



The Effectiveness of Shuttle-Run and Zigzag Run Training on the Agility of Football Players

Original Article

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Abstract

This research was motivated by his weakness to actual agility, this was seen when he was unable to spill the ball while running fast and was unable to take another path without losing balance. The purpose of this study was to see how shuttle-run and Zigzag run training to improve the skills of PERSIMURA U-17 soccer players in Musi Rawas District. Pseudo-experiments are this kind of research. All athletes of PERSIMURA U-17 Kab. Musi Rawas will be used as a population for this study a total of 39 Musi Rawas players. The example in this study was taken using a relative testing method, namely a procedure based on the doctor's own consideration into an example of 16 people. *The Illinois Agility Run test* was used for the research instrument. The strategy of examining factual information uses the Liliefors regularity test and the t test at the importance level $\alpha=0.05$. This study found that the football agility of PERSIMURA U-17 Kab. Musi Rawas was significantly affected by *shuttle-run training*. Cross-running training has an impact on the readiness of PERSIMURA U-17 football in Musi Rawas District. Exercises known as *zigzag* running and *shuttle* running have very different effects on agility. The agility of PERSIMURA U-17 Football Players of Musi Rawas Regency is more influenced by *zigzag* running training than by *shuttle run training*.

Keywords: *shuttle run, zigzag run, agility, football*

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INTRODUCTION

The essence of the game in Indonesia is to improve physical, mental and otherworldly well-being as well as promote more regular performance. This is in line with efforts to increase the role of sports in development as reflected in Article 4 of Law of the Republic of Indonesia Number 3 of 2005 which refers to the National Sports System: "Public games have the meaning to maintain and further develop welfare and welfare, achievement, human quality, instill ethics and human dignity, sportsmanship, discipline, strengthen and encourage community solidarity and honor, fortify the diversity of society, and promote the peace and privileges of the people of the country."

Football is the most popular sport in the world that requires a variety of skills with different intensities and is a challenge for physical fitness (15). Football is a team sport with eleven players, and a goalkeeper. The goal is to put as many balls as legitimately into each goal and prevent conceding one goal so that the team can claim victory (9). Soccer is a physically demanding sport that requires a high level of strength, speed, balance, stability, flexibility, endurance, and agility.

For hundreds of years, football has been popular all over the world (1). According to Anon (2), soccer is a popular sport that many people like to play in the world and is played in almost every region. In Indonesia, football is a popular sport and the Indonesian Football Federation (PSSI) regulates the sport. The level of football enthusiasts in Indonesia is quite high; For example, the country hosts various official and unofficial competitions and tournaments. Performance sports are sports that support and nurture competition participants in an orderly,

tiered and feasible manner, with the full aim of obtaining achievements with the help of knowledge and innovation (13). According to Arwandi and Ardianda (3) in an effort to work on the achievements of football players, preparation is a decisive element in achieving achievements. In order to achieve football achievements, there are several factors and factors that help them, especially important football-specific abilities.

Syukur and Soniawan said football is a game that requires a lot of energy, intellectuals on the field make people excited, and teamwork brings joy (11). Football in Musi Rawas Regency itself is a game that is loved by every level of society. This can be seen from the football crew that is widely present in Musi Rawas Regency. In accordance with what Sukatamsi explained (7) that to obtain high achievements in football, a player needs to have 4 points of view, such as: 1) special progress (ability), 2) actual change of events (actual health), 3) change of strategic events (mental and insight), 4) champion development.

A soccer player needs a fairly agile game. Good physical condition, technical and mental mastery, and dexterity are prerequisites for success. A player will be able to perform optimally if his physical condition is good. This was conveyed by Sajoto (7) that "one of the determining variables in achieving sports achievements is the satisfaction of being a part, the part consists of compactness, speed, readiness, coordination, power, perseverance of muscles, heart and lungs. "strength." lungs, flexibility, balance, perseverance, and health while participating in sports."

In doing a sport to achieve optimal performance, aspects of physical, technical, strategic and mental maturity that need to be trained and improved based on the sport or the requirements of the game or competition it participates in (10). Physical requirements in football are complex, including: speed, agility, endurance, strength. , flexibility, balance, explosive power, and coordination

In addition to training their form, soccer players also require a high level of dexterity, one of which is the type of movement on the soccer field requires dexterity when spilling the ball to slide quickly towards the goal beyond some rivals who watch in certain developments. Agility is very important to be able to qualify, avoid obstacles from the opponent so that when scoring the ball into the opponent's goal. Therefore, readiness is also important for players not to fall and get injured when running on the field (5)

To be able to follow various sports, especially football, agility is needed as a physical quality. According to Sumerta et al (17) said that "readiness is the body's ability to take different paths as quickly as possible to change positions". When a player loses the ball, he will be able to adjust himself to the ever-changing movements due to his agility. As a result, he will most likely get the ball back bigger, although it requires a lot of effort and practice. Given the importance of the readiness component in the sport of football, there needs to be extraordinary attention and attention from the coaches or manufacturers of football crews.

PERSIMURA (Musi Rawas Football Affiliate) is an Indonesian football team that has been located in Muara Beliti since 1980, Musi Rawas, South Sumatra. PERSIMURA has several mentors including Mr. Donny Fahamsyah as lead trainer, Kapal Kanan, Ical, Ratri. PERSIMURA has U-17 and senior age groups who each receive individual coaching.

Given the perception I made of the football crew of the PERSIMURA U-17 Regime, Musi Rawas is known to still lack physical dexterity, as evidenced by his inability to change direction without losing balance, as well as his inability to dribble while running fast. The lack of agility must be seen during the training match between group A and group B of PERSIMURA U-17 Kab. Musi Rawas. The result of the creator's perception is that almost 60% of attacks fail because the opponent can always expect it, especially the ball that is being controlled or spilled is often "taken" by the opponent and the opponent quickly counterattacks.

The declining physical condition of athletes is caused by the things mentioned above, one of which is the lack of agility in moving. Harsono said that there are various kinds of agility training, such as shuttle running, zigzag running, wind running, square running, do running, tree cone drill, running down the line. Practice, grass practice, and running beginning and end. There are many kinds of agility training, the creators wanted to see the impact of haul running training and cross-running training in improving participants' agility (6).

MATERIAL AND METHODS

The type of research used is pseudo-experimentation. Hasan (4) defines the term "population" as the number of all objects or people who have certain, different, and complete characteristics to be investigated. Meanwhile, according to Sugiyono (16), population is an area that is added up consisting of objects / objects that have a certain amount that are still in the air by experts to be concentrated and then withdrawn. All PERSIMURA U-17 athletes will be used as a population for this study. A total of 39 Musi Rawas players. Because the sample is a good representation of the population to be studied, only a small part of the population is taken into account during the data collection process in order to accurately represent the entire population (14). The example in this study was taken using a relative testing method, namely a procedure based on the doctor's own consideration into an example of 16 people. *The Illinois Agility Run test* was used for the research instrument. The method of investigating measured information uses the *Liliefors regularity test* and the t test at the importance level $\alpha=0.05$.

RESULTS

The agility pre-test results showed a low of 39.76, a high of 45.47, of 42.58, and a standard deviation of 1.78. However, the post-agility test showed the lowest score obtained. 42.45, the highest value 48.16, the normal 44.78 and the standard deviation 1.71. For more details, see Table 1.

Table 1. Frequency of Pre-Test and Post-Test Shuttle-Run Exercise Scores on Agility

Interval Class	Fa		Fr		Category
	Pre-Test	Post Test	Pre-Test	Post Test	
<15,2	1	3	12,50	37,50	Excelent
16,1-15,2	2	4	25,00	50,00	Very Good
18,1-16,2	4	1	50,00	12,50	Good
19,3-18,2	1	0	12,50	0	Fair
>18,3	0	0	0	0	Needs Improvement
Sum	8	8	100	100	

According to the table above, the side effects of the pre-test information examination of transportation running preparation on agility with a strain class of <15.2 there was 1 person (12.50%) in the fantastic class, with a class range from 16.1-15.2 as many as 2 people (50.00%) in the admirable class, 18.1-16.2 people in the range class of 4 people (50.00%) in the good category and 1 person in the range class 19.3-18.2 (12.00) in the medium class, Meanwhile, no development requirements were found, while the consequences of checking post-test information on preparation for running transportation on agility with a strain class of <15.2 there were 3 people (37.50%) in the brilliant classification, the range class of 16.1-15.2 as many as 4 people (50.00%) with a very good general classification, and the range class of 18.1-16.2 as many as 1 person (12.50%) with a great class, while the class was sufficient and the improvement of needs was not found.

Table 2. Frequency Distribution of Pre-Test and Post-Test Data of Zigzag Run Exercise to Agility

Interval Class	Fa		Fr		Category
	Pre-Test	Post Test	Pre-Test	Post Test	
<15,2	1	5	12,50	62,50	Excellent
16,1-15,2	2	3	25,00	37,50	Very Good
18,1-16,2	5	0	62,00	0	Good
19,3-18,2	0	0	0	0	Fair
>18,3	0	0	0	0	Needs Improvement
Sum	8	8	100	100	

From the results of the agility pre-test, the lowest value was 39.76, the highest value was 45.47, the average was 42.58, and the standard deviation was 1.78. From the results of the agility post-test, the lowest value was 42.45, the highest value was 48.16, the average was 44.78, and the standard deviation was 1.71. The effect of zigzag running training on agility for more details see table 2.

The results of the pre-test data analysis of agility zigzag running training with interval class 15.2 were known to have one person (12.50 percent) with a very good category, interval class 16.1-15.2 there were two people (25.00 percent). percent) in the very good category, interval class 18.1-16.2 there were five people (62.50 percent) in the good category and were not found to be sufficient and needed improvement. While the results of post-test data analysis zig.

Normality Test

This exploration speculation was attempted through the completion of the t-test investigation. Using the Lilliefors test and significance level = 0.05, a normality test is first carried out to determine whether the data comes from a normal distribution or not. The calculation of Lilliefors test results can be seen in table 3 below. In the table 3 it tends to be seen that the results of L calculate are smaller than L table, so it stands to reason that the information is usually adjusted.

Table 3. Normality Test Results Summary

Variable	Group	L Calculate	L Table	Information
Sutle Run	Pre-Test	0,1056	0,285	Normal
Training Against Agility	Post-Test	0,1871		
Zig-zug run	Pre-Test	0,1131	0,285	Normal
exercises against agility	Post-test	0,285		

Homogeneity Test

The results of the homogeneity test analysis of each variable are presented in the following table, and the overall calculation is presented in the table below. The fact that the Fh result is smaller than the Ft result of the table 4 shows that the data is consistent.

Table 4. Homogeneity Test

Variable	Fh	Ft	Information
Shuttle run training on agility	1,94	3,79	Homogenic
Zigzag run training against agility	2,48	3,79	Homogenic
Shuttle run and zigzag run exercises against agility	2,86	3,79	Homogenic

Hypothesis Testing

Table 5. Summary of Hypothesis Test Results

Agility	Mean	SD	T count	T table	Test Results	Information
Pre-Test	16,80	1,08	4,95	1,895	Significant	Ha Accepted
Post-Test	15,48	0,78				

Effects of *Shuttle-Run Training* on Agility. After the analysis requirements are tested and it turns out that all variable data meet the requirements of the hypothesis test, then the statistical test is used t-test which has a significance level of 0.05. In the pre-test shuttle-run training affected agility with an average value of 16.80 seconds and a standard deviation of 1.08; in post-test 16 treatments had an average score of 15.48 seconds and a standard deviation of 0.78. Furthermore, all calculations are presented in Table 5 below. Based on the table, it can be said that there is an influence of transportation running preparation on agility (t count = 4.95 > t table = 1.895), then the speculation proposed is recognized.

Effects of *Zigzag Run Training* on Agility. After the analysis requirements are tested and it turns out that all variable data meet the requirements of the hypothesis test, then the statistical test is used t-test which has a significance level of 0.05. In the pre-test, zigzag running training affected agility with an average score of 16.72 seconds and a standard deviation of 1.00. In the post-test, an average score of 14.89 seconds was obtained and had a standard deviation of 0.63 after being treated 16 times. Furthermore, all calculations are presented in Table 6 below. Based on the table, zigzag running training affects agility ($t \text{ count} = 9.23 > t_{\text{table}} = 1.895$), so the proposed hypothesis is accepted.

Table 6. Summary of Hypothesis Test Results

Agility	Mean	SD	T count	T table	Test Results	Information
Pre-Test	16,72	1,00	9,23	1,895	Significant	Ha Accepted
Post-Test	14,89	0,63				

Differences in the Effect of *Shuttle-Run and Zigzag Run Training on Agility*. After the analysis requirements are tested and it turns out that all variable data meet the requirements of the hypothesis test. Therefore, the statistical test is used t-test which has a significance level of 0.05. In the post-test shuttle-run training obtained an average value of 15.48 seconds with a standard deviation of 0.78, while in the Zigzag training exercise an average value of 14.89 seconds was obtained with a standard deviation of 0.63 in. zigzag running training after the exam. In addition, the overall calculation can be seen in table 7 below. The table shows that shuttle and zigzag training have different effects on agility ($t \text{ count} = 3.33 > t_{\text{table}} = 1.895$), thus supporting the hypothesis proposed.

Table 7. Summary of Hypothesis Test Results

Agility	Mean	SD	T count	T table	Test Results	Information
Pre-Test	15,48	0,78	3,33	1,895	Significant	Ha Accepted
Post-Test	14,89	0,63				

DISCUSSION

Muscles will work harder when you run. There are eight isotonic contractions and one isometric contraction in these contractions. According to Irawan & Hariadi (5), when running there are isometric and isotonic contractions, namely moving the legs while maintaining isometric contractions. Then, when the player reduces speed before taking a different path of 180 degrees to run back to the initial stage, certain muscle compressions are needed in place (12). Thus, the hip lengthening muscles (knee extensor and hip extensor) undergo erratic compression (extensor), when the muscles resist the force of the body pushing forward, then that's when the muscles quickly push the body in another direction position (18).

Increased mitochondrial activity and work in muscle cells can be done if done systematically over a long period of time by applying the basic principles of training. In each meeting, similar exercises are given and repeated so that the body can adjust the preparation given so that it can increase agility. Football requires high agility, the more agile a player is, the greater the potential he has on the field in the conditions expected in the sport of soccer. Therefore, the football agility of PERSIMURA U-17 players in Musi Rawas Regency was influenced by *shuttle run training*.

Based on the results of the speculation test test, a calculated value of $(9.23) > t_{\text{table}} (1.895)$ was obtained at the importance level of $\alpha = 0.05$ for example size 16. Therefore, it can be concluded that H_a is accepted and H_o is rejected. Thus, the football agility of PERSIMURA U-17 players of Musi Rawas Regency was significantly affected by *Zigzag run training*.

When performing agility, the hamstring muscles are a collection of muscles that play a role in balancing and moving the lower limbs. The adaptability of the hamstring muscles is an ally of dexterity. Judging from how it works which will generally shrink, it is rare for people to realize that there is a decrease in the ability of hamstring muscle extensibility (8).

When running on the field, the hamstring muscles are forced to lengthen and contract rapidly and relentlessly, so a decrease in extensibility will affect the agility of soccer players. Because agility is definitely related to all aspects of the physical component, every athlete needs agility in all sports. Dribbling past an opponent is a skill in soccer that requires dexterity.

Therefore, the football agility of PERSIMURA U-17 players in Musi Rawas Regency is influenced by *Zigzag run training*.

Based on the results of the speculation test test, the calculated value (3.33) > ttable (1.895) was obtained at the importance level of $\alpha = 0.05$ for example size 16. So it tends to be assumed H_0 is rejected and H_a is recognized. Therefore, the practice of hauling and cross-running has a very contrasting impact on the football agility of PERSIMURA U-17 players in Musi Rawas District.

Both of these approaches in training are known to have a significant impact on soccer agility, as shown by the findings of the study above. However, previous research has shown that there is a significant difference between *zigzag* run training and *shuttle run* training. It is known that the *zigzag* run training group experienced an increase in agility of 10.95% based on the percentage increase. This value is greater than the increase in agility speed in the *shuttle run* training group which was only 7.85%.

Although both types of soccer training can improve agility, researchers, data, and field experience show that *a zigzag run workout has a greater impact on agility than a shuttle-run workout, because a zigzag run workout requires you to run alternately and spin quickly through a cone without losing balance; a zigzag run workout must be done at maximum speed in order to clearly see an increase in dexterity; Shuttle-run training requires you to run fast from one location to another and must quickly change direction. However, completing preparations to improve readiness cannot be separated from the player's own work, because players are expected to focus on carrying out preparation programs so that preparation targets can be achieved properly.*

CONCLUSION

Based on the introduction of the examination information and the discussion above, the result of this exploration can be suspected that: 1. The football agility of PERSIMURA U-17 players in Musi Rawas Regency is greatly influenced by shuttle-run training. 2. The football agility of PERSIMURA U-17 players in Musi Rawas Regency is greatly influenced by *zigzag run training*. 3. Exercises called *zigzag run* and *shuttle-run* have very different effects on agility. The agility of PERSIMURA U-17 Football Players in Musi Rawas Regency is more influenced by *Zigzag* run training compared to *shuttle run training*.

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CONFLICTS OF INTEREST

Authors state no conflict of interest.

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