



The Effect of SAQ Training (Speed, Agility, and Quickness) and Balance on Yeop Chagi Taekwondo Kicking Skills

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Abstract

The background of this research is the low skill of 9 year old athletes in performing the yeop chagi taekwondo kick movement. This study aims to analyze the effect of SAQ and balance training on Yeop Chagi Taekwondo kicking skills. The research method used was an experimental method with a treatment design by level 2 x 2. The research subjects were 32 Fazz Taekwondo Team Bandung athletes, divided into two groups, each group consisting of 16 people. The results of the research are as follows: 1) the yeop chagi taekwondo kicking skills of Fazz Taekwondo Team athletes using ladder drills for poomsae training (mean = 99.50 and s = 2.90) are better than the yeop chagi taekwondo kicking skills using ladder drills training (mean = 99.25 and s = 4.25). 2) Fcount of interaction (FAB) = 8.796, with p-value $0.006 < 0.05$, so H_0 is rejected and H_1 is accepted. 3) the value of Qcount (Qh) = 6.19 is greater than $Q_{table} = 4.05$ or $Q_{count} > Q_{table}$ at the significance level $\alpha = 0.05$. This means that there is a difference between ladder drills for poomsae training and ladder drills training for yeop chagi taekwondo kicking skills in athletes who have high balance. 4) Qcount (Qh) = 5.67 is greater than $Q_{table} = 4.05$ or $Q_{count} < Q_{table}$. This means that there is a difference between ladder drills for poomsae training and ladder drills training for yeop chagi taekwondo kicking skills in athletes who have high balance. Thus, it can be concluded that overall there is an influence of SAQ and balance training on Yeop Chagi Taekwondo Kick skills.



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INTRODUCTION

Taekwondo is one of the most successful modern martial arts sports which has its roots in traditional Korean martial arts (Fachrezzy, Maslikah, Reginald, et al., 2021). Taekwondo is a martial art that uses empty foot and hand techniques, where the main concept of Taekwondo is a combination of strength, speed, agility, balance and accuracy. Taekwondo is divided into three words, tae means foot or attacking an opponent using the foot, kwon means hand or attacking with a punch and defending oneself with parry, and do which means art or a way of disciplining oneself. This sport not only teaches physical aspects, as in fighting, but also places great emphasis on teaching aspects of mental discipline. There are deep philosophical aspects in Taekwondo so that by studying Taekwondo, the mind, soul and body as a whole will grow and develop. In this sport we should show good physical condition, mental strength and high enthusiasm. Taekwondo requires excellent physical condition, because every movement technique must be maximized due to the high intensity of the movement. One of the physical conditions that must be possessed is balance.

Taekwondo is a sport that is well developed, it can be seen from the quality of the matches held or the mastery of techniques possessed by taekwondo athletes (Wardhani & Yane, 2023). Based on developments that have existed to date, this is a manifestation of the implementation of science and technology which has become a very important part in the development of sports in general.

Taekwondo is a sport that is highly popular, so many clubs and regional coaching have started to be established with aims ranging from fun activities for children, fitness to high

levels of achievement. This sport has many kicking techniques, where providing training is one of the important factors for improving skills in kicking techniques (Apriantono et al., 2013).

The results of observations made on Fazz Taekwondo Team Bandung athletes who train 3 times a week, namely on Tuesdays, Thursdays and Sundays and with an average athlete age of 6-15 years, Fazz Taekwondo Team Bandung athletes also actively participate in events or Taekwondo championships at regional, provincial and national levels were held. Then there were several problems during training, namely the lack of balance in the Yeop Chagi kick when carrying out basic Taekwondo technical movements so that there was no freedom to take steps and attacks or respond to the opponent's attacks. Fazz Taekwondo Team Bandung athletes still haven't maximized the yeop chagi kick movement technique that they trained during training or sparring or during competition. Even when competing, Fazz Taekwondo Team Bandung athletes were unable to optimize the opportunities available so they lost when competing. In practice, many athletes still have difficulty performing the yeop chagi kick. Such as the direction of the gaze looking down which should be looking towards the target, the shaft of the foot not tiptoeing, and many still use the apchuk or tip of the foot when kicking which should use the sole of the foot.

Then during training it was proven that when sparring, athletes were very slow and found it difficult to avoid attacks from opponents so that it was very easy for opponents to anticipate these attacks. In this case, balance is very necessary and important when carrying out attacks, changing steps, and countering so that you can avoid and counter attacks from your opponent. If athletes do not have balance, it will be difficult to anticipate attacks. The kick

that requires balance when competing is yeop chagi, where not only the legs play a role when executing the kick. The hands also help in the process of performing the Yeop Chagi kick technique. The position of the hands must be closed towards the body, otherwise there will be a backward force or deceleration which will make the technique imperfect, ineffective and inefficient. However, there are still many athletes who, when executing the yeop chagi kick movement, position their hands or arms open or pointing backwards, which later when competing will be detrimental to the athlete. This requires good balance when kicking between the feet and hands.

In order to get a correct yeop chagi kick, you need muscle strength and good balance. Because muscle strength will help the quality of movement or correctness in the technical aspect, and of course it is also supported by providing appropriate training effectively and efficiently.

Taekwondo as a sport has a positive psychological and physiological influence on the growth and development of children and adolescents (Baek et al., 2021). Because taekwondo is a martial art for disciplining oneself by using empty foot and hand techniques (Fachrezzy, Maslikah, Ali, et al., 2021) which is useful for improving one's health condition and obtaining self-defense functions and martial arts sports by training skills through practice basic techniques, "poomsae", "kyokpa" and "kyorugi" (Kukkiwon, 2012).

Kicks are one of the important techniques in taekwondo and athletes must master them. This is because kicks are a kicking technique that is used to attack and gain points. Foot technique is a technique that is often used in taekwondo competitions because the points obtained are greater (Roslan & Abdullah, 2020). Therefore, if you want

to have good taekwondo athletes, coaches must improve the athletes' taekwondo kicking skills. Simple skills are the ability to carry out tasks with specific goals to be achieved (Burdukiewicz et al., 2018). Improving kicking ability certainly requires a variety of effective exercises by paying attention to various factors that influence taekwondo kicks. The problem that often occurs in training, especially taekwondo kicks, is that there is still a lack of knowledge and lack of variation among trainers regarding the factors that influence taekwondo kicks.

Alp dan Gorur (2020) yeop chagi technique skills, namely the knees and thighs are lifted by bending at the hips, the strength of the kick is strengthened by turning the body towards the target, the feet and toes are bent. The edge of the foot is held parallel to the ground and the knee of the kicking leg should be lower than the heel. When done correctly, the kicking leg will be completely straight after hitting the target.

Training is basically an educational process that aims to help individuals improve their cognitive, affective and psychomotor abilities. Training is a series of several training processes that are arranged systematically, carried out repeatedly, the amount of training load increases day by day. Athletes prepare themselves to achieve certain goals through structured and focused training. The purpose of training is to improve athletes' skills and work capacity in order to optimize athlete performance (T. O. Bompá & Buzzichelli, 2019).

Every exercise has the aim of illustrating something, in a better direction, as is the case in the sport of football. Therefore, in preparing and planning the training process, a trainer must consider factors called training components. Training is a very important strategic factor in the coaching process to

achieve maximum quality performance in a sport (T. Bompa & Haff, 2018).

One form of training to increase agility in sports science is SAQ (Speed, Agility, Quickness) training. SAQ training has become a popular form of training to improve physical condition today. In fact, SAQ training has been developed and used for a long time, namely since the 1980s, originating from the United States. This SAQ training is applied by many American Football coaches to improve the physical abilities of their athletes, and later on SAQ training became an inspiration and is widely used by other sports. SAQ training is a progressive training system and is a training designed to develop and prepare basic motor skills so that they are able to integrate them into movement patterns in each sport (Amar et al., 2017). SAQ training also allows athletes to become better at reading and reacting to stimuli, move effectively and efficiently in all directions and be able to control their overall body movements with good coordination and balance.

SAQ exercises often involve movements that require good balance, such as jumping, turning, and changing direction quickly (Soemardiawan, 2018). Through these exercises, the core muscles and stabilizers of the body are strengthened, which are important components of balance. Along with this, taekwondo athletes will develop skills to maintain their body balance when performing complex movements, such as executing the yeop chagi kick.

Next, the factor that can improve Yeop Chagi kicking skills is balance. Balance is an element of physical condition, one of the important elements of physical condition. This element of balance is very prominent in controlling the body's neuromuscular organs (Angulo et al., 2020). Balance is the ability to maintain the correct posture and body

position when standing (static balance) or when making movements (dynamic balance) (Sinatriyo et al., 2020). Improved balance will allow taekwondo athletes to maintain their body position better when executing the yeop chagi kick (Lubis & Nasution, 2021). This is important to ensure the kick is executed with optimal precision and stability, so that it reaches the target accurately and effectively. SAQ training develops athletes' ability to quickly adjust their balance in changing situations (Ariansyah et al., 2017), such as when facing a moving opponent or anticipating an attack. This is important in the yeop chagi kick because it allows the athlete to remain balanced and responsive even in dynamic situations.

Balance is the ability of a person to maintain the center of gravity of the plane of support when in an upright position. Balance is the ability to accept every reaction that the body has so that it will be in a stable position (Tauhidman & Ramadan, 2018). Balance is closely related to the kicking movement process. It is very important to have physical components such as balance. Balance is very necessary to perform the yeop chagi kick. Balance is required when one leg is lifted when the kick is executed.

Balance is a general term that describes the dynamics of body posture to prevent a person from falling. Balance is assumed to be a group of reflexes that trigger balance centers found in the visual, vestibular, and somatosensory systems. The Visual System or vision system is the main system involved in planning movements and avoiding obstacles along the way. The vestibular system can be thought of as a gyroscope that senses or influences linear and angular acceleration, while the somatosensory system is a system consisting of many sensors that sense the position and velocity of all body

segments, contact (impact) with external objects (including the ground), and gravitational orientation (Pratama & Sarkity, 2023).

Carrying out movement activities requires factors, meaning that physical condition is one of the conditions demonstrated in efforts to improve performance. Balance is a very important physical component of a person's movement performance. Balance is the ability to maintain the neuromuscular system in an efficient position or attitude while we move (Harsono, 2017).

Balance is the ability to maintain posture and body position quickly when standing (Static Balance) or when making movements (Dynamic Balance). Situation and balance are divided into two parts: 1) balance (static balance) is balance referring to the ability to maintain the body's position in a still position. 2) dynamic balance (dynamic balance) is a balance that leads to a moving body position (Widiastuti, 2017). Balance involves various movements in each body segment supported by the musculoskeletal system and fulcrum. The ability to balance body mass with the fulcrum will enable humans to carry out activities effectively and efficiently (Bowman & Rosario, 2021).

Based on the problems above, this is a deficiency in physical condition, one of which is balance in performing the yeop chagi kick movement. The balance factor is very much needed to support kicking movement techniques in the sport of taekwondo. Various forms of agility and balance training are ladder drills, ladder drills for poomsae taekwondo, ladder drills, down the line drills, grass drills, starting and stopping runs (Muti, 2023). With so many forms of balance training, researchers found hope that by providing zig-zag running training and ladder drills for poomsae taekwondo

training, it was the right training for the problems above.

Based on the background and limitations of the problem described previously, the formulation of this research problem is:

1. Is there a difference in yeop chagi taekwondo kick skills using ladder drills and ladder drills for poomsae taekwondo?
2. Is there an interaction between SAQ (Speed, Agility, and Quickness) training and balance on Yeop Chagi Taekwondo kicking skills?
3. Is there a difference in yeop chagi taekwondo kick skills using ladder drills and ladder drills for poomsae taekwondo for athletes who have high balance?
4. Is there a difference in yeop chagi taekwondo kick skills using ladder drills and ladder drills for poomsae taekwondo for athletes who have low balance?

METHODS

The purpose of this research is to scientifically analyze the effect of SAQ (Speed, Agility, and Quickness) training with ladder drills and ladder drills for poomsae taekwondo as independent variables, balance as a control variable on yeop chagi kick skills in athletes aged 6-9 years. This research method uses quantitative research with experimental methods. The experimental method is a research method used to find the effect of certain treatments (Sugiyono, 2017).

Research design is a design used to simplify the research process (Mulyadi, 2013). The design used in the research is the 2 x 2 treatment by Level design. The treatment by level design is an action on one or more variables which is manipulated simultaneously in order to study the influence of each variable on the dependent variable or the influence

caused by the interaction between several variables (Sari et al., 2017).

Participants

The sample is part of the number and characteristics of the population (Dewi & Nathania, 2018). The sample for this research was taken using a purposive sampling technique. The sample was selected, namely Fazz Taekwondo Team Bandung athletes aged 6-9 years, totaling 32 athletes.

Sampling Procedures

This sampling procedure uses simple random sampling. Simple Random Sampling is taking sample members from a population randomly without paying attention to the strata in that population (Sugiyono, 2017). to determine the number of samples using the Verducci technique.

Materials and Apparatus

Data collection in this research was carried out through two activities, including: (1) literature study related to ladder drills for poomsae and ladder drills, balance and yeop chagi taekwondo kicks; (2) with a research instrument, namely the Yeop Chagi Taekwondo kick skill instrument through expert judgment validation.

Procedures

The procedures in this research use procedures in experimental research, namely: (1) determining samples and grouping them into one research class, (2) pre test, (3) treatment, and (4) post test (Aka, 2019).

Design or Data Analysis

1. Normality Test

The normality test is a test to determine normality in the distribution of data. The normality test is carried out to

determine the distribution of data, whether the data is normally distributed or not (Lestari, 2017). This test is carried out to find out whether the data distribution is normally distributed or not. Normality testing was carried out using the liliefors test.

2. Hypothesis Testing

To test the hypothesis using Analysis of Variance or two-way ANOVA. by comparing differences in sample mean values involving two or more factors. Two-way ANOVA can be used to see the interaction between two factors consisting of two or more categories on other variables (Karunia Eka Lestari, 2018).

RESULT

The requirements for testing analysis include carrying out a normality test using the Liliefors test and hypothesis testing in this research is carried out using two-way analysis of variance and followed by the Tukey test, if there is an interaction in the test. Based on data obtained in the field, the results are presented as follows:

1. Normality Test

Normality testing was carried out using the Liliefors test at a significance level of $\alpha = 0.05$. The results of the normality test for the entire group of research data show that the largest Lcount value of all treatment groups is smaller than the Ltable value, thus it can be concluded that the sample comes from a normal distribution population.

2. Hypothesis Testing

Hypothesis testing uses two-way analysis of variance (ANOVA). with the following results

- a. Based on the summary of the results of the calculation analysis

- (ANOVA) at a significant level of $\alpha = 0.05$, it is found that $F_o = 3.017$ with $p\text{-value} = 0.000 < 0.05$ or H_0 is rejected. Thus, there is a difference in the average yeop chagi taekwondo kick skills of the group of athletes who were given training with Ladder drills for poomsae taekwondo and Ladder drills.
- b. The results of F_{count} interaction (FAB) = 8.796 with $p\text{-value} = 0.006 < 0.05$ or H_0 is rejected. Thus, there is a very significant interaction effect between SAQ training (factor A) and balance (factor B) on Yeop Chagi Taekwondo kicking skills. From the results of the analysis, it can be seen that the influence of SAQ and balance training variables on Yeop Chagi Taekwondo kicking skills is $RSquared = 0.327 \times 100 = 32.70\%$.
- c. The value of Q_{count} (Q_h) = 6.19 is greater than $Q_{\text{table}} = 4.05$ or $Q_{\text{count}} > Q_{\text{table}}$ at a significant level of $\alpha 0.05$, Thus, Q_{count} is greater than Q_{table} , so that H_0 is rejected, it can be interpreted that there is a difference in the Yeop Chagi Taekwondo kick skill score which has a significantly high balance between Ladder drills for Poomsae Taekwondo and Ladder Drills. In other words, athletes who have high balance using Ladder drills for poomsae taekwondo (mean = 104.50) are higher than those who have high balance using Ladder drills (mean = 98.51) on the Yeop Chagi Taekwondo kick skill score. Thus the research hypothesis is stated that the average athlete who has high balance using Ladder drills for poomsae taekwondo is higher than the average athlete who has high balance using Ladder drills on the Yeop Chagi Taekwondo kick skill score which is acceptable.
- d. The value of Q_{count} (Q_h) = 5.67 is larger than $Q_{\text{table}} = 3.79$ or $Q_{\text{count}} > Q_{\text{table}}$. Thus, Q_{count} is greater than Q_{table} , so H_0 is rejected, it can be interpreted that there is a difference in the Yeop Chagi Taekwondo kick skill score which has a significantly low balance between Ladder drills for Poomsae Taekwondo and Ladder Drills. In other words, athletes who have low balance using Ladder drills for poomsae taekwondo (mean = 94.50) are lower than those who have low balance using Ladder drills (mean = 100) on the Yeop Chagi Taekwondo kick skill score. Thus the research hypothesis is stated that the average athlete who has low balance using Ladder drills is higher than the average athlete who has low balance using Ladder drills for poomsae taekwondo on the Yeop Chagi Taekwondo kick skill score which is acceptable.

DISCUSSION

In the first hypothesis, it is said that there is a difference between SAQ training and Yeop Chagi Taekwondo kicking skills. The results found that there were differences in Yeop Chagi Taekwondo kick skill scores between athletes using Ladder drills for poomsae Taekwondo and using Ladder drills.

SAQ training has a very important role in the training process. Technical training is an element that greatly influences technical mastery (Gunawan et al., 2016) including in taekwondo. The aim of training technical movements is to

automate movements according to the desired movement technique and correct automation. In training, there are stages that must be carried out for someone to master a movement technique.

If the athlete does not have an interest in training to learn a new movement then the training will cause boredom. With appropriate SAQ training, it is hoped that athletes will become active and can influence the athlete's training results (Lao, 2019).

In Ladder drills for poomsae taekwondo, it is an SAQ exercise that begins with a forward step movement. Before performing the yeop chagi kick, the taekwondo coach asks the athlete to take 3 steps forward to produce a good yeop chagi kick. Ladder drills for poomsae taekwondo are SAQ exercises that can be used to apply the knowledge you already have, train various thinking skills, attitudes and concrete skills, so that it is hoped that they will be able to increase the athlete's enthusiasm for training and improve their training results. Meanwhile, the ladder drills method is a teaching method where the trainer gives students the task of learning something, then reports the results. The Ladder drills method is applied as an effort to support and simplify training.

Thus, it can be seen that project-based SAQ training is effective in improving Taekwondo Yeop Chagi kick skills in athletes compared to ladder drills. In the second hypothesis, there is an interaction between ladder drill for poomsae training and ladder drills training on Yeop Chagi Taekwondo kicking skills. This is related to the training results which will be optimal if the athlete has good balance, of course this will help the athlete improve his yeop chagi kicking skills. Training must be carried out continuously systematically and accompanied by an increase in training load according to the individual

athlete's stage. Training is a systematic training process that is carried out repeatedly and the longer the amount of training load increases (Tangkudung & Asmawi, 2019).

Apart from that, balance is a person's ability to maintain the center of gravity of the plane of support when in an upright position. Balance is the ability to accept every reaction that the body has so that it will be in a stable position (Tauhidman & Ramadan, 2018).. Therefore, balance is closely related to the kicking movement process. It is very important to have physical components such as balance. Balance is very necessary to perform the yeop chagi kick. Balance is required when one leg is lifted when the kick is executed.

The interaction of SAQ and balance training will provide an alternative to the overall yeop chagi kicking skill. SAQ (Speed, Agility, and Quickness) training is very appropriate when applied to athletes who have high balance. This can happen because the application of Ladder drills or Ladder drills for poomsae will guide the athlete in controlling the skills of the yeop chagi kick being performed. So that taekwondo accuracy and speed can be done well. An athlete's high balance is a good supporting factor for mastering Yeop Chagi Taekwondo kicking skills. Thus, it can be seen that there is an interaction between SAQ training (Ladder drills for poomsae and Ladder drills) and balance on Yeop Chagi Taekwondo kicking skills. In the third hypothesis, the difference between ladder drill training for poomsae training and ladderdrill training which has a high balance on Yeop Chagi Taekwondo kicking skills

Ladder drills for poomsae Taekwondo are exercises specifically designed to help improve the techniques and skills required in the performance of poomsae, namely a series of formal

movements or patterns that are an integral part of the martial art of Taekwondo (Persada et al., 2023). These ladder drills are different from general ladder drills because they focus more on the technical and artistic aspects typical of poomsae.

This exercise helps athletes to develop precision in each step and position required in poomsae. Every step and body rotation must be carried out precisely according to the poomsae standards taught. The movements in ladder drills for poomsae strengthen breathing control and body balance (Utomo, 2018). This is important because poomsae requires the athlete to maintain good control over their movements throughout a series of patterns.

Ladder drills for poomsae help improve coordination between the complex movements of the feet, hands and body rotations required in poomsae. Good coordination between these body parts is essential for the proper execution and aesthetics of poomsae movements. By using ladder drills for poomsae, athletes can prepare themselves mentally and physically for poomsae competitions. These drills help hone quick responses and recovery after certain movements, which are important in performing in front of judges. In the fourth hypothesis, the difference between ladder drills for poomsae training and ladder drill training which has a low balance on Yeop Chagi Taekwondo kicking skills

Technical training is an element that greatly influences technical mastery (Gunawan et al., 2016) including in taekwondo. The aim of training technical movements is to automate movements according to the desired movement technique and correct automation. In training, there are stages that must be carried out for someone to master a movement technique. Ladder Drill is a form of jumping exercise using one or two legs by jumping over a ladder-shaped

rope placed on the floor or ground (Pamungkas et al., 2023). Training ladders are some of the most common props throughout the world, and they assist athletes in a variety of movements that train speed and agility with good foot coordination. Following stair training usually involves a certain pattern of stairs placed flat or relatively flat on the floor. By moving the feet in and out of the steps, the aim is to increase speed (Somerset, 2014).

Ladder drill training using a ladder or agility ladder that focuses on fast movements and correct reactions can increase running speed. Ladder drills are an important part of many team sports practices. Athletes can move their legs quickly and precisely (Chandrakumar & Ramesh, 2015). As stated by Hadi et al., the Ladder Drill is the most frequently performed exercise in various parts of the world because this exercise can help players in various types and kinds of movements which can increase agility, balance and speed with better coordination (Hadi et al., 2016). In addition, this exercise can teach a player to take the right steps according to his agility. Speed, coordination, flexibility and balance are supporting factors for agility.

CONCLUSION

Based on the research findings, conclusions can be obtained including the following: (1) Overall, there is a difference in the influence of ladder drill for poomsae taekwondo and ladder drill on Yeop Chagi Taekwondo kick skills. This means that the effect of ladder drill for poomsae taekwondo is higher than ladder drill in improving Yeop Chagi Taekwondo kicking skills, (2) there is an interaction effect between SAQ training and balance on Yeop Chagi Taekwondo kicking skills; (3) there is a difference in

influence between the ladder drill for poomsae taekwondo group and the ladder drill group for athletes who have high balance on yeop chagi taekwondo kick skills; and (4) There is a difference in influence between the ladder drill for poomsae taekwondo group and the ladder drill group for athletes who have low balance on yeop chagi taekwondo kick skills

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