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Exercise Modification of Directional Hand Movement to Improve The Punch Speed in Pencak Silat

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Abstract

In performing pencak silat, speed is needed. This study aims to determine the effect of modification exercises directional hand movement on the punch speed in pencak silat. The method used was an experiment with a one group pre-test and post-test design. The sample in this study was 32 students (20.15+0.84) at the Universitas Islam 45 Bekasi. Based on the results of the analysis, it can be concluded that the exercise modification of directional hand movement improve the punch speed in pencak silat. The t value = 8,258, with df = 31, and the p-value = 0.000 <0.05. Thus it can be concluded that there is an increase in the speed of the punches through the modification of the exercise directional hand movement. This can be an input for coaches and sports teachers as a reference for variations in exercise in increasing the physical component of speed in martial arts.

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INTRODUCTION

Pencak silat is the original culture of Indonesia and currently continues to grow up, both in the regulation and organization (Muhamad, Memet; Haqiyah, Aridhotul; Riyadi, 2019). Pencak silat is one of the martial arts that need to get coaching and then developed into a sport of more popular achievement (Haqiyah, 2019). To prepare martial arts athletes and to face a match, the direction of coaching is emphasized on the factors of physical condition, technique, and tactics and mental (Tangkudung, Haqiyah, Puspitorini, Tangkudung, & Riyadi, 2020).

One of the techniques in pencak silat is a punch (J. H. W. Lubis, 2014) that can generate one point in the match category. In making a blow, speed is needed so that it cannot be deflected by an opponent and is effective in attack. The straight punch is most effective in pencak silat competitions, so it is necessary to research on the variation of exercises that can increase punch speed.

Speed is movement or travel with a short time that can reach a long distance and is also used for time motion. Speed is the ability to cover distances quickly (J. Lubis, 2013) or the ability to move from one place to another in the shortest possible time. Speed is locomotors and its movement is cyclic (a type of motion that is performed repeatedly such as running and so on) or the speed of body parts such as making a punch (Widiastuti, 2015).

Speed is classically defined as the shortest time required for an object to move along a fixed distance, which is the same as velocity, but without specifying the direction. That is, velocity is classically defined as the shortest time it takes for an object to move along a fixed distance, which is the same as the velocity, but without determining the direction (Miller, 2012).

Based on the above opinion, it can be concluded that speed is the ability to perform similar movements in succession in the shortest possible time or the ability to cover a distance in the shortest possible time.

Some principles that need to be adhered to increase speed development are increasing recognition of special perceptual situations and automating as much as possible the motoric answers that need to be made or the kinetic attitudes that need to be chosen in real situations. Therefore it is very necessary to have a training method that conditions athletes in real competition situations, where athletes are required to make movements as quickly as possible in a short time «Stimulus-Response». In pencak silat, speed is an absolute determinant of achievement. Because the measure of the time to attack quickly will determine the acquisition of value.

Hand reaction time can determine success in a match, so hand reaction time is an important component in sports (Syafitri, Supatmo, & Indraswari, 2017). Good reaction time is very important to train because it allows early identification of an opponent›s body movement or attack that allows taking decisive or evasive action to be taken if necessary (Syaquro & Badruzaman, 2018).

Based on observations on students of the Universitas Islam 45 Bekasi, the punch technique has not been effective and efficient. This may occur due to the lack of reaction speed possessed by athletes, so based on these problems, it is necessary to have a variety of training methods to increase speed.

One of the exercises that can be applied to train hand reaction speed is directional hand movement. The training method developed by the author is a modification of the directional hand movement (Brown & Ferrigno, 2005) by using pipe and PowerPoint applications.

Modified directional hand movement exercises have been shown to increase reaction speed (Riyadi, Dani Nur; Lubis, Johansyah; Rihatno,Taufik; Haqiyah, 2019), so this exercise is appropriate for pencak silat athletes to train punch speed. Besides that, it can also train hand-eye coordination.

METHOD

The method used was an experiment with a one-group pretest and posttest design. The sampling technique used purposive sampling was 32 students (20.15+0.84) at the Islamic University of Bekasi. The instrument used to measure the speed of the punch (Riyadi, 2020)

The procedure for implementing exercises directional hand movement is moving the hands towards the stimulus (for example, hand signals, shoulder signals, or the ball. More complex variations of movement can be done by doing leg movements (Brown & Ferrigno, 2005). This can be seen more clearly in the **Figure 1** below:

Figure 1.Exercise Directional Hand Movement Movement

The modification made is adding a visual signal through a simple application with the help of pipe equipment, more clearly can be seen in the **Figure 2** below:

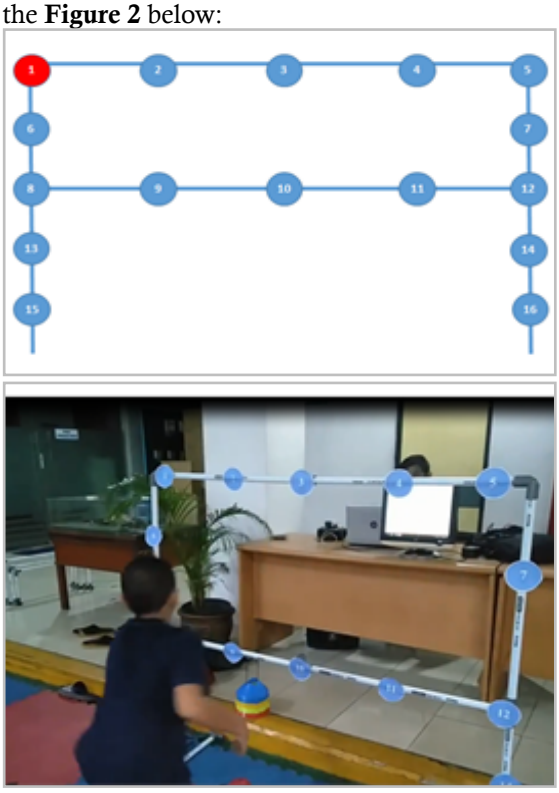

Figure 2. Exercise Modification of Directional Hand Movement

The volume and intensity settings of the speed training program can be seen in the **Table 1** below:

Table 1. Volume And Intensity Settings Of The Speed Training

	Alactid an aerobic speed	Lactid aerobic speed
Method	Repetitive shord interval training	Pepetision short and medium interval training
Intensity	• 90-100% max speed • Maximal/supra max	• 90-100% max speed • Maximal/supra max
Repetisions	From 4 – 8 per set	From 3 – 5 per set
Duration of efford	From 2" – 10"	From 9" – 20"
Set	3 – 5 set	2 – 4 set
Total distance	Total 300 – 600 m sesions (depending of the training)	Total 600 – 1200 m sesions (depending of the training)
Rest period	• Semi active/active • 1 : 10 between rept • 4" to 8" between set	• Active • 1 : 30 between rept • 7" to 10" between set

RESULTS AND DISCUSSION

Based on the results of data processing, the descriptive statistical analysis of the results **Table 2** of the blow speed test was:

Table 2. Descriptive Statistics

Group	N	Min	Max	Mean	SD
Pre-Test	32	0.58	2.15	1.3731	0.31363
Post-Test	32	0.45	2.02	1.2494	0.33627
Gain	32	-0.02	0.53	0.1238	0.08477

Descriptively, it can be seen that there is an increase in the average score of punch speed, in the pre-test, the average value is 2.15 and in the post-test is 2.02 with an average value of 0.53 seconds increase.

The results of the research data normality test can be seen in the **Table 3** below:

Table 3. Normality Test

Group	Sig	Result
Pre-Test	0.378	Normal
Post-Test	0.242	Normal

Based on the table above, it is known that the pre-test sig value is 0.378> 0.05 and the post-test is 0.242> 0.05 so it can be concluded that the research data is normally distributed. While the results of the homogeneity test can be seen in the **Table 4** below:

Table 4. Homogeneity Test

Levene Statistic	df1	df2	Sig.
0.017	1	62	0.896

Based on the table above, it is known that thevalue is Levene Statistic 0.017 with df1 = 1 and df2 = 62. The sig value is 0.896> 0.05. So it can be concluded that the research data is homogeneous.

After the two pre-analysis requirements are met, then the hypothesis is tested by using the paired sample t-test (Kadir, 2015; Muhamad, Memet; Aridhotul, 2015). The results **Table 5** are as follows:

Table 5. Hypothesis Test Results

Mean	t	df	Sig.
0.12375	8258	31	0.000

Based on the **Table 2** paired samples test, obtained the mean difference = 0.12375, which means the difference scores speed test results blow on pre-test and post-test. The t value = 8,258, with df = 31, and the sig or p-value = 0.000 <0.05. Thus it can be concluded that there is an increase in the speed of the punches through the modification of the exercise directional hand movement.

The advantage of the modification exercise directional hand movement is that it increases the speed and time of the upper body movement. Through the light signal given, students will try to complete the exercise movement according to the number shown by the light signal on the screen.

This punch speed exercise can improve sensory and motor function because it requires eye and hand coordination. A person's processes in thinking and coordinating the sensory and motor systems can be assessed by measuring reaction time. At hand reaction time, good hand visual and motoric coordination will provide a quick response to hand movements. Hand reaction time also determines the success of an athlete in a competition, so that hand reaction time is an important component in sports (Syafitri et al., 2017).

Good reaction time is very important in pencak silat, because it allows for early identification of the opponent's body movements or attacks that allow taking decisive or evasive action to be taken if necessary (Syaquro & Badruzaman, 2018). Reaction speed is very influential on punch ability (Muis, 2016).

Exercise modification of directional hand movement increases reaction speed (Riyadi, Dani Nur; Lubis, Johansyah; Rihatno,Taufik; Haqiyah, 2019). So that this exercise is appropriate to practice punch speed in pencak silat.

CONCLUSION

Based on the results of data analysis, it can be concluded that the modification exercise directional hand movement increases the speed of pencak silat punch. This can be an input for coaches and sports teachers as a reference for variations in exercise in increasing the physical component of speed in martial arts.

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