elicited from above findings that government school boys have has more handgrip strength than private school boys of 13 year age group. Meanwhile, no significant differences were noticed on other variables viz. speed, agility, coordination, reaction time, explosive power, flexibility and endurance and % body fat.

Table-VI uncovers the results of t-tests on selected physical fitness variables between private and government school boys of age 14 years. The results revealed significant differences on three parameters viz. balance, handgrip strength and % body fat. The mean and standard deviation for balance in private and government school group was 18.23±6.11 and 21.09±7.08 respectively. The obtained results ($t=2.14, p<0.05$) reveal significant difference between both groups in 14 years age group. It can be inferred from the above scores that boys of government schools were better on the variable balance. Furthermore, the mean and standard deviation for handgrip strength in private and government school boys were 9.87±1.74 and 13.19±3.44 respectively. The obtained scores ($t=6.19, p<0.05$) signified significant difference between the two groups. It can be elicited from the above results that government school boys had have better handgrip strength than private schools boys of age 14 years. Similarly, the mean and standard deviation for % body fat in private and government school group were 20.88±5.23 and 18.24±4.64 respectively. The obtained results ($t=2.61, p<0.05$) revealed significant difference between both groups. Accordingly, it can be elicited from above findings that government school boys had have less % body fat than private school boys of 14

year age group. At the same time, no significant differences were seen on other variables viz. speed, agility, coordination, reaction time, explosive power, flexibility and endurance.

Table I: Description of variables, tests and measuring units

Variable	Test	Measuring unit
Speed	30 meter dash	Seconds
Agility	Illinois agility test	Seconds
Coordination	Alternate hand wall toss test	Maximum counts
Balance	Stork stand test	Seconds
Reaction time	Ruler drop test	Seconds
Handgrip strength	Handgrip dynamometer	Kilograms
Endurance	600 meter run/walk	Seconds
Explosive power	Standing broad jump	Meters
Flexibility	Sit and reach test	Centimeters
Body fat %	Slaughter's equation	Percentage

Table II: Comparisons of selected physical fitness variables between boys of private and government students

Variable	Private (n=207)		Government (n=177)		t-value	p-value
	Mean	SD	Mean	SD		
Speed	7.93	0.65	7.91	0.62	0.05	0.44
Agility	21.95	2.37	22.14	2.32	0.72	0.95
Coordination	16.18	3.71	17.23	4.51	2.46	0.01*
Reaction time	0.19	0.03	0.19	0.04	0.51	0.59
Balance	16.78	5.92	18.77	5.55	3.52	0.001*
Handgrip Strength	10.40	2.31	12.87	3.36	8.52	0.001*
Endurance	156.66	17.50	157.82	17.73	0.64	0.50
Explosive power	1.62	0.27	1.60	0.30	0.69	0.48
Flexibility	29.36	6.41	30.05	6.52	1.05	0.29
Body Fat %	19.97	4.51	18.04	4.56	4.13	0.001*

* indicates $p < 0.05$.

Table III: Comparisons between 11 year old boys of private and government students

Variable	Private (n=38)		Government (n=34)		t-value	p-value
	Mean	SD	Mean	SD		
Speed	8.06	0.64	8.00	0.57	0.52	0.61
Agility	21.68	3.00	21.84	2.36	0.25	0.81
Coordination	15.75	3.88	17.43	4.59	1.67	0.10
Reaction time	0.20	0.03	0.19	0.03	0.88	0.38
Balance	15.96	5.55	16.28	4.03	0.27	0.78
Handgrip Strength	10.82	2.16	12.22	3.18	2.19	0.02*
Endurance	172.53	13.38	161.52	15.20	3.38	0.001*
Explosive power	1.67	0.27	1.58	0.28	1.15	0.25
Flexibility	29.83	6.01	29.93	5.33	0.06	0.91
Body Fat %	19.43	4.74	17.79	3.53	1.65	0.09

* indicates $p < 0.05$.

Table IV: Comparisons between 12 year old boys of private and government schools

Variable	Private (n=60)		Government (n=44)		t-value	p-value
	Mean	SD	Mean	SD		
Speed	7.92	0.67	7.96	0.69	0.17	0.87
Agility	21.81	2.08	22.05	2.28	0.54	0.57
Coordination	16.57	3.21	16.23	4.20	0.47	0.63
Reaction time	0.20	0.04	0.17	0.03	1.60	0.11
Balance	16.45	5.92	18.10	4.64	1.61	0.10
Handgrip Strength	10.49	2.63	13.07	3.78	4.09	0.001*
Endurance	156.70	16.20	153.55	17.52	0.95	0.35
Explosive power	1.61	0.29	1.53	0.27	1.41	0.16
Flexibility	31.22	6.21	30.83	6.64	0.31	0.76
Body Fat %	20.12	3.67	18.08	5.30	2.30	0.01*

* indicates $p < 0.05$.

Table V: Comparisons between 13 year old boys of private and government schools

Variable	Private (n=55)		Government (n=55)		t-value	p-value
	Mean	SD	Mean	SD		
Speed	7.89	0.65	7.96	0.59	0.43	0.66
Agility	22.01	2.33	22.66	2.27	1.42	0.14
Coordination	15.71	3.49	17.60	4.66	2.37	0.02*
Reaction time	0.18	0.02	0.19	0.03	0.51	0.60
Balance	16.31	5.89	18.95	5.01	2.55	0.012*
Handgrip Strength	10.52	2.46	12.78	3.09	4.23	0.001*
Endurance	155.84	18.65	156.42	17.55	0.17	0.87
Explosive power	1.61	0.28	1.65	0.26	0.46	0.65
Flexibility	28.11	6.69	30.08	7.11	1.51	0.14
Fat %	19.26	4.34	18.04	4.52	1.45	0.15

* indicates $p < 0.05$.

Table VI: Comparisons between 14 year old boys of private and government schools

Variable	Private (n=54)		Government (n=44)		t-value	p-value
	Mean	SD	Mean	SD		
Speed	7.85	0.68	7.82	0.65	0.21	0.84
Agility	22.20	2.25	21.70	2.36	1.06	0.28
Coordination	16.54	4.34	17.58	4.52	1.14	0.24
Reaction time	0.18	0.04	0.19	0.04	1.03	0.31
Balance	18.23	6.11	21.09	7.08	2.14	0.04*
Handgrip Strength	9.87	1.74	13.19	3.44	6.19	0.001*
Endurance	159.68	17.50	159.70	19.21	0.01	0.98
power	1.57	0.29	1.60	0.35	0.50	0.62
Flexibility	28.19	6.21	29.33	6.55	0.87	0.37
Body Fat %	20.88	5.23	18.24	4.64	2.61	0.01*

* indicates $p < 0.05$.

4. Discussion

The present study was intended to explore the differences of physical fitness parameters between private and government school boys. The comparisons were done between each age group from 11 to 14 years and on overall sample. While comparing the boys of 11 year age group it was found that both groups showed differs on two parameters viz. handgrip strength and endurance, wherein government school boys were found to be significantly better than private schools. However, both groups did not differ significantly on other parameters. In 12 year age group, handgrip strength was again found better in government schools boys. Moreover, Government school boys were having less % body fat than their counterparts. In 13 year age group, similar trends were seen on handgrip strength and balance which found to be better among government school boys. Moreover, significant differs were found in coordination and for this parameter also, government school boys were found to be better than their counterparts. In 14 year group, it was found that government school boys were significantly better in balance and handgrip strength. Moreover, private school boys were having more % body fat than their counterpart. Overall sample showed significant differences for coordination, balance, handgrip strength and % body fat, where government school boys were found to be better. However, no significant differences were noticed for speed, agility, reaction time, endurance, explosive power and flexibility. On the basis of above findings, it could be inferred that government school boys are better in some selected physical fitness variables than private school boys of age 11-14 years. Contrarily, a similar study done on

government and non-government school boys reported that non-government school boys were better on flexibility, speed, endurance and upper body strength (Kumar and Singh, 2012) [5]. In India, the majority of students enrolled in government schools are usually from low socio-economic status and students with higher socio-economic status usually go to private schools. The cause behind the findings of this study might be the sedentary lifestyle habits prevailed among higher socio-economic status children. On the other hand, children with less socio-economic status are likely to expose to those works which demand more physical activity.

5. Conclusions

On the basis of above results, it can be concluded that government school boys were better than private school boys on four components of physical fitness viz. coordination, balance, handgrip strength and body fat %.

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