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Determination factors of badminton game performance

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Abstract
The characteristics of badminton game in order to determine the requirements, structure, and movements that indicate performance level. The finding of the study is to plan with greater precision to determine the factors affecting the game performance. Sixteen female badminton players (mean age 22.8 ±2.16 years) with state level experience from different district of West Bengal were studied. Coordinative and technique ability were measured in relation to badminton game performance. The correlation results of the study was confirmed that coordinative and technique ability were equally intense to the high demands of the badminton sport.

Keywords: Determination factors, female badminton players, technique ability, performance

Introduction

Badminton sport is characterized variety of actions of short duration and high intensity coupled with a short resting time. The number of different shots used during a game can vary a lot by allowing numerous tactical choices. This sport has requiring a specific preparation in terms of patience, control and motor actions. Coordinative factors such as reaction time, foot stepping and balances are essential motor characteristics in this sport. During game, rally start with a service and a control service often dictated who will be won the rally. The three most popular strokes are the smash, the clear and the drop, however, Ming *et al*. (2008) showed that stroke repartition with more clears, lobs and net shots. After reviewed research literature concerning the relationship of various factors with the badminton game performance, the investigator interested to study the coordinative ability and technique efficiency in relation to badminton game performance.

Methodology
Subjects
A total of sixteen female badminton players, age ranging between twenty to twenty five years were voluntarily participated as the subjects in this study. Shuttlers have represented senior state ranking badminton championship conducted by West Bengal State Badminton Association.

Criterion Measure
The criterions were selected from two different groups of factors.

Coordinative Ability	Side Step Jump test	Modified Bass test of Dynamic Balance	Nelson Hand Reaction Test	Nelson Foot Reaction Test
Badminton Technique Ability	French Short Service test	French Long Service test	Poole forehand clear test	Poole back hand clear test

Badminton game performance of the players was measured out of ten points by a panel of three qualified coaches during actual competition and the average of three scores was considered as game performance of the badminton players.

Statistical Analysis
The collected data were analyzed as the measure of central tendency and variability respectively. To find out relationship the co-efficient of correlation was formulated.

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Results

Numerical scores for each of these parameters were considered as the data for the present study.

The relationships between selected coordinative ability parameters and badminton game performance have been presented in Table – 1.

Table 1: Co-efficient of Correlation between Selected Coordinative parameters with Badminton Game Performance

Co-efficient Correlation between Coordinative ability parameters with Badminton Game Performance (N= 16)	Co-efficient Correlation(r)	P Value
Side Step Jump	0.499*	0.049
Dynamic Balance	0.502*	0.047
Hand Reaction Test	0.562*	0.023
Foot Reaction Test	0.619**	0.010

*Significant at 0.05 level. **Significant at 0.01 level. Mean value of Badminton game performance was 6. 33.

Table – 1 indicated that badminton game performance was significantly related to side step jump (0.049level), dynamic balance (0.047 level), hand reaction test (0.023 level), foot reaction test (0.010 level).

Graphical representations of Table-1 have been showed in Fig. no 1.

Fig 1: showed graphical representations of co-efficient correlation between selected Coordinative ability parameters with Badminton Game Performance.

Table–2 represented the relationships between selected Badminton technique ability and badminton game performance.
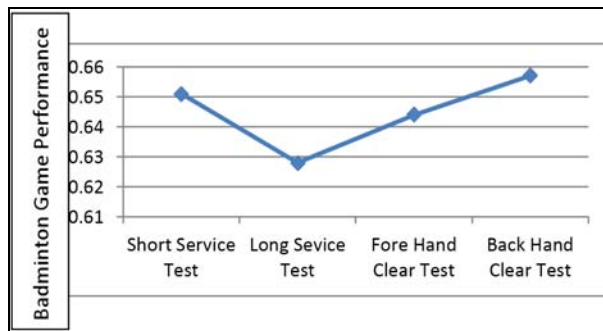
Table 2: Co-efficient Correlation between Selected Badminton technique ability with Badminton Game Performance

Co-efficient Correlation between Badminton technique ability with Badminton Game Performance (N= 16)	Co-efficient Correlation(r)	P Value
Short Service Test	0.651**	0.006
Long Service Test	0.628**	0.009
Forehand Clear Test	0.644**	0.007
Backhand Clear Test	0.657**	0.005

*Significant at 0.05 level. **Significant at 0.01 level. Mean value of Badminton game performance was 6.33.

Table – 2 indicates that badminton game performance was significantly related to short service (0.006level), long service (0.009level), forehand clear (0.007level) and backhand clears (0.005level) strokes.

Graphical representations of Table-2 have been showed in Fig. no 2.

Fig 2: showed the graphical representation of co-efficient correlation between selected Badminton technique ability with Badminton Game Performance.

Discussion

The findings of the present study showed that selected coordinative and technique abilities were significantly related to badminton game performance. On the basis of review of literature the investigator opined that badminton game is changing over the last two decades. Match analysis system has become very noticeable that players seem to be working more intensely and covering more distance on the court. Badminton is a skilled based sport, all about technique, decision making and creative play. It is a continuous, multi-directional, multi-paced sport. The resting time become shorter and higher the rally time is common phenomena in modern badminton game. The number of shots per rally is in accordance with the literature, showed mean values ranging between 6.6 to 12.7 shots per rally (Abian-vicen et al., 2013; Cabello and Lees, 2004; Chen and Chen, 2008; Faude et al., 2010). Concerning the stroke distribution it was revealed that the clear is a key stroke which prolongs the rally time. This means that the clear shot is used for tactical purposes, either to wait for an inaccuracy of the opponent or used to exhaust the opponent when necessary. To sustain in rally, it is obvious that coordinative abilities and different controlled stroke play has a great role on badminton game performance.

Conclusion

Within the limitations of the conducting the present study the following conclusions were drawn:

i) Badminton game performance was significantly related to coordinative abilities.

ii) Selected coordinative abilities in this study vis. side step jump, dynamic balance, hand reaction, foot reaction were significantly related to badminton game performance.

iii) Significant relationship was found between badminton game performance and the badminton strokes variable.

iv) Selected technique variable in this study vis. short service, long service, forehand clear and backhand clear strokes were significantly related to badminton game performance.

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