

Analysis of the techniques and tactics of the women's beach volleyball match in the 14th World Championships

Jiyue Zhang

China School of Physical Education, Southwest University, Chongqing 400715, PR China

2462580734@qq.com

Abstract

In the 14th world beach volleyball championship in Chinese women's beach volleyball team against Brazil women's beach volleyball team tactics analysis, using literature method, video observation, mathematical statistics, comparative analysis method of the two teams serve, receiving, blocking, attack and defensive tactics characteristics such as comparative analysis and explore. Find out the advantages and disadvantages of the Chinese combination in various technical and tactical links, and find out the problems, strengthen the advantages, overcome difficulties, so that it can improve the winning rate against the Brazilian team, and provide valuable experience for China's women's beach volleyball. Research shows that: (1) technically, the Chinese team's block is a weak link, need to strengthen the front row of the blocking ability. The serve also needs to strengthen the performance, in sharp contrast to the performance of Brazil, can try to jump the ball or jump serve.(2) Tactically, the Chinese team should pay attention to the training of offensive techniques and tactics, use the flexibility of the offensive mode, broaden its own offensive means, and "combination of playing and hanging". In addition, in order to improve the victory rate, we need to strengthen their own physical and psychological quality.

Keywords

World Beach Volleyball Championship; Beach volleyball; Female athletes; Technique and tactics.

1. Introduction

1.1. Basis for Topic Selection

Beach volleyball is a sport where two teams of two players each compete on a sandy court divided by a net. It is a uniquely charming sports event that is popular worldwide. Beach volleyball, which combines intense competitiveness with unique artistry, is known as "one of the most outstanding sports of the 21st century"[1].The sport of beach volleyball has been widely popularized and developed rapidly over the past decade or so. In Asia, it began to develop in the 1990s. Beach volleyball has developed rapidly in China. Since its introduction in China in 1995, the performance in the sport has been continuously improving, with a historic breakthrough achieved in 2006. Later, beach volleyball was included as an official Olympic event, prompting the Chinese Volleyball Association to strengthen efforts to popularize and enhance the sport, and it has also been included in China's development plan for volleyball.

With the development of beach volleyball, various technical and tactical levels have been continuously improved, and the corresponding technical and tactical systems, including rules, have been constantly refined, making this sport highly entertaining and competitive. Since this event was included as an official competition in the Atlanta Olympics, there has been a surge in countries joining beach volleyball, with more and more teams participating and the scale of competitions growing larger. Nations have also strongly supported the rapid construction of

multiple beach volleyball training bases. In addition to international events such as the World Tour, World Championships, and Olympics, there are also international competitions like the World Middle School and University Beach Volleyball Championships and the "BRICS" Games, which promote international cultural exchanges. In 2013, the Chinese women's beach volleyball team won the world championship for the first time in both the Indonesia and Italy legs of the World Beach Volleyball Tour. In 2006, they again won the women's championship at the Shanghai Jinshan leg of the World Beach Volleyball Tour. At the 2008 Beijing Olympics, the Chinese women's beach volleyball team won silver and bronze medals, marking their best performance in Olympic history.

Currently, the landscape of women's beach volleyball in the world is clear. Countries with high competitive levels in beach volleyball are concentrated in coastal developed countries in Europe, America and other regions. The women's teams from Brazil and the United States still occupy the highest level. From the perspective of the situation in Asia, Xue Chen/Xia Xinyi of the Chinese women's team, as representative figures of the Chinese women's beach volleyball team, rank first in Asia. The FIVB world rankings of Chinese women's beach volleyball players are constantly improving, but there are still some gaps compared with some top international players, such as in competition experience, rational application of techniques and tactics, and specific physical fitness. Techniques and tactics play a decisive role in the development of volleyball, and their application is an important factor in winning games. In the process of beach volleyball matches, participating pairs will use corresponding techniques and tactics according to different opponents, different environments, etc.

1.2. Research Objectives and Significance

The 14th Beach Volleyball Championship was held in Mexico in 2023. China's women's beach volleyball team, Xue Chen and Xia Xinyi, lost to the world No.1 Brazilian pair Anna Paritza and Duda in the round of 16. In recent years, the Chinese team has made significant progress, but they often lose more matches than they win against Brazil. As the competition in women's beach volleyball becomes increasingly fierce, the study and practice of beach volleyball tactics and techniques have become particularly important. Researching the performance of China's women's beach volleyball team in the current World Championships, summarizing their strengths and weaknesses, can provide valuable experience for the development of China's women's beach volleyball team.

This study conducts a comparative analysis of the match footage between China and Brazil in the World Beach Volleyball Championship, evaluating multiple technical indicators. By presenting concrete numerical data, it identifies the root causes of China's defeat, highlights their competitive weaknesses, and suggests strategies to improve. While China's women's beach volleyball team has earned numerous accolades, there remains a gap compared to elite international players. Enhancing tactical proficiency and application skills remains crucial, underscoring the importance of studying beach volleyball's technical and tactical characteristics.

2. literature review

2.1. Related concept definition

2.1.1. The Definition of Tactical Concepts

In his textbook "Sports Training", Tian Maijiu emphasized that sports techniques—the methods for executing athletic movements—are a key determinant of an athlete's competitive performance. These techniques consist of movement elements and technical structures [2]. Sports tactics refer to the strategies and actions employed during competitions to defeat opponents or achieve desired outcomes. The refinement of techniques provides more options

and possibilities for tactical planning, while the application of tactics further enhances and improves technical execution. These two aspects are inseparable and mutually reinforcing in competitive sports.

2.1.2. The Definition of Beach Volleyball Tactics and Techniques

In their book "Illustrated Techniques of Beach Volleyball", Su Limin and Zhong Bingshu define the fundamental techniques of beach volleyball as the collective term for players' reasonable hitting actions and coordinated movements within the rules. Key techniques like serving, bumping, spiking, passing, and blocking are categorized as ball-handling skills, while various preparatory stances and movements are termed non-ball skills [3]. In today's increasingly competitive beach volleyball matches, mastering these techniques requires precise execution under diverse conditions to overcome the sport's unique challenges. Beach volleyball tactics involve players strategically applying techniques based on competition rules, game dynamics, real-time match situations, and weather variations. This emphasizes teamwork and tactical execution, requiring players to understand and implement coaches' strategies—including offensive/defensive plans, positional coordination, and tempo control. Players must also adapt to opponents' tactics to flexibly adjust their own strategies. Beach volleyball tactics primarily rely on individual skills with mutual cooperation as a supplement. Therefore, athletes must possess comprehensive technical abilities, strong offensive/defensive capabilities, and independent play skills, all supported by effective teamwork. This makes beach volleyball focus on technique and rhythm, while indoor volleyball emphasizes coordination and variation.

2.2. Research on Volleyball Techniques and Tactics

At present, there are relatively few research papers on beach volleyball tactics and techniques in China. By searching for the keywords "beach volleyball" in CNKI, there are 1161 related research papers, while only 58 papers related to the keywords "beach volleyball" and "tactics and techniques" were found.

The earliest published research on beach volleyball tactics and techniques was Jiang Hong's 1995 article "Beach Volleyball Tactics, Techniques, and Training Strategies" in the Journal of Shenyang Sport University. This study analyzed challenging tactical systems such as serving efficiency, point-line combination attacks, and counter-attacking strategies [4]. However, the article provided only a preliminary analysis of beach volleyball without delving into the detailed application of specific tactics.

In 2001, Li He published "Discussion on the Characteristics of Techniques and Tactics in Beach Volleyball" in "China Sports Science and Technology", which elaborated on the technical and tactical features of beach volleyball. At the same time, it analyzed the specialized technical applications of the top four teams in the 1999 Dalian International Beach Tour and the National Beach Tour (Fenghua Station), including spiking situations, pad adjustments, and blocking techniques. The data in the article showed that "techniques with good concealment and effective attacking were widely used in matches; light taps and drops were preferred over spikes to save energy, resulting in higher success rates; the emergence of pad adjustments and blocking techniques could avoid unnecessary mistakes" [5]. However, this article only conducted data analysis on a few specialized techniques and lacked tactical data collection.

The most cited article on beach volleyball tactics and techniques was Xu Botong's 2003 study "The Impact and Guidance of New Beach Volleyball Rules on Tactical Training," published in the Journal of Guangzhou Sport University. This research examined the effects of the most significant rule change in beach volleyball history on tactical development and training strategies. To emphasize concise and effective tactics, the study analyzed the application of techniques like light spikes, ball padding adjustments, setter changes, and upper-hand blocks through statistical data. The findings revealed: "The implementation of new rules has not only accelerated the evolution of beach volleyball tactics but also established a comprehensive

system. Developing targeted training methods and refining techniques are crucial for enhancing China's beach volleyball performance." [6] Under the new rules, practical techniques and tactical combinations are being optimized for greater effectiveness.

In 2004, Ling Wenjie and Sun Zhifeng published "Analysis and Research on the Scientific Research Status of Beach Volleyball in China from 1994 to 2003" in "China Sports Science and Technology", which analyzed the publication volume, journal volume, paper categories, and research methods of beach volleyball scientific research achievements from 1994 to 2003. The study showed: "The scientific research achievements of beach volleyball in China from 1994 to 2003 were relatively few, but showed an upward trend. The research content of the papers also expanded year by year, but there was less creativity [7]." The research on tactics and techniques mainly elaborated on the characteristics of tactics and techniques, application features, and the current status of attack and defense.

In 2007, Xu Lanying published a study titled "Research on the Application of Offensive and Defensive Techniques in China's Elite Women's Beach Volleyball Players" at Beijing Sport University. The research conducted a comprehensive and in-depth comparative analysis of multiple volleyball techniques, including serving, passing, receiving, and spiking during first or counterattacks. The findings revealed that Chinese players exhibited lower receiving accuracy compared to international athletes, higher counterattack rates, less frequent use of second-ball counterattacks, and significantly different blocking techniques [8].

In 2008, Wang Lijun published a comparative analysis of the technical and tactical aspects between the Chinese and Brazilian women's beach volleyball teams in the final match of the Olympic test event in "Liaoning Sports Science and Technology". The article mainly studied the direct scoring situations of the two teams' attacks, the direct scoring situations of their serves, and the defensive situations, concluding that "the Chinese team should try to conceal their offensive intentions to confuse the opponents, while also judging the opponents' offensive intentions as early as possible and flexibly changing their attacking methods" [9]. In terms of serving, the Brazilian team had a high scoring rate and good placement, while the Chinese team made more errors and wasted energy with their powerful jump serves. On defense, the Brazilian team demonstrated strong blocking awareness and self-protection awareness, whereas the Chinese team lacked such awareness, highlighting the importance of anticipation. The article revealed the gap between the Chinese team and world-class teams, identified the technical and tactical shortcomings of the Chinese team, and provided suggestions.

By reviewing relevant foreign literature, the article "Computer Analysis of the Technical and Tactical Effectiveness in Greek Beach Volleyball," published in 2005 by Michalopoulou et al., utilized computer analysis for data processing. The study involved a large sample size, totaling 3,416 match stages. The analysis covered multiple aspects, including serving effectiveness, receiving effectiveness, set effectiveness, offensive effectiveness, blocking effectiveness, and 12 other performance parameters. The statistical analysis included one-way ANOVA, frequency analysis, and chi-square tests. The study demonstrated a substantial sample size and precise computer data analysis results. The article concluded: "The outcomes of beach volleyball matches are influenced by two key skills: offense and serving. By employing serving techniques, players attempt to score directly and limit opponents' offensive opportunities under optimal conditions, significantly increasing the chances of successful blocks and counterattacks by serving teams. Offensive skills are the most scoring skills throughout the match. Further research is needed to understand the impact of other skills (receiving, defense, and receiving) on offensive efficiency and the final results of beach volleyball matches" [10]. This article highlights that advanced countries in beach volleyball possess superior levels of technical and tactical statistical analysis compared to China, while also reflecting certain gaps in China's current research on beach volleyball techniques and tactics.

These studies have conducted targeted comparative analyses and detailed examinations of the technical and tactical characteristics of Chinese beach volleyball players. The number of research studies on beach volleyball has been increasing annually, laying a foundation for scientific research in this field. Due to the late start of beach volleyball in China and the limited number of researchers engaged in this sport, available reference materials remain scarce. Through reviewing relevant literature, it is evident that previous studies on volleyball techniques and tactics have primarily focused on indoor volleyball, with relatively few studies dedicated to beach volleyball, particularly female beach volleyball teams. Existing research mainly concentrates on match statistics from multiple games and comparative analyses of other countries' techniques, while specific match analyses and studies on domestic athletes are relatively rare. Most prior research on beach volleyball techniques and tactics has employed literature review and survey methods, with few comprehensive data-driven analyses conducted.

This article conducts statistical analysis on the match footage between the China women's beach volleyball team and the Brazilian women's beach volleyball team at the 14th World Championship, examining the influencing factors of Xue Chen/Xia Xinyi's technical application and tactical coordination, as well as the experiences and shortcomings of their tactical success. By comparing with the technical and tactical characteristics of top international athletes, it aims to understand the trends in the development of women's beach volleyball techniques and tactics worldwide, analyze the gap between China's women's beach volleyball and world-class teams, provide grassroots training directions for coaches and athletes, and promote the development of women's beach volleyball in China.

3. 3. Subjects and Methods

3.1. Subject investigated,object of study

This paper analyzes the technical and tactical characteristics of the Chinese and Brazilian teams in the women's 1/8 finals of the 2023 World Beach Volleyball Championship by observing the match videos.

Table 1. Basic information of the research object

Country	Name	Height/cm	Age	World ranking
China	Xue Chen	191	34	11
	Xia Xinyi	182	27	
Brazil	Anna Patricia	194	27	1
	Duda	180	26	

3.2. Research technique,research method

3.2.1. Literature method

Using keywords such as "beach volleyball", "technical and tactical", and "female athletes", relevant books and literature were retrieved through knowledge service platforms like CNKI, Wanfang Database, and VIP Journal Integration Platform. A total of 40 pieces of literature were selected for reference.

3.2.2. Video observation method

By repeatedly watching the video recordings of the 1/8 finals of the World Beach Volleyball Championships, an observation and analysis was conducted on various technical and tactical aspects of Xue Chen/Xia Xinyi during the match. While watching the match, the offensive success rate and error rate of the Chinese team, the number of times they seized counterattack opportunities, and the pertinence of blocking and defensive tactics were recorded. Additionally, the technical and tactical characteristics of the Chinese team were grasped through the video observation method.

3.2.3. Method of mathematical statistics

Watch the match videos of the 1/8 finals of the 2023 FIVB Beach Volleyball World Championships, record data related to serving, receiving, attacking, blocking, and defending in the matches, and use Excel for statistical analysis to provide solid data support for the writing of this thesis.

3.2.4. Method of comparative analysis

Based on research and reference to relevant literature, a comprehensive comparison and analysis of the technical and tactical aspects of the two teams are conducted in accordance with the statistical data and data processing of the competition, and the results of the data processing are demonstrated.

4. Research Findings and Analysis

4.1. Technical Analysis of the Chinese and Pakistani Teams

4.1.1. Analysis of the serving stage technique

The match begins with a serve, a crucial offensive move. A precise and aggressive serve can disrupt the opponent's tactics, giving your team a first-mover advantage, easing defensive pressure, and setting up counterattacks. Conversely, frequent serve errors result in losing the serve and points, while also creating psychological pressure and defensive challenges. Unlike indoor volleyball, beach volleyball requires adaptation to environmental factors like sunlight, wind conditions, and rain-induced ball weight changes. Skilled players can leverage these elements to create difficulties—whether through sunbathing serves, crosswind serves, or rain-induced ball variations—to outmaneuver opponents or score directly.

In this match, China lost 0-2 with scores of 23-25 and 21-18. At the start, both Chinese players served with the ground serve technique, while Brazil's two players used the jump serve. The ground serve is less powerful and more prone to producing weak serves compared to the jump serve, but it's easier to target players and points. This technique also minimizes wind resistance, especially in outdoor matches, and conserves energy.

Table 2. Statistics of the Chinese team's serving effect

Athlete	Score %	Breakthrough%	General%	Mistake%	Total/count
Xue Chen	1 5.5	0 0	14 77.8	3 16.7	18
Xia Xinyi	1 4.2	1 4.2	19 79.1	3 12.5	24
Total	2 4.8	1 2.3	33 78.6	6 14.3	42

Table 3. Statistics on Brazil's serve

Athlete	Score %	Breakthrough%	General %	Mistake %	Total/count
Anna	1 4.5	0 0	20 91.0	1 4.5	22
Duda	1 4.3	2 8.7	18 78.3	2 8.7	23
Total	2 4.4	2 4.4	38 84.5	3 6.7	45

The data in Tables 2 and 3 reveal that both teams maintained consistent serving techniques during the match, with no significant difference in scoring efficiency or break power. This indicates that the Chinese team focused on minimizing errors while seeking defensive counterattack opportunities, though their serving error rate remained higher than Brazil's. Particularly during the early and mid-game when the score was closely contested, the Chinese team needed to enhance their serving aggressiveness to break through. While maintaining serving stability, they should apply pressure on the opponents' offensive organization to achieve break points or score.

4.1.2. The Technical Analysis of Receiving and Serving

In beach volleyball matches, receiving serves is not only a key point in the transition between offense and defense but also the foundation for organizing all offensive tactics. It requires players to seek initiative from a passive position. They must not only possess physical flexibility, standardized movements, and accurate judgment but also implement a proactive guiding ideology. The success of receiving serves is directly related to whether the first attack tactic can be formed and the quality of its formation. If a serve reception results in an error, it may lead to the opponent scoring directly, which can cause negative emotions such as restlessness and depression among one's own players. Additionally, if the serve reception is not in place, it will directly affect the effectiveness of the setter's pass, ultimately impacting the success of the entire offensive tactic. In actual combat, players also need to flexibly adjust their serve-receiving strategies based on the opponent's serving characteristics and court conditions. Players need to have comprehensive skills and strategies to create favorable conditions for the team's offensive tactics.

Table 4. Statistics on the Receiving Effect of China and Brazil

Athlete	Arrived %	General %	No attack %	Mistake %	Total/count
Xue Chen	6 66.7	2 22.2	0 0.0	1 11.1	9
Xia Xinyi	28 84.9	3 9.1	1 3.0	1 3.0	33
total	34 80.9	5 11.9	1 2.4	2 4.8	42
Anna	1 33.3	0 0.0	0 0.0	0 0.0	1
Duda	23 67.6	8 23.6	1 2.9	2 5.9	34
Total	24 68.6	8 22.9	1 2.8	2 5.7	35

As shown in Table 4, both teams strategically targeted shorter defenders with their serves, resulting in fewer returns by Xue Chen. In this match, China's receiving performance outperformed Brazil's. Xue Chen and Xia Xinyi achieved an 80.9% return accuracy rate, 12.1 percentage points higher than Brazil's 68.6%, while China's error rate remained lower. Overall,China's receiving demonstrated strong performance, though two common errors occurred when opponents served near the receiving area junction, leading to "allowing the ball" and "grabbing the ball" situations. During the match, players should closely monitor Brazil's mid-court serves, prearrange who will receive first, or have high-performing players take the initiative to avoid these scenarios.

4.1.3. The Technical Analysis of Blocking Stage

In beach volleyball, blocking serves as a pivotal defensive technique that directly determines match outcomes. The effectiveness of blocking is measured through three key aspects: scoring blocks, blocking back, and blocking up, which aim to restrict opponents 'attacks and create opportunities for teammates to counterattack. Blocking can decelerate, weaken, or redirect opponents' spikes, thereby reducing pressure on back-row defenders. It can also directly block back, block up, or even block out the ball, converting it into scoring opportunities. Effective blocking disrupts opponents 'offensive plans, instills psychological pressure, dampens their

momentum, and boosts team morale and confidence. The success of blocking in beach volleyball depends on the blocker's overall skills—height, footwork, hand positioning, and reaction speed—along with seamless coordination between blockers and defenders.

Table 5. Comparison of the blocking effects of the Chinese team and the Brazilian team

Country	Score %	Recoil %	Intercept %	Points lost %	Air jump %	Total/ count
China	0 0.0	1 2.9	2 5.9	6 17.6	25 73.6	34
Brazil	6 13.0	3 6.5	2 4.4	10 21.7	25 54.4	46

During this match, the Chinese team made 34 blocks, scoring 0 points, with 1 successful block return and 2 block lifts. Their block success rate stood at 8.8%, while they conceded 6 points, resulting in a block loss rate of 17.6%. The Brazilian duo executed 46 blocks, scoring 6 points, with 3 successful block returns and 2 block lifts, achieving a 23.9% success rate. However, they suffered 10 block losses, leading to a 21.7% block loss rate. The block scoring rate clearly indicates that China's performance lagged behind Brazil's by approximately 15.1%. Additionally, China's "air blocks" (blocks without touching the ball) were 19.2% more frequent than Brazil's. These ineffective blocks created defensive gaps, increasing China's offensive errors. Xue Chen's blocks failed to effectively contain Brazil's attacks. The data highlights that blocking was a critical factor in improving China's win rate during this match. Post-game, Xue Chen and Xia Xinyi should analyze their blocking shortcomings and develop strategies to counter strong block defense.

4.2. Tactical Analysis of the Chinese and Pakistani Teams

4.2.1. Offensive tactical analysis

In beach volleyball, offensive plays primarily involve creating scoring opportunities through coordinated teamwork and technical execution during matches, enabling effective attacks like spikes or drop shots. With diverse offensive strategies and dynamic tactical combinations, athletes must maintain sharp mental focus to execute successful attacks, thereby increasing their chances of scoring and improving the team's winning rate.

Table 6. Comparison of the offensive styles of the Chinese team and the Brazilian team

Athlete	Score%	Hard spike%	Soft spike %	Blocked%	Points against %	Total /count
Xue Chen	10 55.5	8 44.4	8 44.4	2 11.2	2 11.2	18
Xia Xinyi	21 51.2	25 61.0	10 24.4	6 14.6	6 14.6	41
Total	31	33	18	8	8	
Anna	3 60.0	5 100.0	0 0	0 0	1 20.0	5
Duda	26 60.5	15 34.9	28 65.1	0 0	2 4.6	43
Total	29	20	28	0	3	

As can be seen from Table 6, the players who made the most offensive attempts in both teams were those who played defensively. In China's team, Xia Xinyi used the "heavy smash" offensive style in 25 out of 41 total offensive attempts, accounting for 61.0% of the first attack. In Brazil's team, Dutta used the "light drop/bat" offensive style in 28 out of 43 offensive attempts, accounting for 65.1% of the first attack. Therefore, there is a significant difference in offensive styles between China and Brazil. The China team primarily adopted the "heavy smash" as their main offensive tactic, accounting for 59% of the total offensive attempts, which is 17.4% higher

than that of Brazil. The Brazilian team, on the other hand, primarily used the "light drop/bat" as their main offensive tactic, accounting for 58.3% of the total offensive attempts, which is 27.8% higher than that of China.

The match revealed that although Xia Xinyi's spikes demonstrated high quality, speed, and power, her attacks were intercepted three times by the opposing blockers. The opponents' adept use of "light taps/droppers" with deceptive placement and concealed maneuvers increased Xue Chen's clearance errors, resulting in low blocking success rates. In beach volleyball, where only two players are on the court, the defensive gaps are wide, making light taps/droppers as effective as heavy spikes—saving energy while reducing errors. This indicates that Xia Xinyi's attack patterns are easily predictable and lack concealment. Coupled with the blockers' 194cm height and the high blocking height, Xue Chen and Xia Xinyi must employ flexible offensive strategies, favoring "combined hitting and dropping" techniques, while improving their grip and placement of the ball.

4.2.2. Analysis of blocking and preventing tactics

The blocking and defensive formation in beach volleyball is a crucial element of the defensive system. During blocking and defense, players must adapt flexibly based on the opponent's characteristics and the game's dynamics, selecting appropriate blocking techniques and positions while coordinating closely with back-row defenders to prepare for transitions from defense to offense. Common blocking and defensive formations include straight-block diagonal defense, diagonal-block straight defense, straight-block straight defense, and diagonal-block diagonal defense. This article analyzes these scenarios.

Table 7. Comparative statistics of China-Brazil blocking and defensive formations

Country	Straight shot %	Slope protection %	Straight shot %	Bending and anti-bending %	Total/count
China	14 41.2	10 29.4	2 5.9	8 23.5	34
Brazil	20 43.5	18 39.1	4 8.7	4 8.7	46

Table 8. Comparison of the success rate of China-Brazil blocking tactics

Country	Straight shot %	Slope protection %	Straight shot %	Bending and anti-bending %	Total/count
China	6 42.9	2 20.0	0 0.0	1 12.5	9
Brazil	8 40.0	4 22.2	3 75.0	1 25.0	16

The comparison of blocking formations in Table 8 reveals that the Chinese team employed blocking tactics 34 times during the match. The most frequently used formation was blocking straight and defending diagonal (14 instances, 41.2%), followed by blocking diagonal and defending straight (10 instances, 29.4%), blocking straight and defending straight (2 instances, 5.9%), and blocking diagonal and defending diagonal (8 instances, 23.5%). Data shows that the most prevalent blocking formations were blocking straight and defending diagonal, along with blocking diagonal and defending straight, accounting for 70.6% of total formations. The Brazilian team also primarily used these two formations, making up 82.6% of their tactics. Table 9 analyzes the success rates of blocking attempts: China achieved 9 successful blocking attempts (26.5%), while Brazil recorded 16 successful attempts (34.8%), resulting in an 8.3% margin of difference. During the match, Xue Chen and Xia Xinyi exhibited improper defensive coordination in blocking, such as collisions between defenders during defensive movements. The Brazilian team avoided similar issues, demonstrating clearer blocking coordination. To improve blocking effectiveness, Xue and Xia should enhance communication, use effective

gestures to execute blocking tactics, ensure timely defensive movements, and anticipate opponents' attack patterns and key routes.

4.2.3. Analysis of the Defensive Counterattack Tactics

In beach volleyball, defense is pivotal, especially between evenly matched teams. A team with higher defensive success rates can better control the game's tempo and create more winning opportunities. The table below categorizes 'single defensive plays' as including both defensive counterattacks and blocking touches.

Table 9. Comparison of the first incoming defense of China and Brazil

Country	Able to attack %	No attack %	Anti-hacking %	Mistake %	Total/count
China	19 57.6	2 6.1	1 3.0	11 33.3	33
Brazil	17 42.5	4 10.0	5 12.5	14 35.0	40

China's defense featured 33 defensive attempts, including 19 successful attacks, 2 failed attacks, 1 defensive rebound, and 11 turnovers, yielding a 66.7% defensive success rate and 33.3% defensive error rate. Brazil's defense recorded 40 attempts, with 17 successful attacks, 4 failed attacks, 5 defensive rebounds, 14 turnovers, achieving a 65% defensive success rate and 35% error rate. In this match, China outperformed Brazil in defensive success rate, demonstrating the Xue Chen/Xia Xinyi duo's solid defensive performance. The two teams' defensive capabilities were relatively balanced, reflecting Xue Chen/Xia Xinyi's deep understanding of defensive tactics and their fearless spirit when facing strong opponents in international competitions.

In beach volleyball, counterattacks are a primary scoring strategy. Without effective counterattacks, teams struggle to widen the score gap or narrow the deficit against opponents. Defense forms the foundation of counterattack execution, where players' anticipation and decision-making accuracy are crucial for refining individual defensive skills and enhancing team counterattack capabilities. This makes counterattacks a vital component in beach volleyball matches.

Table 10. Comparison of the anti-counter effects of the Chinese team and the Brazilian team

Country	Score %	Breakthrough %	General %	mistake %	Total/count
China	10 50.0	1 5.0	7 35.0	2 10.0	20
Brazil	8 47.1	1 5.9	6 35.5	2 11.7	17

Regarding Xue Chen and Xia Xinyi's counter-attacking performance, the match's point-per-serve format meant the score was essentially a one-point game. When other stats were similar, counterattacks proved crucial. Table 11 shows Xue Chen/Xia Xinyi's higher counter-attack success rate, lower error rate, and better execution—slightly outperforming the Brazilian team. This indicates their effective counter-attacking play. However, in critical moments, they should avoid rushing after successful defense, instead maintaining steady, well-planned attacks to boost success rates, lift morale, narrow the gap, and even take the lead.

5. Research Findings and Recommendations

5.1. Conclusion

1.The serving technique of Chinese team tends to be stable, and the impact of the first attack on the opponent is small, and the serving is mainly directed to the defender in the second position.

2. In the receiving and serving technique, the Chinese team has a high first pass accuracy rate, which can effectively organize the attack. In the match, the Brazilian team mainly pursued the serve of Xia Xinyi from the Chinese team. When the opponent served the ball at the junction, the Chinese team appeared to "grab the ball" and let the ball pass.

3. Blocking is a weak point in China's counter-attacking defense, with low success rates and limited impact on opponents. Front-row blockers often hinder back-row defense, so decisive blocking and quick retreats are crucial. Partners should enhance communication to coordinate blocking routes effectively.

4. On the tactical front, China's offensive strategy proved monotonous and predictable, making it easy for opponents to anticipate. Their attacks were frequently blocked by the opponents' blocking formations, leading to a high error rate. The blocking tactics predominantly followed two patterns: "block straight, defend diagonal" and "block diagonal, defend straight." Defensively, Xue Chen and Xia Xinyi outperformed the Brazilian duo, whose drop shots were precise and their attacks often targeted the backcourt baseline, resulting in higher scoring efficiency. China's defenders should have improved their positioning and defensive awareness. While they excelled in counter-attacking phases, the match's loss primarily stemmed from weaknesses in blocking and defensive flexibility.

5.2. Suggestion

1. Xue Chen and Xia Xinyi should enhance their serving techniques by boosting their serving confidence while maintaining stability. They need to improve the power and accuracy of their serves, daring to challenge the opponent's first-attack system to reduce defensive pressure. Beyond improving serving performance, they should focus on practicing serving techniques for different landing points, such as near the sideline, corners, or between two players.

2. Regarding return techniques, the Chinese team should enhance their receiving skills, particularly against fast and unpredictable serves. They should lower their center of gravity to better control the ball's trajectory, while clearly designating the primary receiver for serves in the mid-court area.

3. For blocking, ensure proper height and hand positioning. Analyze the opponent's offensive tactics to execute blocking techniques accurately and enhance effectiveness. Tailor blocking strategies to match the opponent's strengths. If the opponent's attack is weak or they're adjusting their offense, adopt a defensive blocking approach to minimize losing points from hand contact and expand defensive coverage.

4. On the tactical front, the Chinese team must prioritize offensive training, demonstrating tactical flexibility in attack methods. They should diversify offensive strategies, master the "drop shot combination," refine their hitting feel and offensive awareness, and strengthen all aspects of their game. Maintaining high morale during matches is crucial for effective scoring. While the Chinese team's defense shows no significant difference from Brazil's, they must focus on blocking and positioning against opponents with precise drop shots and tricky placement. Defenders should position themselves further back to prevent opponents from hitting to the back court sideline or diagonally. The counter-attack phase requires thorough preparation, drawing lessons from every match. Daily training should emphasize improving defensive ball recovery rates, capitalizing on every defensive rebound opportunity, and enhancing overall defensive awareness, skills, and the tenacity to never give up.

Overall, the development of the China women's beach volleyball team is on the right track. Facing the world's top opponents, Xue Chen and Xia Xinyi demonstrated strong mental resilience and solid professional skills, combining offense and defense with seamless teamwork, showcasing the brilliant style of the China women's beach volleyball team.

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