Study on Effect of Physical Variables in relation to Skill Performance of Ball badminton Players

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Abstract

This study examined the effect of physical variables in relation to skill performance of ball badminton players of Annamalai University, Chidambaram, India. Forty-one ball badminton players were randomly selected. Physical variables such as agility, explosive power, flexibility, and skill performance variable High spin twist service was considered. The tests selected for the physical fitness variables for hand explosive power was explosive power push up jump; agility, 6×10 m shuttle run; flexibility, bend and reach test and P. Raj Kumar and Kalidasan R. skill test battery in ball badminton was used to analyse the skill performance high spin twist service the subjects were assessed in physical fitness variables (Explosive power) In relation to high Spin Twist Service. Pearson product moment correlation was applied to find out the relation between physical variables and performance variable (High spin twist service). Mean, Standard deviation, correlation and multiple regression was with the level of significance at 0.05. High spin twist service was positively correlated with explosive power at (r=0.99) which shows a high correlation of 99%. A player can excel in high spin twist service if he has good hand explosive power. It was concluded that a meaningful relationship was found between Explosive power and skill performance - ‘High Spin Twist Service’ among the ball badminton players. Also, no other physical variable aspects have positive relationship with the skill performance- ‘High Spin Twist Service.’

Keyword: Ball badminton, Explosive power, High spin twist service
Introduction:

History of Ball badminton

Ball badminton originated in Thanjavur, in Tamil Nadu. It became popular, commanding the interest of the Maharaja of Thanjavur. The game has attracted numerous players from southern India [1].

“Ball badminton is a competition originally from India. It is a racket game played on a court of set dimensions (12 by 24 metres) separated by a net with a yellow ball made of cloth. A shuttlecock (also called a pigeon or birdie) is a projectile with high drag that is used in badminton sport. It has an open conical shape shaped by feathers that are embedded in a rounded cork (or rubber) base. Ball badminton helps you sharpen the core analytical abilities. It involves sharp thinking, listening, and exercising sound judgment. It needs play by two players or two pairs of players” [2].

“The serve is the only skill controlled solely by one player. A player’s serve will dramatically affect the outcome of the volley and then of course the outcome of the game” [3]. Explosive power is a term derived from the word explosion (Britain) which means the eruption, and adapted into Indonesian to express the events that are an element of an eruption or explosion of limbs such as arms, where it involves an element of strength and speed. In the field of sports explosive term is often used as a substitute for the word power. As proposed by Harsono (1988:200) as follows: Power is especially important for those sports where athletes must direct the explosive force as the numbers in the athletic throwing and pitching soft ball. Explosive power capability is also known by the term muscle power, it is worth advanced by Abdul Kadir Ateng” [4,5]. There are very few studies conducted on ball badminton so the results of the present study will supply useful data to ball badminton trainers about the importance of the physical variables about skill High spin twist service.

II. Methods

This study examined the physical variables-hand explosive power, agility, flexibility in relation to skill performance-high spin twist service of ball badminton players. Annamalai University, Chidambaram, India. Forty-one ball badminton players were randomly selected

Variables: Independent Variables

Physical variables

- Agility,
Hand Explosive power,
Flexibility

Skill performance variables

Dependent Variable

High spin twist service

Physical variables agility, explosive power, flexibility was measured using the following tests selected for the physical fitness variables were “The purpose of Push up Jump was to measure the explosive force of an arm muscle”[6]; agility, 6×10 m shuttle run; flexibility bend and reach test, P. Raj Kumar and Kalidasan R. skill test battery in ball badminton was used to analyse the skill performance such as High spin twist service Over-arm volley [7].

Statistical Analysis

To fix the relationship between criterion variable and independent variables Pearson product moment correlation was used and multiple regressions was also used for calculation. In multiple regressions, a criterion variable was predicted from a set of forecasters. Forward selection method of multiple regressions was used in this study to find out the forecaster variable that has the highest correlation with the criterion variables and it is entered into the equation first. The rest variables are entered into the equation depending on the contribution of each forecaster. In all the cases 0.05 and 0.01 level of significance was fixed to test the hypothesis. The statistical outcome are the centres for the final elaboration of the data and the related hypotheses.

III. Result

Descriptive Statistics

The mean and Sd values on selected physical fitness Components and service ability of ball badminton players have been shown in table-I

Table I- Mean and Standard deviation on Physical fitness variables and High spin twist service variables of badminton

<table>
<thead>
<tr>
<th>Physical Fitness Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Number of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agility</td>
<td>36.48</td>
<td>36.50</td>
<td>41</td>
</tr>
<tr>
<td>Flexibility</td>
<td>13.45</td>
<td>13.45</td>
<td>41</td>
</tr>
</tbody>
</table>
Prediction

To fix the relationship between dependent variable and independent variables Pearson product moment correlation was used. The computation of multiple regression was also used. In multiple regression, the predicting a criterion variable from a set of predictors. Forward selection method of multiple regression was used in this study to find out the predictor variable that has the highest correlation with the criterion variables is entered into the equation first. The rest of the variables were entered into the equation depending on the contribution of each predictor. The data on selected physical fitness components and skill performance variables service in ball badminton were statistically analysed by using Pearson product moment correlation and the results is presented in table-III.

Table III Pearson coefficient correlation matrix between criterion (Physical fitness independent (High spin twist service) variables of badminton players

<table>
<thead>
<tr>
<th></th>
<th>Agility</th>
<th>High spin Twist Service</th>
<th>Explosive power</th>
<th>Flexibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agility</td>
<td>1</td>
<td>.019</td>
<td>-.297</td>
<td>-.030</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.909</td>
<td>.059</td>
<td>.850</td>
</tr>
<tr>
<td>High spin Twist Service</td>
<td>.019</td>
<td>1</td>
<td>.339*</td>
<td>-.245</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.909</td>
<td>.030</td>
<td>.123</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>41</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Explosive power</td>
<td>-.297</td>
<td>.339*</td>
<td>1</td>
<td>-.136</td>
</tr>
<tr>
<td></td>
<td>.059</td>
<td>.030</td>
<td>.396</td>
<td></td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>41</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Flexibility</td>
<td>-.030</td>
<td>-.245</td>
<td>-.136</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>.850</td>
<td>.123</td>
<td>.396</td>
<td></td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>41</td>
<td>41</td>
<td>41</td>
</tr>
</tbody>
</table>
It is evident from table-III that there was significant positive relationship between high spin twist service and explosive power with $0.339P<0.05$ and High spin twist service and flexibility were not correlated.

Multiple regression equation was computed because, the multiple correlation is sufficiently high to warrant prediction from it. Then, the correlation identifies the independent variables to be included and their order in the regression equation. Multiple correlation was computed by forward selection method on data obtained and the results is presented in table-IV.

Table IV Pearson Coefficient Correlation Between Criterion Variable ' High spin twist service ' and Independent (Physical fitness) Variable variables of badminton

<table>
<thead>
<tr>
<th>Variables (Forward Selection)</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>R Square Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosive power</td>
<td>0.99</td>
<td>0.99</td>
<td>0.99</td>
<td>0.99</td>
</tr>
</tbody>
</table>

a. Predictors: Explosive power  
b. Dependent Variable: Service  
c. Linear Regression through the Origin

Table V Analysis of Variance between Regression and Residual between Skill Performance- High spin twist service and Selected Physical fitness Variables of badminton

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2253.67</td>
<td>1</td>
<td>2253.67</td>
<td>2972.32*</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>30.32</td>
<td>40</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2284.00</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results presented in Table V proved that the obtained F value of 2972.32 is higher value than the required table F value and the difference between regression and residual was significant. Hence, the obtained Multiple R value of 0.99 was significant at 0.05 level.

From the table-IV it was found that the multiple correlation coefficient for predictors
explosive power is 0.99 which is highly influencing which produce highest multiple correlation with High spin twist service ability. R square values showed that the percentage of contribution of predictors to the playing ability. 99% of influence is in is by explosive power towards the performance variable service. Figure-I Shows the percentage of regression standardised residual.

IV. Discussion

The results were consistent that Explosive power would be an indicator of High spin Twist Service performance in ball badminton player. Few studies are in line with the present study. In order to achieve a body composition that promotes maximum Explosive power muscles have a significant relationship with the service capabilities[8].“findings in this study stated that there is a significant relationship (significant) arm muscle explosive power and concentration together with the ability to serve up volleyball student of Physical Education Faculty of Sport Science, State University of Padang, as well as contributing amounting to 21.34%”.[9]. That is jointly arm muscle explosive power and concentration have significant relationship and accepted as true by empirical with the ability to serve up volleyball [10]. From the results of the obtained explosive power of arm muscle contributed significantly to smash playing ability of badminton players [11]. The coefficient of correlation of speed (r =-0.667), agility (r =-0.83), explosive strength (r =0.55), shoulder strength (r =0.69) and muscular endurance (r =0.75) were significant with Badminton Players performance at 0.05 level of confidence.

V. Conclusion:
It was concluded that there was a significant relationship between Explosive power and skill performance - ‘High Spin Twist Service’ among the ball badminton players. Also, no other physical variable aspects have significant relationship with the skill performance - ‘High Spin Twist Service.’

VI. References

1. ""Game history" on Ball Badminton Federation of India website". Archived from the original on 3 December 2009. Retrieved 31 August 2010.


