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The Effect of Two Foot Forwads, in Out and Two Foot Sideways Training on Access and Speed of Students of MTS Badrussalam Surabaya

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Abstract

Many students at MTs Badrussalam who take extracurricular activities lack agility and speed. Agility and speed serve to support students during extracurricular activities, students who do exercises programmatically and regularly can improve agility and speed. Ladder drill is one of the exercises to improve agility and speed. In this study, the aim was to find out that agility ladder training increased agility and speed. The results of this study are expected to be used by practitioners as evaluation material for the development of knowledge in the field of science that has been carried out with programmatic training in order to increase agility and speed. The research method uses quantitative research with quasi-experimental methods. This research design uses a randomized control group pretest-posttest design. In this design, thirty samples were divided into three groups which were given different treatments. The analysis used is the average (mean), standard deviation, normality test and ANOVA (Analysis of variance). The results of this study after being tested with ANOVA is that there is a significant effect on agility ladder two foot forwards, agility ladder in and out and agility ladder two foot sideways exercises on agility with sig (0.048), (p <0.05) then also there is a significant effect on speed with sig (0.041) (p<0.05). Based on the LSD test, the most influential of ladder drill exercises on agility is 1). Ladder drill two foot side ways. 2). Ladder drill in and out, 3). The two foot forwards ladder drill exercise and the speed that affects the ladder drill exercise are 1). Ladder drill two foot forwards exercise, 2). Ladder drill in and out, 3). Ladder drill two foot side ways.

Keywords
ladder drill; agility; speed and extra curricular exercises

I. Introduction

In the age of advancement in Science and Technology, many students neglect physical activity, the period of being a student is an important period of growth, which will greatly change the physical conditions that affect physical reactions and activities. Muscle mass and bone size increase and the size and distribution of fat stores in the body also changes. Therefore, the body mass index (BMI) can describe the excess fat in the body, is very simple and can be used for large measures. population research scale In the school education sector, the importance of sports and recreation subjects (Ferriyanto, 2010). Education is one of the efforts to improve the ability of human intelligence, thus he is able to improve the quality of his life (Saleh and Mujahiddin, 2020). Ladder drill is a ladder-shaped exercise equipment that is placed on the floor to improve the ability of the athlete's legs and movement to change body direction quickly and is widely used as a tool to increase speed and agility for intermittent dynamic sports such as football and basketball (Idris, 2014). A form of physical exercise whose function is to train leg agility and

synchronize movements in a balanced way. Ladder drill is a kind of ladder drill used to improve dexterity, agility and movement speed. Ladder agility will help improve all aspects of the basic movements of this sport, such as improving balance, reflex training, muscle endurance, reaction speed and coordination between various parts of the body. In addition to physical benefits, continuous agility ladder training will help improve the nervous system, endurance and leg muscle strength (Pratama.dkk, 2014).

Agility is the ability to change body position, the direction of body movement quickly when moving quickly, without losing balance or awareness of body position. So that agility is one element of physical condition that plays an important role, especially in extracurricular games, especially when getting obstacles from opponents. A player must be able to move quickly to change direction or escape (Kusuma, 2017). Agility in team sports consists not only of the ability to change the direction of movement, but also the ability to anticipate the movements of an opponent, read and react to certain game situations agility: "rapid whole-body movement with a change in speed or direction in response to a stimulus". (Horička. et al, 2014:9). Agility is influenced by several factors Components of physical condition, age, gender, weight and fatigue (Mariyono. et al, 2017).

Speed is one of the most important elements of physical condition in many sports. In many literatures it is explained that speed is one of the basic elements in physical conditions. As a basic element, speed stands alone. Standing alone means not being influenced by other elements of physical condition. That speed is an independent or stand-alone physical ability and therefore the development of speed requires its own specifications (Ihsan, 2018: 8). Every sport activity, whether it is a game, a race, or a competition, always requires a speed biomotor component. For this reason, speed is one of the basic biomotor elements that must be trained in an effort to support sports achievement (Nuryadi, 2018:1).

Ladder drill is a ladder-shaped exercise tool that is placed on the floor to improve the athlete's footwork ability and change the direction of the body quickly, ladder drill as a tool to increase speed and agility (Meng, 2014). Ladder training is an important part of many team sports training. They need to move their feet quickly in precise and specific movements. Athletes must pay attention to perform stair agility exercises accurately and quickly. Agility ladder training benefits an athlete by teaching him to move quickly but deliberately. It's essential for athletes of all shapes and sizes, Speed ladder and agility ladder workouts help move quickly in the sport. Speed ladder and agility ladder training should be a daily chore when it comes to being a standout athlete. If you want to be faster on the court, you need to think about stair training and agility training. Just like anything, practice makes perfect, so take some time and you will see results (Chandrakumar, 2015).

In this study, three exercises were used in the study, namely: 1). The two-foot forward ladder drill exercise is a form of exercise by running forward as fast as possible, taking turns entering the stairs. Runners must quickly change positions from one ladder to the next, and so on until they reach the final box and do this repeatedly. 2). Ladder drill in out exercise is a form of exercise by running by simultaneously moving the legs inward with the feet to the right/left as quickly as possible, two feet simultaneously entering the stairs into and out of the exercise ladder. Runners must quickly change positions from one ladder to the next, and so on until they reach the final box, and this is done repeatedly. 3). The two foot sideways ladder drill exercise is a form of exercise by running by alternating foot movements to the side, runners must quickly change positions from one ladder to the next, and so on until they reach the final box, and are carried out sequentially. over and over again.

MTs Badrussalam Surabaya is a school located on Jl Hr Muhammad 161, Pradah sub-district, Dukuh Pakis, Surabaya City, students who study there are only students who live in the surrounding area, Access to school is only by walking, students in school Those who take extracurricular activities require agility training because when student learning is tested by running zig zag, many students have difficulty in carrying out the test, the facilities and infrastructure at the school are only modest, such as extracurricular learning on a dirt field modified to resemble a futsal field. The existing sports facilities and infrastructure at MTs Badrussalam Surabaya are also quite adequate, starting from the futsal field, volleyball field and cycling area. t the infrastructure is also very good because it is managed by the school while the futsal field is in school with outdoor management.

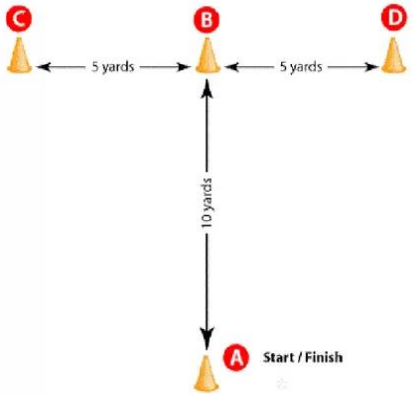
II. Research Method

This study uses quantitative research with a quasi-experimental method (quasi-experimental design), because there is a cause and effect relationship between the variables but the control group is not used in the study. the experimental method is a research method used to find the effect of certain treatments on others in a controlled manner (Maksum: 2018). The design or design of this study uses a pretest-posttest control group. In this design there is no control group, the advantage of this design is that pretest and posttest are carried out so that it can be known with certainty the changes in results due to the treatment given (Maksum, 2018:115-116).

The population is all research subjects whose characteristics have been determined by the researcher (Mahardika, 2015: 204). The population in the research that will be conducted are all male students of MTs Badrussalam Surabaya who join extracurricular activities. a. Physically and mentally healthy. b. Male students of MTs Badrussalam Surabaya who participated in futsal extracurricular. c. Pleased to follow the procedure in this study.

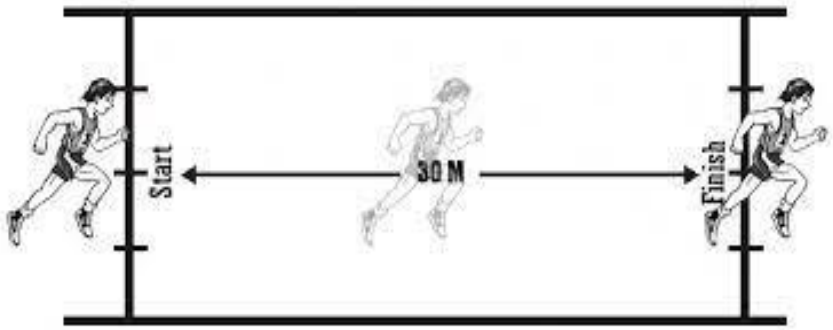
The sample is part of the population where research data will be collected in a certain way and will then be analyzed with certain techniques (Mahardika, 2015: 208). This study uses non-probability sampling, namely purposive sampling with a purposive sampling technique that requires sampling with a specific purpose that is described with the purposes used in the study (Mahardika, 2015: 221). The distribution of the sample in this study is to use the ordinal pairing technique. Based on the ordinal pairing technique. So the sample in this study will be grouped into three groups 1. Ladder drill two foot forward: 10 students 2. Ladder drill in and out group: 10 students 3. Ladder drill two foot side ways group: 10 students.

The instrument that will be used by the researcher is in the form of agility and speed tests in extracurricular activities at MTs Badrussalam Surabaya with the Shutle run T test and the 30 m sprint test.



Source: www.tes-agility-sepakbola-t-test.com

Figure 1. *T test*



Source: www.tes-pace-sepakbola-t.com

Figure 2. *30 Meter Running Test*

The data collection techniques used were observation, experimentation, and measurement techniques in the form of agility and running speed tests using the Shutle run T test and the 30 m sprint test. Observation technique was used to obtain initial and final test data. Experimental techniques were used to treat the testes and measurement techniques were used to obtain data on the results of the initial test and the final test of running speed.

The technique used for test analysis Mean (mean) Mean is a calculated number by dividing the number of values by the number of individuals, Standard Deviation is a storage measure to distinguish the difference in the size of the difference between the data and the average on the scale. (Mahardika, 2015: 278). The normality test aims to ensure that the data obtained are symmetrically or normally distributed, normal testing with Kolmogorof-Smirnov (Maksum, 2018: 190). ANOVA (Analysis of variance) is a technique used to examine differences in variance between three or more data groups. ANOVA is always associated with a number called variance. ANOVA with two or more independent variables is called a two-way ANOVA or factorial ANOVA.

III. Results and Discussion

3.1 Results

The results of the research that has been carried out at the MTs Badrussalam Surabaya school on students who take part in extracurricular training activities, so in this chapter will be described with a description of the data regarding the research that has been done, namely "The Effect of Ladder Drill Exercise Two Foot Forwads, In Out And Two Foot Sideways On Agility Ladder Exercises Against Agility and Speed "The description of the data that will be discussed in the form of data obtained from the results of the pre-test and post-test with the tests carried out, namely the shutle run T-test for agility and the 30 m run test for the speed test, with the same treatment. given to the group, namely Ladder drill Two Foot Forwads, In Out and Two Foot Sideways with the aim of increasing the agility and speed of students at MTs Badrussalam Surabaya in extracurricular training activities. In calculating research data, researchers used the assistance of the Statistical package analysis program for the social science (SPSS) version 21.00 for Windows.

a. Description of the data Pre Test and Post test agility and speed using the Shutle run T test and the 30 meter run test for the Ladder drill two foot forward group

Pre Test Results				Post test Result		Difference	
No	Name	Pre Test Results		Post test Result			
		Speed	Agility	Speed	Agility		
1	AR	5,66	14,00	5,05	12,88	0,61	1,12
2	LT	6,10	13,97	5,66	12,90	0,34	1,10
3	AN	5,71	15,00	5,19	13,08	0,68	1,53
4	DV	5,88	15,41	5,10	12,98	0,96	1,90
5	DN	6,15	14,90	5,16	12,47	1,02	2,69
6	MF	6,20	15,47	5,18	12,78	0,98	2,69
7	HS	6,28	15,50	5,34	13,62	1,25	1,46
8	AY	6,70	15,50	4,97	13,50	1,73	2,00
9	MR	6,53	16,00	5,32	13,18	1,56	2,70
10	MI	6,88	16,50	5,24	14,07	1,64	2,43

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Agility pre test	10	13,97	16,50	15,2250	,25174	,79608
Agility post test	10	12,47	14,07	13,1460	,14754	,46655
Speed pre test	10	5,66	6,88	6,2090	,12795	,40462
Post test speed	10	4,97	5,66	5,2210	,06058	,19157
Valid N (listwise)	10					

Based on the descriptive data from table , it can be seen that there is a difference in the average value of the results of the pre-test and post-test on agility and speed tests. This can be seen from the results of the pre test before the Ladder drill two foot forward exercise was carried out with an average time of 15.22 seconds and after the Ladder drill two foot forsward exercise increased agility with a time of 12.47 seconds. Then the speed

also increased, seen from the results of the pre test before the Ladder drill two foot forward exercise was carried out with an average time of 5.66 seconds and after the Ladder drill two foot forward exercise was carried out the speed increased with a time of 4.97 seconds. Thus, it can be assumed that there is a difference in the average value of the results of the Ladder drill two foot forward exercise for agility and speed before (pre-test) and after (post-test) in MTs Badrussalam students who take extracurricular activities.

b. Description of the Pre Test and Post test data for agility and speed using the Shutle run T test and the 30 meter run test for the Ladder drill in and out group

Pre Test Result				Post test Result		Difference	
No	Name	*Pre Test Result*		*Post test Result*			
		Speed	Agility	Speed	Agility		
1	DF	5,75	14,00	5,53	13,16	0,52	1,92
2	AD	6,00	14,10	5,66	13,00	0,78	2,43
3	ES	6,40	15,22	5,15	13,76	0,44	1,07
4	FV	6,24	14,10	5,67	13,47	0,99	2,43
5	BA	6,17	14,90	5,21	13,00	0,59	0,91
6	MA	6,42	14,90	5,13	13,04	0,94	1,88
7	ES	6,13	14,13	5,70	13,75	1,29	1,86
8	BT	6,26	16,00	5,70	13,30	0,48	2,53
9	BK	6,58	15,93	6,10	13,40	1,19	0,75
10	MW	6,72	16,50	5,16	13,80	1,29	2,36

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Agility pre test	10	14,00	16,50	14,9780	,28974	,91623
Agility post test	10	13,00	13,80	13,3680	,10132	,32041
Speed pre test	10	5,75	6,72	6,2670	,08893	,28123
Post test speed	10	5,13	6,10	5,5010	,10298	,32566
Valid N (listwise)	10					

Based on the descriptive data from table 2, it can be seen that there is a difference in the average value of the results of the pre-test and post-test on agility and speed tests. This can be seen from the results of the pre test before the Ladder drill in and out exercise was carried out. With an average time of 14.97 seconds and after the Ladder drill in and out exercise agility increases with a time of 13.36 seconds. Then the speed also increased, seen from the results of the pre test before the Ladder drill in and out exercise was carried out with an average time of 6.26 seconds and after the Ladder drill in and out exercise the speed increased with a time of 5.5 seconds. Thus it can be assumed that there is a difference in the average value of the Ladder drill in and out training results for agility and speed before (pre-test) and after (post-test) in MTs Badrussalam students who take extracurricular activities.

c. Data description of Pre Test and Post test of agility and speed using Shutle run T test and 30 meter run test for Ladder drill two foot side ways group

Pre Test Result				Post test Result		Difference	
No	Name	*Pre Test Result*		*Post test Result*			
		Speed	Agility	Speed	Agility		
1	RF	6,08	13,53	5,40	12,00	0,22	0,84
2	RP	6,25	13,41	5,66	12,50	0,58	1,03
3	CA	6,28	13,81	5,56	12,22	0,43	0,38
4	MK	5,83	15,03	5,25	14,00	0,57	0,63
5	RR	6,35	14,79	5,37	12,10	0,56	2,70
6	MWA	6,52	14,41	5,08	13,10	0,72	1,59
7	FP	6,77	14,38	5,50	12,53	1,44	1,31
8	DY	6,75	14,50	5,56	13,75	1,21	2,82
9	FE	6,81	15,38	5,68	13,78	1,27	1,85
10	MRI	6,85	15,55	5,56	13,19	1,13	1,60

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Agility pre test	10	13,41	15,55	14,4790	,23250	,73523
Agility post test	10	12,00	14,00	12,9170	,23658	,74814
Speed pre test	10	5,83	6,85	6,4490	,10990	,34755
Post test speed	10	5,08	5,68	5,4620	,05964	,18861
Valid N (listwise)	10					

Based on the descriptive data from table 3 above, it can be seen that there is a difference in the average value of the results of the pre-test and post-test on agility and speed tests. This can be seen from the results of the pre test before the Ladder drill two foot side ways exercise was carried out. With an average time of 14.47 seconds and after the Ladder drill two foot side ways exercise agility increased by 12.91 seconds. Then the speed also increases, seen from the results of the pre test before the Ladder drill two foot side ways exercise with an average time of 6.44 seconds and after the Ladder drill two foot side ways exercise the speed increases with a time of 5.46 seconds. Thus, it can be assumed that there is a difference in the average value of the results of the Ladder drill two foot side ways exercise for agility and speed before (pre-test) and after (post-test) in MTs Badrussalam students who take extracurricular activities.

d. Results of the Ladder drill Two Foot Forwads Normality Test

Tests of Normality

Types of research Treatment	Types of research	Kolmogorov-Smirnov[a]			Shapiro-Wilk			Desc
		Statistic	df	Sig.	Statistic	df	Sig.	
Ladder drill Two Foot Forwads	Agility	0,141	20	,200*	0,92	20	0,1	Normal
	Speed	0,186	20	0,06	0,918	20	0,09	Normal
Ladder drill In and out	Agility	0,216	20	0,15	0,89	20	0,27	Normal
	Speed	0,12	20	,200*	0,945	20	0,3	Normal

Ladder drill Two Foot Sideways	Agility	0,111	20	,200*	0,963	20	0,6	Normal
	Speed	0,184	20	0,074	0,916	20	0,08	Normal

So it can be decided that the research data are normally distributed p > (0.05). Because the research data is normally distributed, we can assume that the data in this study are normally distributed and can be tested further.

3.2 Discussion

Discussion of research based on the results of data analysis on the effect of agility ladder training two foot forwards, in and out and agility ladder two foot sideways on agility and speed at the school at MTs Badrussalam Surabaya. The next process will discuss the effects and differences in the effects of the exercises that have been given. The results are as follows:

ANOVA Analysis Calculation Results

Exercise Model	F	Sig	Description
Two foot forwards, in and out and two foot sideways ladder drill exercises for agility	3,20	0,048	significant positive effect

Based on the table above, it shows that the ladder drill exercise variable has an F value of 3.20 and a significance value of 0.48 < 0.05. This proves that the research hypothesis states that there is an effect of ladder drill exercises two foot forwards, in and out and two foot sideways on agility, because the learning significance value is smaller than the alpha value (α) 5%. So the conclusion is that there is a difference between the results of the ladder drill exercise (pre-test) and after (post-test) using ladder drill exercises two foot forwards, in and out and two foot sideways on agility.

ANOVA Analysis Calculation Results

Exercise Model	F	Sig	Description
Two foot forwards, in and out and two foot sideways ladder drill exercises for speed	3,37	0,041	significant positive effect

Based on the table above, it shows that the ladder drill exercise variable has an F value of 3.37 and a significance value of 0.041 < 0.05. This proves that the research hypothesis states that there is an effect of two foot forwards, in and out and two foot sideways ladder drill exercises on speed, because the learning significance value is smaller than the alpha value (α) 5%. So the conclusion is that there is a difference between the results of the ladder drill exercise (pre-test) and after (post-test) using ladder drill exercises two foot forwards, in and out and two foot sideways on agility.

IV. Conclusion

Based on the results of the research and the results of the analysis that has been carried out by the researchers, it can be concluded that the level of agility and speed of the students of MTs Badrussalam increased after giving the ladder drill exercises Two Foot Forwads, In and Out and Two Foot Sideways. Researchers and collaborators agreed to carry out the action of giving the exercise. Based on the observations of the collaborators on the training process. The conclusions of this study are as follows:

1. There is a significant effect on agility ladder two foot forwards, agility ladder in and out and agility ladder two foot sideways exercises on agility with sig (0.048), ($p<0.05$).
2. There is a significant effect on the agility ladder two foot forwards exercise, agility ladder in and out and agility ladder two foot sideways on speed with sig (0.041) ($p<0.05$).

Suggestions

Suggestions that can be used as consideration for increasing agility and speed after doing this research are:

1. To the Physical Education teachers/extracurricular trainers, that the Two Foot Forwads, In Out and Two Foot Sideways ladder drill exercises for MTs Badrussalam students can be used as an alternative in selecting and determining strategies or training methods to improve agility and speed. This will provide benefits including: the opportunity to move each student who takes extracurricular activities will be more and can foster passion and enthusiasm and it is not easy to make students bored and boring in carrying out training activities in the field.
2. For students, to always be eager to explore their potential and understand what is being done in the training process because it will be very useful during matches.
3. It is hoped that other authors can conduct further research with different methods and types of exercises as the development of this research.

References

Chandrakumar , N. Dkk. 2015. "Effect of ladder drill and SAQ training on speed and agility among sports club badminton players". *International Journal of Applied Research.* Vol 1: Hal 12..

Feriyanto. 2010. *Volume oksigen maksimal.*Bandung: Studio Press.

Horička, Pavol.dkk, 2014. *"*The relationship between speed factors and Agility in sport games Slovakia*". Journal Of Human sport & exercise. Nitra University.* Vol,9.

Idris, 2014. "Effects of Agility Ladder Drills on Dynamic Balance of Children*".*

Malasyia. Journal of Sports Science and physical education.

Ihsan, Nurul. dkk. 2018. "Concentration Contribution to Pencak Silat Kick Speed". Journal of Sports Science Media. Vol, 8 : Hal, 1.

Kusuma, Ketut chandra.dkk, 2017. "Effect of Ladder Drill Exercise on Speed, Surrounding, and Power Leg Muscle". Undhiksa.

Mahardika, I Made Sriundy . 2015. Research methodology. Surabaya: Unipress.

Maksum, Ali 2018. Research methodology in sports. Surabaya: Unipress.

Mariyono, dkk. 2017. *"Agility Training Method and Ankle Flexibility on Dribbling Skills*" . *Journal of Physical Education and Sports.* Vol 6: hal. 1

Meng Heng Choon, dkk. 2014. Effects of Agility Ladder Drills on Dynamic Balance of Children. *Journal of Sports Science and Physical Education.*Vol, Malaysia. http://jsspj.upsi.edu.my.

Nuryudi, Achmad.dkk. 2018. "Effect of Ladder Drill Exercise on Speed 60 Meter Run at Loc Sidoarjo Basketball School". Journal of Education. Physical, Sports and Health. Vol. 2: Hal 1.

Pratama, Nanda Eriko. dkk. 2018. *The influence of ladder drill and jump rope exercise towards speed. Agility and power of limb muscle* . Journal of Sports and Physical Education Vol,5 : Hal,1

Saleh, A., Mujahiddin. (2020). Challenges and Opportunities for Community Empowerment Practices in Indonesia during the Covid-19 Pandemic through Strengthening the Role of Higher Education. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*. Volume 3, No 2, Page: 1105-1113