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Relationship between motor abilities and clear skill level of Delhi badminton players

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Abstract

The purpose of this study was to evaluate the relationship between motor abilities and clear skill level of badminton players for which 60 badminton players (40 boys and 20 girls) were selected from various badminton coaching centers of Delhi having age ranged from 13 to 15 years. Motor abilities namely agility, balance, flexibility, explosive power (SBJ&VJ), reaction time, speed, strength were measured by conducting 10 yards shuttle run, Stork balance, bend and reach, standing broad jump (SBJ), Sargent jump(VJ), Nelson hand reaction, 30 meter dash, sit-up tests. Hicks clear skill test were used to assess the badminton skill of the selected subjects. Pearson Product moment coefficient of correlation with significant level at ($p < 0.05$) was used to examine the correlations between smash skill and agility, balance, flexibility, explosive power, reaction time, speed, strength. The analysis of data of boys badminton players revealed that clear skill was positively correlated with the strength ($r = 0.299$), and explosive power ($r = 0.388$), whereas agility ($r = -0.476$) was negatively correlated with the clear skill. No significant correlation was observed between speed, flexibility, reaction time, balance, leg power and clear skill of boys badminton players. The results in the case of girls badminton players shows that the clear skill was positively correlated with flexibility ($r = 0.541$), leg power ($r = 0.596$), explosive power ($r = 0.593$), and negatively correlated with the speed ($r = -0.381$), agility ($r = -0.669$). On the basis of results no significant correlation was observed between strength, reaction time, balance and clear skill of girls badminton players.

Keywords: Motor ability, Badminton, Boys, Girls, Delhi.

Introduction

Badminton is a moderately popular game in India and the level of success on the international level has been quite fluctuating. However on the domestic level, India has always been rich with the young talented badminton squad. These days India's domestic badminton circuit is teeming with a crop of talented youngsters who aspire to make it big at the international level. They draw inspiration from the feats of Indian badminton legends like Prakash Padukone and Pullela Gopichand who struck gold at the big stage. Read on to explore more about the famous badminton players in the country. The game of badminton has its roots well laid in the Indian soil. A descendent of Battledore and Shuttlecocks, the game was originally christened Poona. In the 1870s, British army officers played this game in the city of Pune in India, which was then called Poona and hence the game was also termed as Poona. Getting fond of the game, the British carried the equipment to their own country as well. Unlike the West, the game of badminton in India may lack the glamour and glitz which is mostly seen in cricket and tennis; it is still being taken up by a healthy number of youngsters across the country.

Objective of the study: The problem has been stated as the relationship between motor abilities and clear skill level of badminton players of Haryana.

Methodology and procedures: The study has been conducted on the sample of 60 badminton players (40 boys and 20 girls) which were selected from various badminton coaching centers of Delhi having age ranged between 13 to 16 years. Motor abilities namely agility, balance, flexibility, explosive power (SBJ&VJ), reaction time, speed, strength were measured by conducting 10 yards shuttle run, Stork balance, bend and reach, standing broad jump (SBJ), Sargent jump (VJ), Nelson hand reaction, 30 meter dash, sit-up test and Hicks clear test were

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used respectively to assess the badminton skill of the selected subjects. Pearson Product moment coefficient of correlation with significant level at ($p < 0.05$) was used to examine the correlations between smash skill and agility, balance,

flexibility, explosive power, reaction time, speed, strength.

Main findings

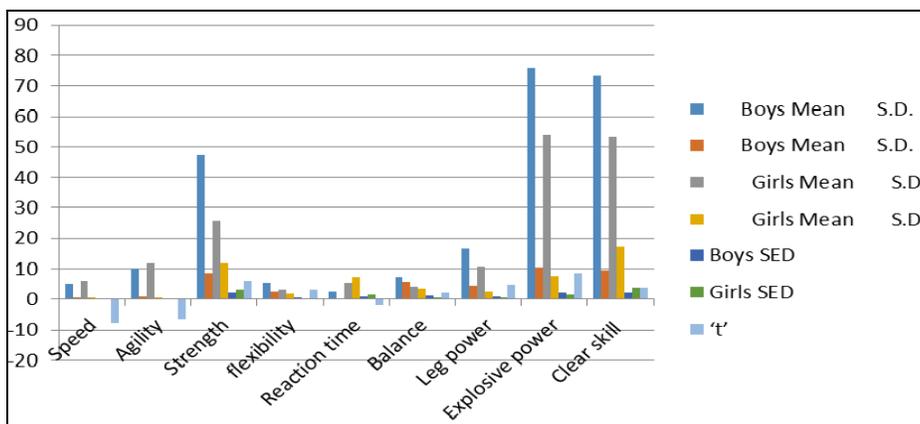
Table 1: Mean difference between the score of motor fitness and skill variables of boys and girls badminton players.

Sr. No.	Variables	Boys		Girls		Boys	Girls	‘t’
		Mean	S.D.	Mean	S.D.	SED	SED	
1	Speed	5.04	0.51	6.14	0.48	0.11	0.10	-7.742
2	Agility	10.20	0.88	11.78	0.55	0.17	0.12	-6.290
3	Strength	47.13	8.66	25.80	11.91	2.23	3.07	5.894
4	flexibility	5.30	2.54	3.20	1.93	0.55	0.42	3.073
5	Reaction time	2.60	0.38	5.54	7.45	0.85	1.62	-1.811
6	Balance	7.48	5.78	4.18	3.53	1.26	0.77	2.185
7	Leg power	16.61	4.51	10.92	2.64	0.98	0.57	4.711
8	Explosive power	76.1	10.62	54.1	7.52	2.31	1.61	8.570
9	Clear skill	73.38	9.51	53.38	17.08	2.07	3.72	3.900

*Significant $t_{0.05(58)} = 2.00$

Table 1 shows that the mean for speed (30 meter sprint) were 5.04second (S.D= 0.51) and 6.14 second (S.D= 0.48) for boys and girls badminton players respectively, and (SED) for boys 0.11 and girls 0.10 respectively. For agility (10 yards shuttle run) 10.20 second (S.D= 0.88) and 11.78 second (S.D= 0.55) and (SED) for boys 0.17 and girls 0.12 respectively. For strength (sit- ups) 47.13 (S.D= 8.66) and 25.80, (S.D= 11.91) and (SED) for boys 2.23 and girls 3.07 respectively. For flexibility (bend and reach test) 5.30 inch (S.D= 2.54) and 3.20 inch (S.D=1.93) and (SED) for boys 0.55 and girls 0.42 respectively. For reaction time (Nelson hand reaction scale) 2.60 second (S.D= 0.38) and 5.54 second (S.D= 7.45) and (SED) for boys 0.85 and girls 1.62 respectively. For balance (stork balance test) 7.48 second and (S.D= 5.78) mean 4.18

and (S.D =3.53) and (SED) for boys 0.26 and girls 0.77 respectively. For leg power (Sargent jump) 16.61 inch (S.D= 4.51), and 10.92 inch (S.D=54.1) and (SED) for boys 0.98 and girls 0.57 respectively. For explosive power (standing broad jump) 76.01 inch (S.D=10.62), and 54.1 inch (S.D=7.52) and (SED) for boys 2.31 and girls 1.61 respectively and clear skill 73.38 (S.D=9.51) and 53.38 (S.D=17.08) and (SED) for boys 2.07 and girls 3.72 respectively. The calculated t value for speed was -7.74*, agility -6.29*, strength 5.89 *, flexibility 3.07 *, reaction time -1.81, balance 2.185*, leg power 4.711*, explosive power 8.57* and clear skill 3.90*. The value of ‘t’ test was found significant at $p < 0.05$ level in case of speed, agility, strength, flexibility, reaction time, leg power, explosive power, clear skill and smash skill except the balance.



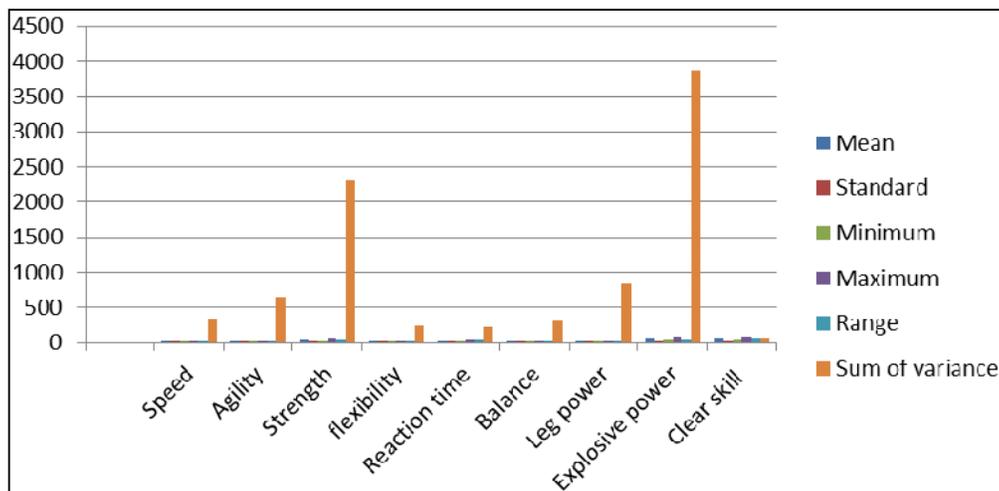
Graph 1: Mean difference between the score of motor fitness and skill variables of boys and girls badminton players.

Table 2: Descriptive Analysis of motor fitness variables and clear skill test of boys and girls of badminton

Individual Sports	Mean	Standard Deviation	Minimum	Maximum	Range	Sum of variance
Speed	5.73	0.76	4.48	7.53	3.05	344.21
Agility	10.85	0.93	8.99	13.01	4.02	651.43
Strength	38.38	13.40	11.00	62.00	51.00	2303.00
flexibility	3.97	2.41	0.78	11.00	10.22	238.76
Reaction time	3.62	4.57	1.80	32.00	30.20	217.60
Balance	5.13	4.78	1.01	20.00	18.99	308.23
Leg power	13.99	4.23	6.00	24.00	18.00	839.50
Explosive power	64.50	12.99	33.00	94.00	61.00	3870.00
Clear skill	66.11	16.85	30.00	93.00	63.00	66.116

Table 2 shows the Descriptive analyses of motor fitness and skill variables of both boys and girls badminton players have been presented in the table 2. Table 2 indicated the all boys/girls badminton players had mean, s.d, minimum, maximum, range and sum of squares of speed 5.73, 0.76, 4.48, 7.53,3.05 and 344.21 for 30 meter sprint, mean of agility was 10.85, 0.93, 8.99, 13.01, 4.02 and 651.42 for 10 yard shuttle run, mean of strength was 38.38, 13.40, 11.00, 62.00, 51.00 and 2303.00 per min for sit ups, mean of flexibility was 3.97,2.41,0.78,11.00,10.22 and 238.76 for bend and reach,

mean of reaction time was 3.62, 4.57, 1.80, 32.00, 30.20 and 217.60 sec for nelson hand reaction test, mean of balance was 5.13, 4.78, 1.01, 20.00,18.99 and 308.23 sec for stork balance test, mean of leg power was 13.99, 4.23, 6.00, 24.00, 18.00 and 839.50 inch for Sargent jump, mean of explosive power was 64.50, 12.99, 33.00,94.00,61.00 and 3870.00 inch for standing broad jump, mean of clear skill was 66.11, 16.85, 30.00, 93.00, 63.00 and 66.116 The graphical representation of data has been shown in figure 2



Graph 2: Graphical representation of Descriptive Analysis of motor fitness variables and clear skill test of boys and girls of badminton

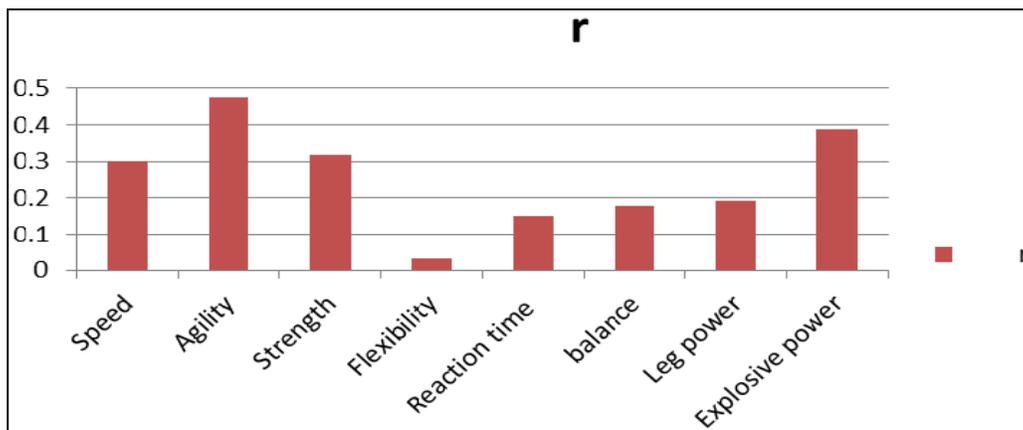
Table 3: Coefficient of correlation of clear skill to motor fitness variables of Boys badminton players.

Sr. No.	Variables	r
1	Speed	-0.299
2	Agility	-0.476*
3	Strength	0.318*
4	Flexibility	0.032
5	Reaction time	-0.151
6	balance	0.178
7	Leg power	0.193
8	Explosive power	0.388*

*Significant $r_{.05(38)} = 0.304$

The table 3 shows that there were significant relationships between motor fitness variables namely agility, strength, explosive power and clear skill of boy's badminton players. Table 3 indicated that the coefficient of correlation between clear skill and motor fitness variables namely speed (30 meter sprint), agility (shuttle run), strength (sit ups), flexibility (bend

and reach), reaction time (nelson hand reaction), balance (stork balance), leg power (sargent jump), explosive power (standing broad jump) for boys badminton players were $r = -.299$, $r = -0.476^*$, $r = 0.318^*$, $r=0.032$, $r = -0.151$, $r = 0.178$, $r = 0.193$, and $r = 0.388^*$ respectively. The graphical representation of data has been shown in figure 3.



Graph 3: Graphical representation of Coefficient of correlation of clear skill to motor fitness variables of Boys badminton players

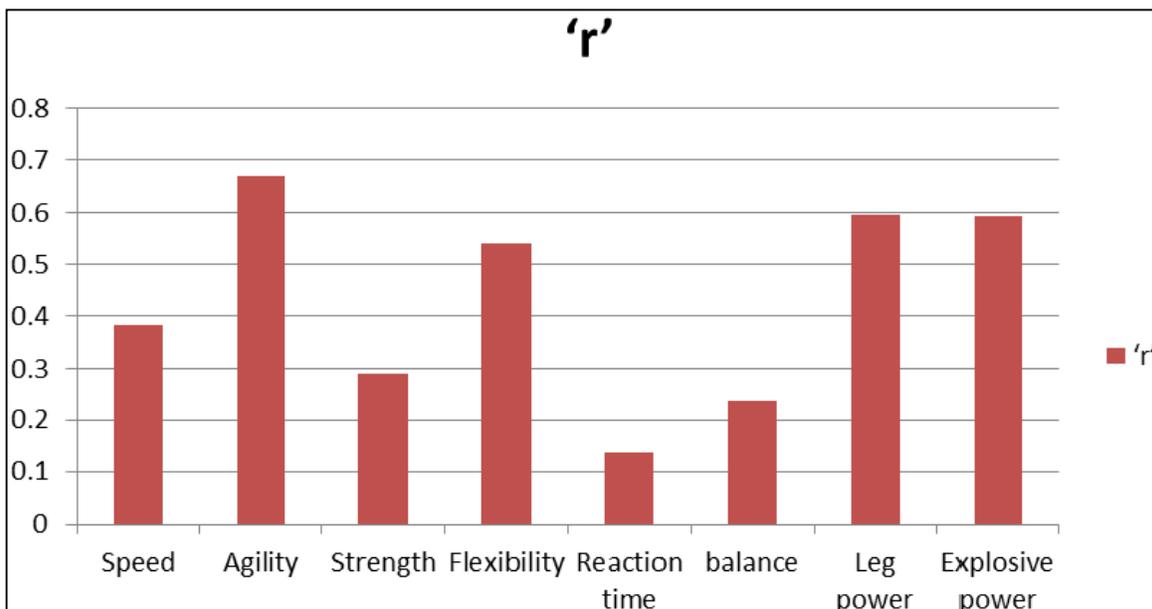
Table 4: Coefficient of correlation of motor fitness variables with clear skill of Girls badminton players.

Sr. No.	Variables	'r'
1	Speed	-0.381*
2	Agility	-0.669*
3	Strength	0.291
4	Flexibility	0.541*
5	Reaction time	-0.136
6	balance	0.236
7	Leg power	0.596*
8	Explosive power	0.593*

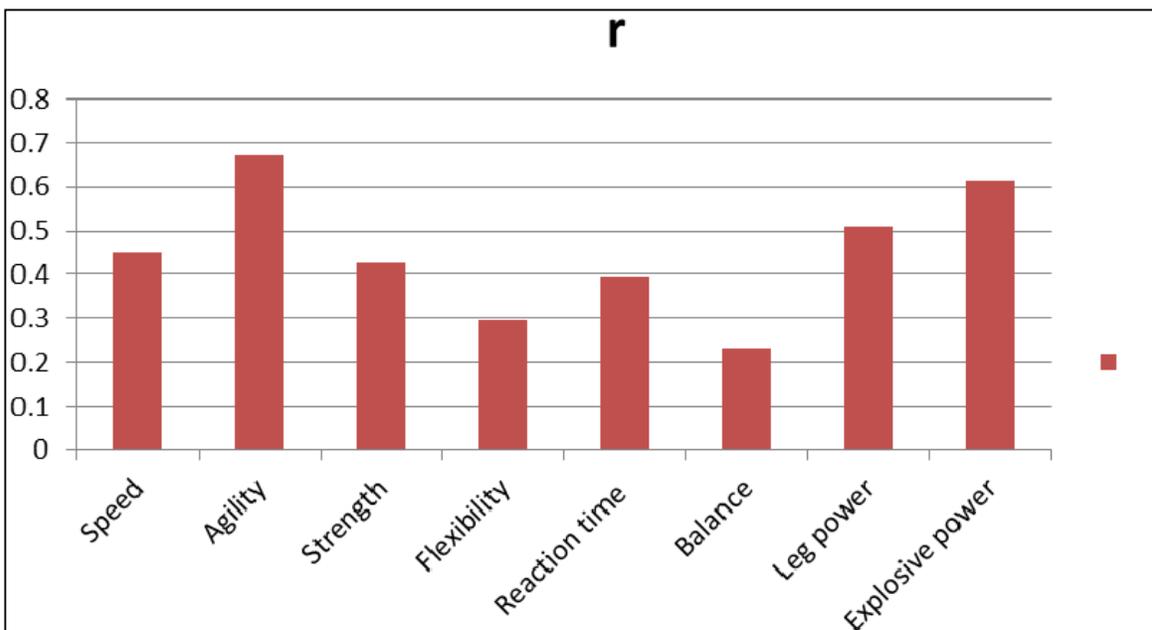
*significant $r_{.05}(18) = .444$

The table 4 shows that there were significant relationships between motor fitness variables namely speed, agility, flexibility, leg power, explosive power and clear skill of girl's badminton players. Table 4 indicated that the girls badminton players coefficient of correlation were -0.381*, -0.669*, 0.291, 0.541*, -0.136, 0.236, 0.596*, 0.593* for speed (30 meter

sprint), agility (shuttle run), strength (sit ups), flexibility (bend and reach), reaction time (nelson hand reaction), balance (stork balance), leg power (Sargent jump), explosive power (standing broad jump) with the clear skill. The graphical representation of data has been shown in figure 4.



Graph 4: Coefficient of correlation of motor fitness variables with clear skill of Girls badminton players.



Graph 5: Graphical representation of Coefficient of correlation motor fitness variables with clear skill of boys & Girls Badminton players

Table 5: Coefficient of correlation motor fitness variables with clear skill of boys & Girls Badminton players

Sr. No.	Variables	r
1	Speed	-0.450*
2	Agility	-0.67*
3	Strength	0.428*
4	Flexibility	0.295*
5	Reaction time	-0.397*
6	Balance	0.233
7	Leg power	0.510*
8	Explosive power	0.613*

*Significant $r.05(58) = .250$

The table 5 shows that there were significant relationships between motor fitness variables namely speed, agility, strength, flexibility, reaction time, leg power, explosive power and clear skill of all boys & girls badminton players. Table 5 indicated that the all badminton players coefficient of correlation for speed (30 meter sprint), agility (shuttle run), strength (sit ups), flexibility (bend and reach), reaction time (nelson hand reaction), balance (stork balance), leg power (Sargent jump), explosive power (standing broad jump) with the clear skill were $-.450^*$, -0.67^* , 0.428^* , 0.295^* , -0.397^* , 0.233 , 0.510^* , and 0.613^* with the clear skill. The graphical representation of data has been shown in figure 5.

Discussion of findings

The descriptive analysis of boys and girls badminton players reveals that there were significant difference obtained on speed, agility, strength, flexibility, reaction time, leg power, and explosive power, clear skill, and smash skill among boys and girls badminton players. No significant difference was observed between balance ability of boys and girls badminton players. The findings reveal that boys badminton players were superior in their motor abilities and skill than the girls badminton players. The analysis of data of boys badminton players revealed that clear skill was positively correlated with the strength ($r = 0.321$), and explosive power ($r = 0.385$), whereas agility ($r = -0.479$) was negatively correlated with the clear skill. No significant correlation was observed between speed, flexibility, reaction time, balance, leg power and clear skill of boys badminton players. The finding may be attributed to the fact that clear skill ability depends upon combination of various factors. The speed, flexibility, reaction time, balance, leg power correlated with clear skill ability may not show significant relationship because in present study each motor fitness variable was correlated with clear skill separately. The results indicate that clear skill ability can be improved by agility, strength, and explosive power.

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