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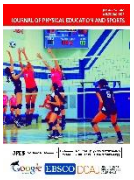

The Distinction of Agility Exercise Method and Flexibility Toward The Front Kick Legerity Development of Tapak Suci Pencak Athletes in Temanggung 2018

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Abstract

Objective: (1) It is aimed to reveal and analyze the distinction between cone exercise method and reflective wall exercise method toward legerity of front kick development. (2) It is aimed to reveal and analyze the distinction between cone exercise and reflective wall exercise method for high flexibility and low flexibility athletes. (3) It is aimed to reveal and analyze the interaction between the cone exercise and reflective wall exercise method and flexibility toward front kick legerity development. The method of research is experimental research method with 2x2 factorial design.The analysis employed ANOVA (analysis of Variants) with significance (α) level on 0.05.Agility exercise roles as the research variable as cone and reflective wall roles as the free variableHigh flexibility and low flexibility role as the attribute variable, while front kick role as the bound varable.The population is 33 Temanggung Tapak Suci Pencak athletes (teenage).Sampling technique employed purposive sampling which results in 20 athletes.Research instrument are flexibility test as well as front kick legerity test.The result shows: (1) That reflective wall agility exercise is better than cone exercise method as $F_{value} > F_{table}$ or 22.231 > 3.59. (2) That athletes who poses high flexibility are better than those who poses low flexibility since it shows $F_{value} > F_{table}$ or 64.692 > 3.59. (3) That there is interaction between cone exercise and reflective wall exercise method to front kick agility since $F_{value} > F_{table}$ or 6.231 > 3.59.

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INTRODUCTION

Pencak silat is a martial art requires high concentration. Pencak silat is aimed for self-defense as well as for keeping health, fitness, training mental endurance, evoking self efficacy, educating fair play and nobel spirit. The motions in pencak silat are much of combination between strike and kick and are equipped with the knowledge of human body weakest part. Pencak silat as a sport has now developed time by time in which originally it is aimed for self defence and for war, now it has become legal contested sport in championships (Nasution & Pasaribu, 2017).

Pencak silat is a martial system which is given by the Indonesian ancestors that needs to be continued, educated, and developed (Kriswanto, 2015).

The attempt of achieving a maximum achievement in pencak silat which needs more fundamental attentions are the athletes' promptness, agility, coordination, flexibility, strength, power, aerobic vitality, anaerobic vitality (stamina). Physical training is the very basic phase to teach in advance of training the technique since physical condition will have dominant impact of attaining techniques for an athlete achievement. Developing physical performance need to be systematically scheduled, programmed and directed in order to increase the physical fitness and functional ability of human body system. Physical training components need to be implemented and differentiated for every category starting the early age category, school age category and adult category. (Lubis, 2016).

Hermitage is one of places to accommodate students talents and interest to gain achievements. A sport achievement can only be achieved through a long process, and its development needs to be educated (Assalaam, 2015).

Recently, there are several hermitage who actively take part to train pencak silat for achievement in order to educate and gain pencak silat athletes from the school age students. One of them is the hermitage of Tapak Suci Putra Muhammadiyah Kabupaten Temanggung. Tapak Suci hermitage is one of pencak silat hermitages in Temanggung who actively take part to train pencak silat for sport achievement through training center and pencak silat extracullicular in schools. Tapak suci hermitage has some programs in teaching pencak silat for sport achievement starting from improving physical condition, scheduled rehearsal and training center for several championship such as POPDA, POSPEDA, KEJURDA, POSPENAS and so on.

According to Syaifullah (2009), the designed training programs have to be well scheduled and well selected correspond to the goal. An unwell scheduled training program will impact on the athletes physiologically as well as psychologically.

In order to design the training program, it is necessary to pay attention on four aspects which are: (1) physical aspect; (2) technical; (3) strategic; (4) mental aspect (Subekti, Kristiyanto, & Purnama, 2014)

Agility training deals with the speeding up and down as well as quickly turn the motion direction and deal with the motion pattern variation (Bompa, 2015).

A training with high tempo will result in legerity which impacts the kick legerity (Dinata, Sutardji & Waluyo, 2013).

Based on coach observation during several last matches, fighters have less quick kick especially the front kick that make it easy to block, and it is easy to be defeated using slamming technique as well as predictable. It is similar with interview result to 30 athletes in Temanggung which 63,3% face difficulty in doing front kick while the rest (36.7%) face difficulty in doing several kick techniqus.

In pencak silat fighting category, it really depends on the fighters in doing several steps simultaneously that make the kick good. The stages of doing kick technique are pre execution (ready posture), execution, and post execution (Seminar Nasional Keolahragaan FIK Unnes, 2016).

Kick is an essential skill in pencak silat since it is a dominant skill. In the execution of front kick, arms movement are really influencing how precise it to the target beside influenced by

the implemented style in the execution (Seminar Olahraga Nasional UNY, 2014).

One of techniques in pencak silat is foot attack called kick if which get on unblockedly, it will gain 2 points (Nugraha, 2014)

Kick gain in 2 points, while punch and slam gain every 1 and 3 points in a championship. Below are some of Temanggung tapak suci teenage athletes' achievements.

According to Sukadiyanto (2011), influencing factors for legerity generally are: genetical, reacting time, power, technique, elasticity, muscle type, concentration, and willingness.

Teenage championship category is meant for men and women age from 14 to 17 (MUNAS Ikatan Pencak Silat Indonesia, 2012)

Tapak Suci Kabupaten Temanggung hermitage gain 5 gold medals in POPDA 2015. Its 4 athletes gained gold medal in students championship and central java championship. It gained 1 gold medal in POSPEDA 2016 pra elimination and gained 1 gold medal in POSPENAS. In 2017, it was defeated in elimination section during POPNAS. In POPDA 2018, it gained 8 gold medals.

Awaring the explained upcoming problems, I propose a training method to help Temanggung Tapak Suci athletes gain higher legerity in front kick. Thus, I intend to do a research in "The Distinction of Agility Training Method and Flexibility toward Temanggung Tapak Suci Teenage Athletes' Front Kick Legerity Improvement."

METHODS

It is a study aim to compare two different treatments on the subject of the study employing factorial design technique.

Population is a generalization that consisting of research subject and object with certain characteristics and quality chosen by the researcher to be studied (Sugiyono, 2013).

The population of this research is 33 men Tapak Suci Kabupaten Temanggung pencak silat athletes who have experienced in several championships.

Table 1. Factorial 2x2 Design

Training method (A)	Flexibility (B)	
	High (B_1)	Low (B_2)
Cone training method (A_1)	$A_1 B_1$	$A_1 B_2$
Reflective wall training method (A_2)	$A_2 B_1$	$A_2 B_2$

Explanation:

A_1B_1 : Pencak silat athletes have high flexibility trained with cone training method.

A_1B_2 : Pencak silat athlete who have low flexibility trained with cone training method.

A_2B_1 : Pencak silat athlete who have high flexibility trained with reflective wall training method.

A_2B_2 : Pencak Silat athlete who have low flexibility trained with reflective wall training method.

Sample is a part of total as well as characteristic in a population (Sugiyono, 2013). It was 20 men athletes who are chosen as the sample with purposive sampling technique in this study.

The research data are athlete flexibility test and athlete front kick legerity test. The employed research instrument is Lubis Trunk Extention (2016) to measure flexibility.

The research instrument for measuring front kick legerity is done with Lubis front kick legerity test (2016).

Data normality test in this study employed *Kolmogorov-Sminov* test using SPSS 23.0 in significance grade 0.05. The decision making criteria are if gained significance value > α, the subject has normal distribution, and if gained significance value < α, the subject has abnormal distribution (Candiasa, 2010).

Data homogeneity test in this research is *Levene* test using SPSS 23.0 program in significance grade $\alpha = 0.05$. The decision making criteria are if count significance value > α, the data is homogeneus, and the data is heterogeneous if count significance value < α (Candiasa, 2010).

Hypothesis test employed analysis test of variants (ANOVA) 2 ways design using SPSS 23.0 program. Alternative hypothesis is approved if ANOVA test valued significance lower than α (sig < 0.05). if count significance value is higher than α (sig > 0.05), the alternative hypothesis is disapproved (Candiasa, 2010).

RESULTS AND DISCUSSION

This section will be writeen in: research data, precondition tes analysis, and hypothesis test. Hypothesis test will be written sequencely in: (a) the distinction of cone training method and reflective wall training method toward Temanggung Tapak Suci pencak athletes front kick legerity; (b) the distinction of high and low flexibility toward Temanggung Tapak Suci pencak athletes front kick legerity; (c) the interation between cone training method as well as reflective wall training method and flexibility with Temanggung Tapak Suci pencak athletes front kick legerity. It will be discussed in detail below.

The research data are pretest, mid test, and posttest which generally described every related variable. The study took place in Tapak Suci training hall, Kowangan, Temanggung.The pretest data is gained on Monday, midtest is gained on Wednesday, and posttest data is gained on Friday. The treatment is given in 12 meetings, with frequent 3 meeting per week, that is on Tuesday, Wednesday, and Friday.

The pretest, mid test, and post test data are served as below.

Table 2. Front Kick Legerity Pre-test, Mid-test and Post-test Data

No	High flexibility group							
	Cone training method (A_1B_1) Front kick				Reflective wall training method (A_2B_1) Front kick			
	Pre-test	Mid-test	Post-test	Deviation	Pre-test	Mid-test	Post-test	Deviation
1	16	18	20	4	17	22	24	7
2	17	19	21	4	17	20	23	6
3	16	18	19	3	18	21	23	5
4	16	18	18	2	16	19	22	6
5	17	19	20	3	17	19	22	5

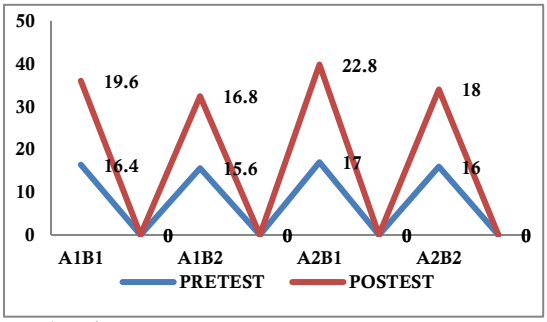
No	Low Flexibility Group							
	Cone training method (A_1B_2) Front kick				Reflective wall training method (A_2B_2) Front kick			
	Pre-test	Mid-test	Post-test	Deviation	Pre-test	Mid-test	Post-test	Deviation
1	15	15	16	1	17	18	19	2
2	16	18	18	2	16	18	18	2
3	15	16	17	2	16	16	17	1
4	16	16	16	0	16	17	18	2
5	16	17	17	1	15	17	18	3

Statistical data of Temanggung Tapak Suci teenage athletes front kick legerity pretes and posttest is displayed as follow.

Table 3. Front Kick Legerity Pre-test and Post-test Statistical Description

Agility training methd	Flexibility	Data resource	Average Front kick legeritiy
Cone training method	High (A_1B_1)	Pre-test	16.4
		Post-test	19.6
		Variance	3.2
	Low (A_1B_2)	Pre-test	15.6
		Post-test	16.8
		Variance	1.2
Reflective wall training method	High (A_2B_1)	Pre-test	17
		Post-test	22.8
		Variance	5.8
	Low (A_2B_2)	Pre-test	16
		Post-test	18
		Variance	2.0

Below is the pre-test and post-test diagram.



Explanation:

A_1B_1 : Pencak athlete who have high flexibility trained with cone method

A_1B_2 : Pencak athlete who have low flexibility trained with cone method

A_2B_1 : Pencak athlete who have high flexibility trained with reflective wall method

A_2B_2 : Pencak athlete who have low flexibility trained with reflective wall method

Data normality test employed Kolmogrov-Smirnov method. Group normality data test employed SPSS version 23.0 for windows software on significance grade 5% or 0.05. Detailed result is displayed in the appendices. Data resume is read as follow.

Table 4. Normality Test

Group	Kolmogorov-smirnov[a]			Shapiro-wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
A_1B_1	.231	5	.200*	.881	5	.314
A_1B_2	.231	5	.200*	.881	5	.314
A_2B_1	.231	5	.200*	.881	5	.314
A_2B_2	.300	5	.161	.883	5	.325

Data normality test shows A_1B_1, A_1B_2, A_2B_1 and A_2B_2 as the sample drawn from population with normal distribution since significance grade valued 0.05.

Data homogeneity test used Levene test and SPSS 23.0 on significance grade 0.05. Levene significance valued higher than 0.05 (sig > 0.05) which means studied sample is homogeneus. Front kick legerity homogeneity test can be read in Table 5. Homogeneity test is meant to test the variants similarity among sample group.

Table 5. Homogeneity test

F	df_1	df_2	Sig.
.333	3	16	.801

Homogeneity test on front kick legerity variable shows significance value higher than 0.05 (sig > 0.05) which means sample is homogeneus. Research hypothesis test is done based on the analysis data result and two-way ANOVA (Analysis of Variants) analysis interpretation. The order of hypothesis test result that is adjusted with formulated in chapter III as follow.

Table 6. Two Ways ANOVA Resume

Source	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	60.550[a]	3	20.183	31.051	.000
Intercept	186.050	1	186.050	286.231	.000
Method	14.450	1	14.450	22.231	.000
Flexibility	42.050	1	42.050	64.692	.000
Method * flexibility	4.050	1	4.050	6.231	.024
Error	10.400	16	.650		
Total	257.000	20			
Corrected total	70.950	19			

a. R squared = .853 (Adjusted R squared = .826)

The first hypothesis reads "there is distinctive impact between cone training method and reflective wall training method to Tapak Suci Kabupaten Temanggung pencak athletes' front kick legerity." Suppose the analysis results in significant impact, the cone and reflective wall training method gives impact to front kick legerity.

The above table ANOVA test shows that H_0 is denied since p significance valued 0.000. It is form calculation result be consulted with table F which the dk numerator = 1 (b-1) and dk denumerator (kb(n-1)). Using significance value 0.000, it results F_{table} = 3.59 as $F_{value} > F_{table}$ or 22.231 > 3.59. Thus, there is significance impact between cone training method and reflective training method to Tapak Suci Kabupaten Temanggung pencak athlete front kick legerity. Based on analysis it is revealed that reflective wall training method is better wit average posttest result 20.4 than cone training method with posttest average 18.2. It means that the hypothesis read that there is distinctive impact between cone and reflective wall training method to Tapak Suci Kabupaten Temanggung athletes front kick legerity is approved.

The second hypothesis reads, "there is significant distinction between high flexibility and low flexibility to front Kabupaten Temanggung Tapak Suci pencak athletes front kick legerity in 2018. Suppose that there is significant distinction based on analysis, it means that there is distinction between high and low flexibility athletes to front kick legerity. Based on the above table, the H_0 is denied since the p significance valued 0.00. It is from the calculation result consulted to F_{table} where dk numerator = 1 (b-1) and dk denumerator (kb(n-1)). Using significance grade value 0.000, it gains F_{table} = 3.59 as $F_{value} > F_{table}$ or 64.692 > 3.59. According to it, there is significant distinction between athletes who posess high flexibility and low flexibility to the front kick legerity. According to the analysis, it is revealed that athlete who posess high flexibility is better with average posttest point 21.2 than those with low flexibility with average posttest point 17.4 in attaining front kick legerity. It, thus, shows the research hypothesis

reads that there is significant distinction between athlete posses high flexibility and that does not in attain front kick legerity is proven to Tapak Suci Kabupaten pencak athletes.

Third hypothesis read, "there is significant interaction between cone training method as well as reflective wall training method and flexibility to pencak athletes front kick legerity in Temanggung. Suppose the analysis shows that there is interaction, so cone and reflective wall training method and flexibility relates to front kick legerity. Based on ANOVA test to the table above it can be understood that H_0 is denied since the p significance valued 0.024. Calculation result then be consulted with F_{table} where dk numerator = 1 (b-1) and dk denumerator (kb(n-1)). According to significance grade 0.024, it results in F_{table} = 3.59. because of $F_{value} > F_{table}$ or 6.231 > 3.59 and the significance grade 6.231 < 0.05, H_0 is disapproved. Based on the result above, hypothesis which reads there is interaction between cone as well as reflective wall training method and high as well as low flexibility to pencak athletes front kick legerity is proved. It is proven that there is an interaction between cone method, reflective wall method and flexibility to Tapak Suci Kabupaten Temanggung pencak athletes.

Belows table shows the distinction between cone method and reflective wall method to front kick legerity.

Table 7. Estimated Marginal Mean Agility

Method	Mean	Std. error	95% confidence interval	
			Lower bound	Upper bound
Cone	2.200	.255	1.660	2.740
Reflective wall	3.900	.255	3.360	4.440

ANOVA analysis result shows there is distinctive impact between cone and reflective wall training method to the athletes front kick legerity. The analysis result cone agility average point is 2.200 while reflective wall agility is 3.900. The deviation value 1.7 which shows there is different impact between both method.

Below is the table shows distinction of athletes with high flexibility and with low flexibility to front kick legerity attainment.

Table 8. Estimated Marginal Mean Flexibility

Flexibility	Mean	Std. error	95% confidence interval	
			Lower bound	Upper bound
High	4.500	.255	3.960	5.040
Low	1.600	.255	1.060	2.140

Second hypothesis test shows there is distinctive impact to athletes who possess high flexibility and low flexipility in case of front kick legerity. It is proved from the ANOVA analysis that athletes possessing high flexibility result average point 4.500 and those with low flexibility result average point 1.600. The deviation from both possession is 2.9 which means there is distinction between athletes who possess high flexibility and who doesn't. Flexibility is the ability of joints to move maximally (Widiastuti, 2017).

Below is the table shows the interaction of agility training method (cone and reflective wall) and flexibility (high and low) to front kick legerity.

Table 9. Estimated Marginal Mean Agility and Flexibility

Method	Flexibility	Mean	Std. error	95% confidence interval	
				Lower bound	Upper bound
Cone	High	3.200	.361	2.436	3.964
	Low	1.200	.361	.436	1.964
Reflective wall	High	5.800	.361	5.036	6.564
	Low	2.000	.361	1.236	2.764

ANOVA analysis as is showed in the table above can be understood that athlete who possess high flexibility and trained with reflective wall training method gain average point 5.800, while those who possess low flexibility possess 1.200. On the other hand, athletes who possess low flexibility and are trained with cone training method gained average point 2.000. The interaction result shows that the research main factor in terms of two factors is seen to have significant interaction.

Interaction here means there is different impact in every paired group.

CONCLUSION

The analysis and research result can be concluded as follow: (1) There is significant distinctive impact between cone agility and

reflective wall agility training method to front kick legerity on pencak teenage athlete Tapak Suci Kabupaten Temanggung 2018. Reflective wall agility training method is better than cone training method. (2) There is significant distintictive impact between athlete of Tapak Suci Kabupaten Temanggung who possess high flexibility and low flexibility in attaining front kick legerity. Athletes who posess high flexibility are better than who don't. (3) There is significant interaction between cone agility training method, reflective wall agility and flexibility to the attainment of front kick legerity.

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