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Movement pattern in term of court coverage among top international male and female badminton players during BWF World Championships 2013

Frederick Josue@Mohd Fadhil Abdullah[1,2], Izwyn Zulkapri[1], Kamaruzaman Soeed[1], Iqbal Tariq[1]

[1]Sport Innovation and Technology Centre (SITC), Universiti Teknologi Malaysia, Malaysia
[2]Faculty of Sports Science & Coaching, Universiti Pendidikan Sultan Idris, Malaysia

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Abstract

The aim of this study are to identify the movement patterns of top international male and female badminton players in term of their court coverage. Twenty games (n=20), ten each from the males and females single of the World Championships 2013, were chosen for this study. The subjects were all elite athletes from the various countries' national squads. All games were analysed using Sports code Pro, which was recorded by Astro Beyond. Then, the researcher is required to identify the specific movement patterns especially on court. Finally, the movement patterns and direction movement of athletes on court were identified and analysed. From the results of this study, we can see that the opponents will try to send the shuttlecock to the sites far from the players to earn advantages. It is a need for the badminton players to have a proper physical conditioning training in order to increase their performance and at the same time reduce the risks of injury.

Keywords: badminton, movement pattern, court coverage

INTRODUCTION

Badminton is a highly exclusive sport that involves a unique movement technique on a relatively small court area (MG Hughes, Reilly, Hughes, & Lees, 1995). It is a brief sport that requires a long period of high intensity exercise interspersed with rest periods (Faccini & Dal Monte, 1996), and entails quick and strong movement of both lower and upper body parts (MG Hughes et al., 1995; Nadzalan, Mohamad, Lee, & Chinnasee, 2018).

Since its inclusion as an official sport in the 1992 Olympic Games in Barcelona, badminton has increased its popularity worldwide. Badminton is an intermittent sport

characterized by multiple intense actions (Sturgess & Newton, 2008) including fast accelerations, decelerations and many explosive movements with changes of direction over short distances.

Performance analysis has become an important role in giving feedbacks through videos and computerized software. The use of this knowledge gives important feedback in organizing team such as coaches and athletes. Previous studies have demonstrated the importance of match analysis in aiding the tactical, technical and training plan in sports. Match analysis in sports will help to give information on the playing pattern, physiological and psychological stress of the performers.

Playing patterns in badminton have been investigated in several previous studies (Abdullahi & Coetzee, 2017; Laffaye, Phomsoupha, & Dor, 2015). Due to its ability to help players to develop the technical, tactical and training plan, playing patterns analysis was thought as one of the methods that should be enhanced. It is the aim of this study to analyse the playing pattern during several selected men's single badminton matches during the BWF World Championships 2013.

METHODOLOGY

This study was considered as an observational study as researchers want to identify and compare the movement patterns between male's single (MS) and female's singles (FS) in the current top international badminton players. Twenty games (n=20), ten each from the males and females single of the World Championships 2013, were chosen for this study. The subjects were all elite athletes from the various countries' national squads. All games were analysed using Sports code Pro, which was recorded by Astro Beyond. Then, the researcher is required to identify the specific movement patterns especially on court. Finally, the movement patterns and direction movement of athletes on court were identified and analysed.

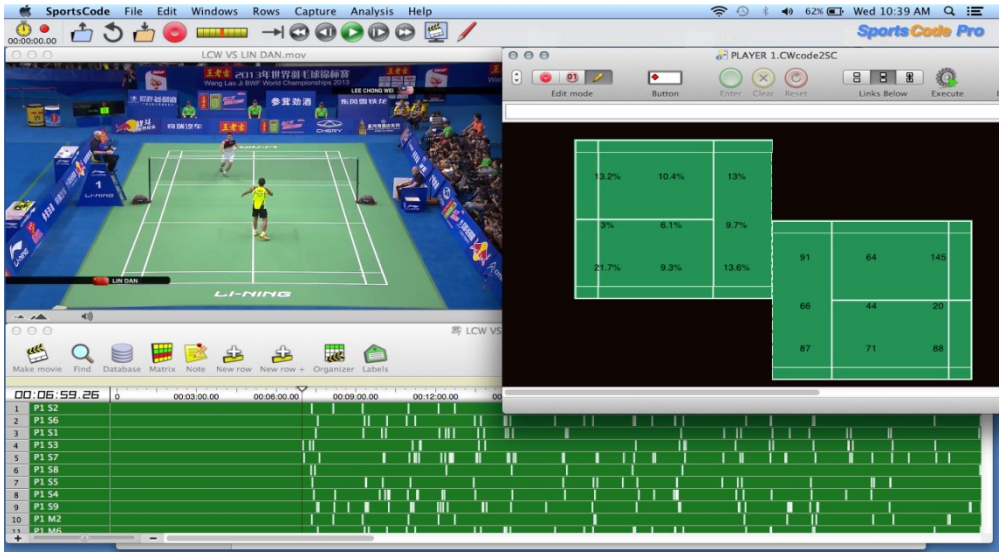

Figure 1: Structures of coding templates

RESULTS

Table 1 showed the percentage of shots from the various court areas. The results showed the most shots were played from the frontcourt (69.40%) followed by the backcourt (49.93%) for males. This is an indication that males hit the shuttle to the net more often. On the other hand, females had a higher mean of shots played from the frontcourt (29.93%) than backcourt (29.20%). The detailed overall average shows that most shots were played at the frontcourt left area 1 (53.10%) and backcourt right area 9 (52.95%). Descriptive analysis shows significant differences between the average percentage of shots from front (49.66%), mid (36.36%) and backcourt (39.56%) as presented in Table 1.

Table 1: Percentage of shots from the various court areas (n=20, Male=10, Female=10)

Area	**Front Court**			**Middle Court**			**Back Court**		
Male	69.4			49.86			49.93		
Female	29.93			22.86			29.20		
Average	49.66			36.36			39.56		
Area	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Male	74.30	65.90	68.00	52.10	47.00	50.50	55.80	23.50	70.50
Female	31.90	26.90	31.00	27.60	16.10	24.90	32.90	19.30	35.40
Average	53.10	46.40	49.50	39.85	31.55	37.70	44.35	21.40	52.95

DISCUSSION

Despite being a very famous sport that has been competed in the Olympic Games since 2000, not much study has been conducted on the playing pattern among badminton players. The knowledge is important, as information about the playing pattern can give knowledge on what should be focused during training. For example, how many lunges movement are performed in a match will show the importance of including lunge exercise during the physical training session (Nadzalan, Abdullah, et al., 2018). To be more specific, in which direction the lunge was done will then affect the type of lunge performed during training. Specific to this current study, how player move in a game will show the importance of training specific related fitness. Badminton is a dynamic and really fast sport. Proper use of tactics are important to obtain points to win the match. In order to plan the tactics, it is important to know how the pattern of movement in the game. Thus, it is important for research to be conducted in badminton playing pattern. To obtain the playing pattern analysis, notation method has been widely used (Abdullahi & Coetzee, 2017; Mike Hughes & Bartlett, 2015).

What we can see from the result, male were shown to have played more at the front court compared to the middle and back court which were found not to be so much difference. At the front and middle court, we can see that more number of playing at area 1 and area 4 respectively. At the backcourt, male were more prone to play at area 9. Female were shown to have played more at the frontcourt and backcourt compared to the middle court. As what found among male, female mostly played in area 1 at the frontcourt, area 4 at the middle court and area 9 at the backcourt. In average, we found that most playing were found at the frontcourt. Looking at each part of court, most playing was at area 1 for frontcourt, area 4 for middle court and area 9 for backcourt.

The findings of this study suggested that the players preferred to return shots at the opponent's forecourt as that area might be safer and offensive. Playing near the courts enable the player to prevent dangerous shot from the opponent. Goods shots near the net that followed by blocking will cause the opponent have to return the shuttlecock high, thus increase the chance for the players to attack. The players tend to return more shots at the fore court compared to mid and rear part of court as a way to play offensively. This showed that players especially that were at the front during that time need to response quick as slow movement will cause they to be in disadvantages position and can cause to unable to return the shots. Analysis further revealed that opponents will tend to return the shuttlecock at the front part (mostly at the net) so that the players will go in front. As the opponent blocked, the players seems to be out of chance and had to lift the shuttlecock up, thus causing the opponent to get in offensive play, that is to smash. The opponents performed smash that resulted the players unable to prepare to return the shuttlecock back.

Tong and Hong (2000) suggested that the lob was the most preferred return shots used by the players, followed by the smash, net and clear. The smash was the most used skill to shot to kill and win a rally followed by net and hit. More male badminton single players would rather serve low-short shots as a way to enhance their offensive chances. Of all the 'effective' shots, only 'unconditional winner' demonstrate significant difference between loser and winner, thus reflecting the fact that the attack and pressure style of play was the most effective strategy for the high level badminton players to win a game. Relating this to the current study, players in the current study were believed to adopt the same match play, by returning shuttlecock to the front court, before causing the opponent to lift the shuttlecock to give the chances for the player to perform smash.

Besides fore court, players also played at the back court. Performing backhand at the rear court was believed to be one of the most disadvantages shot (Breen & Paup, 1983; Poole, 1991; Tong & Hong, 2000). When playing backhand stroke, player need to twist the body and the change their grip from forehand to backhand position causing more time needed to get into ready position for the next shot. Additionally, backhand stroke is believed to be less powerful compared to the forehand stroke, thus the opponent will get more opportunity to offense. (Tong & Hong, 2000) study revealed that of all returns in the matches that they analyzed, 51.94% were sent to the backhand site, demonstrating that offensive players would rather return the shots at left rear, left mid and left fore court for the right-handed players. They also showed that among the six areas in the court, returns from the left rear court had the greatest number of 'ineffective' shot. This showed that the backhand rear court tend to be the weakest shot even among high level players.

Findings by Tong and Hong (2000) in ten selected matches during 1996 Hong Kong Badminton Open Tournament demonstrated that the greatest number of ineffective shots occur at the left rear part, while the greatest number of effective shots occur at the left forecourt. The number of 'conditional winner' was much lower than the number of 'unconditional winner' for the whole court. Mid court was found to be the site of the highest number of 'unconditional winner' shots. Additionally, 'forced failure' shots was found to be mostly happened at the mid-court while 'unforced failure' shots was found to be greatest at the rear court.

In another study, Abdullah et al. (2018) in their study analyse the patterns of playing during a men's single badminton matches at the BWF World Championships 2017. The study calculated the means of effective and non-effective shots performed. The effective returns were showed based on court position. Based on the results, most of the smash was found to be targeted at the rear part of the court. Drop has been found to be less performed, however most drop was performed when the player are at the rear part of court. Besides that, Abdullah et al. (2018) also found that net and lobs are the other return methods to be used. Based on the

analysis, the authors suggested that players need to have good ability to move in different directions in a quick manner, with reaction time played big important role in order for the players to reach the shuttlecock that were sent to the front, back and side of the court. Without good agility, players definitely will not be able to prepare and could cause them to lose many points that will later bring to lose in the match.

In contrast to findings of this current study, Oswald (2006) in his study demonstrated that majority of the shots were played in the midcourt area, focusing with over than 25% at the left midcourt. The rear part of court was the second followed by the fore court. Austrian top players tend to send the shuttlecock nearly 30.3% at the left rear court with an attack clear. However, international top players only performed 14.4% to the same site with the same shot. International top players were found to hit 37.7 % of the strokes with the smash. At the right rear court, Austrians players hit 33.5% of the shuttlecock with drop shots, while international players hit 41%. Drop shot was found to be the most used strokes in the other parts of court. Next, looking on the faults and points made in different court areas, it was found that international players tend to make points at the left rear court while Austrians score majority points at the left mid court. Most faults happened at the left mid court. This again demonstrated that backhand would be the most disadvantages shot to be used during the badminton game even for the top-level players.

Alcock and Cable (2009) study was done to compare the physiological demands of singles and doubles badminton, the physiological profiles of specialist singles and doubles and the types of shots played in each discipline. The results showed that the disciplines differ tactically with singles are tend to use more shots played at the front and back court to make their opponent to move and cover larger areas to make them fatigue faster. The findings also showed that the singles tend to do high serve that is in contrast to the findings on elite male single players that is more tend to serve lower as a way to induce offensive strategy (Tong & Hong, 2000). This thus showed the differences of style of play between different levels of participants.

CONCLUSION

Through this study, we can see that badminton players need to have good muscle strength, endurance, agility and power to move vigorously in the court. The opponents will try to send the shuttlecock to the sites far from the players to earn advantages. It is a need for the badminton players to have a proper physical conditioning training in order to increase their performance and at the same time reduce the risks of injury.

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✉ Frederick, M.F.A
Sport Innovation and Technology Centre (SITC),
Universiti Teknologi Malaysia,
Malaysia
Email: fadhil@fsskj.upsi.edu.my