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## The Effect of Ladder Drill Variations on the Agility of the Men's Futsal Team at SMP II Al-Abidin Boyolali

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### ABSTRACT

This study aims to determine the effect of ladder drill training variations on improving the agility of male futsal players at SMP II Al-Abidin Boyolali.

A quantitative approach was used with a pre-experimental design involving only one treatment group without a control group. The research sample consisted of 15 male students participating in the school's futsal extracurricular activities, selected through purposive sampling. The instrument used to measure agility was the Illinois Agility Run Test, conducted before and after the treatment.

The data were analyzed using the Paired Sample T-Test. The results showed that the calculated t-value (10.994) was greater than the critical t-table value (1.76131) with a significance level of  $0.000 < 0.05$ . This indicates a significant difference between the pretest and posttest results.

In conclusion, the variation of ladder drill training had a significant effect on improving the agility of the male futsal players at SMP II Al-Abidin Boyolali.

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### 1. INTRODUCTION

Sport is a physical activity that has a positive impact on physical and mental health, and plays a role in developing an individual's potential as a whole. (Alamsyah & Soedjatmiko, 2019). Besides being a means of recreation, sport is also important for maintaining endurance and physical health. Physical health significantly impacts quality of life, as the saying goes, "A healthy mind resides in a healthy body." Generally, sport is divided into recreational, competitive, and educational. Recreational sport is played for enjoyment, while competitive sport is developed systematically through competitions supported by science and technology.

Futsal is a sport similar to soccer, but played on a smaller field and requiring high speed and agility. The game is played at a high intensity, requiring players to move quickly in attack and defense. (Lhaksana, 2011) Futsal requires fast ball movement, good team coordination, and organized defensive and offensive strategies. Futsal requires good physical condition to help athletes master basic techniques.

Physical condition, particularly agility, significantly impacts a futsal player's performance. Agility, the ability to change direction quickly, makes it easier for players to outwit opponents and dominate the game. Furthermore, agility also helps improve coordination, technique, and response

to opponent movements. (Firdaus Soffan Hadi, 2016). Mastering good physical condition encourages increased performance.

Developing competitive sports like futsal can be achieved through extracurricular activities. These activities not only train technical skills but also shape students' character. Under the guidance of the school, extracurricular activities provide a platform for the targeted development of talents. In addition to physical abilities, students also learn values such as discipline, responsibility, and sportsmanship. These activities provide opportunities to compete at various levels, from school-level to national championships.

At SMP II Al-Abidin Boyolali, one of the extracurricular activities available is futsal, which has adequate facilities. However, the school's futsal team still struggles to compete at the district level. Coaches' observations indicate a lack of player agility in training and matches. This is evident in one-on-one situations, which makes it difficult to attack and defend. According to (Little & Williams, 2005), players with low agility will have difficulty in one-on-one duels, so appropriate training methods are needed to overcome this.

An effective exercise for improving agility is ladder drills, which involve using a special ladder to train motor skills (Firdaus Soffan Hadi, 2016). This study applied variations of ladder drills to improve the agility of futsal players at SMP II Al-Abidin. With the right and structured training method, it is hoped that the players' physical condition, especially their agility, will improve significantly, thus improving the team's performance in matches.

## **2. METHODS**

This research is a quantitative research with an experimental method. The design used is a pre-experimental design, which involves only one class as the experimental class without a control class. (Sugiyono, 2010). The purpose of this study was to determine the effect of ladder drill training variations on improving the agility of the men's futsal team of SMP II Al-Abidin Boyolali. To obtain the necessary data, this study was conducted at Goal Futsal Field, Bangunharjo, Pulisen, Boyolali District, Boyolali Regency, Central Java, from April to May 2025, with 16 training sessions every Monday, Thursday and Saturday.

The population in this study included all members of the male futsal team of SMP II Al-Abidin Boyolali consisting of 30 students. Sampling in this study was carried out using a Purposive Sampling technique with the following criteria: male students and students aged 14-15 years old as well as students who had participated in the futsal tournament at SMP Boyolali Regency. From these criteria, 15 samples were selected for this study. In the data collection process, researchers conducted an initial test (Pre-Test) to measure students' initial abilities before being given treatment, as well as a final test (Post-Test) to evaluate the effect of variations in ladder drill exercises on improving student agility.

To support data collection, researchers used a special instrument designed to measure agility, namely the Illinois Agility Run Test. The Illinois Agility Run Test is an instrument for measuring agility with the aim of assessing a person's skill in sports and their ability to turn at various angles and in different directions. (Fachrurrozy et al., 2022) This instrument was used because it has a high level of validity, namely 0.90, and strong reliability with a value of 0.94. (Chalil et al., 2018), making it highly suitable for use in the context of this study. The normality test in this study uses the Shapiro-Wilk test to determine whether the distribution of the data to be analyzed is normally distributed. The Shapiro-Wilk test is suitable for use in this study, because it tests for sample sizes less than 50. If the data is normal, then the hypothesis test is carried out using a paired sample t-test and if it is not normal, the non-parametric Wilcoxon Signed-Rank test is used.

## **3. RESULT AND DISCUSSION**

This research was achieved through a systematic data collection and sample selection process. The purpose of this study was to determine the effect of implementing various ladder drill exercises on improving agility levels in the men's futsal team at SMP II Al-Abidin Boyolali. As a first step, agility abilities were measured through a pretest using the Illinois Agility Run Test instrument. After that, the study participants were given a treatment in the form of a training program with various ladder drill variations carried out according to a predetermined schedule. After the entire training

series was completed, final data collection was conducted through a posttest to determine changes or improvements in the participants' agility abilities. The results of the pretest and posttest were then analyzed to determine the extent of the effect of ladder drill exercises on improving agility. The following are the results of the pretest, which can be seen in the table below.

### Normality Test

The normality test on this data uses the Shapiro-Wilk test. If the significance value is more than 0.05, it can be said that the data is normally distributed.

| Tests of Normality |                                 |    |                   |              |    |      |
|--------------------|---------------------------------|----|-------------------|--------------|----|------|
|                    | Kolmogorov-Smirnov <sup>a</sup> |    |                   | Shapiro-Wilk |    |      |
|                    | Statistic                       | df | Sig.              | Statistic    | df | Sig. |
| Pretest            | .122                            | 15 | .200 <sup>*</sup> | .961         | 15 | .702 |
| Posttest           | .121                            | 15 | .200 <sup>*</sup> | .927         | 15 | .246 |

The initial measurement (pretest) showed a significance value of 0.702, and the final measurement (posttest) showed a significance value of 0.246. Because both values were greater than 0.05, the data were deemed normally distributed and met the assumptions of parametric analysis. Thus, both the pretest and posttest demonstrated that the assumption of normality in the ladder drill treatment was met.

### Hypothesis Testing

To find out whether there was an increase in agility ability after being given treatment in the form of ladder drill training, the researcher used the Paired Sample t-Test statistical analysis method which can be seen in the following table.

| 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              | Pretest - Posttest | .65667             | .23132         | .05973          | .52857                                    | .78477 | 10.994 | 14 | .000            |

This study aims to measure the effect of ladder drill training on improving agility through pretest and posttest tests. The results of the analysis showed t count 10.994 > t table 1.76131 with a significance of 0.000 < 0.05, so that  $H_0$  is rejected and  $H_1$  is accepted. This means that there is a significant difference between the pretest and posttest, which indicates that ladder drill training has a real impact on improving students' agility.

## DISCUSSION

This study was conducted to determine the effect of ladder drill training on improving student agility. Data were collected through agility tests before (pretest) and after (posttest) the treatment. The training was given in several structured sessions to determine the extent to which ladder drills could improve agility, particularly in the context of futsal, which requires quick and agile movements.

Data analysis was performed using a Paired Sample T-Test to compare the pretest and posttest results. The results showed that the calculated t value was 10.994, while the t table at a significance level of 5% ( $\alpha = 0.05$ ) with degrees of freedom ( $df = 14$ ) was 1.76131. Because the calculated t value was greater than the t table, there was a significant difference between the values before and after the exercise. In addition, a significance value of 0.000 was obtained, which means it is smaller than 0.05. This indicates that the results obtained are statistically significant. Thus, the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_1$ ) is accepted. This means that ladder drill training does have a significant effect on increasing participants' agility.

## 4. CONCLUSION

Based on these findings, it can be concluded that variations of ladder drills are effective in improving students' agility. These exercises provide a positive stimulus to the neuromuscular system, thus supporting fast, coordinated, and efficient movements. Therefore, ladder drills can be a

recommended training method in physical development programs, particularly for sports like futsal that require high agility.

#### **AUTHOR'S STATEMENT**

This article is the author's original work and has never been published in any scientific journal, and is not currently in the process of being reviewed or published in another journal.

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