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Movement Analysis of *Momtong Dollyo* and *Eolgol Dollyo Chagi Kicks* in *Kyorugi* Athletes at Orion Taekwondo Dojang, Kepahiang, Bengkulu

Selvi Zalehah, Arie Asnaldi, Rosmawati, Weny Sasmitha, Suwirman

[1,2,3,4]State University Padang, Padang, 21751, West Sumatra, Indonesia

*Corresponding Author: vivilukman31@gmail.com

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Abstract

This study aims to analyze the movement techniques of momtong dollyo and eolgol dollyo chagi kicks in kyorugi athletes at the Orion Taekwondo dojang, which, based on initial observations, still show weak mastery of basic techniques. The approach used is descriptive with a case study method, involving 14 kyorugi athletes selected purposively. Technique assessment was conducted using an assessment rubric and evaluated by judgment through observation of four technical aspects: initial stance, execution, final stance, and dominant kicks. Data analysis was carried out using a quantitative descriptive model with a percentage formula. The research results showed that 65.47% of athletes were classified as athletes who frequently use the eolgol dollyo chagi kick, while 96.42% of athletes mostly used the momtong dollyo chagi kick. It can be concluded that the momtong dollyo chagi kick is more often used in competitions because it is easier to perform compared to the eolgol dollyo chagi kick, with the tendency that the kicks used by athletes aim to score as many points as possible and win the match.

Keywords: *Dollyo Chagi, Kick Analys, Kyorugi,* Taekwondo

1. Introduction

Sports are activities owned by every person; by exercising, one can gain physical freshness and achieve performance, thus improving the quality of good work (Bridge et al., 2014; Chaabene et al., 2018). Achievement sports in Indonesia receive significant attention from the central and regional governments, so it is hoped that the development and coaching of achievements can be carried out more seriously, resulting in athletes who excel at the regional, national, and international levels (Bridge et al., 2014)

The development of sports is very important to create healthy individuals both physically and spiritually, as well as possessing noble character and being able to enhance the unity and integrity of the nation (Lee et al., 2005). Taekwondo is one of the martial arts that originated from South Korea and has rapidly developed in various countries, including Indonesia. Taekwondo is not only viewed as a martial art but also as a competitive sport officially contested at the national and international levels (Roslan & Abdullah, 2020; Umang & Mortejo, 2023).

Taekwondo has been an Olympic sport since 2000, thus increasing the demands for the quality of athletes' techniques, physical abilities, and mental strength (Kim et al., 2023; Lim et al., 2019). The achievements of taekwondo athletes are greatly determined by the mastery of good basic techniques, especially kicking techniques. In taekwondo competitions in the kyorugi category (fighting), kicking techniques play a very dominant role compared to punching techniques. This is due to the rules and scoring system that give higher points for attacks using the feet compared to the hands (Castro Garrido et al., 2020).

Kicks performed with the correct technique, adequate strength, and hitting the valid target area will yield significant points for the athlete (Lee et al., 2005). Therefore, mastery of kicking techniques becomes a key factor in determining victory in kyorugi matches. One of the most frequently used kicking techniques in Taekwondo competitions is Dollyo Chagi. This kick has advantages in terms of speed, flexibility of use, and the opportunity to score points (Chaabene et al., 2018).

It is explained (Estevan Torres et al., 2015)Dollyo Chagi is a circular kick that uses the back of the foot as the striking part. Dollyo Chagi is divided into two main types based on the target, namely Momtong which targets the body and Eolgol which targets the head. Based on observations of athletes at Kyorugi Dojang Orion Taekwondo Kepahiang, several issues were found in the execution of the Dollyo Chagi technique. These issues

include the inconsistency of hand positions during attacks, the angle of knee lift that is not yet optimal, and a lack of balance after executing the kick. In addition, athletes tend to use Momtong more often than Eolgol Dollyo.

107 although the point value of Eolgol is higher. The technical problems in the execution of the Dollyo Chagi kick can directly impact the athletes' performance. Athletes who are unable to execute the kick effectively will struggle to accumulate points, even if they have good physical condition. This condition indicates a gap between the ideal technique taught in training and the technique applied during competitions. Therefore, a thorough study is needed to analyze the movement of the Momtong Dollyo and Eolgol Dollyo Chagi kicks.

In the context of taekwondo, the analysis of the Dollyo Chagi kick can be conducted by observing several phases of movement, namely the initial stance, execution phase, and final stance. These three phases are interconnected and determine the overall effectiveness of the kick (Kim et al., 2018). With this research, it is hoped that the results of the analysis can be utilized as a basis for developing training for the Dollyo Chagi kick, both in terms of basic technique, movement coordination, and tactical application in competitions.

2. Materials and Methods

This research uses a quantitative descriptive approach with observation. This approach is chosen to objectively and systematically describe the mastery of the Momtong Dollyo and Eolgol Dollyo Chagi kicks in kyorugi athletes without providing treatment or manipulation to the research subjects. According to (Sugiyono, 2015), quantitative descriptive research aims to describe the phenomena that occur based on numerical data obtained from direct measurement and observation.

The research subjects are 14 athletes from Kyorugi Dojang Orion Taekwondo Kepahiang selected using purposive sampling technique. The sample selection criteria include active athletes, with at least regional competition experience, and in the green to red stripe belt category (grup 7-1). All samples are male athletes with balanced body weight, and during competitions, they use an electronic scoring system(Creswell & Creswell, 2017).

Data Collection Technique

Data collection for the research is conducted through indirect observation with the help of video recordings of simulation matches. This technique is chosen so that the movement assessment can be done meticulously and repeatedly. The data collection procedure is as follows:

1. Video Recording of Matches: Athletes perform matches with a certain duration using standard Taekwondo equipment, such as body protectors, headguards, and foot and hand protectors.
2. Assessment with Judgement: The video recordings are then analyzed by three judges consisting of nationally certified Taekwondo referees. The assessment is conducted using a scale.

The research instrument is in the form of a technical assessment rubric that includes four main aspects, namely:

1. Initial stance
2. Execution
3. Final stance
4. Dominant kick

Each indicator is assessed with a category of "2" or "1" to indicate the conformity of the movement with the ideal technique.

Data Analysis Techniques

Data obtained from the judgement assessment was subsequently analyzed using descriptive percentage analysis techniques. The scores from the three judgements were recapped and the average value was calculated for each technique indicator. The resulting scores were then presented in percentage form using the following formula:

$$P = \frac{f}{n} x\ 100\%$$

P: Percentage
F: Score Frequency
N: Total Maximum Score

The results of the percentage analysis were used to describe the level of mastery of the Momtong Dollyo and Eolgol Dollyo Chagi techniques in the Kyorugi athletes of Dojang Orion Taekwondo Kepahiang.

3. Result

The results of this study were obtained from the analysis of the observation of the Momtong Dollyo Chagi and Eolgol Dollyo Chagi kicks in the Kyorugi athletes of Dojang Orion Taekwondo Kepahiang. The assessment was conducted by three certified national judges through the observation of video recordings of matches. The aspects analyzed included the initial stance, execution phase, final stance, and the dominant kick used by the athletes.

Initial Stance

The initial stance is a very important phase in the execution of the Dollyo Chagi kick as it serves as the foundation for balance and readiness of the athlete before launching an attack.

Table 1. Percentage of Initial Stance Results

No	Indicator	Value	Percentage
1	Hands front of chest	68	80.95%
2	Ready stance	64	88.09%
3	Focused gaze	84	100%

(Source: Research Results)

Based on the research results, the majority of Kyorugi athletes at Dojang Orion Taekwondo Kepahiang have been able to apply the initial stance quite well. This is evident from the use of the ready stance (88.09%) and the straight gaze towards the opponent, which was consistently performed by all athletes. The majority of athletes were able to take the initial stance position stably and maintain their gaze towards the opponent before kicking.

The stance provides body stability and facilitates the athlete to make quick movement transitions, while a focused gaze helps the athlete anticipate the movements and attacks of the opponent.

Figure 1. Ready Stance Position

(Source: Research Documentation)

However, in the indicator of hand position in front of the chest (80.95%), several athletes were still found to be inconsistent in maintaining it. The hand position not being in front of the chest can reduce protection against the body protector and open up opportunities for counterattacks from opponents. This condition shows that although the initial stance has generally been mastered well, further training is still needed that emphasizes coordination between body posture and defensive function so that athletes can optimally apply the initial stance in competition situations.

The results of the assessment recap show that the aspect of the initial stance obtained an average percentage above 80%. This indicates that athletes have a fairly good basic understanding of the initial stance in supporting balance and readiness of movement before performing the Dollyo Chagi kick.

Implementation

The implementation of the Dollyo Chagi kick is the core phase that determines the effectiveness of the attack and the opportunity to score points.

Table 2. Percentage of Implementation Results

No	Indicator	Value	Percentage
1	Hands front of chest	36	42,86%
2	90° knee	42	50%
3	Hip-higth legs	82	97,61%
4	Target direction of the opponent	84	100%

(Source: Research Results)

In the aspect of the implementation phase, the research results show variations in the level of technique mastery among athletes. Several implementation indicators, such as the direction of the kick and the contact of the back foot on the target, have been performed well by most athletes. All athletes were able to direct their kicks to valid targets, towards the body and head of the opponent, and maintain focus on the target. This indicates that athletes understand the main objective of the kick, which is to hit the sensor area to score points.

In terms of kick height, a large portion (97.61%) of athletes were also able to lift their legs to hip or rib height, indicating a good level of flexibility and body control. However, some weaknesses were still found in certain indicators, particularly the hand position when kicking and the knee lift that has not yet reached the optimal angle.

Figure 2. Implementation of Kicks

(source: research documentation)

Although there are still some athletes who have not lifted their knees to form a 90° angle (50%) and have not consistently maintained their hands close.

The chest position when kicking. Technically, the angle of the knee and hand position greatly influence the strength, balance, and accuracy of the kick. In the context of competition, athletes tend to prioritize the effectiveness of attacks over the perfection of biomechanical techniques. This indicates a difference between the ideal technique in training and the applicable technique used by athletes during competition.

The analysis results show that the percentage of mastery in the execution phase is in the sufficient to good category, with the average score being below the initial stance aspect. Some athletes lower their hand position when releasing the kick, resulting in less optimal body protection. In addition, insufficient knee lifting causes the kick trajectory to be less strong and accurate, potentially reducing the effectiveness of the kick in scoring points.

Final Stance

The final stance is a subsequent phase after the kick

release that plays an important role in maintaining balance and the athlete's readiness to perform the next attack or defense.

Table 3. Percentage of final stance results

No	Indicator	Value	Percentage
1	Foot pulled back	75	89,28%
2	Ready stance	78	92,85%

(Source: Research Results)

Based on the research results, the majority of athletes are able to pull back their feet to the original position and form a ready stance after kicking(Ozbar, 2015). This indicates that athletes have quite good body control and an understanding of the importance of maintaining stability after launching an attack.

Figure 3. Final stance position

(source: research documentation)

Therefore, mastery of the correct final stance needs to be continuously trained so that athletes not only focus on scoring points but also maintain the continuity of movement, balance, and safety during the competition. The average percentage in the final stance aspect is in the good category. However, there are still some athletes who are slow to return their body position to the defensive stance, thus opening opportunities for opponents to counterattack. This finding indicates that the final stance still needs improvement, particularly in terms of the speed of transition from attacking to defending.

Dominant Kicks

The research results show that the majority of athletes often use Momtong Dollyo compared to Eolgol Dollyo. Only a small number of athletes predominantly use Eolgol Dollyo Chagi. This indicates a tendency for athletes to choose techniques that are safe and easy to perform, even though the points are low.

Table 4. Percentage of dominant kick results

No	Indicator	Value	Percentage
1	*Momtong Dollyo Chagi*	71	96,42%
2	*Eolgol Dollyo Chagi*	55	65,47%

(source: research results)

From the total sample studied, 92.85% of athletes more often used Momtong Dollyo Chagi compared to Eolgol Dollyo Chagi in match simulations. The dominance of the use of Momtong Dollyo Chagi indicates that athletes tend to choose kicks with a lower risk level and a higher chance of success. Meanwhile, Eolgol Dollyo Chagi is used by athletes in smaller numbers because it requires better technique, flexibility, and timing, as well as having a risk of losing balance if not performed correctly. Overall, the research results show that the mastery of the Momtong Dollyo Chagi and Eolgol Dollyo Chagi techniques among Kyorugi(Lim et al., 2019) athletes of Dojang Orion Taekwondo Kepahiang is in the good category. The initial and final stance aspects show relatively higher results compared to the execution phase. The execution phase remains an aspect that still requires special attention because several technical errors that could potentially reduce the effectiveness of kicks in matches were still found.

4. DISCUSSION

The discussion of this research focuses on the analysis of the basic techniques of Momtong Dollyo Chagi and Eolgol Dollyo Chagi performed by Kyorugi athletes of Dojang Orion Taekwondo Kepahiang in match situations. Generally, the research results show that the majority of athletes have a fairly good mastery of basic techniques, especially in aspects directly related to scoring points. This indicates that the training process that has been carried out so far has provided adequate technical foundations for athletes to compete in matches.

In the initial stance aspect, the research results show that the majority of athletes have been able to take the initial position well before performing kicks. A stable horse stance, focused gaze towards the opponent, and hand position in front of the chest reflect the athletes' readiness to attack and defend. A good initial stance provides body stability and the athletes' readiness to respond to attacks or opportunities to attack(Bujang et al., 2019; Kim et al., 2023). However, some athletes were still found to be inconsistent in maintaining their hand position in front of the chest. This inconsistency can impact the defense aspect, as the hand position serves to protect the body protector from the opponent's attacks. This finding indicates that although the initial stance has been mastered, the coordination between attacking and defending functions still needs to be improved.

Nevertheless, even though the initial stance is in the good category, the research results show that some athletes are still inconsistent in maintaining their hand position during the transition to the execution phase of the kick. In the execution phase, all athletes were able to direct their kicks to valid targets and maintain them. The focus of the view towards the

target. This shows the athlete's understanding of the main goal of the kick in the match, which is to score points.

In terms of ideal technique, there are still athletes who have not lifted their knees and have not kept their hands close to their chests. This condition indicates a difference between the techniques taught in training and the techniques applied during matches, as athletes adjust their movements for the effectiveness of attacks and energy efficiency.

In the aspect of the final stance, most athletes have been able to retract their legs and return to a ready stance after executing a kick. A good final stance plays an important role in maintaining balance and readiness to perform follow-up movements, both defensively and offensively(Hanief & Puspodari, 2017; Shin et al., 2016). However, there are still some athletes who are inconsistent in maintaining their hand positions after kicks. This has the potential to open up counterattack opportunities from opponents and increase the risk of violations, thus requiring attention in the training program.

5. Conclusion

Based on the results of the research and analysis that have been conducted, it can be concluded that the Kyorugi athletes at Orion Taekwondo Dojang Kepahiang generally have a good mastery of the basic technique of Dollyo Chagi kicks. This is evident from the athletes' ability to apply the initial stance, execution, and final stance of the kick, particularly in the indicators of ready stance and focus of view towards the opponent.cHowever, some inconsistencies were still found in certain technical aspects, such as hand position in front of the chest and the angle of knee lift that have not fully aligned with the ideal technique. Furthermore, the results of the match situation research indicate that athletes tend to prioritize the effectiveness of techniques over the perfection of movements.

Biomechanics. This is reflected in the tendency of athletes to choose techniques that are safer and easier to consistently score points. In terms of execution, all athletes were able to direct their kicks to valid targets and maintain focus on their opponents, thus still able to score points despite some deficiencies in several basic technique indicators. Other conclusions indicate that Momtong Dollyo Chagi is the most dominant kick used by Kyorugi athletes of Dojang Orion Taekwondo Kepahiang compared to Eolgol Dollyo Chagi. This dominance is due to a lower level of difficulty, better body balance, and a smaller risk of errors and penalties. Meanwhile, Eolgol Dollyo Chagi, although it has a higher point value, is relatively rarely used because it requires greater flexibility, balance, and precision. Therefore, improving the quality of training that emphasizes consistency in technique and physical readiness is essential to support optimal athletic performance achievements.

The discussion regarding dominant kicks shows that Momtong Dollyo Chagi is used more frequently than Eolgol Dollyo Chagi. This is due to the lower difficulty level of Momtong Dollyo Chagi, better body balance, and a smaller risk of error. Eolgol Dollyo Chagi has a higher point value but demands better flexibility, balance, and precision.

These findings indicate that athletes tend to choose techniques with the most favorable risk-to-reward ratio in matches. The research results also show that Momtong Dollyo Chagi is the most dominantly used kick by athletes, with a percentage of 92.85%. The dominance of Momtong Dollyo Chagi usage indicates that athletes tend to choose techniques with a lower risk level and a higher chance of success in scoring points. Coaches need to design training that not only emphasizes effectiveness but also improves the overall quality of techniques for athletes in applying movements during competitions.

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