

# Contribution of Exercise Squat Jump Split and Training Twist Bar on The Improvement of Mae Geri Chudan Kick Speed on Athlete Karate Female of DOJO WADOKAI UNIMED in 2019

Pangondian Hotliber Purba\*

Universitas Negeri Semarang, Indonesia

\*Corresponding Author: pangondianhotliberpurba@gmail.com

**Abstract.** The study aims to determine the contribution of the Split Squat Jump and Exercises Bar Twist to the Increasing Speed of Kick *Mae Geri Chudan* on Karate Female athletes at Wadokai University *dojo* Unimed in 2019. The research method used in the study was experimental method, the sample used in the study was 14 people. Split squat jump exercise has a significant contribution to increasing the speed of the kick *Mae Geri Chudan* using the right foot in the Karate Female athlete Wadokai *dojo* Unimed Year 2019 with a regression equation  $\hat{Y} = 6.18 + 0.13X_1$ , based on the calculation results  $F_{count} = 8.59$  and  $F_{table(0.05; 1/12)} = 4.75$ , so  $F_{arithmetic} > F_{table}$  with a contribution of 40.96%. While the kick *Mae Geri Chudan* using the left foot of the regression equation was  $\hat{Y} = 7.49 + 0.09X_1$  and the calculation result  $F_{count} = 5.79$  and  $F_{table(0.05; 1/12)} = 4.75$ , so  $F_{count} > F_{table}$  with a contribution of 31.36%. The exercise twist bar contributed significantly to the increase in the speed of the kick *Mae Geri Chudan* using the right foot in the female 's karate athlete Wadokai *dojo* Unimed 2019 with a regression equation  $\hat{Y} = 7.57 + 0.31X_2$ , based on the calculated  $F_{count} = 7.54$  and  $F_{table(0.05; 1/12)} = 4.75$ , so  $F_{arithmetic} > F_{table}$  with a contribution of 38.44%. Where as for the kick *Mae Geri Chudan* using the left foot the regression equation was  $\hat{Y} = 7.93 + 0.23X_2$  and the calculation result  $F_{count} = 6.89$  and  $F_{table(0.05; 1/12)} = 4.75$ , so  $F_{count} > F_{table}$  with a contribution of 37.21%. Exercise split squat jump and twist bars together provide a significant contribution to the increase in the speed of kick *Mae Geri Chudan* using the right foot on a college athlete Wadokai Karate Female *dojo* Unimed 2019 with regression equation  $\hat{Y} = 6.07 + 0.09X_1 + 0.12X_2$ . Based on the calculation of  $F_{arithmetic} = 4.41$  and  $F_{table(0.05; 2/11)} = 3.08$ , so  $F_{arithmetic} > F_{table}$  with a contribution of 44%. Whereas for the kicking of *Chudan game* using the left foot the regression equation was  $\hat{Y} = 7.60 + 0.02X_1 + 0.19X_2$  and the calculation result was  $F_{count} = 3.27$  and  $F_{table(0.05; 2/11)} = 3.08$ , so  $F_{count} > F_{table}$  with contribution of 37%.

**Key words:** split squat jump, bar twist, speed, mae geri chudan

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## INTRODUCTION

Karate was a branch of achievement sports that were competed at both the national and international. To improve sports performance, especially in Karate sports, exercise was needed that can improve all components of physical condition, because the ability of excellent physical condition determines the level of achievement. According to Harsono (1993: 1) that the physical conditions in question were Strength, Endurance, Flexibility, Agility, Speed, and Power.

To produce karate techniques that were fast, precise, powerful and a right timing, the truss must be strong and stable but relaxed and not rigid (*Flexible*) so they were ready to react in all situations both to defend and to attack. Therefore the importance of the role of the truss must be trained seriously and correctly. (Purba, 2009)

According to Yosef Nossek (1982: 87), speed was a conditional quality that allows a sportsman

to react quickly when stimulating and show / make movements as quickly as possible because the speed movements were carried out in the shortest possible time, speed was directly dependent on time and the influence of strength. The results of the research show that Exercise using weight, one of which was bending, influences the speed of the kick *Mae Chudan*. (Purba, 2009)

Based on preliminary test results, it can be seen that power of leg muscle karate female athletes in *Dojo* Unimed was in the poor category. From the results of the *Mae Geri Chudan's* kick speed test table can be seen that the category of *Mae Geri Chudan's* kick speed still in the category of very less when compared with the skills kick speed assessment table.

The data was the result's percentage obtained to see the development of the ability of the sample or athlete in performing the *Mae Geri Chudan's* kick test. From these data, we can conclude that

the average test results for kicks when performing *Mae Geri Chudan* Karate Female Wadokai Dojo athletes in Unimed were very low. Based on the statement previously mentioned, the researcher wants to prove the Contribution of Split Squat Jump Exercise and Bar Twist Exercise Towards the Increase in the Speed of The *Mae Geri Chudan* kick in the karate female athlete Wadokai Dojo Unimed.

## THEORETICAL STUDY

### The Essence of Karate

Karate was one of the martial arts sports that were well known to all people in Indonesia and in other countries. Karate has been competed informs *word* and *kumite* at the regional, national and international levels. Karate has also been turned into a symbol in society where the symbol has been embedded in the minds of the people who make them proud, recognized by community members and also respected by others. Besides that, many have become professionals in the field of karate ranging from organizational management, athletes, coaches and also referees.

Karate was formed by two characters, the first being *kara* (empty) and the other *te* (hands). The word empty means that the martial technique karate does not require weapons, only uses limbs such as hands and feet instead of weapons (Wahid, 2007). Furthermore it was said that karate was a special method of self-defense through the use of properly trained limbs. Karate applies a way of life that was more than just defending it self and has become a guide and way of life for every practitioner. Body movements that were systematic and follow the rules, meanings, meanings and targets they contain were the core of the action of karate itself so that all movements and souls were shown as one unit. The unity of movement and spirit becomes the core of karate sports (Rudianto, 2010).

There were three forms of exercise that every person who practices karate goes through. The form of the practice was the form of exercise *kihon* (basic), the form of exercise *word* (stance), and the form of exercise *kumite* (sparring). These three forms require karateka to be able to perform karate techniques perfectly. The technique was very necessary when doing *word* and also *kumite*. *Kumite* sue karateka can move quickly in attack and also fights so they can win the match by getting the most points.

### The Nature of *Mae Geri Chudan*'s Kick Speed

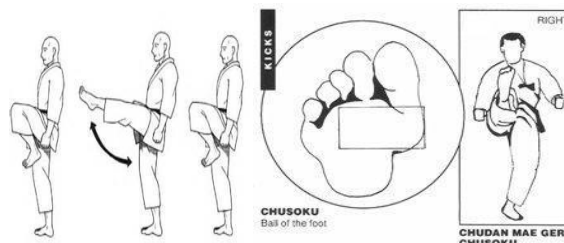
Speed does not only mean moving the entire

limb quickly but it can also be only part of the limbs in the shortest possible time. Harsono (1988: 216) says that speed was the ability to make similar movements in a row in the shortest possible time or an ability to travel adwastance in the shortest possible time.

*Mae Geri Chudan*'s Kick was a kick by using the tip of your foot (*Chusoku*) to the abdominal area. This was in accordance with what was revealed by JB Sujoto (1990: 100) namely *Mae Geri Chudan*'s kick was a kick to the stomach area. Furthermore Situmeang, (2008: 9) states *Mae Geri Chudan* was a kick with one foot, then weight was only supported by one foot. Therefore a good balance of one leg was very important, especially when the pedestal receives a shock load back on target. When doing a kick the balance of the body was very important, not only because when doing the kick all the weight was supported by one leg, but also because of the back pressure when the kick hit the target. To maintain The balance, the supporting foot must stand firmly on the floor with the ankles tightened. When doing a kick, focus all of your energy on the kicking leg with the help of the waist support movement and pull the foot back quickly to make it possible to do the next technique.

Improved results of athlete exercise in basic kick *mae geri* was skills due to applied technique exercise strategies fading. The application of the technique exercise strategy *fading* was proven to be able to make it easier for athletes to understand and perform kick skills *mae geri* (Purba, 2016)

The kick *Mae Geri Chudan technique* as revealed by JB Sujoto (1990: 100), First bend the knee of the foot which will be used for kick, and lift your knees as high as you can reach, then kick straight, hard, and sharp forward. Both of these movements must not be stopped, must be done in one motion that was not interrupted, to more clearly see the picture below.



**Figure 1.** *Mae Geri Chudan*'s Kick Source: Abdul Wahid (2007: 83).

According to Bustami Syam (2007: 14), there were a number of basic factors that must be considered in performing kick technique: at the

beginning of the movement of the foot lift that will kick with the knee fully bent, meeting beside the other foot and doing the kick with the help of waist movements. The important thing in the kick was to bend and straighten the knee.

Kick technique in karate was inseparable from the waist movements. A karateka must understand the importance of waist movements to be able to perform techniques that were fast and hard. Juan M. (2018) suggested that the circular motion of the waist was the basic of the movement to produce strength and speed in each technique. In karate, parrying, punching, and kicking were all supported by waist movements. Without a fast and flexible waist movement, the resulting technique will be rigid, slow, and do not have maximum speed and strength.

When karateka does The Mae Geri Chudan'kick, karateka must be able to use the waist that push the kick speed as much as possible which was adjusted to the direction and destination, so as to be able to get satisfying (effective) results. The speed and flexing of the knee also largely determines the strength of Mae Geri Chudan'skick. When kicking it must also be felt that the overall strength of the body was channeled to the kick. The use of maximum waist movements and leg pulling after a quick kick were needed to enable the implementation of the next movement as well as to prevent the opponent from capturing the length of the curved line that the foot traverses when kicking.

From the above quote it can be concluded that the Mae Geri Chudan'kick will be achieved if concentration of energy, bending the knee, bending the knee and pushing the waist forward which can then produce maximum power, speed and strength. However, to be able to produce maximum power, speed and strength, it must be supported by physical condition exercise. The physical condition Exercise was Split Squat Jump and Bar Twist where both forms of exercise were expected to have an effect for maximum speed, power and strength for kicking Mae Geri Chudan.

### **The Nature of Exercise**

According to Harsono (1988: 10) that, exercise was a systematic process of practicing or working that was done repeatedly with more and more increasing the amount of exercise or workload. The exercise that was done must be done correctly, programmed and continuous. Bompa (1983: 4) further said that exercise was a systematic process or repetitive work and long periods of time that were increased gradually and

individually shown in the formation of physical functions to meet demands.

Exercise process that properly should be taken into account and adjust the volume, frequency, and internal recovery or rest period for the exercise, especially the principle of overload (*over-loadprinciple*). Harsono (2000: 56) argues that if the Exercise load was too light, then no matter how long he exercises, how often he practices or, however tired he repeats the exercise, the improvement in achievement will not increase.

From the above opinion, it can be concluded that practice in principle was to put physical pressure on the body on a regular, systematic, continuous basic to improve the ability of physical conditions. The Exercise method can be carried out using physical condition abilities In detail Harsono (2000: 27) argues that "In addition to using beban Exercises specifically to increase strength and *power*/ muscles, the exercise method was more directed at developing *power* / explosive power called plyometrics. Almost the same opinion Bompa, Tudor.O (1994: 23) said that exercise plyometrics was a form of Exercise from the explosive power of very strong muscle contractions which was a reaction to very fast loading.

Then in order for the exercises carried out according to the program to be more effective and useful, the exercises must be based on the principles of the Exercise. Harsono (1988: 102-112) mentions, among others: the principle of overload (*overload*), through development principle, the principle of specialization, the principle of individualization. Components of physical condition, strength and speed were needed in the game *Karate*.

From the above opinion it can be concluded that the practice in principle was to provide physical forces on the body on a regular, systematic and continuous basic so that it will increase the ability of body organs and skills athlete will ultimately increase the ability of athletes.

Furthermore Bompa (1994: 5) says the purpose of exercise was to achieve and expand overall physical development. Thus the exercise method was a systematic and planned way that functions as a tool presenting an exercise program to improve functions physiological, pwasocological and certain skills. The ultimate goal of a performance Exercise program, to achieve it all, someone who will do a sports movement must be supported with qualities that

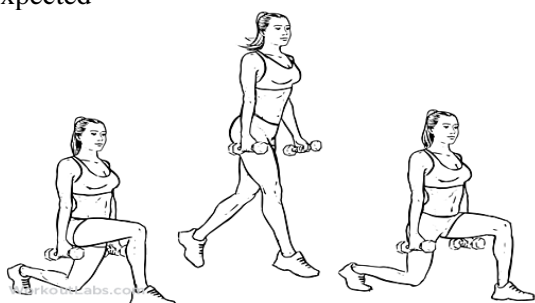
were on him.

In designing an Exercise program, reps and sets were things that should not be forgotten. According to Harsono (1988: 188) repetition was a repetition of forces carried out when lifting weights. While the set was every number of these replications.

**The Nature of Split Squat Jump's Exercise**

According to Bompa (1994: 167) which states that Exercise was a sport activity carried out in a progressive and individual way that leads to the characteristics of physiological and psychological functions to achieve predetermined goals. While Harsono (1988: 101) argues that exercise was a systematic process of practicing or working, which was done repeatedly with increasing numbers of exercise or workloads.

From the above quotation it can be explained that Exercise was a daily activity of Exercise which was an attempt to achieve the objectives of the planned program. Exercise was also a movement that involves muscle parts so that the muscles always work and practice. With frequent muscle work (Exercise) it was expected that an increase in muscle ability in doing business was expected



**Figure 2.** Exercise form Split Squat Jump  
Source: Donald A. Chu, Ph.D (1992: 80)

Donald A.Chu, Ph.d (1992: 91) The goal was to increase the strength of the lower body (leg muscles) and hip flexibility. How to do a *Split Squat Jump* was to hold the dumbbells on each hand and the position of the split as shown in the picture (start). Jump as high as possible, separate your legs like you did at (midpoint). Land in a separate position. Continue The method until the number of repetitions was needed, jumping gently and in rhythm.

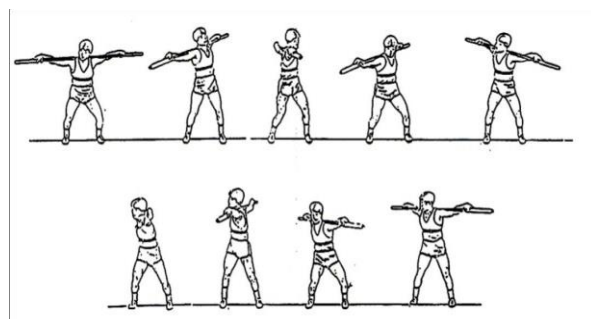
By having *power* good leg muscle, an athlete will have strong and fast legs in making a kick, so that the kick that the athlete does will be better and harder to anticipate by the opponent.

**The Nature of Bar Twist' Exercises**

According to R. Farenttions and J. Radelliffe (1994: 13) that "*Bar Twist* was one form of Exercise flexibility that can help in developing speed". Furthermore Harsono (1983: 163) added "The results of the study show that improvement in flexibility will help in developing speed coordination and agility".

The steps in doing a Twist Bar according to R. Farenttions and J. Radelliffe (1994: 13) was an athlete holding a rattan stick that weighs 20-50 pounds with a length of rattan 2 meters, placed behind the head, rounds to the right and left at shoulder height, feet slightly at bend, do 3 - 5 sets with repetitions 20 -30 times turn right and left, while resting between sets for 1 minute.

From the above quote, the Bar Twist Exercise can be concluded as an exercise used to develop or increase muscle flexibility, which was the muscle in question was the waist muscle. The means that the shape of the waist muscle will produce a maximum waist push, so that it will form akick *Mae Geri Chudan* that has a good speed and correct. This was very important because the urge to the front of the waist will form a powerful and fast lap waist. So that the moment to attack can be done with the right movements and fast.



**Figure 3.** Exercise Movement Bar Twist  
Source: R. Farentionos and J. Radelliffe (1994: 13)

**METHOD**

1. Design

Pre-test	Treatment	Post-test
T1	Split Squat Jump, Bar Twist	T2

Information: T1 (initial test) *Leg Muscles, Mae Geri Chudan* kick speed  
T2(final test) *Leg muscle, Mae Geri Chudan* kick speed

## 2. Place and Time Research

Location of the study was conducted at the Unimed multi purpose building where the North Sumatra Wadokai Karate-Do College was practiced. The research was conducted on July 13 - August 24, 2019.

## 3. The Subject of Research

The Subject of the study were all athletes who participated in women's special karate Exercise activities as many as 14 people.

## 4. Research Variables

Independent variables were Split Squat Jump and Bar Twist Exercises. The dependent variable was the increase in the speed of the *Mae Geri Chudan* kick of the female Wadokai athlete *Dojo* Unimed.

## 5. Data Analysis was

Data obtained through individual score tests both from the results of the ability tests of the *Split Squat Jump*, *Bar Twist* and *Mae Geri Chudan* kick speed were raw data. The data will be processed according to statistic analysis which proves whether the hypothesis proposed in the study can be accepted or rejected. Data collected from *pre-test* and *post-test* were analyzed using the calculation of *Regression*, *Linear Regression*, *Test Normality*, and *Test Homogeneity*. Then for testing the hypothesis was several statistic engineering procedures were taken.

## RESULTS AND DISCUSSION

**Based on the results of hypothesis testing, it turns out that all three hypothesis proposed show significant contributions. The description of each of these hypothesis can be explained as follows:**

### 1. Contribution of *split squat jump* Exercise toward the increasing of the *Mae Geri Chudan* kicks speed in Karate Female athletes Wadokai *dojo* Unimed 2019

Results of calculations on the hypothesis was which states that there was a significant contribution between *split squat jump* exercises ( $X_1$ ) with the speed of the *Mae Geri Chudan* ( $Y$ ) right foot showing a simple regression equation model  $\hat{Y} = 6.18 + 0.13X_1$ . Through the analysis was of significance for significance obtained  $F_h = 8.59$  greater  $F_t = 4.75$  while for linearity obtained  $F_h = 0.14$  smaller  $F_t = 6.04$  so that the simple regression equation  $\hat{Y} = 6.18 + 0.13X_1$  is very significant and linear. The means that if the practice was split squat jump increased by one score, the speed of the kick right foot *mae*

*geri* increases 0.13 score at a constant 6.18. Furthermore, the correlation coefficient between split squat jump Exercise ( $X_1$ ) with the kick speed of the *mae geri* right foot was 0.64. Based on the correlation coefficient ( $r_{y1}$ ), a determination value of 0.4096 was also obtained. The means that the speed of the kick *Mae Geri Chudan* right foot can be explained by the Exercise split squat jump 40.96%.

The results of calculations on the hypothesis was which states that there was a significant contribution between the Exercise *split squat jump* ( $X_1$ ) with the kick speed *mae geri* left foot ( $Y$ ) shows a simple regression equation model  $7.49 + 0.09X_1$ . Through analysis was of significance for significance obtained  $F_h = 5.79$  more large  $F_t = 4.75$  while for linearity obtained  $F_h = 0.63$  smaller  $F_t = 6.04$  so that the simple regression equation of  $7.49 + 0.09X_1$  is very significant and linear. The means that if the exercise was *split squat jump* increased by one score, the speed of the kick *maegeri* left foot increases by 0.09 score at a constant of 7.49. Furthermore, the correlation coefficient between workouts *split squat jump* ( $X_1$ ) with the speed of kick *mae geri chudan* the left foot 0.56. Based on the correlation coefficient ( $r_{y1}$ ), a determination value of 0.3136 was also obtained. The means that the speed of the kick *mae geri* left foot can be explained by the practice *split squat jump* of 31.36%.

### 2. Contributions Bar Twist Exercise to the increased speed of the kick *Mae Geri Chudan* the karate athlete daughters college Wadokai *dojo* Unimed 2019

Results calculated on the hypothesis was that says that there was a significant contribution between Exercise *Bar Twist* ( $X_2$ ) with speed kick *Mae Geri Chudan* right leg ( $Y$ ) shows simple regression equation model  $\hat{Y} = 7.57 + 0.31X_2$ . Through regression analysis was for significance it was obtained that  $F_h = 7.54$  was greater  $F_t = 4.74$  while for linearity it was obtained  $F_h = 0.53$  smaller  $F_t = 4.28$  so that the Simple regression equation  $\hat{Y} = 7.57 + 0.31X_2$  is stated to be very meaningful and linear. The means that if the Exercise was bar twist increased by one score, the speed of the kick *Mae Geri Chudan* right foot increases by 0.31 score at a constant of 7.57. Furthermore, the correlation coefficient between the twist bar ( $X_2$ ) with the kick speed was *mae geri chudan* right-footed 0.62. Based on the correlation coefficient ( $r_{y2}$ ) also obtained a

determination value of 0.3844. The means that the speed of the kick *Mae Geri Chudan* right foot can be explained by the Exercise split squat jump of 38.44%.

The results of calculations of the hypothesis was that says that there was a significant contribution between Exercise *Bar Twist* ( $X_2$ ) with a speed of kick *Mae Geri Chudan* left-footed (Y) shows a model of simple regression equation  $\hat{Y} = 7.93 + 0.23X_2$ . Through regression analysis was for significance obtained  $F_h = 6.89$  greater  $F_t = 4.74$  while for linearity obtained  $F_h = 0.70$  smaller  $F_t = 4.28$  so that the simple regression equation

$\hat{Y} = 7.93 + 0.23X_2$  is stated to be very meaningful and linear. The means that if the Exercise was *bar twist* increased by one score, the speed of the kick *mae geri* left foot increases by 0.23 score at a constant of 7.93. Furthermore, the correlation coefficient between *the twist bar* ( $X_2$ ) with the kick speed was *Mae Geri Chudan* left foot 0.61. Based on the correlation coefficient ( $r_{y_2}$ ) also obtained a determination value of 0.3721. The means that the speed of the kick *mae geri* right foot can be explained by the Exercise *split squat jump* of 37.21%.

### 3. Contributions workout split squat jump and the bar twist to the increased speed of the kick *Mae Geri Chudan* the karate athlete daughters college Wadokai dojo Unimed 2019

Results calculated on the hypothesis was that says that there was a significant contribution jointly Exercise *split squat jump* ( $X_1$ ) and *Bar Twist* ( $X_2$ ) with a speed of kick *Mae Geri Chudan* right-footed (Y) shows a model of multiple regression equation  $\hat{Y} = 6.07 + 0.09X_1 + 0.12X_2$ . Through regression analysis was for significance gained greater  $F_h = 4.41$   $F_t = 3.08$  so simple regression equation was  $\hat{Y} = 6.07 + 0.09X_1 + 0.12X_2$  was expressed very linear. The means that if the practice was split squat jump and Bar Twist increased by one score, the kick speed of the *mae geri right foot chudan* increases by  $0.09 + 0.12$  in the 6.07 constant. Furthermore, the double correlation coefficient between *split squat jump* ( $X_1$ ) and *twist bars* ( $X_2$ ) with the kick speed was *mae geri chudan* right foot 0.1936. Based on the correlation coefficient ( $r_{y_{12}}$ ), a determination value of 0.44 was also obtained. The means that the speed of the kick *Mae Geri Chudan* right foot can be explained by the practice split squat jump and twist bar by 44%.

The results of calculations about the hypothesis was which states that there was a significant contribution together *split squat jump* ( $X_1$ ) and *twist bars* ( $X_2$ ) with the kick speed *mae geri chudan* left foot (Y) shows the multiple regression equation model  $\hat{Y} = 7.60 + 0.02X_1 + 0.19X_2$ . Through multiple regression analysis was for significance obtained  $F_h = 3.27$  greater  $F_t = 3.08$  so that the simple regression equation  $\hat{Y} = 7.60 + 0.02X_1 + 0.19X_2$  is declared very linear. The means that if the Exercise was split squat jump and Bar Twist increased by one score, the speed of the kick left foot *mae geri* increases  $0.02 + 0.19$  kor at a constant of 7.60. Furthermore, the double correlation coefficient between split squat jump ( $X_1$ ) and twist bars ( $X_2$ ) with the kick speed was *Mae Geri Chudan* left foot 0.1369. Based on the correlation coefficient ( $r_{y_{12}}$ ) also obtained a determination value of 0.37. The means that the speed of the kick *mae geri* left foot can be explained by Exercise split squat jump and *twist* 37%.

Overall, it can be concluded that after statistic testing of empirical data obtained from the field, it can be said that the two proposed independent variables namely Exercise variables *split squat jump* and *Bar Twist* significantly contribute to the speed of the kick *mae geri chudan* in Karate Female athletes at Wadokai college *dojo* Unimed 2019.

### CONCLUSION

From the results of the research discussion, it can be concluded that:

There was a significant contribution of *split squat jump* Exercise and *Bar Twist* Exercise to increase the speed of the kick *mae geri chudan* in Karate Female athletes at Wadokai *dojo* Unimed Year 2019. Furthermore, there were contributions which was significant together from Exercise split squat jump and Bar Twist to increase kick speed *Mae Geri Chudan* in Karate Female athletes at the Wadokai University *Dojo* in 2019.

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