

## The Influence of Ikie Punch and Chimney Jump Training on Agility

**Yonny Herdyanto<sup>1(\*)</sup>, Mochamad Ridwan<sup>2</sup>, Gatot Darmawan<sup>3</sup>.**

<sup>1,2,3</sup> Universitas Negeri Surabaya, Surabaya, Indonesia,

<sup>1</sup> Dep. Of Sport Coaching Education, Universitas Negeri Surabaya, Surabaya, Indonesia,

<sup>2,3</sup> Dep. of Sport Education, Universitas Negeri Surabaya, Surabaya, Indonesia,

(\*)✉ yonnyherdyanto@unesa.ac.id

### Abstract

This training aims to assess the magnitude of increased agility, due to the training of arm muscles. Arm muscle training in the form of ikie punch training. This study used a randomized group pre-test and post-test design. The sample used was 44 people randomly from 125 bachelor students in 2013. This type of research is a quasi-experiment, with a quantitative approach with an experimental research design. Data was collected by physical agility measurement techniques by using a side step test tool and analyzed by the MANOVA (Multivariate Analysis of Variance) technique. The results of data analysis increased agility variables using ikie punch and chimney jump training obtained  $F = 17,859$  ( $p < \alpha 0,05$ ), Giving training from both treatment groups can be concluded  $H_0: \mu_{1.1} = \mu_{1.2} = 0$  rejected,  $H_1: \mu_{1.1} = \mu_{1.2} \neq 0$  is accepted. This means that there are components of the mean factor  $\mu_{1.1}$ ,  $\mu_{1.2}$ , which are not worth 0. It is seen that each component of the mean factor  $\mu_{1.1}$ ,  $\mu_{1.2}$ , is positive, meaning that the ikie punch and chimney jump training can significantly improve the dependent variable, namely agility. Conclusions from the results of the study, that the training of ikie punch and chimney jump has an effect on increasing the variable agility.

**Keywords:** Agility, Ikie Punch, chimney jump, ladder drill, exercise, training.

### Introduction

The development of achievement sports today still uses many traditional systems, namely training using loads that are connected with simple machines so that the resulting movement is very limited in one direction and the target is only in one muscle group. This form of training is very suitable for sports that do not move a lot (static) and the variations in movement are also very simple as in weightlifting. In certain sports whose movement activities require moving and moving in more than one direction and involve a lot of movement from joints, this traditional training is not appropriate given. Examples of movements that involve a lot of joint movement and move around are badminton, tennis, soccer, volleyball, basketball, swimming, rowing and others. Setiono (2010) divides sports into three groups of sports (sports), namely static, semi dynamic and dynamic, while for dynamic sports is still divided into semi-complex and complex.

Physical ability is one of the most important factors and is the foundation in achievement, so this is very important to be improved through systematic training and using appropriate training methods and in accordance with the characteristics of the sports that become his specialty and the needs of trained physical condition components. According to Bompa & Haff (2009) said that the element of physical ability needed in sports achievement includes elements of strength, speed, flexibility, explosive power of muscles, agility, accuracy, balance, muscle endurance, cardiovascular endurance and coordination. If the physical ability is not good, it will greatly affect the appearance on the field so that achievements will not be achieved. All sports require physical abilities as a very important component to support the achievement of high-level motion skills. Judging from the movement patterns of various sports, movements in sports activities are generally dynamic, so the preferred

physical components are agility, speed, balance, strength and power. Before determining the type of exercise used for this study, you must understand the movement characteristics and types of muscles contracted to produce agility and power. According to Chu and Myer (2013) states that movements that begin with an eccentric action and after that occur when the muscle contracts isometrically and after that it is followed by a concentric movement which is a movement that can always increase power.

Giving material in the physical training process can be in the form of developing components of physical conditions and movement patterns in certain sports. Various types of body movements expressed in terms of movement abilities called biomotor abilities such as muscle strength, flexibility, speed, power, agility, balance, endurance, accuracy and coordination in sports, can be improved through intensive physical training (Lumpkin, 2008) . According to Bompa (2009) exercise is the process of preparing athletes to reach a higher level. The ability of the trainer is very influential in this matter because it is expected that the trainer can make a systematic training program supported by several training knowledge. To improve the ability of skills and the ability of energy capacity requires a long time and process. It aims to improve the quality of the player or athlete acutely by being given a physical load regularly, directed, gradually increasing and repetitively the time and implementation. The implementation of training that is applied in all sports should be varied and of high quality.

Chin, Marijke et al (2008) conducted a study on the effect of physical training on physical performance, the results of the study reported that the level of the body's ability to be trained regularly through physical training can improve its functional performance. The existence of elements of training in the preparation of training programs such as type / model of training, intensity of training, frequency and duration of training is needed. Physical training is a form of activity to improve physical performance, therefore regulation of training variables such as the volume and intensity of training is very important and must be considered. Santtila, Hakkinen, Nindl (2012) in the conclusion of his research report that eight weeks of specialized physical training with appropriate program settings, arranged with optimal training intensity and volume, obtained a large cardiovascular and nerve nerve response (as a feature of physical fitness conditions) compared to basic training that uses the weight of each individual. Besides that, special training in the form of military movements had an effect on maximal muscle strength in the arms and legs which increased by 3.8% ( $p < \alpha 0.001$ ) compared to data before receiving training for eight weeks. Relating to physical training, Dorgo, King and Rice (2009) concluded the results of his study that there was a significant increase in muscle strength and endurance ( $p < \alpha 0.001$ ) after 14 weeks of manual load training and structured load training programs. It was also concluded that between the two forms of training there were no significant differences in muscle strength ( $p > \alpha 0.22$ ) and muscle endurance ( $p > \alpha 0.09$ ) and structured load training was more effective than manual load training. Moreover, it is said that combination training is an exercise choice for trainers, because this exercise is also an innovative thing for strength and power based training that contributes to more efficient training time (Santos & Janeira 2008). According to Sheppard and Young (2007) states that strength and power also contribute to and influence agility provided that the direction of movement changes with short distances such as in badminton and goalkeeper movements. Therefore agility is one component of basic biomotor capabilities that is very important to have and must be increased in its ability to achieve maximum achievement in every sport that has dynamic movement characteristics.

## Method

Based on the problems and objectives of the research described previously, then this type of research is a quasi experiment, with a quantitative approach with an experimental research design (experimental design) which means giving treatment to samples in the form of exercises Ikie punch and Chimney jump. This study aims to determine the effect of exercise type treatment on improving agility, balance and power. this study uses the design of Randomize Group Pre-test Post-test Design

with factorial design. The total population is around 125 students. For the required sample there were 44 people divided into 4 treatment groups. Each group is 11 people. Drop out criteria: stop taking the program more than 3 times. the number of samples is 37 people. Data analysis in this study is descriptive statistics and inferential statistics. Descriptive statistics to get a general picture of data in the form of minimum values, maximum values, mean, standard deviation, frequency distribution.

Furthermore, to test the hypothesis, the test requirements for analysis are first, namely the test for normality and homogeneity. Normality test with Kolmogorov-Smirnov and Shapiro-Wilk, and homogeneity test with Box's test of equality. If the data is proven to be normally distributed and homogeneous, then it will be followed by a multivariate analysis in the form of MANOVA test, Paired Comparisons technique with the Hotelling method Taking (T2) and then a simultaneous confidence intervals (Johnson, and Wichern, 2002) analysis. All tests were carried out with a significance level of  $p = 0.05$ , so the confidence level of this study was 95%. To find out the effect of each treatment followed by the Least Significance Difference (LSD) test (Montgomery, 1997). Testing is aided by an analysis computer program in the form of SPSS 18 for Windows.

## Result and Discussion

Description of the results of this study discusses the average obtained from the results of tests conducted in each group. The results of these tests will be recorded and calculated based on the group and the type of exercise applied. Test results before and after each group were given ladder drill training in all groups totaling 44 people and each group consisted of 11 sports training students.

Table 1 result agility test

Group	Pretest	posttest	GS
Ikie Punch dan Chimney Jump	37.36	38.55	1.18

Based on the measurement results in table 4.1 above in all groups it can be seen that there is an increase in the average value between pretest and posttest in the agility variable. This is evident from the posttest mean value greater than the average pretest value. In the Ikie Punch and Chimney Jump groups, the mean scores for agility from post-test results (38.55), proved to be higher than the results of pretest measurements of (37.36). In the Ikie Punch group and the Leg Extension Standing shows the mean value for agility from posttest measurement results (38.45).

To test whether the results of the descriptive analysis above are significant or not, then a significance test will be carried out which is also a hypothesis test. The things needed to know the hypothesis testing in the analysis of this study are as follows:

### 1. Normality Test

To test the normal distribution of data, in the study using the Shapiro-Wilk test calculation. The steps to test the hypothesis are as follows:

- a.  $H_0$ : data is taken from populations that are normally distributed
- $H_a$ : data taken is not from a population with normal distribution.
- b. Opportunities for errors  $\alpha = 0.05$
- c.  $H_0$  is rejected if p value (Sig.)  $< 0.05$ .
- d. Normality Test Results

Table 2 Normality of Test

	Training	Shapiro-Wilk		
		<i>Statistic</i>	df	Sig.
Agility	<i>ikie punch dan chimney jump</i>	.966	11	.846

Based on table 2 above shows that the value of Sig. overall shows a number greater than 0.05. According to the testing criteria it can be said that all of the data is normally distributed.

Homogeneity test is conducted to find out whether the dependent variable data has the same variant in each category of independent variables. If there are more than one independent variable, then homogeneity must occur in groups formed by independent variables. The steps to test the hypothesis.

a. Ho: Matrix The covariance variants of all groups are homogeneous

H1: the covariant variant matrix of all groups is not homogeneous.

b. Opportunities for error  $\alpha = 0.05$ .

c. Ho is rejected if P value (Sig.)  $< 0.05$ .

d. Homogeneity Test Results

Table 3 Test of Homogeneity of Variance

		<i>Levene Statistic</i>	df1	df2	Sig.
Agility	<i>Based on Mean</i>	.567	3	40	.640
	<i>Based on Median</i>	.483	3	40	.696
	<i>Based on Median and with adjusted df</i>	.483	3	39.302	.696
	<i>Based on trimmed mean</i>	.551	3	40	.650

Based on table 3 above, the results of the homogeneity test calculation show homogeneous data. Because according to the testing criteria that if the value of Sig.  $> 0.05$ , then Ho is accepted. So it can be concluded that all data gain scores from the treatment group ikie punch and chimney jump have the same variant (homogeneous).

Follow-up from the results of this study is a discussion of the results of the analysis of the study. The discussion here is about decomposing the results of the study giving a body weight training model to agility. Training using ladder drill is given, namely ikie punch and chimney jump. The data collected after the end of the treatment was analyzed and the data used was in the form of different data (delta) from the final test results with the initial test of the agility variable. To answer the hypotheses that have been proposed, the analysis test used in this study is the result of the analysis of the calculation of different tests using the pretest and posttest scores of each group using the paired test showing an increase in each dependent variable. So it can be concluded that increasing the ability of agility together due to the training of ikie punch, chimney jump as a result of repeated stimulation in the form of a training program carried out for eight weeks, three times each week and the intensity of the received load is 30-60%, so that according to the conditions of the people who do not have a

high level of experience in conducting training. Power, Dodd and Jackson (2011) argue that the burden on the body raises responses in the form of response and adaptation. The response is the body's immediate response to a temporary training process such as rising body temperature and increased heart rate. While adaptation is the body's response to training loading that occurs over a relatively long period of time and is relatively permanent as morphological adaptations in the form of muscles are stronger and hypertrophy. Muscle adaptation is influenced by many factors such as training status, type of training, training dose, genetic and gender factors. It was also said that for the initial stages of training so that the adaptation process and training response can be achieved, training must take place between 6-10 weeks depending on the type of training and the form of training given (Bompa & Haff 2009). The readiness of athletes to carry out physical training is very necessary, therefore periodization of general physical preparation must be given a weight training model to form strengths with appropriate training doses. By being given good strength training, the hope is that when special physical preparation periodization with a variety of training programs aimed at increasing the power and agility needed, the body will be ready to do it with the capital training that has been given to general physical preparation.

The chimney jump training movement is a plyometric movement and it is strongly believed that by providing plyometric training it will have an impact on increasing the power of the limbs. The form of training that is characterized by an element of strength or a combination of strength and speed can be used in training to increase power. Such as dynamic weight training or plyometric training. The principle in developing power capabilities through strength training is that moving the body quickly is more important because the maximum strength will also be increased (Hanson, et al. 2009). The training load on power aspect training can start at 30% from 1RM to 80% from 1RM, with 30% - 50% for cyclic power and 50% - 80% for acyclic power (Bompa, 2009).

The training of ikie punch and chimney jump was most effective in improving agility skills, so it was clear that the treatment of ikie punch and chimney jump training could be generalized to the population. This is also in accordance with the research conducted by Taheri et al (2014) showing that Plyometric Exercises and weight training improve agility, power, and speed. It was also added to the results of research that showed that 8 weeks of weight training had a significant influence on increasing agility (Shahidi et al, 2009). Adaptation of nerves increases strength in the first 3-4 weeks of weight training. Muscle hypertrophy creates an increase in the size and function of muscle fibers after 8-12 weeks of weight training (Johnson et al, 2013). The possibility of nerve adaptation and muscle hypertrophy is caused by weight training which results in increased agility. Therefore the training of ikie punch and chimney jump should be given to the periodization of special physical preparation training, which is expected that athletes have received strength training in the periodization of general physical preparation so that it has a good foundation of strength.

## Conclusion

Giving training from both treatment groups can be concluded  $H_0: \mu_{1.1} = \mu_{1.2} = 0$  rejected,  $H_1: \mu_{1.1} = \mu_{1.2} \neq 0$  is accepted. This means that there are components of the mean factor  $\mu_{1.1}$ ,  $\mu_{1.2}$ , which are not worth 0. It is seen that each component of the mean factor  $\mu_{1.1}$ ,  $\mu_{1.2}$ , is positive, meaning that the ikie punch and chimney jump training can significantly improve the dependent variable, namely agility. Conclusions from the results of the study, that the training of ikie punch and chimney jump has an effect on increasing the variable agility.

## Reference

Bompa T.O & Haff, G.G (2009). *Periodization Theory and Methodology of Training. Fifth Edition*. Canada: Human Kinetics.

- Chin, A.P., Marijke,J.M et al. (2008). "The Functional Effects of Physical Exercise Training in Frail Older People": A Systematic Review. *J Sports Medicine*. Vol. 38 (9) September 2008. *Review Article*.
- Chu D.A and Myer.D.G (2013). *Plyometrics*. United States of America. Human Kinetics.
- Johnson et al. (2013). "Effects of exercise sequence in resistance-training on strength, Speed, and agility in high school football players". *International journal of exercise science*, 6(2) : 126-133, 2013.
- Lumpkin, E. (2008). *Introduction to Physical Education, Exercise and Sport Studies*. Eighth Edition. Kansas:McGraw Hill Companies.
- Montgomery, D.C. (1997). *Design and Analysis of Experiments*. 5th. Toronto: John Wiley & Sons, INC.
- Ratamess, N.A, Alvar, B.A., Evetoch, T.K., Housh, T.J., Kibler, W.B., Kraemer, W.J., & Triplett, N.T. (2009). "Progression Models in Resistance Training for Healthy Adults". *J Medicine and Science in Sports and Exercise*. Vol. 41. (3). Pp. 687-708.
- Santtila, M., Hakkinen, K., Nindl, B.C. (2012) "Cardiovascular and Neuromuscular Performance Responses Induced by 8 Weeks of Basic Training Followed by 8 Weeks of Specialized Military Training". *J of Strength and Conditioning Research*. Vol. 26 (3) March 2012.
- Santos,, E.J.A.M., & Janeira, M.A.A.S. (2008). "Effect of Complex Training on Explosive Training in Adolescent Male Basketball Players. *Journal of Strength and Conditioning Research*. Vol. 22 (3) May 2008 pp 903-908.
- Sheppard J.M and Young W.B. (2007). "Agility literature review: Classifications, Training and Testing". *Journal of Sports Sciences*, September 2006; 24(9): 919– 932.
- Taheri et al.(2014) "The effect of 8 weeks of plyometric and resistance training on agility, speed and explosive power in soccer players" Pelagia research library. *European journal of experimental biology*, 2014, 4(1): 383-386.