

Comparative Analysis of the Techniques and Tactics of World Excellent Badminton Men's and Women's Doubles

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Abstract

Objective: To explore the characteristics of the use of techniques and tactics in world-class women's and men's doubles competitions, analyze and summarize the differences and changes in their use of techniques and tactics, and provide reference for the training and competition of Chinese men's and women's doubles badminton athletes. **Method:** This article selected 66 rounds of doubles final videos from 30 international events from 2020 to 2022, and used research methods such as literature review, comparative analysis, and video observation. The results show that: 1) From the perspective of serving and receiving, the main serving points for men's and women's doubles are concentrated in position 1, with position 4 as the auxiliary position for men's doubles and position 6 as the auxiliary position for women's doubles. The women's doubles mainly receive and serve by putting the ball, while the men's doubles combine rubbing and throwing on this basis. 2) In the front court of men's doubles, the main focus is on throwing the ball, supplemented by pushing and rubbing the ball. In women's doubles, the main focus is on picking the ball, supplemented by pushing the ball. 3) The men's doubles mainly draw in the midfield, while the women's doubles mainly pick the ball. 4) In terms of backcourt skills, women's doubles use dribbles more frequently than men's doubles in addition to killing the ball.

Keywords

Badminton, Men's Doubles, Women's Doubles, Techniques and Tactics, Comparative Analysis

1. Introduction

Badminton is a sport that combines technology and intelligence. Through grid

playing, it can avoid unnecessary injuries caused by body collisions and is easy to control the intensity of the sport. It has become one of the favorite sports for Chinese people. In the high-level events, men's doubles are the most intense offensive and defensive event in badminton, and the fastest back and forth speed is the event in badminton, and men's doubles has the characteristics of fast speed, strong oppression and high ornamentation, which can bring rich visual experience to the audience (Liu, 2013). In contrast, women's doubles events exhibit the characteristics of slow pace, multiple shots and rounds, and finding the best attacking time through landing control. Looking back at the 1980s, the strength of Chinese badminton teams in world competitions was very weak. With the development of technology and the continuous improvement of scientific and targeted training, the overall strength of Chinese badminton teams continued to strengthen. By 2021, Chinese badminton teams had achieved brilliant results in high-level events such as the Olympic Games, World Championships, and Sudirman Cup, gradually occupying the peak position of the world badminton world. In recent years, with the continuous improvement of the strength of badminton events in countries such as Japan, Indonesia, and Malaysia, China's men's and women's doubles events are facing huge challenges (Zhang, 2022).

The current trend in doubles events is to pay more attention to handling the center and front court, quick coherence, surprise, and creating offensive awareness. Defense is also an effective means of attack (Hong, 2020). In badminton, in general, male athletes are generally more physically strong than female athletes, so male athletes generally have faster speed and stronger strength, which usually makes the pace of the game faster, and also requires more and more explosiveness and reaction speed of male athletes. In terms of cooperation and tacit understanding, due to the fast pace of men's doubles, players usually emphasize faster filling cooperation. Women's doubles players usually pay more attention to tacit understanding and teamwork, and master the rhythm of the game through more delicate technical techniques. In men's doubles, the height and trajectory of the ball are usually flatter and lower compared to women's doubles due to its faster speed, in order to force the opponent to make mistakes or create offensive opportunities, thus achieving a competitive advantage.

This article sorts out, compares, and analyzes the characteristics of the technical and tactical use of outstanding men's and women's doubles athletes in high-level competitions using video observation, comparative analysis, and other methods. It seeks to identify the patterns and differences in the use of technical and tactical skills, which can provide a theoretical basis for targeted training of Chinese badminton doubles athletes in terms of technology and tactics. It can also provide certain reference value for badminton enthusiasts in China when engaging in badminton sports.

2. Research Object

The men's doubles and women's doubles finals of 12 international badminton events from 2020 to 2021 were the research subjects. These include the Tokyo

Olympics, World Badminton Championships, Uber Cup, Thomas Cup, Sudirman Cup, Swiss Open, All England Badminton Open, Malaysia Open, Singapore Open, Indonesia Badminton Masters, Danish Open, German Open, French Open, a total of 30 matches with 66 rounds, with a statistical score of about 2500 points.

3. Research Methods

1) Literature method

Search using keywords such as “badminton, doubles, and technical tactics” through CNKI and Wan fang databases, and consult relevant journals, dissertations, multimedia materials, etc. to provide theoretical and data support for this study.

2) Video analysis method

This article observes the final videos of 12 international high-level badminton events in 2021 and 2022, including badminton events such as Uber Cup, Thomas Cup, Sudirman Cup, and Tokyo Olympics, and records and analyzes the frequency and frequency of technical and tactical use of men’s doubles and women’s doubles through paper records. The data is then summarized and screened in Excel, and finally analyzed through statistical analysis.

3) Mathematical Statistics

This study analyzes and studies the collected information using data analysis software such as Excel.

4) Comparative analysis method

Based on the data results collected by Excel, a comprehensive comparison and research analysis of the techniques and tactics used in men’s doubles and women’s doubles in international badminton tournament finals are conducted, summarizing the characteristics and laws of the application of techniques and tactics in men’s doubles and women’s doubles.

4. Results and Analysis

1) Comparative Analysis of Service Techniques

a) Service Technique Landing Point

The overall serving techniques of badminton include forehand serve high and long, forehand serve before the net, forehand serve flat and high, backhand serve before the net, and backhand serve flat and high. In doubles matches, the main focus is on serving the ball before the net, and the hitting area of the serve includes positions 1, 2, and 3. In the center and back court, long shots are mainly served, and the hitting area of the serve includes positions 4, 5, and 6 (**Figure 1**), providing a reference for data analysis based on regional division.

b) Comparative analysis of service technique application

In badminton matches, high-quality serving and receiving can to a certain extent control the rhythm of the game and grasp the initiative of the game, thereby better executing the technical and tactical tactics developed in this round (**Wang**

& Lin, 2022). Through statistical analysis of the service landing points in world excellent men's and women's doubles matches (Table 1), it was found that the main service landing area in men's doubles is position 1, accounting for about 71.5% of the total service landing points. Women's doubles service landing points in position 1 account for about 61.9% of the total service landing points, while the difference in service landing points in positions 2, 3, and 4 is relatively small, while there is a significant difference in the proportion of the total service landing points in positions 5 and 6. Overall, the main service landing point for men's doubles and women's doubles is position 1, with men's doubles combined with the 5th service landing area as a supplement, and women's doubles combined with the 6th service landing area as a supplement. And the proportion of men's doubles and women's doubles in other serve landing areas is relatively low.

2) Comparative analysis of receiving and serving techniques

a) Positioning of receiving and serving techniques

Divide the half court of the entire badminton court into an average of 9 landing areas. For example, with the right hand holding the racket, the backhand positions in the front court area are sequentially numbered 1, 2, and 3 to the right. The midfield area is sequentially numbered 4, 5, and 6 from the backhand position to the forehand position. The back court area is sequentially numbered 7, 8, and 9 from the head area to the forehand area (Figure 2), providing a reference for data analysis based on regional division.

b) Comparative analysis of the application of receiving and serving techniques

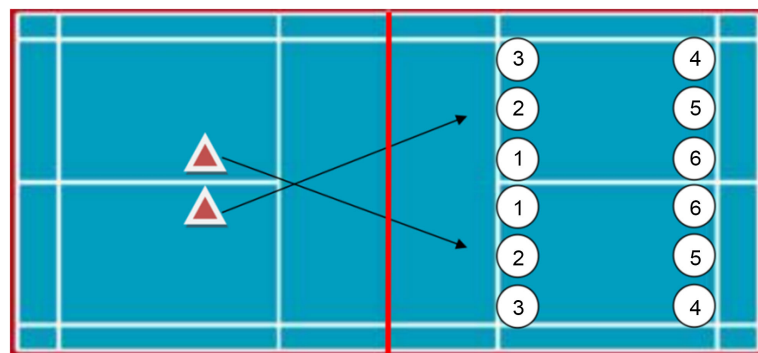


Figure 1. Schematic diagram of the service landing area in the badminton field.

Table 1. List of Service Landing Points for Men's and Women's Doubles.

	Serve area	1	2	3	4	5	6	amount
men's doubles	Number of times (N)	810	23	17	67	150	66	1133
	Proportion (%)	71.5	2.0	1.5	5.9	13.3	5.8	100
women's doubles	Number of times (N)	754	10	76	91	79	209	1219
	Proportion (%)	61.9	0.8	6.2	7.5	6.5	17.1	100

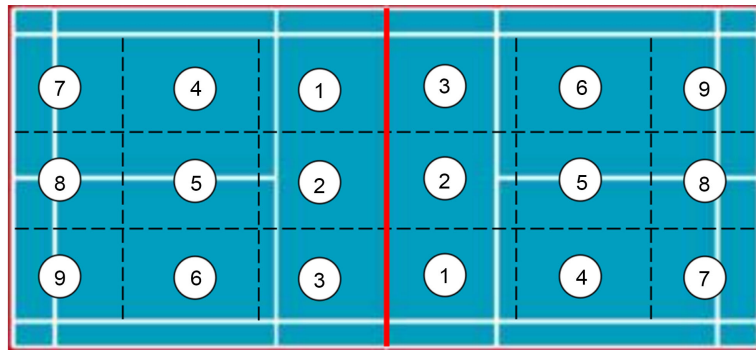


Figure 2. Schematic diagram of the receiving and serving area in the badminton field.

The techniques of receiving and serving badminton mainly include rubbing and releasing, dribbling, high and far, killing, throwing, flat drawing, diagonal hook, picking, and pushing.

Through the statistical comparison and analysis of the receiving techniques of the world's outstanding men's doubles and women's doubles matches, the results show that men's doubles mainly focus on pushing and rubbing the ball in the process of receiving the serve, and combines a large number of saving, and the use of techniques and tactics is flexible and changeable. Women's doubles mainly focus on pushing the ball in the use of serve techniques and tactics, followed by killing and saving, while the frequency of use of high, flat draw, and hook diagonal techniques is relatively low. In general, men's doubles are more flexible in the use of technique than women's doubles in the use of service techniques, and they are better able to implement their own techniques and tactics through receiving serves.

c) Comparative analysis of receiving and serving landing points

Through statistical analysis of the receiving and serving points in men's doubles and women's doubles, it was found that (**Table 2**).

The main landing points for receiving and serving in men's doubles are Zone 2 and Zone 5, accounting for 25.5% and 25.4% of the total landing points for receiving and serving, respectively. These two landing areas account for 50.9% of the total landing points for receiving and serving in men's doubles; The main receiving and serving points in women's doubles are in Zone 4, with Zone 5 and Zone 6 as auxiliary areas, accounting for 28%, 17.8%, and 14.7% of the total receiving and serving points, respectively. These three areas account for 60.5% of the total receiving and serving points in women's doubles; However, there is not much difference between men's doubles and women's doubles in other service landing areas, with the proportion being less than 10%. Overall, the receiving and serving areas of men's doubles are mainly in Zone 2 and Zone 5, with Zone 4 being the auxiliary area; In women's doubles, the receiving and serving areas are mainly in the 4th area, supplemented by the 5th and 6th areas, and the proportion of landing points in men's doubles and women's doubles is relatively low in other landing areas.

Table 2. List of receiving and serving landing points for men's doubles and women's doubles.

	placement	1	2	3	4	5	6	7	8	9	amount
men's doubles	Frequency (N)	83	277	38	204	276	136	38	14	22	1088
	Proportion (%)	7.6	25.5	3.5	18.8	25.4	12.4	3.5	1.3	2.0	100
women's doubles	Frequency (N)	70	123	41	333	212	175	129	28	78	1189
	Proportion (%)	5.9	10.3	3.4	28.0	17.8	14.7	10.8	2.4	6.6	100

Note: Service receiving errors are not included.

3) Comparative Analysis of Front field Technology Application

The frontcourt techniques of badminton mainly include rubbing the ball, releasing the net, pushing the ball, throwing the ball, cross the corner, and picking the ball.

The application of frontcourt techniques requires strengthening offensive awareness, striving for the initiative in frontcourt attack, and creating more opportunities for winning the game (Feng et al., 2022). Through statistical analysis of the application of frontcourt techniques in men's doubles and women's doubles, it was found that in the application of frontcourt techniques, the world's top men's doubles mainly rely on throwing and putting techniques, accounting for 28.3% and 24.4% of the total frontcourt techniques, respectively. In women's doubles, the main technique is picking, accounting for 33.4% of the total frontcourt techniques, which is significantly higher than men's doubles, followed by the use of putting techniques, Approximate 26.9% of the total number of frontcourt technology applications. The use of hook techniques in men's doubles and women's doubles is relatively low, accounting for less than 5% of the total number of frontcourt techniques used. From this, it can be seen that male doubles players, due to their advantages in physical fitness such as speed and strength, use the forward court diving technique more frequently than the female doubles diving technique. The diving technique is used when the opponent sends a high-speed underspin or flat ball to respond. Due to the characteristics of fast ball speed, unpredictable landing point, and high threat, it has become one of the commonly used scoring techniques for excellent badminton players in the world. In the process of multi ball confrontation, women's doubles players often use the drop ball technique to seek the best attacking time, and the world's top badminton players have high consistency in their movements, making it difficult to predict the opponent's outgoing line and landing point when actively hitting the ball, Therefore, when passive, it is often done by picking the ball to get rid of it. In doubles matches, the line of hook in front of the net is long, and the quality of the ball's arc is difficult to grasp, making it easy for opponents to catch and lose points. Therefore, the frequency of use of hook in front of the net is relatively low in men's doubles and women's doubles.

4) Comparative analysis of the use of midfield techniques

The midfield techniques in badminton mainly include draw, block, pick, in-

tercept, kill, and cross corner techniques.

Through statistical analysis of the use of midfield techniques in men's and women's doubles, it was found that in men's doubles, the most frequently used midfield techniques were flat drawing techniques, accounting for about 35.38% of the frequency of technique use. The second most commonly used techniques were dribbling and blocking techniques, accounting for about 22.4% and 20.3% of the total number of techniques used. The frequency of intercepting, killing, and diagonal cutting was relatively low, and the midfield was the area where flat drawing techniques were more commonly used. However, midfield killing often involves forcing the opponent to return the ball poorly through draw draws and forward thrusts to gain the opportunity to kill the ball. In fast-paced matches, especially in doubles, the diagonal technique of midfield shooting often leaves more reaction time for the opponent to return the ball due to the long flight path of the ball. Therefore, in men's and women's doubles matches, it is necessary to quickly observe and judge the opponent's position. The main technique used in women's doubles in mid court is dribbling, accounting for approximately 27.4% of the total number of midfield techniques used, followed by flat draw and kill techniques, accounting for 24.1% and 21.9% of the total number of midfield techniques used, respectively. Similarly, the proportion of diagonal techniques used is relatively low. It can be seen that in men's doubles, the use of midfield techniques is mainly based on flat draw techniques, with high intensity and strength, and significantly faster speed and competition rhythm than in women's doubles. The frequent use of ball picking techniques in women's doubles shows that the pace of the game is relatively slow. In dealing with passive balls, most of the players use ball picking to level the situation, which is related to the relatively strong defensive strength of women's doubles.

5) Comparative Analysis of the Use of Backcourt Techniques

The backcourt techniques of badminton mainly include long shots, flat shots, dribbles, kills, and passive dribbles.

Through the statistical analysis of the use of men's doubles and women's doubles backcourt technology, it is found that men's doubles is mainly based on offensive killing, accounting for about 62.2% of the total number of backcourt technology applications, followed by hanging balls accounting for about 19.1% of the total backcourt technology applications, the use of hanging ball technology is mainly to cooperate with killing, killing and hanging, through hanging ball technology to mobilize the opponent's center of gravity, and then destroy its relatively well-prepared defensive rhythm, combined with the use of killing techniques to obtain better technical and tactical effects. The frequency of use of flat high ball and high distance ball technology is relatively low, accounting for less than 10.0% of the total number of backfield technology applications. Women's doubles are still dominated by killing balls in the use of backcourt techniques, but combined with a large number of hanging balls, accounting for 47.8% and 26.3% of the total number of technical uses, respectively, compared to men's doubles more threatening continuous attacks, women's doubles more pursuit of

landing point control. It is worth mentioning that women's doubles are significantly higher than men's doubles in the proportion of the frequency of high-distance ball technology, and in the handling of passive balls in the backcourt, women's doubles use the pumping technique in frequency relatively less than men's doubles, and more use of highballs to passively get rid of.

5. Analysis and Discussion

1) In terms of serving, the main landing points for men's doubles and women's doubles serve are in the first zone in front of the net. The reason is that the first zone has a short serving route, high stability, and easy control of the landing point. When the opponent receives the serve, the ball angle is relatively small, so the first zone is a high-frequency area for high ball landing points. In terms of serving in the back court, the men's doubles are mainly in the 4th area, while the women's doubles are mainly in the 6th area. By observing the opponent's position and combining the way of serving in the back court, the opponent's receiving and serving rhythm is disrupted.

2) In terms of receiving and serving, men's doubles players mainly receive and serve by pushing and rubbing the ball, and combine a large amount of throwing. The use of techniques and tactics is flexible and varied, because men's doubles players have fast movement speed, strong observation ability, and high receiving and serving hitting points. Therefore, the use of receiving and serving hitting techniques is more flexible and varied. In women's doubles, the use of receiving and serving techniques and tactics is mainly focused on pushing the ball, with relatively less use of throwing techniques and relatively limited use of receiving and serving techniques. In terms of the frequency of use of high distance, flat draw, and diagonal hook techniques, both men's and women's doubles are relatively low, which is closely related to the fast pace of doubles matches and the intense competition for center and front court ball rights.

3) In terms of frontcourt techniques and tactics, men's doubles mainly rely on throwing and putting techniques, while women's doubles mainly rely on picking techniques, supplemented by the use of putting techniques. Both men's doubles and women's doubles have relatively low use of hook techniques. Due to their physical advantages such as speed and strength, men's doubles players use the ball catching technique in the front court more frequently than women's doubles. Women's doubles players, due to their relatively strong defensive ability and offensive ability, often use the ball picking method to level the situation by getting rid of the passive ball. Therefore, their use of hook techniques is significantly higher than that of men's doubles, In terms of the frequency of use of hook in front of the net, both men's doubles and women's doubles are relatively low.

4) In terms of the use of midfield techniques and tactics, men's doubles is mainly based on the use of flat drawing techniques, supplemented by the use of picking and blocking techniques, men's doubles players have strong personal ability and high offensive threat, it can be seen that the midfield ball handling is

often not easy to get up, while women's doubles in the middle of the field use of technology is mainly based on picking the ball, the use of flat drawing and killing techniques is supplemented, women's doubles in the passive ball handling men's doubles has a certain degree of difference, diagonal technique in men's doubles and women's doubles games are less used.

5) In terms of the use of backcourt techniques and tactics, men's doubles and women's doubles mainly rely on heavy kills in their technical use. "Kill and block" is the main scoring technique of men's doubles (She et al., 2013), which obtains victory in the game through quick and continuous attacks from behind kills and front blocks. However, in combination with backcourt dribbling techniques, the frequency of using dribbles in women's doubles is significantly higher than that in men's doubles. Through the pursuit of landing control, Mobilize the opponent's defensive focus to obtain the best attacking opportunity.

6. Conclusion and Suggestions

1) Conclusion

a) The main service landing point for men's and women's doubles is in Zone 1, with Zone 5 as the auxiliary area, and Zone 6 as the auxiliary area. The women's doubles serve mainly through push, and the men's doubles combine push and rub on this basis.

b) The use of frontcourt techniques in men's doubles is mainly focused on throwing and pushing the ball, while in women's doubles, the use of hook techniques is relatively low.

c) The use of midfield techniques in men's doubles is mainly tied, while in women's doubles, the ball is mainly picked.

d) The use of backcourt techniques in men's and women's doubles is mainly focused on killing the ball, and the frequency of women's doubles combined with drop ball techniques is higher than that of men's doubles.

2) Suggestions

a) In recent years, with the assistance of technology to promote the scientific and targeted training of athletes, the competition for ball rights in doubles events during the serve and receive stages has become more intense. Doubles players need to improve their observation ability of opponent's position and racket surface selection, improve the quality of serve, and reasonably predict the landing point of opponent's serve.

b) Enhance the awareness and ability of catching the net when receiving the serve, grasp the rhythm of receiving the serve, execute the formulated techniques and tactics through active snatching, and improve the variability of the use of receiving and serving techniques.

c) In women's doubles, it is necessary to improve the ability to actively grab the net, strengthen the training of defensive and counterattack techniques and tactics. In men's doubles, it is necessary to strengthen the stability of the net front diving and midfield flat drawing techniques, combine the retraction and release

during the flat drawing process to break the opponent's rhythm, and seize the opportunity for active attack.

d) Strengthen the ability to continuously attack in the back court, improve the coherence of the shots in the back court, and at the same time, pay attention to the targeted use of techniques and tactics, fully utilize the individual advantages and skills of athletes, and master the rhythm of the game.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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