

# Contribution of Physical Condition and Self Efficacy Towards the Gyaku Zuki Chudan

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**Abstract—** This study aims to determine the effect of power arm, flexibility and self efficacy towards the gyaku zuki chudan on the national athletes karate the of Indonesia. The research method is a descriptive associative, and the analysis technique is path analysis. The sampling technique used is total sampling of 24 people. The instruments used are a test of gyaku zuki chudan, power arm measurement using medicine ball throw, flexibility measurement using sit and reach test, and self efficacy measurement using questionnaire. The conclusions are: (1) power arm directly affects on the gyaku zuki chudan, (2) flexibility directly affects on the gyaku zuki chudan, (3) self efficacy directly affect on the gyaku zuki chudan, (4) power arm directly affects on the self efficacy, and (5) flexibility directly effects on the self efficacy.

**Keywords—** power arm, flexibility, self efficacy, gyaku zuki chudan

## I. INTRODUCTION

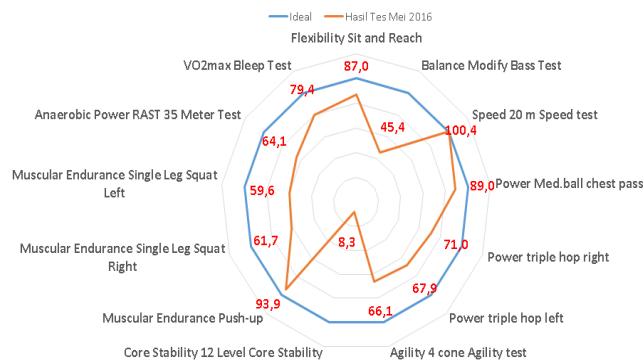
Karate entered Indonesia in 1963 brought by Indonesian students who returned to their homeland, after completing his education in Japan. The first Karate World Championship was held in Tokyo in 2000, and since then karate has been part of many international multi-sport events, as well as having its exclusive event (Chaabène, Hachana, Franchini, Mkaouer, & Chamari, 2012).

The quantity of karate sports branches can be developed well into the outskirts of the region, as evidenced by the total number of 34 Regional board throughout Indonesia and 25 active karate colleges (PB FORKI 2016 Congress) and at the PB FORKI congress 2017 (December 8, 2017) the college attending only 18 out of 25 college.

Such a large quantity has an impact on the number of national championship events on the official agenda of PB FORKI, such as : PANGLIMA Cup, KASAD, MENDAGRI, O2SN, PPLP, POPNAS, POMNAS, Inter Master, Pre PON, PON or open champions al. OSO Cup, UNS 11 March, Padang open, Open UI, Tora Open, Tebing Tinggi Open, Jombang Open, OJK etc. This proves that the development of

karate bodybuilding in quantity has spread all over the country.

Training patterns provided by trainers often follow the match schedule to be followed, without following the planned periodization pattern. Direct exercise leads to motion skills, such as punch or kick base and its combination, physical exercise and a very important psychological aspect are overlooked at the time of coaching. An example is the Analysis of the Early Physical Test Result of a Karateka National athlete on May 10, 2016, conducted by PRIMA (Program Indonesia Emas) not in accordance with predetermined targets. Averages based on athletes Physical Test data of moderate.



**Figure 1. Physical Test Results Phase 1**  
 (Source: Program Indonesia Emas, 2016: 4)

Of the overall physical tests, the average physical performance of male karate athlete is 76,1% and the lowest is 53,6%, meaning that the physical performance of the athlete has not reached the ideal value (> 70 percentage).

There are two categories of karate matches: kata number and kumite number (fight). Kumite is a body contact match where the rules have been set by WKF (World Karate Federation). The kumite match points are divided into three levels: yuko (one), wazari (two), and ippon (three). Punch is one of the dominant techniques in martial arts karate. However, in the karate match, the blow is only worth one, but

the punch can be used to attack, cut or avenge the opponent's attack. The results indicate that top-level karateka use upper-limbs karate techniques much more than lower-limbs ones regardless of gender, match outcome and weight category, with both applied in the head (i.e., jodan) more than in the body (i.e., chudan) (Montassar Tabben, Jeremy Coquart, Helmi Chaabène, Emerson Franchini, Nihel Ghoul & Claire Tourny, 2014)

A limited number of investigations have examined the physiological responses of senior male national- (Chaabène, Franchini, et al., 2014) and international- (Tabben et al., 2013) level karate competitors, with the intent of elucidating the physiological demands of this combat sport. Documentation data released by the Karate Championship Committee in 2017 National Level PB FORKI, averaging 81.94% using bludgeoning gyaku zuki chudan (Table 1).

**Table 1. Contributions Techniques Karate 2017 Match Results (Semi Finals and Final)**

No	Championships	Technique	Result	%
1	PPLP dan PPLD (6 - 11 August 2017)	1. Gyaku Zuki Chudan 2. Gijami jodan 3. Ushiro mawashi geri 4. Oi zuki	72 12 2 4	80 % 13,33 % 2,23 % 4,44 %
2	O2SN (3 - 9 September 2017)	1. Gyaku Zuki Chudan 2. Gijami jodan 3. Ushiro mawashi geri 4. Oi zuki	138 9 6 5	87,34 % 5,70 % 3,80 % 3,16 %
3	POPNAS XIV (16 - 19 September 2017)	1. Gyaku Zuki Chudan 2. Gijami jodan 3. Ushiro mawashi geri 4. Oi zuki	87 15 2 6	79,09 % 13,64 % 1,82 % 5,45 %
4	Piala Panglima (22 - 24 September 2017)	1. Gyaku Zuki Chudan 2. Gijami jodan 3. Ushiro mawashi geri 4. Oi zuki	122 18 4 6	81,33 % 12 % 2,67 % 4 %
Total			508	

Gyaku zuki chudan is more varied and very efficient in value acquisition, it is recognized by the national karate athletes, they feel more confident using the technique gyaku zuki chudan compared other techniques especially when not yet scored or in a series. 70% of all karate techniques use a lot of punches as a powerful weapon, therefore a karateka must have a really good blow to get a point or point when in a fight or kumite (Purba, 2016: 48).

According to Harsono (2017: 36), Exercise with complex motion skills desperately requires careful preparation, not just in terms of motor skills considering good movement will be strongly supported by good physical and mental condition. Physical condition is a very important element in almost all sports, especially to support other aspects such as engineering, tactics and mental. With good physical condition karateka can hit faster and there will be efficiency and effectiveness of the technique to be used. Power, speed, agility, balance and flexibility is a biomotor component that athletes must have to perform excellently in a game.

According to Bompa (2009: 124), understanding the importance of supporting technical skills such as physical and

psychological conditions need to be examined for optimal performance. Achievement of sport can be achieved through good coaching and training that aims to improve the physical in general and physically in accordance with the special sport of interest. Dharma (2002: 79) said that good physical condition and perfect technical mastery have not guaranteed the performance of the athlete to be excellent without being supported by a good mentality, estimated at 80% of initial appearance and towards the end of the game determined by the psychological aspect. Because the mindset, emotional reactions and behaviors in match situations are determined to what extent karate ka can be convinced of the ability to do a task that can be done well.

Martial arts are considered to be a unique form of exercise that focuses the correct mental and physical participation and not simply on winning or receiving extrinsic reward such as a black belt (Funakoshi, 1973). Further, martial arts improve practice improves socialization (Lantz, 2002) intellectual ability (Ryan, 2008) and morality (Lantz, 2002). Previous studies have shown a positive impact of martial arts on exercise self-efficacy (Caldwell, Harrison, Adams, & Triplett, 2009), and physical self-worth (Li, Harmet, Chaumeton, Duncan, & Dincan, 2002; Linxuan, 2011).

Bandura (1997: 3) describes self efficacy or self-efficacy is the individual's perception of his or her ability to perform the expected action. Individuals with high self efficacy will choose to do larger and more unyielding endeavors. Self efficacy has an important role in regulating one's motivation, one believing in his ability to have high motivation for success.

Hirsch Robert D., Michael Peter P. & Shepherd Dean A. explains "Entrepreneurship has found that self efficacy is positively associated with the creation of a new independent organization." A karateka who has positive self-efficacy will be creative in making new tactics and strategies, high self-efficacy will give the initiative and perseverance to improve the effort and performance karateka. Relation to this research karate athletes who have high self-efficacy will be motivated to improve his performance is higher.

This background encourages researchers to analyze the dominant needs of the physical components (power arm and flexibility), the technique of gyaku zuki chudan bludgeon and self efficacy, further developing the blow technique skills often used by athletes to be more effective and efficient. In order for the results of the research to be a barometer of athlete achievement.

## II. METHOD

The method used in this study was descriptive associative method with measurement techniques and tests. The analysis technique used was path analysis. The sample used is a national karate athlete who has the achievement of 3 World Champion athletes, 4 Asian champion athletes and 4 athletes of Southeast Asian and National Champions who are conducting training camp for the preparation of the Karate

World Championship In Santa Cruz De Tenerife – Spain, 26 - 29 October 2017.

The instruments used in this research are: (1) Medicine ball throw test to power the arm (Widiastuti, 2015: 115), (2) Flexibility measured with seat and reach test (Widiastuti, 2015: 175). While the self efficacy is measured by the questionnaire in several dimensions, including: (1) The level of difficulty task (Magnitude) is related to the difficulty of a task, (2) Area of behavior (Generality) that is related to the area of behavior, and (3) Stability of belief (Strength) that is associated with the degree of ability of individuals to belief or hope. The amount of value obtained by gyaku zuki chudan technique is to do a straight punch parallel to the chest or angle of the 90° with as soon as possible for 10 seconds. Samples tested 2 times, performed in a closed room, the results obtained in the execution of the test is a benchmark of the value that the test has in hitting in the size of the number of punch.

### III. RESULT AND DISCUSSION

Descriptive statistics calculation results can be seen in the table below:

**Table 2. Descriptive Statistics Calculation Result**

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Power Arm	24	91,40	198,50	150	26,10
Flexibility	24	11	32	23,71	5,84
Self-Efficacy	24	168	234	205,21	21,17
Gyaku Tzuki Chudan	24	64,20	128,30	100,02	19,63

Based on the above table, the results of the calculation of descriptive statistics of 24 research samples, including: power arm has a minimum value of 91,40, the maximum value of 198,50, the mean of 150, and the standard deviation of 26,10. Flexibility has a minimum value of 11, a maximum value of 32, a mean of 23,71, and a standard deviation of 5,84. While self-efficacy variable 168 has a minimum value, maximum value of 234, a mean of 205,21, and a standard deviation of 21,17. Gyaku zuki Chudan has a minimum value of 64,20, a maximum value of 128,30, a mean of 100,02, and a standard deviation of 19,63.

**Table 3. Result Summary of Normality Test**

Normality Result			
Variables	N	Asymp. Sig. (2-tailed)	Remarks
Power Arm	24	0,200	Normal
Flexibility	24	0,200	Normal
Self-Efficacy	24	0,200	Normal
Gyaku Tzuki Chudan	24	0,106	Normal

Based on the above table, known asymp value. Sig. (2-tailed) research variables. Power arm of 0,200, flexibility of 0,200, self efficacy of 0,200 and gyaku tzuki chudan of 0,106. All Asymp values. Sig. (2-tailed) greater than 0.05. So it can be concluded that the overall data is normally distributed.

After conducting the required tests for analysis normality test then the researcher did the hypothesis testing by using path analysis. For the data processing of path analysis, the

researcher used SPSS version 23 (Kadir, 2015: 261-269), which the summary of test results is presented as follows:

**Table 4. Result Summary of Structural Test 1**

Direct Effect inter Variables	Path Coefficient	t-cal	p-value	Conclusion	Remarks
X <sub>1</sub> on X <sub>3</sub> (p <sub>31</sub> )	0,479	2,723	0,013	Significant	
X <sub>2</sub> on X <sub>3</sub> (p <sub>32</sub> )	0,429	22,441	0,024	Significant	$\varepsilon = 0,275$

By using backward method, obtained two model result of data processing. Path coefficient will be shown column of standardized coefficient (Beta). The value of  $p_{31} = 0,479$ ;  $t\text{-cal} = 2,723$ ,  $p\text{-value} = 0,013 < 0,05$ , or  $H_0$  is rejected, which means there is an direct effect between power arm (X<sub>1</sub>) on self efficacy (X<sub>3</sub>). While the value of  $p_{32} = 0,429$ ;  $t\text{-cal} = 22,441$ ,  $p\text{-value} = 0,024 < 0,05$ , or  $H_0$  is rejected, which means that there is a direct effect between flexibility (X<sub>2</sub>) on self efficacy (X<sub>3</sub>).

Athletes who do hard and heavy exercises in certain movements tailored to the actual appearance of the game will have a high level of self-efficacy different from athletes who do not practice hard. Good physical condition and perfect technical mastery have not become a guarantee of athlete performance will be good if not supported by good mentality. Because the mindset, emotional reactions and behaviors in a match situation are determined to what extent karateka can believe in the ability to do a task that can be done well. This is possible because the agility is more emphasis on the movement to find the position of attack and avoid the opponent rather than when hit. The level of self-efficacy will affect the individual's choice of an activity. Duties that demand high self-efficacy are preferred over those that demand low self-efficacy, (Bandura, 1997). Attempts to perform activities indicate greater self-efficacy will lead to greater effort and higher self-efficacy levels associated with persistence levels. Self-efficacy affects one's emotional reaction and mindset. Self-efficacy can also be described as a function of self-efficacy in which an individual can accomplish a task. Thus it can be said that the high persistence associated with self-efficacy will inevitably lead to improvement, (Cherien, 2013).

According to Bandura's (1991) self- efficacy theory, behavior change and maintenance are function of expectations about the outcome and belief in one's ability to engage in or execute the behavior (efficacy). Self-efficacy beliefs have been related to the adoption, maintenance, and relapse of physical activity in free- living settings. For example, self- efficacy decreased over 6 months in university students who regressed in their exercise stage of change, but exercise self- efficacy was unchanged for those who maintained regular exercise (Wallace & Buckworth, 2003). Hallam and Petosa (2004) found support for self- efficacy and other constructs of social cognitive theory mediating expected increases in self- efficacy for the treatment group and not the control group and better adherence across 12 months for the treatment group. Social cognitive theories are frequently applied to physical activity, and self-efficacy has the strongest support as a correlate of exercise and

physical activity. There is evidence for its role in exercise adoption, but mixed support for effects on adherence.

Based on the research of Edin K. Suwarganda (2009) on Analysis of performance of the karate punch (Gyaku zuki). The result is the females in this study tend to show a more simultaneous movement sequence and the men show a more sequential sequence with regard to the shoulder and elbow movements. Additionally their optimal performance is achieved in different punching conditions. The men punch optimal in terms of longer distance and peak linear joint velocities in the subgroup associated with Counter-chudan punches whereas the women punch optimal in the subgroup associated with the Jodan punches.

More studies need to be conducted in this area in order to further explain the relationship between martial arts training and psychological factors such as self-concept, self-esteem, and self-efficacy, but from the information collected and reviewed training time and levels of contact are key factors that must be accounted for in the relationship of these areas (John Shireman).

While the results of research Ian Heazlewood (2011) that Self-efficacy and its relationship to selected sport psychological constructs in the prediction of performance in ironman triathlon. The sources of confidence may fall into three broad areas. First, athletes gain confidence from 'achievement', which includes both mastery and demonstration of ability. Second, athletes gain confidence from 'self-regulation', which includes physical/mental preparation and physical self-presentation. Third, athletes gain confidence from a positive and achievement-nurturing 'climate', which includes the sources of social support, coaches' leadership, vicarious experience, environmental comfort, and situational favourableness. That is, athletes gain confidence when they achieve their goals, engage in effective self-regulation of cognitions and behaviour, and train and compete in a competitive climate that is supportive, challenging, comfortable, and motivating.

Attention to sport, especially martial arts, is necessary to increase self-esteem. Thus, we can try to increase mental and social health of the people in different ages, by implementation practical and operational educations. It suggests that in addition to martial arts educations, psychological educations in different dimensions of selfconcept (social, physical, moral, and intellectual) also lay in the programs exercises. Also, suggests that expanded researches about martial arts and physical-mental effects of these sports implemented. Moreover, suggests that to sustain physical and mental powers and also self-confidence and self-efficacy of people, the educational and cultural organizations, fit the educational martial arts into their sport programs (Allahkaram Pouladei Reishehrei, Akbar pouladei Reishehrei, Ebrahim Soleimani, 2013).

While the results of the calculation of structural 2 can be seen in the table below:

**Table 5. Result Summary of Structural Test 2**

Direct Effect inter Variables	Path Coefficient	t-cal	p-value	Conclusion	Remarks
X <sub>1</sub> on Y (p <sub>y1</sub> )	0,308	2,151	0,044	Significant	$\varepsilon = 0,128$
X <sub>2</sub> on Y (p <sub>y2</sub> )	0,250	1,797	0,087 / 2 = 0,044	Significant	
X <sub>3</sub> on Y (p <sub>y3</sub> )	0,447	2,928	0,008	Significant	

Using the backward method, the path coefficients shown by the Standardized Coefficients (beta) column are obtained. From table coefficient, obtained value  $p_{y1} = 0,308$ ;  $t\text{-cal} = 2,151$ ,  $p\text{-value} = 0,044 < 0,05$  or  $H_0$  is rejected, which means the power arm (X1) a positive direct effect on gyaku tzuki chudan (Y). Value of  $p_{y2} = 0,250$ ;  $t\text{-cal} = 1,797$ ,  $p\text{-value} = 0,087 / 2 = 0,044 < 0,05$  or  $H_0$  is rejected, which means there is a positive direct effect between flexibility (X2) to gyaku zuki chudan (Y). While the value of  $p_{y3} = 0,447$ ;  $t\text{-cal} = 2,928$ ,  $p\text{-value} = 0,008 < 0,05$ , or  $H_0$  is rejected, which means there is a direct effect between self-efficacy (X3) on gyaku zuki chudan (Y).

Success in sports often demands perfect skills in high physical stress situations, it is increasingly clear that physical conditions play a very important role in improving athlete performance. The research conducted by Jujur Gunawan Manullang (2014) about the influence of arm power training method on the speed of blows of gsaku zuki chudan of UNIMED special karate Dojo sport, such as: 1) there is difference of influence between dumbbell press and medicine-ball wall throw blows gyaku zuki chudan gesture. 2) there is a difference in the effect of high arm power and low power arm on the result of blow speed gyaku zuki chudan. 3) there is interaction between training method and power arm to the result of blow speed gyaku zuki chudan, athlete karate dojo UNIMED. In addition, the results of Sova Azmi Saputra research, Iman Imanudin (2017) on the influence of rubber exercises and weight training on increasing the arm power and blow speed gyaku zuki chudan. From this study it is known that the use of weight training and rubber give a significant influence on the speed and power of the arm to blow gsaku zuki on the karate sport.

Power with a very good score, the greater the power deployed the faster the results obtained, karateka who have good power will have a good speed. in performing reaction motion and performing non-reactive acyclic motion as the arm slid towards the target, the moment of freedom and close to the target power is instrumental to perform a combination of reactive acyclic motion and fast cyclic action to produce quick and direct punches. To do a good gyaku zuki chudan, speed and power arm needed (Saputra, 2017).

The result of the blow technique gyaku zuki chudan is very good. These results illustrate the excellent motor capabilities of a sample of Indonesian national athletes. Power is very good to support attacks and counterattacks. Components of flexibility with good scores, caused by different types of athletes compete in accordance with the characteristics of his personality. Complete with perfect results provides a systematic movement to the athlete in the application of the technique.

#### IV. CONCLUSION

Based on the results of data processing and analysis, the conclusions of this study are as follows: (1) power arm directly affects the gyaku zuki chudan, (2) flexibility directly affects the gyaku zuki chudan, (3) self-efficacy directly affect the gyaku zuki chudan, (4) power arm directly affects the self-efficacy, (5) flexibility directly effects the self-efficacy.

Some suggestions to be given with respect to the results of this study are for lecturers, coaches, trainers, and physical education teachers, the results of this study can be used as a reference and information in the search for talented karate athletes on the match category based on the level of good physical fitness and mental.

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