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The Exercise Effect Of *Front Cone Hops And Zig-Zag Cone Hops* Due To Agility And Speed

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Abstract- Exercise is a systematic process of practicing working repeatedly, the more days, the exercise gained step by step. The technique of agility and speed is an exercise technique used by athletes of 5 types of sports. Indeed, to develop agility and speed it is necessary practice the front cone hops and zig-zag hops. The purpose of this research is to analyze about: (1) the influence of front cone hops exercise on agility; (2) the effect of front cone hops exercise on speed; (3) the effect of zig-zag cone hops exercise on agility; (4) the effect of zig-zag cone hops exercise on speed; (5) the difference in the effect of front cone hops and zig-zag cone hops exercises against agility; (6) the difference in the effect of front cone hops and zig-zag cone hops on speed. The type of research that used in this study is quantitative with quasi-experimental methods. The design of this study is using matching-only design, and the data analysis is using Anova. The data retrieval process is done with T-test for 30 meter test run agility for speed at pretest and posttest. The result of the research based on T test shows that the T-count value between pretest and posttest of each group are: (1) Experiment Group I for agility 5,227 and velocity 4,747 (2) Experiment Group II for agility 2,607 and speed 6,253 (3) Group control for 4,649 agility and speed of 1,952. Based on the analysis above, it can be concluded that there is an increase in agility and speed for each experimental group and control group after being given front cone hops and zig-zag cone hops exercises seen from t-test results. In addition there is a difference of influence through the Anova test, where the practice of front cone hops gives a better effect of zig-zag cone hops exercise in improving agility and speed.

Index Terms- Exercise, Front Cone Hops, Zig-Zag Cone Hops, Speed, Agility

I. INTRODUCTION

At this time the public has been aware about the necessary of exercising. This is an evident from a lot of members of the public who do sports on holidays in the field as well as in a certain place that allowed. Exercise is very beneficial for the health of the body because by exercising the body will become healthier and fit. Sports is a necessity for everyone, because everyone wants to be healthy, nobody wants to get sick or disturbed by their health (Munters, 2013, p.15). When we are often doing an exercise the body will be immune to some diseases compared with those who rarely doing an exercise.

The sport's goal of a national sports system are to nurture and improve health and fitness, achievement and quality, instilling moral values and noble character, sportsmanship, discipline, cultivating and fostering national unity, strengthening national resilience, and elevating dignity, dignity and honor of the nation. Exercise develops and grows in various forms and ways of execution, in achieving a sporting achievement in the present, not just exercise or exercise, but achievement is a process that takes a long time. To achieve high sports achievement, it is needed various disciplinary roles. Achievement of sporting achievements that maximize many factors that influences. Factors that determine sports achievement are biological, psychological, environmental, and other supporting aspects. In general, the increased performance of sports athletes who require a lot of movement is strongly influenced by the readiness of four main components. The four main components are physical, technique, tactics, and mental. Of the several components of physical condition, leg muscle is one of the important components needed by many dynamic sports. For example it can be seen in athletic sports, running, jump, leap, volleyball, futsal, and kicking. In connection with that, it is mentioned that some dynamic sports require a lot of leg muscle role.

Looking at the elements of the trainer, speed and agility are among the elements of physical training required in many sports. According to Nicholas Ratamess, (2012, p.13) speed is the ability to perform similar movements in sequence in the shortest time, or the ability to travel a distance quickly. The definition of agility according to Sucharitha, et al (2014, p.755) is the ability to maintain or control the position of the body when the body quickly change direction during the series of movements. From the components above about the physical conditions, the reserachercan wants to focus on speed and agility by comparing the two forms of exercise used to increase explosive power and agility. One of the training to improve muscle quality by using own load is the form of plyometric exercise.

Plyometric is a form of exercise used by athletes in all types of sports to improve agility and speed. Plyometric exercise is a form of exercise that can be used to improve the biomotoric fitness of athletes, including strength and speed that have a very wide application in sports activities.

Based on the description about the background, the author would like to provide an alternative exercise that can be done during extracurricular futsal in order to improve the athlete's physical condition, especially in improving the agility and speed of the athlete. So, in this occasion, the researcher is interested to analyze the exercises of front cone hops and zig-zag cone hops on improving agility and speed, with the practice of front cone hops and zig-zag cone hops as independent variables will be used to analyze the effect given to dependent variable namely agility and speed.

II. RESEARCH METHOD

This type of research uses a quantitative approach. While the research method used in this research is a quasi experimental research method (quasi experiment).

Experiment is a type of research in which the sample or object of research is given a treatment (treatment) The design program in this study uses matching only design, which pair the subject one with another based on certain variables by using control group, pre-test and post-test.

Information:

T11: Pre-test group

T12: Pre-test group

Controls: Pre-test group

T21: Post-test group

T22: Post-test group

Controls: Post-test group

X1: Treatment with front cone hops exercise

X2: Treatment with a zig-zag cone hops exercise

A. Population and Sample

The population is the entire individual involved in the study. Population is the subject of research. The population in this study is all students who follow extracurricular futsal in SMPN 55 Surabaya, amount 50 people of male with age 12-14 years.

A good sample should as far as possible describe the population. The characteristics and properties of sample members reflect the characteristics and nature of the population. The sample of this study amounted to 30 people where 30 people are male with age 12-14 years.

Kelompok	Pre-test	Treatment	Post-test
1	T1 ₁	X	T2 ₁
2	T2 ₂	X	T2 ₂
3	Kontrol		Kontrol

B.

and the analysis as follows:

1. Test Prerequisite Analysis

a. Test of Distribution Normality

To test the normality of data distribution, used kolmogrov-smimov method. To determine whether it is normal or not in the distribution of data that used as a comparison of significant results in a calculation data with 5% significance level. If the level of significance in the static test is greater than 0.05, then the data is declared to be normally distributed.

b. Homogeneity Test

The homogeneity test of variance is done to know whether it is homogeneous or it is not in the data collection. This study used homogeneity of variance test. If the statistical value of the test homogeneity of variance is more than 0.05, then the data has a homogeneous variant.

c. Hypothesis testing

To know the difference of treatment effect on the dependent variable before and after treatment in each experimental group, then t test (paired T test) with hypothesis rejection rate at $\alpha = 0.05$. To know the difference of treatment effect to the increase of dependent variable before and after given treatment to each experimental group, used ANOVA analysis (analysis of variance).

To find out which independent variables have the greatest influence in increasing dependent variables, LSD (last significant different) statistical analysis is used in SPSS 16.0 with the level of rejection of hypothesis at $\alpha = 0.05$.

III. RESULTS AND DISCUSSION

A. Description of Group Data I

From the results of agility data, where in the initial test experimental group I had an average of 15.54 seconds while in the final test the average decreased to 15.32 seconds. It shows an average difference of -0.22 in the experimental group I after being treated 18 times for 6 weeks.

Similarly, the increase occurred in the initial test results and the final test of experimental group velocity I shows an increase in speed after the experimental group I was treated for 18 meetings. This can be seen from the average initial test of 5.22 seconds and the final test decreased to 4.92 seconds with an average difference of -0.31 seconds so that the difference from the average shows an increase after being treated for 18 six weeks of meetings.

B. Group Data Description II

From the results of agility data, where in the initial test the experimental group II had an average of 15.42 seconds while in the final test the average decreased to 15.23 seconds. This shows the difference in mean difference of -0.19 seconds in the experimental group II after being treated 18 times for 6 weeks.

Similarly, the increase in the initial test results and the final test of the experimental group velocity II are showing an increase in speed after the second experimental group was treated for 18 meetings. This can be seen from the average initial test of 5.33 seconds and the final test decreased to 5.12 seconds with an average difference of -0.21 seconds so that the difference from the average shows an increase after being treated for 18 six weeks of meetings.

C. Description of Control Group Data

The control group data aimed only as a controller in both experimental groups, then the increase in the dependent variable is really due to the form of treatment given to the two experimental groups.

From the agility test data, which is in the initial test has an average of 15.63 seconds and on the final test the average decreased to 15.58 seconds. It shows the difference in average agility in the relatively small control group -0.06 seconds. While the speed test data, which is in the initial test has an average of 5.20 seconds and on the final test the average decreased to 5.08 seconds. This shows the difference in average velocity in the relatively small control group -0.12 seconds. So if viewed from the table above, the increase of the two variables is relatively small when it is compared with both groups of previous experiments.

D. The Term of Hypotheses Test

1. Data of Normality Test

Variabel	Test	Kel. I	Kel. II	Kel. III	Ket	Status
		Sig	Sig	Sig		
Kelincakan	Tes Awal	0.164	0.200	0.200	$P > 0,05$	Normal
	Tes Akhir	0.200	0.200	0.200	$P > 0,05$	Normal
Kecepatan	Tes Awal	0.200	0.200	0.200	$P > 0,05$	Normal
	Tes Akhir	0.200	0.197	0.200	$P > 0,05$	Normal

Based on the data in the table above, it shows that the data acquisition of the two dependent variables namely speed and agility have the meaning that the data is normally distributed. This is because the significance (p) of each group shows (p) or $\text{sig} > 0.05$ which results in H_0 being accepted. So it can be concluded that the data taken from the population that is normally distributed.

2. Data of Homogeneity Test

Variabel	Test	Sig (P)	Ket	Status
Kelincahan	Tes Awal	0,824	P>0,05	Homogen
	Tes Akhir	0,838	P>0,05	Homogen
Kecepatan	Tes Awal	0,303	P>0,05	Homogen
	Tes Akhir	0,251	P>0,05	Homogen

B. acquisition of the two dependent variables are agility and speed. They have homogeneous variance. This is interpreted because the significance value of each data indicates the level of significance or (p) > 0.05. So, it can be concluded that the variance in each group is the same or homogeneous.

Multiple Comparisons

LSD

Dependent Variable	(I) Independent	(J) Independent	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
kelesih_kelincahan_kelincahan	Front Cone Hops	Zig-Zag Cone Hops	-.0300	.05056	.519	-.1367	.0767
		Kontrol	-.16700	.05056	.003	-.2707	-.0633
	Zig-Zag Cone Hops	Front Cone Hops	.03300	.05056	.519	-.0707	.1367
		Kontrol	-.13400	.05056	.013	-.2377	-.0303
	Kontrol	Front Cone Hops	.16700	.05056	.003	.0633	.2707
		Zig-Zag Cone Hops	.13400	.05056	.013	.0303	.2377
kelesih_kecepatan_kelincahan	Front Cone Hops	Zig-Zag Cone Hops	-.10100	.07303	.178	-.2508	.0488
		Kontrol	-.19100	.07303	.014	-.3408	-.0412
	Zig-Zag Cone Hops	Front Cone Hops	.10100	.07303	.178	-.0488	.2508
		Kontrol	-.09000	.07303	.228	-.2398	.0598
	Kontrol	Front Cone Hops	.19100	.07303	.014	.0412	.3408
		Zig-Zag Cone Hops	.09000	.07303	.228	-.0598	.2398

*. The mean difference is significant at the 0.05 level.

The table above shows that there are significant differences between the three groups. The difference can be seen from the mean difference. So from the mean difference it gives a meaning difference of influence to the increasing of agility among research group. This can be known from the mean difference value, that the experimental group I is more optimal for agility improvement compared to the experimental group II and the control group. And shows that there are significant differences between the three groups. The difference can be seen in the mean difference, so that the difference gives a different meaning of influence to speed improvement between research groups. Thus, from the test results of the dependent differences between groups of dependent variables (agility and speed) it can be concluded that the front cone hops exercise program provides greater improvement of the zig-zag cone hops training program and the exercise in the control group.

IV. CONCLUSIONS

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Based on the results of research and discussion that have been described in the previous chapter, it can be put concluded as follows :

1. There is a significant effect of front cone hops training program on increasing agility.
2. There is a significant effect of front cone hops training program on increasing speed.
3. There is a significant effect of the zig-zag cone hops exercise program on improving the agility.
4. There is a significant effect of zig-zag cone hops training program on increasing speed.
5. There is significant effect of front cone hops training program and zig-zag cone hops on increasing agility and speed.

SUGGESTION

Based on the results of the research it can be submitted four suggestions as follows:

1. To improve agility and speed on the extracurricular, futsal is not only done with conventional exercise, but can be done by continuous training method with the form of front cone hops training program and zig-zag cone hops.
2. Model of front cone hops and zig-zag cone hops training programs can be recommended and applied to the exercise program in order to improve agility and speed.
3. For the trainer, must be creative in developing the training program in accordance with the ability of athletes. So, athletes are able to implement the training program that has been prepared by the coach, then the goal of the exercise can be achieved
4. For further researcher, this research can be used as input and comparison of research results if choosing similar problems as the object of research.

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