

# Analysis of offensive tactical organization in volleyball against zonal blocking

Daniel Baker<sup>1, a</sup>, Jean Dupont<sup>2, b, \*</sup>

<sup>1</sup>Bloomberg London Headquarters, 3 Queen Victoria Street, London, EC4N 4TQ, UK

<sup>2</sup>Dartmouth College, Hanover, NH 03755, USA

a.bd\_26baker@xinnet.com, b.jean9367\_d@gmail.com

**\*Corresponding Author**

**Abstract:** This paper explores the characteristics of zonal blocking and its application in volleyball matches, aiming to identify the most effective offensive tactics when facing zonal blocking. The study provides references for further improving the volleyball training system and the development of volleyball. Conclusion: With the evolution of volleyball and its rules, a variety of offensive methods and tactical combinations have emerged, along with more detailed classifications of blocking forms, each with corresponding offensive strategies. Suggestions: In regular volleyball teaching, specialized analysis and training on offensive tactics against zonal blocking should be conducted. Additionally, multiple offensive tactical systems should be developed to cultivate players' ability to switch and apply offensive tactics flexibly and quickly.

**Keywords:** Volleyball, Zonal Blocking, Offensive Tactics, Analysis

## 1. Introduction

In volleyball, blocking is the first line of defense and a crucial component of counterattacks. With the development of volleyball techniques and tactics, the organization and application of blocking have become increasingly important in matches. Blocking is a defensive technique employed by the front-row players to intercept the opponents' attacks above the net. It is not only a defensive action but also an aggressive and proactive means of defense. The primary goals of blocking are to return the opponents' attacks, create favorable conditions for counterattacks, and ideally, to directly score points by blocking the opponents' offensive shots. Successful blocking can have a significant psychological impact on both teams and directly influence the outcome of the match.

To reduce the pressure on defenders and enhance the effectiveness of counterattacks, various blocking strategies have been developed in volleyball training and competitions, including man-to-man blocking, zonal blocking, rotational blocking, and positional blocking. Among these, zonal blocking is widely used in matches. With the continuous innovation and development of volleyball techniques worldwide, the improvement of individual skills, and the emergence of diverse blocking tactics, the difficulty of scoring in volleyball has increased. This has necessitated the development of more effective offensive tactics. These requirements have also spurred the emergence and rapid development of back-row attacks and the integration of front and back-row players in a three-dimensional offensive system. The three-dimensional offensive tactic refers to a coordinated attack strategy where front-row players execute various fast and varied tactics while back-row players jump near the attack line to create offensive opportunities. This tactic emphasizes the front-row players as the main attackers, with back-row players providing support. The core of this tactic is the quick breakthrough by front-row players, supported by realistic decoy attacks from the front row to create opportunities for back-row spikes and active movement by back-row players to distract the opponents and create favorable conditions for front-row attacks. The three-dimensional offensive tactic is based on traditional tactics. Previous analyses of volleyball techniques and tactics were often general and comprehensive, lacking in-depth studies on specific techniques. This approach overlooked the impact of key elements on the overall performance and failed to provide detailed insights into the application of techniques and tactics.

## 2. Research subjects and methods

### 2.1. Purpose of the study

Zonal blocking is one of the commonly used tactics in volleyball matches. By studying the tactical organization against zonal blocking in volleyball, we can gain a better understanding of the current status and development trends of modern volleyball tactical organization.

### 2.2. Significance of the topic

By studying the tactical organization against zonal blocking in volleyball matches, this research aims to provide practical references for the development of offensive tactics in real-world volleyball competitions.

### 2.3. Research subjects

The tactical organization against zonal blocking in professional competitive volleyball matches, and research on volleyball tactics.

### 2.4. Research methods

#### 2.4.1. Literature review method

In accordance with the research requirements of this thesis, extensive literature on volleyball offensive tactics and the selection of different blocking tactics was reviewed and collected through databases such as the China National Knowledge Infrastructure (CNKI), the Library of Shaanxi Normal University, Sohu Sports, and the China Volleyball Network. The relevant research findings of other scholars and experts in this field were carefully analyzed and summarized to provide a solid theoretical foundation for the research topic.

#### 2.4.2. Video observation method

By watching match videos, the application of tactics in volleyball matches was statistically analyzed. Additionally, the tactical choices under the situation of zonal blocking were statistically analyzed to provide relevant materials for the research of this thesis.

#### 2.4.3. Logical analysis method

By employing logical analysis methods such as induction, deduction, analogy, and reasoning, the collected information is thoroughly examined to substantiate the relevant conclusions and recommendations.

## 3. The evolution of volleyball blocking

### 3.1. The significance of blocking

in Volleyball Blocking is the first line of defense and one of the fundamental techniques in volleyball. It is an effective means of countering the opponent's powerful and fast attacks, an important method for scoring, and a defensive technique with offensive characteristics. Currently, blocking has evolved from basic forms such as "covering," "sealing," and "encircling" to more sophisticated tactical forms, including dense blocking, dispersed blocking, overlapping blocking, positional exchanges, and techniques like aerial displacement and double jumps [2].

A successful block can diminish the opponent's offensive momentum, reduce the pressure on the team's back-row defense, create favorable conditions for organizing counterattacks, and impose psychological pressure on the opponent's attackers. In matches, blocking is one of the key methods for scoring points and gaining the right to serve.

### 3.2. The main evolution of volleyball blocking

#### 3.2.1. The classification of volleyball blocking

With the updating of volleyball match rules and the continuous improvement of technical and tactical levels, the competition for the net in volleyball matches has become increasingly fierce. The characteristics

of modern volleyball matches include flexible and varied offensive tactics, high spiking points, fast ball speeds, and rapid attack-defense rhythms. If an effective block is not formed during the match, the defensive difficulty for the back-row players increases. Therefore, as the first line of defense and one of the main means of scoring, blocking has become increasingly prominent in matches. The higher the blocking success rate, the more effectively it can suppress the opponent's offense, and the greater the chances of winning. In today's volleyball matches, the competition for the net is increasingly intense, with blocking and spiking being the two key factors that determine victory or defeat. Good blocking techniques and effective cooperation can psychologically intimidate the spiker, weaken the opponent's offensive momentum and confidence, boost the morale of the team members, and serve as one of the sharp weapons for direct scoring. The level of blocking technique directly reflects a team's ability to compete for the net. With the development of volleyball towards larger, three-dimensional, and comprehensive directions, players' heights have increased significantly, and their jumping abilities have also improved. Coupled with the three-dimensional offensive tactics, the trend of combining height and speed has put forward new requirements for blocking levels [3]. From the development of modern volleyball and match situations, to transform the existing ability to compete with opponents into the key to victory, it is necessary to have the strength to compete for the net, and blocking is an important aspect of this competition. Therefore, various blocking forms such as zonal blocking, man-to-man blocking, positional exchange blocking, and player exchange blocking have been developed.

Zonal blocking divides the 9-meter blocking area into three zones, each 3 meters wide, with the three front-row blockers each defending one zone. The blockers perform blocking within their fixed zones, covering all offensive tactics such as high balls and quick balls within their zones.

Man-to-man blocking involves the three front-row blockers each covering the opponent's attacker in their corresponding position (for example, the main blocker covers the opponent's opposite hitter). Regardless of how the opponent's attacker moves, the blocker must follow and block their attacks.

Positional exchange blocking is used when the opponent's tactical movement (such as a front cross) causes mutual obstruction among the blockers, preventing them from making effective blocks. In this case, the blockers exchange the attackers they are covering.

Player exchange blocking is used when there is a significant difference in height or technical and tactical levels between the blockers and the opponent's attackers, or when the opponent consistently attacks from a specific point. In such situations, the blockers may not be able to form an effective block. Therefore, they exchange positions (for example, the vice blocker and the opposite hitter switch positions) to enhance their blocking effectiveness.

#### **4. Analysis of the zonal blocking system in volleyball**

Zonal blocking refers to dividing the 9-meter effective blocking area into three zones, with each blocker responsible for their designated 3-meter blocking zone. Within a zone, the blocker is tasked with blocking all types of attacks, including quick balls and high balls. This system ensures that regardless of the attacking tactics employed by the opposing team, at least one blocker is always in position to make a block. If multiple attackers are concentrated in one zone, the other two blockers can also provide assistance.

Due to the specific responsibilities assigned to each blocker—Blockers in Zones 2 and 4 are skilled at blocking high balls, while the blocker in Zone 3 is better suited for quick balls—one limitation of zonal blocking is that it may struggle to adapt to tactical movements within a zone (such as a secondary attack) or individual tactical variations (e.g., misalignment tactics by the vice spiker). This can lead to situations where the blockers are unable to form an effective block in time. The large blocking area assigned to each player in zonal blocking requires blockers to have good mobility.

Zonal blocking places high demands on the individual blocking skills of each player. Since each blocker is responsible for a 3-meter zone, they need to possess strong footwork and the ability to perform double jumps. Additionally, blockers must have good judgment and observational skills. For example, if the attacking team employs a misalignment tactic by the vice spiker, the blocker must discern whether the attack is genuine or a decoy to avoid being left out of position. In situations where the attacking team combines high and quick attacks or uses multiple attack points within a zone, the blockers must accurately judge the points of attack to effectively execute the block.

## 5. Organization of offensive tactics against zonal blocking in volleyball

With the continuous development of volleyball and the improvement of technical and tactical levels, by the 1980s, exchanges and integration among various technical and tactical schools had become more frequent, and the pace of innovation in playing styles had accelerated. The era when a team could dominate the volleyball world with a single skill was long gone. Consequently, a new volleyball revolution—total offense and defense volleyball—began quietly.

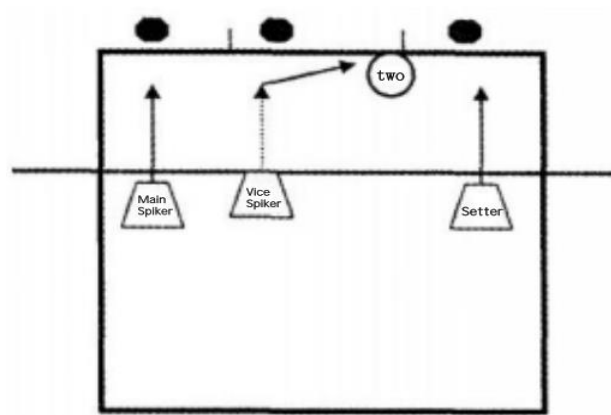
A team's offensive tactics cannot be singular or simplistic; otherwise, they can easily be deciphered and countered by opponents in matches. Therefore, a diverse range of offensive tactics is essential. The execution of offensive tactics must be well-organized, with multiple tactical systems designed to specifically break through the opponent's block. Emphasis should be placed on the combination of height and speed, as well as the integration of front and back-row attacks, to form an all-around offensive style. Additionally, offensive tactics should have continuity and coherence, and their application in matches should occasionally be sudden to catch opponents off guard.

The methods for breaking through zonal blocking in volleyball include conducting secondary attacks within a single zone and employing multiple attack points within the same zone. This confuses the blockers, making it difficult for them to determine the exact point of attack and thus preventing them from forming an effective block.

### 5.1. Front-row offensive tactics

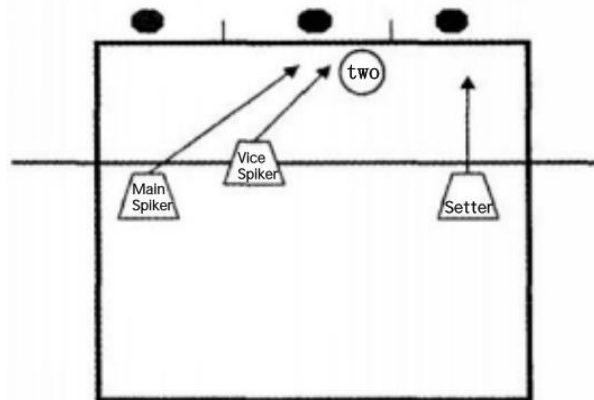
**Misalignment:** Misalignment refers to a personal tactic in which the vice spiker runs a quick attack, pretends to jump, deceives the opponent's blocker into jumping, and then moves laterally to avoid the blocker's area, creating a positional difference to spike the ball.

In this scenario, the main attacker is in Position 4, the vice spiker is in Position 3, and the opposite spiker is in Position 2. The main attacker spikes from Position 4, and the opposite spiker spikes from Position 2. The vice spiker runs to the short flat quick position, makes a fake action as if to spike a short flat quick ball, attracting the opponent's blocker in Position 3 to jump. By creating a positional difference, the vice spiker can then attack and score.

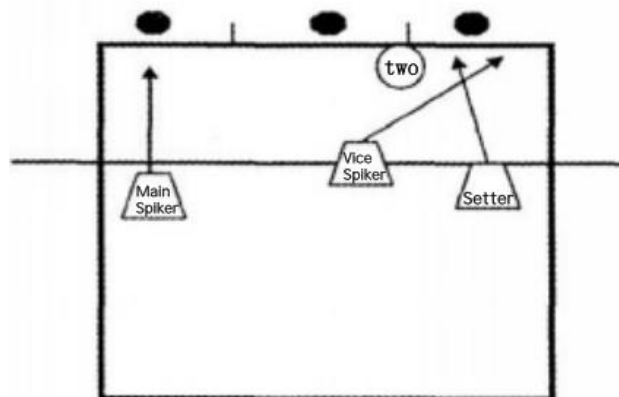


**Overlapping Attack (Staggered Attack):** The staggered attack, also known as the overlapping attack, is an offensive tactic conducted under the cover of a quick attack. During the attack, one player makes a fake movement as if to spike a quick ball or provides a decoy, while another player performs an overlapping attack from a slightly further position behind her, spiking a semi-high ball. Essentially, this tactic utilizes the same attack point, with two spikers providing mutual cover and attacking at different times. This confuses the opposing blockers, making it difficult for them to determine who the actual spiker is, thereby creating a situation where multiple attackers target a single point. From the definition, it is clear that there are no changes in the running movements in the staggered attack. The core content of the staggered attack is the superposition of attacks on a single point on the net. If executed well in practice, this tactic can achieve a good breakthrough effect [4]. For example, if the vice spiker runs a quick attack and the main spiker performs an overlapping attack from behind the vice spiker, spiking a semi-high ball in Zone 3, it creates a

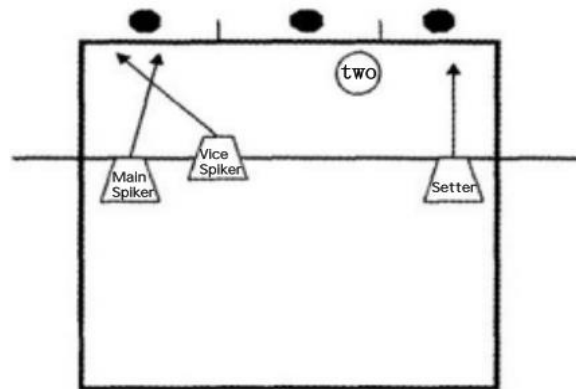
secondary attack within the same zone. This confuses the opposing blockers, preventing them from making a second block and ultimately scoring a point.



**Back Cross:** The actual definition of the back cross is as follows: When the setter faces the direction of Position 4 to pass the ball, the player in Position 3 makes a movement as if to spike a near-body quick ball or provides a decoy. Meanwhile, the player in Position 2, who is behind the setter, runs across in front of the setter to spike a far-net quick ball or a semi-high ball after crossing paths with the player in Position 3 [5]. From the definition, it can be seen that the core of the "cross" tactic is that two attacking players provide cover for each other through crossing movements, creating a surprise attack. The back cross refers to an attacking movement involving a cross run behind the setter, targeting the direction of Position 4. For example, if the vice spiker runs a back-fly attack and the opposite spiker runs behind the setter to form a crossing movement with the vice spiker, then spikes a semi-high ball in Position 2, it creates a secondary attack within the same zone. This confuses the opposing blockers, preventing them from making a second block and ultimately scoring a point.

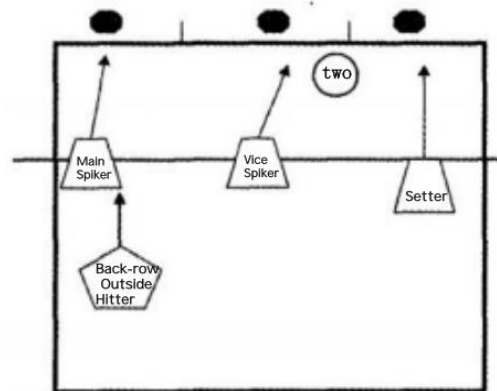


**Front Cross:** The front cross refers to the action where two front-row players run across each other. The spiker and another player cross their running paths and execute a running spike. Essentially, the two players provide cover for each other and create a situation in a localized area where there are more attackers than blockers. This confuses the blockers, making it difficult for them to determine which runner is the actual spiker, thus posing a significant threat [6]. From the definition, it is clear that the core of the "cross" tactic is that two attacking players provide cover for each other through crossing movements, creating a surprise attack. The front cross refers to an attacking movement involving a cross run in front of the setter, targeting the direction of Position 4. For example, if the opposite spiker spikes a high ball from Position 2, and the vice spiker runs a long flat quick attack, the main spiker and the vice spiker can form a crossing movement to spike a semi-high ball from Position 4.

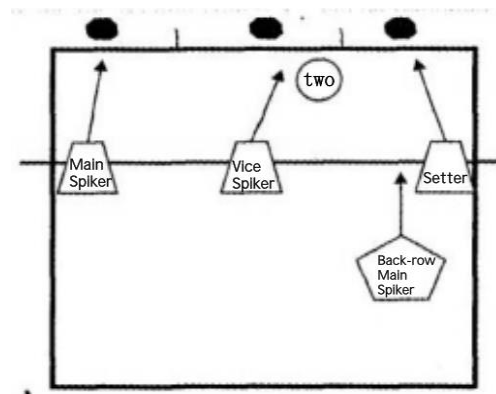


### 5.2. Back-row offensive tactics

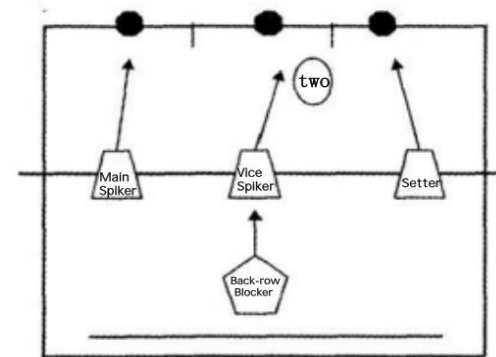
**Back Four Attack:** The back four attack refers to the offensive tactic where the back-row player in Position 5 (behind Position 4) executes an attack from the back row. In this formation, the main spiker is in Position 4, the vice spiker is in Position 3, and the opposite spiker is in Position 2. The main spiker attacks with a high ball from Position 3, the vice spiker executes a quick attack, and the opposite spiker spikes a high ball from Position 2. Meanwhile, the back-row main spiker performs a back four attack, creating a secondary attack within the area of Position 4. This confuses the opponents, making it difficult for them to determine the exact point of attack.



**Back Two Attack:** The back two attack refers to the offensive tactic where the back-row player in Position 1 (behind Position 2) executes an attack from the back row. In this formation, the main spiker is in Position 4, the vice spiker is in Position 3, and the opposite spiker is in Position 2. The main spiker attacks with a high ball from Position 4, the vice spiker executes a quick attack, and the opposite spiker spikes a high ball from Position 2. Meanwhile, the back-row main spiker performs a back two attack, creating a secondary attack within the area of Position 2. This confuses the opponents, making it difficult for them to determine the exact point of attack.



**Double Quick Attack:** The double quick attack refers to an offensive tactic where two attackers in the same area execute quick attacks from both the front and back rows. In this formation, the main spiker is in Position 4, the vice spiker is in Position 3, the opposite spiker is in Position 2, and the back-row vice spiker is in Position 6. The main spiker attacks with a high ball from Position 4, the vice spiker executes a quick attack, and the opposite spiker spikes a high ball from Position 2. Each attacker draws one blocker from the opposing team. The front-row vice spiker runs a quick attack to draw the opponent's blocker into jumping, while the back-row vice spiker jumps slightly later than the front-row vice spiker to avoid the block, creating an open net for the attack.



## 6. Conclusion

This paper has conducted a progressive analysis and study on the topic of offensive tactical organization against zonal blocking in volleyball, from basic to advanced levels. With the evolving trends in volleyball and the continuous updates to its rules, a wide variety of offensive methods and tactical combinations have emerged. Correspondingly, more detailed classifications of blocking forms have been developed, each with its own set of countermeasures. Blocking and attacking are like a complex of interacting contradictions, promoting and constraining each other. For every blocking form, there is a corresponding offensive tactic, and for every new offensive tactic, a counter-blocking form can be developed.

A volleyball team must develop multiple offensive tactical systems, with tactics that are diverse and adaptable, in order to efficiently score points in matches. In regular volleyball training, specialized practice on offensive tactics against zonal blocking should be emphasized. Offensive tactics should not be singular or simplistic, to avoid being easily countered by opponents, which could lead to a situation akin to "hitting against a wall." Instead, multiple offensive tactical systems should be established to cultivate players' ability to be flexible and adaptable, as well as their capacity to quickly switch and apply different offensive tactics.

## 7. References

- [1] Pu Yan. Analysis of the Characteristics and Application of Modern Volleyball Three-Dimensional Offensive Tactics in Matches. *Neijiang Science and Technology*, 2011(3): 160.
- [2] Shen Minghai, Shi Lv. Development Trends of Modern Volleyball Individual Tactics. *Sports*, 2013(2): 18.

- [3] Wu Jiayi, Cai Zhiyuan. Research on the Practical Blocking Level of Chinese Men's Volleyball Team. *Journal of Zhangzhou Normal University (Natural Science Edition)*, 2009(2): 139.
- [4] Staggered Attack is merely an overlap on a single point [Online]. Available: <http://www.vbol.cn/forum.php?mod-viewthread&tid=82102006>.
- [5] Volleyball Tactics [Online]. Baidu Baiku. Available: [http://baike.baidu.com/link?url=g2f5BVibMNb2HA90FE1-eQz6zvkkBaw84zOdeDnJ7zp3vFHctf59oPdEwmoRm2wiKQdGJwUz54IY4VC8wh4Bq\\_#6](http://baike.baidu.com/link?url=g2f5BVibMNb2HA90FE1-eQz6zvkkBaw84zOdeDnJ7zp3vFHctf59oPdEwmoRm2wiKQdGJwUz54IY4VC8wh4Bq_#6).
- [6] Same as [5].