

# Analysis of the Technical and Tactical Use of Zuo Ju, China's Outstanding Reserve Athlete in Women's Small Levels—The Example of the 2023 World Taekwondo Championships

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**Abstract:** *This study employs the literature review method, video observation analysis, mathematical and statistical methods, and logical analysis to investigate the technical and tactical statistics of junior-level taekwondo athlete Zuo Ju in the 53 kg class, who won the silver medal in the 2023 World Taekwondo Championships across five matches. The organization and analysis of these statistics focus on the analysis of taekwondo tactics used in the matches, characteristics, scoring, and other aspects of taekwondo. The aim is to elevate the competitive level of Chinese female taekwondo, and to provide a reference for cultivating high-level rising stars following the retirement of veteran Wu Jingyu.*

**Keywords:** *2023 World Taekwondo Championships; women's 53kg; taekwondo techniques and tactics*

## 1. Introduction

The women's taekwondo in the small weight category in China is one of the strong events for the national team. After the Tokyo Olympic Games, the world champion Wu Jingyu announced her retirement. As a 'sparring' taekwondo player, Zuo Ju gradually stood out. Since 2018, Zuo Ju has achieved numerous successes: she won first place in the 53 kg category in the 2020 National Taekwondo Championships, the women's 49 kg category champion in the 14th National Games in 2021, a silver medal in the women's 53 kg category in the Taekwondo World Championships in 2022, the women's 49 kg category champion in the World Taekwondo Grand Slam Championship Series and the Olympic Games qualifiers in 2023, and a silver medal in the women's 53 kg category in the 2023 World Taekwondo Championships in June of the same year.

The World Taekwondo Championships, which began in 1973 and are held every two years, are the oldest international taekwondo competition. They are also known as the pinnacle of fighting competition and are considered as important as the Olympic Games. The 2023 Baku World Taekwondo Championships were held in Baku, the capital city of Azerbaijan, on May 29th, 2023. These World Championships also laid the groundwork for the achievements at the 2024 Paris Games. In the women's 53kg taekwondo competition, the Chinese youngster Zuo Ju overcame five challenges and won four consecutive matches to secure third place in the 53kg category in the final. Based on this, this study focuses on an in-depth analysis of the techniques and tactics applied by the rising star Zuo Ju in the competition. It summarizes and analyzes the characteristics of her performance in a multi-dimensional way, aiming to provide a reference for stabilizing the competitive level of China's taekwondo team and preparing for the 2024 Paris Olympics.

## 2. Subjects and Methods

### 2.1 Research target

The subject of this dissertation is the technical and tactical use of Zuo Ju, a 53kg female Taekwondo player in 2023 Baku World Taekwondo Championship.

## 2.2 Literature Review Method

In this paper, a comprehensive search was conducted using the keywords "Taekwondo technical and tactical research" and "Taekwondo women's athletics" through the library of Shandong University of Science and Technology, as well as electronic databases. The aim was to gain a thorough understanding of the development direction, talent pool, characteristics, and current status of the Chinese women's taekwondo team. This comprehensive approach provided a solid foundation for the study.

## 2.3 Video observation analysis method

In this paper, we search the event information of 2023 World Taekwondo Championships 53kg tournament through Mickey Mouse Video, Central Video and CCTV Sports Channel for five matches: 1/16 match, 1/8 match, 1/4 match, semifinals and finals, to count the use of Zuo Ju's techniques and tactics.

## 2.4 Mathematical and statistical methods

The data summarized using the software and video observation and analysis method were analyzed and counted.

## 2.5 Logical analysis

Pragmatically summarize the collected data information in a multi-faceted comparative analysis.

## 3. Results and analysis

### 3.1 Basic analysis of the 5 matches of Zuoju at the 2023 World Championships

Table 1 2023 World Championships Zuoju match opponents and scores

competition stage	Name of opponent	score of a minor inning			totals
1/16	ERGASHOVA Sitora	9:2	10:8		2:0
1/8	TASKIN Zaynrp	5:3	12:9		2:0
1/4	Dubai	10:9	3:10	9:8	2:1
semifinals	SAMYELHOSSEINY Shahd	9:2	8:2		2:0
finals (of a competition)	CEREZO IGLESIAS Adriana	0:14	7:10		0:2

At the 2023 World Taekwondo Championships in Baku, Chinese Taekwondo youngster Zuo Ju (53kg) emerged victorious, winning the silver medal. She participated in five matches, as shown in Table 1. In the sixteenth and eighth rounds of the competition, Zuo Ju easily dominated, adopting an active and direct attacking approach to win 2:0. In the quarter-final, she faced Su Baiya from Taiwan, who played cautiously and conservatively. Zuo Ju won the first round of the match 10:9 but lost the second round 3:10. In the third round, she quickly adjusted her mentality, changed her technique, tactics, and defense strategy to secure a one-point victory. In the semi-final, Zuo Ju relied heavily on cross kicks as her main scoring method, combined with high-quality combination movements and a counterattack strategy. She won the first game 9:2 and the second game 8:2, achieving a significant score and an easy victory. However, in the final, her opponent displayed a stronger offensive consciousness and an aggressive playing style, which made Zuo Ju's playing style more passive. She lost the first game 0:14 by a significant margin but quickly adjusted in the second game to catch up. Unfortunately, she ultimately lost by a score of 7:10. Overall, Zuo Ju demonstrated courage and skill in her five matches, adeptly adjusting and changing her scoring methods and strategies based on her opponents' characteristics. As a relatively inexperienced player, her ability to psychologically adapt to the competition may still be lacking. Therefore, subsequent training should focus on strengthening her physical qualities, technical and tactical skills, and improving her psychological resilience.

### 3.2 Analysis of the use of Zuoju technology at the 2023 World Championships

Scoring and winning depend on the ability to utilize basic techniques, and high-quality tactics cannot be separated from the mastery of these fundamental skills. Zuo Ju employed a range of basic techniques across her five matches, including horizontal kicks, side kicks, downward chops, straight punches, backward spinning kicks, spinning kicks, and hook kicks.

According to the data presented in Table 2, it is evident that Zuo Ju's most frequently used basic techniques in the five matches of this World Championships were, in order, horizontal kicks, downward chops, side kicks, and straight punches. The spinning kick technique was utilized less frequently. Specifically, the horizontal kick was employed 205 times, with a utilization rate of 58.4%. However, the single success rate was only 7.8%, with 16 successful attempts. Nevertheless, the scoring rate of 30.3% was the highest among all the technical statistics.

In contrast, the utilization rates of the spinning kick, backward spinning kick, and hook kick were 0.57%, 2.6%, and 2%, respectively, with success rates of 0%, 11.1%, and 14.3%. The corresponding scoring rates were 0%, 4.5%, and 2.6%. Rotational movements, while technically more challenging and offering higher scoring potential, involve a larger movement range and unstable center of gravity, making them easier for opponents to exploit. Zuo Ju adopted a conservative and cautious approach in her matches, hence the infrequent use of these three techniques.

The straight punch technique can be relied upon for quick and accurate counterattacks against opponents, thereby increasing one's scoring rate and decreasing the opponent's. In summary, Zuo Ju predominantly utilized the horizontal kick technique to launch attacks or counterattacks across her five matches, albeit with a less than ideal success rate. This suggests a need to intensify training in this technique in future sessions.

Moreover, Zuo Ju adeptly employed the straight punch technique in matches to counterattack and shift momentum, effectively disrupting her opponents' scoring opportunities while enhancing her own. This not only enhanced the viewing experience for the audience but also underscored her proficiency in tactical adjustments.

However, Zuo Ju's utilization of more complex leg techniques, such as spinning kicks, was limited. This indicates a need for further refinement and experience in executing these higher-level maneuvers. Future training should focus on improving the scoring rate of simpler techniques like horizontal kicks while simultaneously strengthening the application of more challenging techniques to bolster overall scoring potential.

Table 2 Statistics on the use of basic techniques of Zuoju at the 2023 World Championships

Type of technology	Number of times used	utilization rate	Number of successes	success rate	score	scoring rate
horizontal kick	205	58.4%	16	7.8%	34	30.3%
side kick	45	12.8%	4	8.9%	11	9.8%
axe kick	60	17.1%	3	5%	13	11.6%
straight punch	23	6.6%	13	56.5%	13	11.6%
spin kick	9	2.6%	1	11.1%	5	4.5%
whirlwind kick	2	0.57%	0	0	0	0
hook kick	7	2%	1	14.3%	3	2.6%

### 3.3 Analysis of the use of Zuoju's single and combined techniques at the 2023 World Championships

Taekwondo's single technique refers to the use of a single Taekwondo leg technique movement by a participating athlete when completing an attack, counter-attack, or defense, and the combination movement refers to the use of multiple Taekwondo leg technique movements when completing an attack, counter-attack, or defense. The reasonable and effective use of individual technical movements to form a complete and mature combination of technical movements and applying them in the field is crucial for colleges and universities to control the rhythm of the game, score more points, and achieve victory in competitions.

As can be seen from Table 3, Zuo Ju's single technical movement was used 270 times in five games, with a utilization rate of 76.9%, while the combination technical movement was used 81 times, with a utilization rate of 23.1%. Compared to Zuo Ju's single technical movement, which was used more often, its utilization rate was much higher than that of the combination technical movement. The success rate of the single technical movement is 52.8%, and the success rate of the combination technical movement is 47.2%. In summary, although the utilization rate of the single technical movement is much higher than that of the combination technical movement, the difference between their success rates is small.

The utilization rate of the combination technical movement is low, but its success rate is high compared with that of the single technical movement. The score rate of the single technical movement is 44.3%, and that of the combination technical movement is 55.7%, which is 10.4% higher than the score rate of the single technical movement. In conclusion, Zuo Ju's combination of technical movements in the competition is of high quality and enhances the audience's enjoyment.

Nowadays, the requirements of Taekwondo competitions are getting higher, and the application of single movement techniques alone cannot satisfy the goal of winning championships. Therefore, diversified combinations of technical movements not only can score more points but also play a role in deterring opponents and enhancing confidence after successfully using them. On the field, horizontal kicks, downward chops, side kicks, and straight punches are more commonly used as single actions, while combination actions are less used, and the type of single action is mostly a horizontal kick followed by a clutch leg or downward chop. After the match, we can strengthen the training and application of combinations of technical movements to lay a foundation for future championships in high-level events.

*Table 3 Statistics on the use of Zuoju's single and combined techniques at the 2023 World Championships*

Type of technology	Number of times used	utilization rate	Number of successes	success rate	score	scoring rate
single technology	270	76.9%	19	52.8%	34	44.3%
combinatorial technique	81	23.1%	17	47.2%	42	55.7%

### **3.4 Analysis of the use of Zuoju's tactical techniques at the 2023 World Championships**

The diversity and flexibility of tactics determines whether a game or even a match is won or lost. The efficient use of tactics cannot be separated from the proficient mastery of basic Taekwondo kicking techniques. Therefore, basic techniques and tactics are indispensable in order to win the championship. Zuo Ju used three kinds of tactics in the five matches of the 2023 World Championships: counterattack, attack, and a combination of attack and counterattack. Counterattacking tactics means that when the opponent is about to attack but has not yet formed a technical action or is in the process of forming a technical action, our athletes are ready to kick up their legs simultaneously to execute the technical action. The counterattacking technical action does not aim to score points, but can be used to counter the opponent's offensive action and disrupt the technical action that the opponent has already formed. Attacking tactics refer to the situation where one of the athletes in the opposing team does not show any intention to kick. When the other athlete has no intention to kick, he/she will take the initiative to quickly and accurately kick the other athlete. The counterattacking technique is employed when the other athlete adopts attacking tactics. The other athlete will use basic Taekwondo footwork to move and avoid the attacking line of the opponent and make a quick reaction to counterattack. The use of this tactic can help the athlete take control of the game, control the tempo, and increase the scoring probability and the winning rate. Athletes cannot execute the tactics in a game the same way they do in training. They should adjust their tactics flexibly at any time based on the characteristics of different opponents, such as height, age, and customary tactics. They should also utilize fake movements, such as swaying or foot movement, to prevent opponents from scoring, thereby increasing their chances of winning.

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*Table 4 2023 World Championships Left Ju Tactical Usage Statistics*

Type of tactics	Number of times used	utilization rate	Number of successes	success rate	score	scoring rate
face an attack	176	50.2%	15	40.5%	32	42.1%
offense	139	39.6%	19	51.4%	39	51.3%
beat back	36	10.1%	3	8.1%	5	6.6%

## 4. Conclusions and recommendations

### 4.1 Conclusion

The leg technique movements used by Zuo Ju in the five matches of the 2023 Baku World Taekwondo Championships were the horizontal kick, side kick, downward chop, backward spinning kick, spinning kick, and hook kick. Among these, the horizontal kick had the highest utilization rate and score rate, followed by the straight punch with the second-highest success rate. The spinning kick had the lowest success rate, utilization rate, and score rate.

In the five matches of the 2023 World Taekwondo Championships in Baku, Zuo Ju used single technical movements 190 times more than combinations of technical movements. However, the scoring rate of the single techniques was 11.4% lower than that of the combinations. The single technical movements were mainly straight punches, horizontal kicks, and downward chops, while the combinations were primarily horizontal kicks + downward chops and horizontal kicks + straight punches. Among these combinations, the horizontal kick + downward chop had the highest scoring rate.

Regarding Zuo Ju's use of tactics in the five matches of the 2023 World Taekwondo Championships in Baku, counterattacking tactics were used most frequently. However, they had lower success and scoring rates compared to attacking tactics. The use of counterattacking tactics combined with other tactics was the least frequent and had the lowest success and scoring rates.

### 4.2 Recommendations

In the context of Taekwondo competitive matches, where electronic protective gear is used, straight punches emerge as a highly efficient method of scoring. In the process of applying straight punches, it is crucial to shorten the distance with the opponent as their movements may not be effective in scoring. While the cross-kick is the most frequently used leg technique among the basic leg technique movements, its success rate is low. A large number of strikes without effective scoring can be very costly and increase the difficulty of winning. Therefore, in future training, Zuo Ju should continue to strengthen physical training, enhance the success rate and scoring rate of the basic leg technique movements led by the horizontal kick, and also reinforce the training and application of high-difficulty technique movements to bolster his high-scoring technique ability.

From the five games, it is evident that Zuo Ju is more skilled in mastering and applying single technical movements, whereas the accuracy rate of the combination technical movements is low. In future training, the coach should adopt a student-centered approach, focusing on the students' abilities and developing a new training mode to improve the proficient application of Zuo Ju's technical movement combinations. This would ultimately enhance the utilization rate of combination technical movements during the games.

Upon analyzing the videos of the five games, it is apparent that Zuo Ju employs fewer offensive tactics in the game, often placing himself in a passive position on the field. Going forward in training, it is imperative to revise the tactical application mindset and adopt a more proactive playing style. By prioritizing offense, we can continuously improve the scoring rate of attacking tactics and establish a flexible and diversified tactical strategy that mainly revolves around offensive tactics but also accommodates multiple tactics.

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