

Effect of Agility Training Method and Leg Muscle Flexibility on Mawashi-Geri Kick Results at Club Karate Bukit Sejahtera, Palembang

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Abstract

The purpose of this study is: (1) Analyzing the difference in influence between Illinois agility training methods and t-drill exercises on the results of the Mawashi-Geri kick, (2) Analyzing the effect of high and low leg muscle flexibility category on the results of the Mawashi-Geri kick, (3) Analyze the interaction between the agility training method and leg muscle flexibility on the Mawashi-Geri kick. This study used an experimental method using factorial 2x2 design. The data analysis technique used Variant Analysis (ANOVA) at a significance level (α) of 0.05. The subjects in this study were karate athletes at Bukit Sejahtera, Palembang, South Sumatra. The results of this study: (1) There is a difference in influence between Illinois agility training and t-drill on the Mawashi-Geri kick, (2) There is a difference in influence between karate athletes who have the high and low category of leg muscle flexibility on Mawashi-Geri kick, (3) There is an interaction between the agility training method, and leg muscle flexibility towards the Mawashi-Geri kick results at Bukit Sejahtera karate club/dojo, Palembang. Suggestion: sports coaches can use the Illinois agility training method as an alternative training method for the Mawashi-Geri Jodan kick training, and for other researchers who wish to conduct similar research, it is hoped that it will further develop research with a broader scope.

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INTRODUCTION

Sport is a methodical and systematic practice of both physical training and movement games, and the goal is to strengthen the body, to develop capability, courage, initiative, discipline and to enable performance achievement (Sabina, Elena-Andreea, and Ioana-Sorina, 2014). Sports achievements, sports competed or competed at both the National and International levels such as the PON, the Asian Games Olympiad, following the agreed rules (Sukirno, 2012).

Karate is a type of martial arts which is popular in the world today, after traditional martial arts (Wahid, 2007). Karate martial arts is different from other martial arts sports because this sport that is preferred is the art of movement and athlete achievement, this means that this sport does not hurt the opponent or is often said not to be a full body contact when the match has judged the art of the athlete's movement seen in the Kata match and committee (Simbolon, 2014).

The achievements of an athlete or sportsman are from physical quality, technique, tactics, and psychological maturity. To achieve high achievement, it is necessary to prepare planning with the right targets, including physical, technical, tactic, and psychological preparation (Ambarukmi, 2007). Simbolon (2014) says karate is a complex sport which means that all physical needs must be complete. So it can be concluded that the relationship between these factors is inseparable and influences each other.

In the Journal of Sport Sciences, according to Alsamad (2012). Mawashi-Geri kicks are a favorite among much-experienced karate because they are relatively easy to use and have potential effectiveness. Mawashi-Geri kick is divided into two targets, namely the target on the back area will get 2 points, and the target on the face will get 3 points following the rules of World Karate Federation and FORKI competition (Simbolon, 2014).

To get point 3 from the Mawashi-Geri kick is not easy, must meet the kick criteria, because Mawashi-Geri kicks are sensitive to face targets, resulting in a violation. Criteria for evaluating

Mawashi-Geri kicks mainly targets on the face if you have good form, awareness of the right target, right time and distance, according to Kolopita (2013) in the Rule of Competition, World Karate Federation.

Flexibility is the ability to move the body or its parts as widely as possible, without joint tension and muscle injury (Fenanlampir, 2015).

Agility is a component of physical fitness that is very necessary for all activities that require speed in changing body position (Widiastuti, 2011). Meanwhile, according to Wiguna (2017) said agility is a person's ability to change direction without losing balance while still doing specific sports skills movements. In the opinion of Verducci in Roesdiyanto, and Budiwanto (2008) it was stated that agility formation is more complicated than the other configuration. Agility is the result of forming elements of speed, strength, coordination, and balance.

The method of training is a procedure and practice that aims to develop or improve the abilities and skills of an athlete (Tangkudung, 2012). With excellent and varied training methods, an athlete is expected to achieve optimal performance. Harsono (2017) said that every exercise must contain useful drills and clear direction and purpose of the training. In improving physical abilities and karate techniques, effective and efficient training is needed. In this study, the training method used was the Illinois agility training method and t-drill exercise.

The results of observations in a competition event held by FORKI South Sumatra many things need to be improved and improved, on average Bukit Sejahtera, Palembang karate athletes who competed during the event lacked aggressiveness when competing, were more inclined to punch techniques, so the kick technique was rarely used. Therefore it looked monotonous and not maximal when playing. Mawashi-Geri's technical skills, especially in Jodan's target, are correct, but still not fast and agile, and lack of balance when shooting in defense, some kicks are taken in vain, and opponents easily deflect some.

METHODS

This research is quantitative research with an experimental method which aims to compare two different treatments to the research subjects with factorial design techniques. According to Sudjana (2005) factorial experiments are experiments that almost or all levels of a factor are combined or crossed with all the levels of each of the other elements in the experiment. The design of this study is a two-factor design.

The population in this study were 33 students at Bukit Sejahtera karate club, Palembang. Samples are totaling 24 karatekas obtained by purposive sampling technique with the category of high and low leg muscle flexibility. Sugiyono (2015) said the purposive sampling technique is a sampling technique based on specific considerations. The independent variable in this study is the agility training method (Illinois agility and t-drill), and the attribute variable is high and low limbs, while the dependent variable is the result of Mawashi-Geri's kick. Data collection techniques in this study will use instrument administration techniques.

The instrument used in this study was a side splits test to measure the extension of leg muscle flexibility, moreover, the Mawashi-Geri kick test to measure the results of Mawashi-Geri's karateka kick at Bukit Sejahtera, Palembang. The data analysis technique used ANOVA at the 0.05 significance level with the help of SPSS 21.

RESULTS AND DISCUSSION

The test table of the subjects effects functions to be able to test the hypothesis of the effect of agility training and leg muscle flexibility on the results of Mawashi-Geri's kick at the Bukit Sejahtera karate club, Palembang. The table of tests of the effects of the subject can be seen in table 1.

Hypothesis testing can be explained as follows:

- (1) There is an influence between the Illinois agility training method and t-drill training on the results of Mawashi-Geri Jodan's kick at

Bukit Sejahtera karate club, Palembang which was tested using the ANOVA test and obtained $F_{value} = 3.846$ with a significance value of 0.034. The results of this calculation are consulted with F_{table} with the numerator $dk = 1(b-1)$ and denominator $(kb(n-1))$, with a significance level obtained from $F_{table} = 3.47$, because $F_{value} = 3.846 > F_{table} = 3.47$ with a significance level of $0.034 < 0.05$.

Table 1. Tests Between-Subjects Effects Data on The Effect of Agility Training Methods and Leg Muscle Flexibility on The Results of Mawashi-Geri's Kick

| Source | df | Mean square | F | Sig. |
|-------------------------------|----|-------------|-------|------|
| Training method | 1 | 4.167 | 3.846 | .034 |
| Flexibility | 1 | 7.424 | 4.696 | .042 |
| Training method * Flexibility | 1 | 5.416 | 3.846 | .025 |

Illinois agility training methods are better than t-drill agility in improving Mawashi-Geri Jodan's kick results. The Illinois agility training method has an average increase in the results of Mawashi-Geri Jodan's kick by 18,916, while the t-drill agility training method has an average of 18,333. The average increase in the results of Mawashi-Geri Jodan's kick at Bukit Sejahtera karate club/dojo, Palembang which conducted Illinois agility exercises was higher than the t-drill agility exercise and had a significant difference. So that the Illinois agility training method is better for improving the results of Mawashi-Geri Jodan's kick than the t-drill agility training method.

Factors that cause Illinois agility training method is better than the t-drill agility training method, because in the form of Illinois agility training exercises there is a movement to change the direction and form of exercise almost the same as the form of tests to be given to accelerate the contraction of the nervous system and increase muscle mass. Increased stimulation of the nervous system and enlargement of muscle mass which can lead to increased agility.

- (2) There are influences of high muscle flexibility and low leg muscle flexibility on increasing the results of Mawashi-Geri Jodan's kicks at the Bukit Sejahtera karate club, Palembang

tested using the ANOVA test and obtained $F_{\text{value}} = 4.696$ with a significance value of 0.042. The results of this calculation are consulted with F_{table} with dk numerator = 1 (b-1) and denominator (kb (n-1)), with a significance level of 0.05 obtained by $F_{\text{table}} = 3.47$, because $F_{\text{value}} = 4.696 > F_{\text{table}} = 3.47$ with a significance level of $0.042 < 0.05$.

Athletes who have high leg muscle flexibility have an average increase in Mawashi-Geri kick results greater than athletes who have low leg muscle flexibility and significant differences. Athletes who have high leg muscle flexibility have an average kick increase of 19,833, while athletes who have low leg muscle flexibility experience an average kick increase of 17,417. The average increase in Mawashi-Geri kick results is better for karate athletes who have high leg muscle flexibility than karate athletes who have low leg muscle flexibility and have significant differences.

The factors that cause it high leg muscle flexibility is better than low leg muscle flexibility. Athletes who have high leg muscle flexibility will make it easier for athletes to make movements, meaning that the athlete's higher leg muscle flexibility will make it easier for athletes to master motion (Mawashi-Geri kick skill technique).

(3) There is an interaction between the agility training method and the leg muscle flexibility towards the results of Mawashi-Geri Jodan's kick at Bukit Sejahtera karate club, Palembang, using the ANOVA test, $F_{\text{value}} = 3.846$ with a significance value of 0.025. F_{table} calculation results with numerator = 1 (b-1) and denominator (kb (n-1)), with a significance level of 0.05 obtained $F_{\text{table}} = 3.47$, because $F_{\text{value}} = 4.615 > F_{\text{table}} = 3.846$ with a significance level of $0.025 < 0.05$.

Provision of Illinois agility training methods and t-drill exercises that are interacted with leg muscle flexibility causing movements that experience physiological adaptation. The adaptation is obtained from 4-5 weeks of practice by applying the principles of practice.

There is an interaction between Illinois agility training methods and t-drill exercises, the leg muscle flexibility towards the results of

Mawashi-Geri Jodan's kick is due to the form of Illinois agility training and t-drill training that has similarities in that they are both agility exercises in each part of their training, this also relates to a kick test that uses agility training. Even though you have been given good practice, but without being supported by a fit physical condition. Then the goal of the exercise will not be achieved, because in providing training, a coach must pay attention to the physical conditions possessed by the athlete. Given this, a trainer must be very talented in observing the right training methods so that when exercising, trained athletes can improve their abilities.

CONCLUSION

Based on the results of data analysis and the discussion put forward it can be concluded as follows: (1) there is a difference in influence between Illinois agility training and t-drill training on the results of Mawashi-Geri kick, Illinois agility training is better than t-drill exercises on the results of Mawashi-Geri kick at Bukit Sejahtera karate club/dojo, Palembang, (2) there is an influence between the Bukit Sejahtera karate athlete Palembang, who has high and low leg muscle flexibility on the results of Mawashi-Geri's kick. Athletes who have high leg muscle flexibility are better than athletes who have low leg muscle flexibility against the results of Mawashi-Geri's kick, (3) there is an interaction between the agility training method and the leg muscle flexibility on the results of Mawashi-Geri kick at Bukit Sejahtera karate club/dojo, Palembang.

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