

Analysis of game performance factors in youth badminton players

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ABSTRACT

Badminton is considered as the fastest racquet sport in the world with its dynamic, speed of execution, high-paced and energetic rallies. To win a rally or game, badminton players need to repeat actions in a short time with high speed and intensity. The purpose of the present study was to find the analysis of game performance factors in youth badminton players, of female players of East Zone Inter University Badminton Championship Women in 2022, Chhattisgarh, India. Thus, a total of 30 players from Eight universities served as subjects. The Championship was done in women age group 18 to 27. The sample of the study 30 women. To find out relationship between Skill performance and unforced errors of female single badminton players the Pearson's product moment co-efficient of correlation was formulated. The results of the present study indicate that there was a no significant relation found ($r = 0.27, 0.26, - 0.15$) in total skill performance and unforced errors.

Keywords: Badminton Player, Singles, Skill performance and Unforced errors

INTRODUCTION

Sport has very prominent role in modern society. It is important to an individual, a group, a nation indeed the world. The world sport has a popular appeal among people of all ages and both sexes. At the moment, there aren't enough assessments of potentially pivotal moments during a badminton rally to be considered essential. **Gawin et al. (2012)** developed a technique for assessing pivotal shots, or "key plays," in their examination of the 2012 Olympic Games. They classified a key play into one of the following categories: half-court, attack, defence, rally opening, or net game. They described a key play as a moment in which the point is won or lost. The operationalization and amount of information, for instance, are two areas where this technique and the one suggested in this paper diverge greatly.

The game of badminton is incredibly adaptable and requires a great deal of physical, physiological, psychological, technical, and tactical skill. Artificial neural network-based machine learning methods offer potentialities in analyses several-context and multiple-variable categorical including physical, psychological, and skill attributes data sets. Using case studies, such deep learning frameworks, for example, have been used to investigate the correlation between the strokes and the outcome of the rally in the badminton sport pattern, which cannot be easily identified (**Zhang et al., 2021; Patel et al., 2023**).

The ability to cover the short distance quickly will also be of great advantage to badminton player (**Toddd & Mahoney, 1995**). Due to the nature of the game and the size of the court, it is crucial for the badminton players to reach his/her maximum speed as fast as possible. Thus, the finding of this research is in agreement with previous researches. Similar-skilled players must attempt to gain an advantage during the rally, for example, by making quick, accurate shots to the pitch's edges. In an advantageous circumstance, one player has enough of time while the other player has insufficient time for the shoot. This advantage is typically related to the amount of time available for a shot, which has already been examined by others for other sports (**Vilar et al., 2013; Vučković et al., 2013**). This advantage can be counterbalanced by strong defending strokes from the opposition or turned into a point in the subsequent shots (for example, by crushing a shuttle that was returned too high and close to the net). In a badminton rally, the perturbation is represented by the shot that generates the advantage, or, to put it another way, shifts the dynamic system

from a balanced state to one of instability. Furthermore, as they cause the system to enter an attractor state right away, unforced errors and direct winners from a balanced scenario are likewise regarded as disturbances. We contend that the most crucial element in winning badminton is the capacity to cause disruptions that work in one's favour while preventing the opponent from doing the same. For performance analysis, this makes the study of perturbations and how they might be achieved a promising topic.

MATERIALS AND METHODS

Participants

All the women badminton players who played in singles matches from their teams against them in the West Zone Inter University Tournament organized by OP Jindal University, Raigarh, Chhattisgarh East Zone Inter University Badminton Championship Women in 2022 was selected to serve as the subjects for this study. Thus, a total of 20 players from Eight universities served as subjects. Age of the subjects ranged between 18 to 27 years.

Study variables

For the present study different types of skill performance such as Drop Shot, Smash shot, Forehand Drive, Backhand Drive and Net shot and unforced errors such as Serve Failure, Stroke Out and Stroke get caught in the net of badminton players and their opponents in singles matches against different teams was used for collecting data was listed below.

Procedures

Further data on different types of strokes and unforced errors of different universities badminton players and their opponents in single matches against different teams was collected during east zone inter university badminton championship women in 2022. Total numbers of difference types of strokes and unforced errors committed by the winner and loser badminton players in singles for each match were recorded. Thus, a total of singles matches was recorded for analysis of data on different types of strokes and unforced errors. Video recordings of the total of 18 matches were collected with total 34 games eventually analyzed.

Statistical analysis

To find out relationship between Skill performance and unforced errors of female single badminton players the Pearson's product moment co-efficient of correlation was formulated. In all cases the criterion for statistical significance was set at 0.05 level of confidence.

RESULTS

Table 1: Pearson's product moment correlations between unforced errors and skill performance variables of Winners

Unforced Errors	Skill performance variables					
	Drop Shot	Smash Shot	Forehand Drive	Backhand Drive	Net Shot	Skill total
Serve failure	0.48	0.35	- 0.01	0.37	- 0.12	0.27
Stroke out	- 0.53	0.04	0.30	0.46	0.27	0.26
Stroke get caught in the net	0.32	- 0.20	- 0.58	0.46	0.09	- 0.15

**Significant at 0.05 level $r_{0.05(06)} = 0.707$*

The correlation coefficients observed between unforced errors and skill performance variables were found to be non-significant.

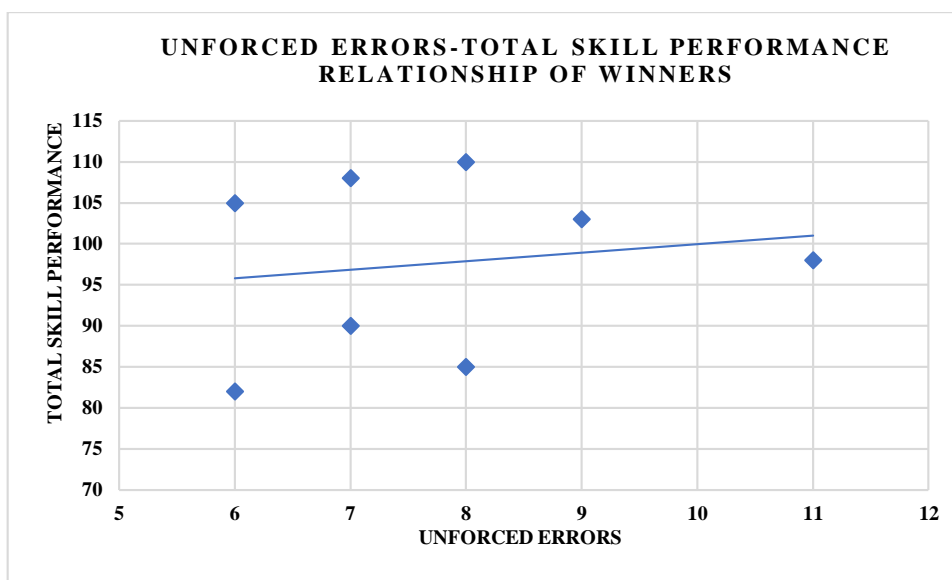


Figure 1: Scatter gram between unforced errors and total skill performance of Winners

DISCUSSION

The results of this study demonstrated a substantial relationship between selected total unforced errors and badminton game performance. The researcher concluded that badminton has changed over the past 20 years based on an examination of the literature. It's clear from match analysis that players appear to be putting in more effort and traveling farther on the court. As a skill-based sport, badminton is all about technique, judgment, and imaginative play. The sport is multidirectional, multipaced, and continuous. In contemporary badminton games, the phenomena is more prevalent the longer the rally duration, and the shorter the resting time. With mean values ranging from 6.6 to 12.7, the number of shots per rally is consistent with the literature (**Abian-vicen et al., 2013; Cabello and Lees, 2004; Chen and Chen, 2008; Faude et al., 2010**). The clear is a crucial stroke that extends the rally time, according to the stroke distribution. This indicates that the clear shot is employed tactically, either to wait for an opponent error or, if required, to exhaust the opponent. It is clear that coordination skills and various controlled stroke play are crucial for maintaining a rally in badminton.

A recent study comparing the temporal new and conventional scoring structure of the revealed that rally times were significantly and the number of shots per rally greater in matches played under the new scoring system. **Lee et. al (2005)**, in their study the result showed that the top three most popular shots used were clear, lift and net. In order to determine the most crucial stratum for gauging achievement, new contingent variables such as endurance, goals, and smashing potency were investigated. This data backs up earlier research by **Patel et al. (2023)** and **Smith et al. (2020)**. A key component of winning sets in professional Badminton is avoiding unforced errors. Regardless of the game scenario examined, the study's findings indicate that players who won the set made less unforced mistakes than those who lost the set. Athletes should therefore collaborate closely with their coaches to create practice tactics that reduce unintentional mistakes in order to increase their chances of winning games. Coaches and athletes could, for example, watch practice or competitive games, spot unforced errors, and figure out how to get better (**Garca-González et al., 2014**). Coaches could also suggest exercises where unforced errors are tracked and penalized (**Low et al., 2023; Stoker et al., 2016**). Given the lack of data on the effects of particular drills and training regimens in improving technical-tactical abilities, more research in this area is necessary (**Sánchez-Pay et al., 2020**).

CONCLUSIONS

This research study can be concluded by saying that the winning team in the game of badminton match was the team who committed fewer unforced errors. The player who committed fewer unforced errors had greater chance of winning the match. The stroke which produced most points was unforced error committed by the opponent. No significant relationship was found between the number of unforced errors and skill performance of winner and loser female badminton players.

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