

Effectiveness of Agility Ladder and Shuttle Run Training on Dribbling Agility in Futsal Games

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Abstract

This research aims to determine the differences between agility ladder and shuttle run training for futsal players. The method used in this research is quantitative research. Data collection in this study began by performing zig-zag dribbling movements, and then treatment was given to two groups, namely the agility ladder and shuttle run groups. The population in this study was SDN Bojongsalam 01, totaling 40 students who were also designated as samples. The results of this research show that the agility ladder and shuttle run training methods are good. In this research, students were treated by providing 12 meetings with two groups of 20 students each. Agility ladder and shuttle run exercises are dribbling agility training activities that can be used in this research to improve dribbling agility. This is supported by the data obtained for the increase in the agility ladder group, which has an independent of 0.840, while the increase in the shuttle run has a mean of 0.843, or $(0.840 > 0.843)$. The agility ladder run training can be produced more effectively than the shuttle run in improving futsal dribbling agility at SDN Bojongsalam 01.

Keyword: Dribbling agility; agility ladder and shuttle run exercises; futsal

Received: 19 Juli 2024 | Revised: 24 August, 18 September, 10 Oktober 2024

Accepted: 16 November 2024 | Published: 30 Desember 2024



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Introduction

According to (Agustian et al., 2018) futsal is a sport that is very much in demand by various groups at the moment. This sport is a development of the sport of futsal, which is played using the feet with the aim of putting as many balls as possible into the opponent's goal so that a team can win the match (Tiwi & Rahmadani, 2023). This sport is played on a field that is smaller than futsal, so this game requires a player to always keep running during the game. Therefore, this game really requires extra-maximum physical conditions compared to other sports. The physical conditions that are really needed in futsal include endurance, strength, speed, flexibility, balance, agility, flexibility, speed, and balance. coordination (coordination), accuracy (precision), reaction (reaction), and power (strength and speed) (Aljabar & Purnomo, 2023).

Sport is a necessity for human life, anytime and anywhere, modern life now makes people increasingly aware of the importance of sports (Puspianto, 2022). This awareness influences the rapid development of knowledge and interest in sports, both as a hobby, spectacle, recreation, fitness, health, and livelihood (Ramli et al., 2024). Apart from improving the quality of their physical condition, players in the game of futsal also require a high level of agility (Kusuma & Irawan, 2022). According to (Nosa, 2013) There are several forms of activity on the field that require agility, from dribbling the ball to dribbling quickly towards the goal past several opponents who are guarding the area in a certain formation. Agility is very important in order to be able to break through obstacles from the opponent in order to put the ball into the opponent's goal.

Apart from that, agility is also beneficial for athletes, so they don't fall easily and get injured when running on the field. Although there are many studies that examine agility ladder training and agility training using agility ladder media, However, until now, in Indonesia, there has been a limited amount of research that examines various kinds of agility ladder training techniques using agility ladder media. This is because there is still a lack of knowledge about the effects and techniques of agility ladder training. The impact of implementing agility ladder training in Indonesia, especially in futsal schools, is still limited. One of the basic futsal techniques that is very important for every futsal player to master is the dribbling technique.

According to (Purnomo & Irawan, 2021) dribbling is a very important basic technique that every futsal player must master. Dribbling is very important in the game of futsal, where dribbling is the continuation of an attack on the opponent (Kusuma & Irawan, 2022). In an effort to improve the performance of futsal players, training is one of the most determining factors in achieving achievement (Prabowo, 2023). The form of exercise chosen will also be very important in achieving the desired training target, as well as improving dribbling skills, there are many exercises that can be used, such as the zig-zag run, shuttle run, dogding run, and wind sprint (Arwandi & Ardianda, 2018). Of the many forms of training to improve dribbling skills, there are two very simple ones, namely the zig-zag run and the shuttle run (Putra & Purbojati, 2022).

According to (Malasari, 2019) zig-zag runs and shuttle runs are training models or forms of physical training to improve dribbling abilities. According to (Parengkuan et al.,

2022) dribbling is a method of moving the ball from one point to another on the field using the feet; the ball must always be close to the feet so that it is easy to control. Players must not keep looking at the ball; they must look around it and monitor the movements of other players. Based on the opinion above, it can be concluded that dribbling is a basic skill in the game of futsal, where players make running movements while pushing the ball using their feet so that the ball moves from one area to another or opens up the opponent's defense area.

According to (Satriaputra & Widodo, 2019) agility is a person's ability to change direction quickly and precisely when moving without losing balance. According to (Jensen et al., 2014) speed is the ability to complete a certain distance quickly, we can use feints when dribbling by controlling our agility and speed so that we can use them when the situation is right and profitable. Apart from improving the quality of their physical condition, players in the game of futsal also require a high level of agility. According to (Akbar et al., 2024) There are several forms of activity on the field that require agility, from dribbling the ball to dribbling quickly towards the goal past several opponents who are guarding the area in a certain formation. Agility is very important in order to be able to break through obstacles from the opponent in order to put the ball into the opponent's goal. Apart from that, agility is also beneficial for athletes, so they don't fall easily and get injured when running on the field.

Methods

The method used is experimental because it can determine the relationship between two or more variables by using an experimental design. The researcher wants to try to provide several training programs whose training programs have been determined by the researcher with the aim of getting data from the results of the pretest and posttest. The independent variables are agility ladder and shuttle run, which are the dependent variables or dribbling agility. This research method is used to look for certain treatments under controlled conditions. As the sources that researchers have read (Sukmadinata, 2017:23) and (Sugiyono, 2012:72) based on the characteristics that have been explained, this research is experimental research using quasi-experimental methods.

The population for this study used the age criteria of 10–12 years, the criteria for class V male and female students at SDN Bojongsalam 01, Bandung Regency, West Java Province. The reason researchers used this population was because there was still a lack of dribbling agility, which was used as the research sample. Therefore, the researcher used a purposive sampling technique using quasi, which was divided into 2 groups, namely the Agility Ladder and Shuttle Run groups, each with 20 people, to compare which group had more influence on improving futsal dribbling agility. In this research, the test used is dribbling ability test (Suherman, 2014). This instrument is standard and recorded in his book, so the instrument is said to be valid and reliable because its validity and reliability have been tested, so there is no need to test it, try the instrument again.

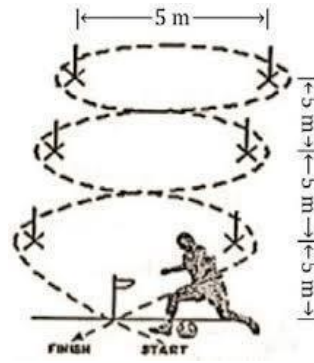


Figure 1. Diagram of the dribbling test field

Table 1. Zig-zag dribbling norms (Fetri, 2019)

Category	Male Female
Excellent	< 18,99 Second
Good	19,00-21,00 Second
Medium	21,00-23,00 Second
Less	23,01-25,00 Second
Very Poor	> 25,01 Second

Based on figure 1 above, there is an example of a futsal dribbling test as well as media assistance with cones in the shape of a figure eight, a ball, a stopwatch, and assistance with writing tools. Meanwhile, table 1 above is the zig-zag dribbling norm, or you could also say that it is test data for credibility and validity. The interval for obtaining the score below is as follows.

Table 2. Score intervals

No	Interval	Value	Description
1.	22,01 - 23,04	9	Excellent
2.	23,05 - 25,07	8	Good
3.	25,08 - 27,10	7	Medium
4.	27,11 - 29,13	6	Less
5.	31,14 - 33,16	5	Very Poor

This research is an experimental study with an experimental design that aims to determine the comparison between Agility Ladder and Shuttle Run on the futsal dribbling agility of students at SDN Bojongsalam 01, Rancaekek sub-district, Bandung district, West Java province. There are several stages of research. The first stage is preparing the instruments and then making an official research permit letter from the campus, which will be submitted to the school to be researched. then observe the field after that, carry out tests on students during 12 test meetings; the first is the agility ladder test; the second is the shuttle run test; and the final test is determining the speed and accuracy of the dribbling agility test.

Results

The table below is the results of the dribbling agility test after and before the trend

Table 3. Pretes postes agility ladder

No	Name	Agility Ladder	
		Pretes	Postes
1.	A.	27,33	22,75
2.	B.	25,57	22,31
3.	C.	26,31	20,00
4.	D.	28,43	22,45
5.	E.	36,22	33,91
6.	F.	39,16	39,37
7.	G.	31,09	36,09
8.	H.	39,43	38,09
9.	I.	50,00	45,13
10.	J.	30,13	48,07
11.	K.	30,90	25,47
12.	L.	32,56	22,44
13.	M.	50,00	44,36
14.	N.	35,22	30,22
15.	O.	30,78	29,16
16.	P.	43,44	50,00
17.	Q.	38,47	45,31
18.	R.	28,03	26,57
19.	S.	30,57	27,56
20.	T.	26,56	20,03

Table 4. Pretes postes shuttle run

No	Name	Shuttle Run	
		Pretes	Postes
1.	A.	43,50	40,47
2.	B.	25,84	22,84
3.	C.	24,30	21,12
4.	D.	22,23	18,24
5.	E.	26,78	24,78
6.	F.	34,78	33,31
7.	G.	33,84	31,84
8.	H.	30,47	30,06
9.	I.	35,35	33,53
10.	J.	38,55	38,44
11.	K.	28,44	24,10
12.	L.	26,50	21,50
13.	M.	37,75	35,81
14.	N.	38,50	32,40
15.	O.	40,62	37,62
16.	P.	40,78	37,70
17.	Q.	30,51	26,31
18.	R.	35,00	29,65
19.	S.	28,40	24,34
20.	T.	40,70	37,37

Table 5. Tests of normality

Class		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Team 1 Agility ladder and Team	Pretes Agility ladder	,204	20	,029	,883	20	,020
	Postes Agility ladder	,138	20	,200*	,907	20	,055

2 shuttle run	Pretes Shuttle run	,138	20	,200*	,907	20	,055
results	Postes Shuttle run	,133	20	,200*	,944	20	,288

The results of the dribbling agility test research that was provided were for each of 20 people. The results of the normality test are seen in table 5 Based on table 5, The normality test results for the agility ladder pretest group obtained a significance value of 0.020, while the agility ladder posttest group obtained a significance value of 0.055. Meanwhile, the shuttle run pretest group obtained a significance value of 0.055, and the shuttle run posttest group obtained a significance value of 0.288. So, the normality test for the agility ladder posttest and pretest posttest shuttle run groups showed that the data was normally distributed because the significance value obtained was > 0.05 , so H1 was accepted. Next, a homogeneity test was carried out, which can be seen in table 6

Table 6. Test of homogeneity of variances

Levene Statistic	df1	df2	Sig.
5,928	1	38	,020

Based on table 6, the homogeneity test in the agility ladder post-test group and the shuttle run post-test group obtained a significance value of $0.020 > 0.05$, so the data was homogeneous. Based on the prerequisite tests that have been carried out, the data is known to be not normal but homogeneous, so the results of the hypothesis test are carried out using a paired test, which can be seen in table 7

Tabel 7. Paired samples test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretes Agility Ladder - Postes Aglty Ladder	154.55000	637.48292	142.54551	-143.80119	452.90119	1.084	19	.292

Based on table 7 paired test, the significance value (2-tailed) is $0.292 < 0.05$, then Ho is rejected and H1 is accepted, there is a significant difference between the initial variable and the final variable, this shows that there is a significant influence on the difference in treatment given to each variable. The next paired data is in table 8.

Tabel 8. Paired samples test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretes Shuttle Run - Postes Shuttle Run	307.05000	156.33650	34.95791	233.88226	380.21774	8.783	19	.000

Based on table 8, A paired test means the significance value (2-tailed) is $0.000 > 0.05$, then H_0 is accepted and H_0 is rejected, showing that there is a significant difference between the initial variable and the final variable. This shows that there is a significant influence on the difference in treatment given to each variable. And finally, there is an independent test in table 9.

Tabel 9. Independent samples test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pretes	Equal	4.144	.049	.204	36	.840	58.22222	285.84547	-521.49926	637.94370
Postes	variances assumed									
Ladder dan Shuttle Run	Equal variances not assumed			.200	30.827	.843	58.22222	290.62717	-534.65063	651.09507

Based on table 9 the non-parametric test obtained a significance value (2-tailed) of $0.840 < 0.05$ and $0.843 < 0.05$, so H_1 was accepted based on the following hypothesis: 1) If the significance value (2-tailed) > 0.05 , then H_0 is accepted and H_1 is rejected. 2) If the significance value (2-tailed) is < 0.05 , then H_0 is rejected and H_1 is accepted. This study aims to determine which is more influential on agility ladder and shuttle run on dribbling agility. Based on the hypothesis test that has been carried out, the significance value (2-tailed) is $0.840 < 0.05$ and $0.843 < 0.05$, so H_0 is rejected and H_1 is accepted. That is, there is a difference between agility ladder and shuttle run on futsal dribbling agility, the agility ladder team has a higher average value than the shuttle run average value, namely $(34.0100) > (33.1440)$. So, further statistical tests were carried out to analyse the pretest postes of agility ladder and shuttle run, the normality value was (0.288), while the homogeneity value of the postes of agility ladder and shuttle run was (0.020) while the paired value was two because the researcher chose the postes compared to the pretests, the agility ladder postes and shuttle run postes had a significance of (0.292) and (0.000) so there were different treatments for the variables. And the last test independent significance value (2 tailed) $0.840 < 0.05$ is agility ladder and $0.843m < 0.05$ is shuttle run so that H_1 is accepted based on the hypothesis.

Discussion

After the research was conducted, a comparison test was conducted which found that there was no comparison of the effectiveness of shuttle run and agility ladder on dribbling agility. The two exercises both have an influence to improve dribbling agility but there is no significant comparison of effectiveness between the two exercises. Agility is not a physical component that only consists of a constituent, but is composed of several components including strength, speed, coordination, reaction time and power. Agility which is one of the

component parts must be owned by futsal players because in playing futsal, players are required to be agile in making movements while maintaining body balance (Guritno & Hakim, 2024).

According to (Fahlefi et al., 2020) changes in direction and speed can swiftly allow players to avoid and even defeat their opponents while playing. In addition, both exercises can equally trigger an increase in adaptation of a player's reaction time. Where when doing the exercise for a long period of time the player will get adaptation which initially before being given training a player will be slow then as routine training is given a player will increase because during training the player gets stimulation continuously and eccentrically where the eccentric contraction itself causes additional flexibility in the leg muscles. When flexibility increases agility will increase (Kusuma & Irawan, 2022).

The results of this study are in line with research conducted by (Akmal & Lesmana, 2019) showing that agility is very important for every player to be able to change the direction of the ball quickly to avoid opponent obstacles. In this study entitled 'the effect of illinois agility run Training on increasing agility in Scudetto Mente Fc players' shows the agility of Scudetto fc players is in the good category. The factors that influence agility according to (Hidayah, 2016) one form of exercise to improve agility skills is shuttle run or run back and forth. The form of shuttle run training starts from one point to another with a distance of 10 metres.

According to (Na'afisari et al., 2023) in shuttle run training, the element of movement is running by changing direction and body position, speed, balance so that this exercise can be used to improve the quality of dribbling the ball. The advantages of shuttle run training according to (Cakrawijaya, 2023) when doing shuttle runs there is movement of the joints of the arms, especially the legs so that it will increase flexibility. Then, muscle contractions will produce muscle strength which is useful for increasing speed and agility of movement (Mardhika, 2017).

The same thing with research conducted by (Malasari, 2019) entitled the effect of shuttle run and zig-zag run training on the agility of taekwondo athletes shows that there is a significant effect of shuttle run and zig-zag run training on taekwondo athletes from the previous category less to the good category. Based on the results of this study, researchers assume that there is a significant effect of shuttle run training on increasing dribbling agility. Agility training using the Shuttle run training model is proven to be able to improve the quality of dribbling the ball, many coaches apply the Shuttle run training model to their players so that the players are able to change their body movements quickly when dribbling the ball when faced by an opponent (Kusuma & Irawan, 2022).

Researchers apply Shuttle run training by installing 2 sticks 10 metres apart, each student will run as fast as possible to the next stick which is 10 metres away, then return to the starting stick by rotating through the stick and doing 2 rounds before entering the finish. the benefits of applying this shuttle run training are so that players are able to change body movements quickly, and help players increase acceleration quickly without losing balance when dribbling the ball in the field. In this study, an increase in training intensity was carried out every 2 weeks. Training intensity is a situation where players must be trained through an

intensive programme based on the principle of overload which is in balance and helps players get to their best performance.

Summary

Based on the results of research conducted by researchers regarding the research findings of students who took part in the training program provided at SDN Bojongsalam 01, Bandung Regency, their skills, especially in carrying out dribbling agility in futsal games, are still lacking. There are still many students who use dribbling techniques and are still lacking in controlling the ball or dribbling. not enough balls. With these findings, the researcher used a training program that had been provided in 12 meetings. After the training program was finished, the researcher immediately took the final test, namely a dribbling test that passed the obstacles that had been provided. Based on this background, researchers who conducted research entitled "The Effectiveness of Agility Ladder and Shuttle Run Training on Dribbling Agility" in this study aimed to find out how much influence the Agility Ladder and Shuttle Run had on dribbling agility using basic futsal techniques. Researchers used an experimental method with an experimental design.

Author's Statement

I as the author, hereby declare that my scientific work is truly the result of my own research and has never been published or published anywhere. If there are similarities with other people's work, I am ready to accept sanctions from the management of the Porkes Journal.

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