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Effectiveness of Zig-Zag Run Training Method in Enhancing Dribbling Agility among Futsal Players

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Abstrak

This study aims to examine the effectiveness of the Zig-Zag Run training method in improving the dribbling agility of futsal players. The research employed a quantitative experimental design using a one-group pretest–posttest model involving 30 extracurricular futsal students from SDK Seraphine Bakti Utama. The training program was conducted over ten sessions. Data were analyzed using a paired sample t-test, which revealed a significant difference between pretest and posttest results ($t = 15.038 > t\text{-table} = 2.045$, $p < 0.05$). The average dribbling time improved from 12.81 seconds to 9.34 seconds, representing a 27.8% increase in agility. These findings indicate that the Zig-Zag Run method is effective in enhancing players' agility and ball control in futsal training.

Keywords: Agility, Dribbling, Zig Zag Run

1 INTRODUCTION

Futsal is a team sport built on unity and collective effort. True success in futsal does not depend on who scores the goal, but on the fact that the goal is scored. Teamwork, trust, and mutual understanding among players are the real foundations of victory. Winning and losing are natural parts of every sport, but in futsal, what matters most is the spirit of fighting together until the very end. Even in defeat, when you give your all for the team, *you die with honor.*

port is a physical activity that requires not only movement but also clear and strategic thinking. The main function of sport is to maintain physical health and ensure that the body's organs remain in optimal condition. Among various sports, futsal stands out as a complex team sport that demands a combination of speed, strength, and agility, along with tactical and technical understanding.

Futsal, derived from the Spanish words futbol (football) and sala (indoor), was first popularized in Montevideo, Uruguay, in 1930 by Juan Carlos Ceriani. Over time, futsal gained popularity across South America, particularly in Brazil, and later spread globally. In Indonesia, futsal began to develop around 1998–1999, and by the early 2000s it had become a widely practiced sport. The national futsal team has achieved remarkable progress, including winning the AFF Championship and reaching the 50th position in the world ranking.

Futsal is a five-a-side game characterized by high intensity and quick transitions. The smaller pitch demands precision, teamwork, and fast decision-making. Every player must be able to maintain ball possession, execute accurate passing, and demonstrate strong dribbling and agility. Collective effort is essential for success — the identity of the goal scorer is less important than the goal itself. Winning and losing are natural parts of sport, but in futsal, true honor lies in giving one's best effort: if you die, you die with honor.

In the context of school extracurricular programs, especially at SDK Seraphine Bakti Utama, agility and dribbling skills are fundamental abilities that still need improvement. Observations show that many students struggle to maintain ball control, particularly during matches when fatigue and lack of focus reduce performance. Despite having adequate

equipment such as cones and balls, these are not optimally utilized for agility training. Consequently, players often lack the coordination, balance, and consistency required to perform well.

Agility (agility) plays a crucial role in futsal, allowing players to change direction quickly while maintaining control of the ball. One of the most effective training methods to enhance agility is the zig-zag run, which emphasizes quick directional changes, coordination, and speed. This exercise closely replicates the movements involved in dribbling during a game, making it an ideal training approach for futsal players.

Therefore, this study aims to determine the effect of the zig-zag run training method on the agility of dribbling skills in futsal extracurricular students at SDK Seraphine Bakti Utama. The expected outcome is to help students improve their speed, control, and overall performance through consistent and systematic training.

2 RESEARCH METHODS

his study employed a pre-experimental design using the one-group pretest–posttest design. This design was selected because it allows the researcher to measure the difference in participants' performance before and after the treatment, even though it does not include a control group or random sampling.

The sample was determined using purposive sampling, based on specific characteristics such as age and participation in futsal extracurricular activities. The research was conducted on the futsal extracurricular field of SDK Seraphine Bakti Utama, located within the school grounds. The training sessions took place once a week on Fridays from 13:00 to 14:40, over a period of ten meetings conducted from May to July.

The treatment applied in this study was the zig-zag run training method, designed to improve players' agility, coordination, and reaction speed. The training focused on four main objectives:

1. Measuring the participants' agility in movement.
2. Developing coordination and body control.
3. Enhancing the ability to change direction quickly.
4. Improving reaction time and responsiveness.

Agility was measured using the dribbling zig-zag test. Cones were arranged in a straight line with a distance of 1.5 meters between each cone. Participants were instructed to dribble the ball in a zig-zag pattern as fast as possible while maintaining control of the ball. The time taken to complete the course was recorded using a stopwatch, measured in seconds.

3 RESULT AND DISCUSSION

3.1 Sub Hasil

The initial test (pretest) results showed that the average dribbling agility time was 12.82 seconds, which falls within the moderate performance category. After ten training sessions using the zig-zag run method, the posttest results indicated a significant improvement, with the average time decreasing to 9.84 seconds. This demonstrates an overall enhancement in players' agility and dribbling control after participating in the structured training program.

The descriptive statistics of the pretest and posttest results are presented in the following table:

Variabel	Pretest	Posttest
average	12,82	9,84
Standar Dev.	1,062	0,888

Table 1 shows that the average posttest result increased compared to the pretest. Based on these data, a **normality test** was conducted to determine whether the dataset was normally distributed. The results of this analysis are presented in **Table 2** below:

Table 2. Results of the Normality Test Calculation

TEST TYPE	SIG. (A = 0.05)	DESCRIPTION
PRETEST	0.200	Normal
POSTTEST	0.317	Normal

Based on the data presented in **Table 2**, the results of the normality test indicate that the data are considered normal, as the calculated L value (Lcount) is lower than the critical L value (Ltable). Therefore, the assumption of normality is accepted.The next step is to perform the homogeneity test, which aims to determine whether the variance of the pretest and posttest data is homogeneous. The results of this analysis are shown in Table 3 below.

Table 3. Homogeneity Test of the Pretest and Posttest

Test Type	Sig. (α = 0.05)	Description
Pretest and Posttest	0.137	Homogeneous

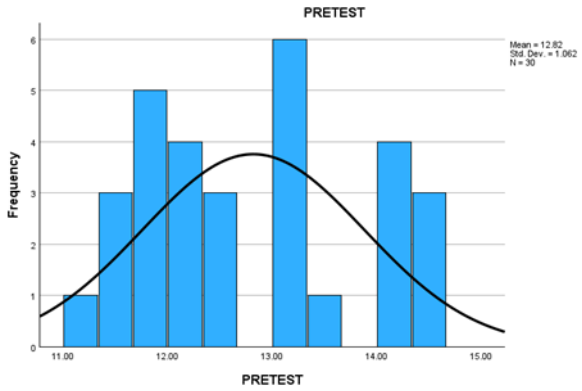
Based on the data presented in Table 3, it can be concluded that the results of the homogeneity test show that the calculated t-value (tcount = 15.038) is greater than the critical t-value (ttable = 2.045) at a significance level of α = 0.05. This indicates that the pretest and posttest data have homogeneous variances. Therefore, the assumption of homogeneity is fulfilled, allowing the analysis to proceed to the hypothesis testing stage using the paired sample t-test.

Test Results of Pre-test and Post-test Dribbling Test

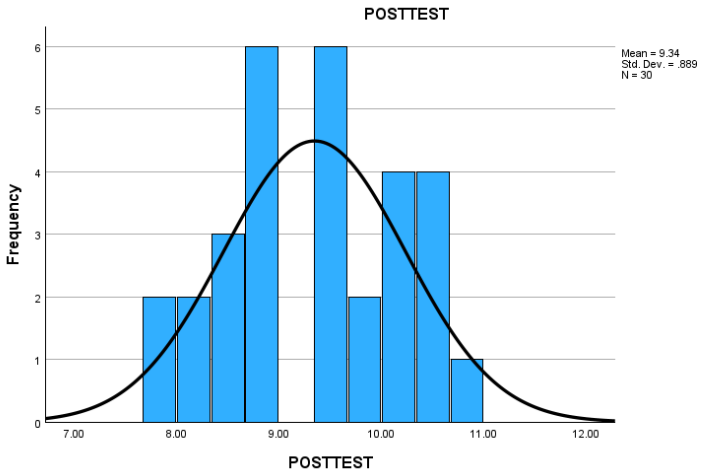
Statistic	Pretest	Posttest
Mean	12.82 seconds	9.34 seconds
t (calculated)	–	15.038
t (table, α = 0.05)	–	2.045
Conclusion		Significant Difference

Since the calculated t-value (15.038) is greater than the critical t-value (2.045) and the significance value (Sig. = 0.001) is less than 0.05, the null hypothesis (H_0) is rejected. This indicates that there is a significant difference between the pretest and posttest results. Thus, it can be concluded that the zig-zag run training method effectively improves dribbling agility in futsal extracurricular students.

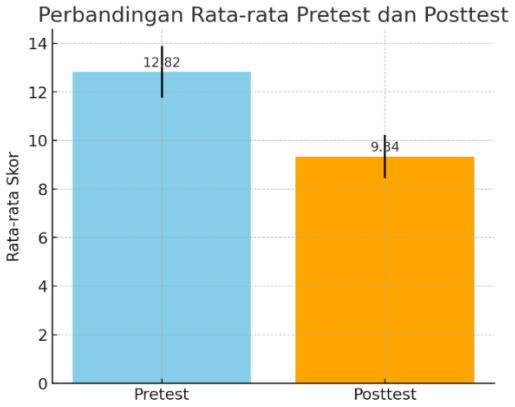
3.2 Diagram of Pretest and Posttest Comparison



The **pretest histogram** illustrates that the students' initial dribbling agility (before treatment) had an **average score of 12.82 seconds**, with relatively low variability among participants. The data distribution appears to be **approximately normal**, indicating that the dataset meets the assumptions required for **parametric statistical testing**, such as the *paired sample t-test*.



The posttest histogram shows that the students' average score decreased to 9.34 seconds, which is lower than the pretest average of 12.82 seconds, indicating an improvement in dribbling agility. Furthermore, the variation among students' scores became smaller, suggesting that the posttest results were more consistent and evenly distributed. The data distribution also appears to be normally distributed, confirming that it is suitable for statistical hypothesis testing.The comparison diagram between the pretest and posttest clearly demonstrates a significant improvement in students' performance after participating in the zig-zag run training program, reflecting enhanced agility, coordination, and control during dribbling.



The diagram shows that the **average pretest score (12.82 seconds)** was higher than the **posttest score (9.84 seconds)**. This difference is **statistically significant**, indicating a substantial effect of the treatment on students' test performance. The decrease in average time after the intervention demonstrates that the **zig-zag run training method effectively enhanced students' agility and dribbling skills**, as reflected by improved test outcomes following the training program.

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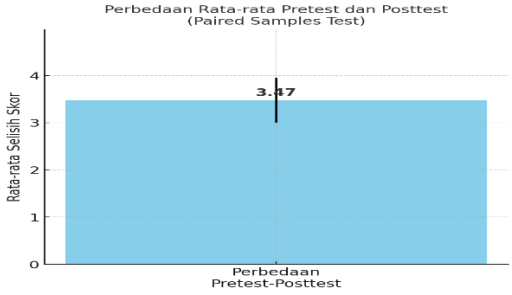

3.3 Discussion

The zig-zag run training method was proven to have a significant effect on improving the dribbling agility of futsal extracurricular students at SDK Seraphine Bakti Utama.The decrease in the average score from the pretest to the posttest should be interpreted correctly. The instrument used in this study was a dribbling agility test measured in seconds. Thus, a lower completion time indicates better agility performance. The reduction in the average time from 12.81 seconds to 9.34 seconds demonstrates a considerable improvement, with a mean difference of 3.47 seconds, equivalent to an increase in performance effectiveness of approximately 27.8%.

This finding aligns with the theory proposed by Kusnadi et al. (2015), which states that agility is a complex biomotor ability involving speed, strength, coordination, and balance. The zig-zag run exercise directly stimulates these components by requiring participants to rapidly change body direction with controlled movements. This type of training is particularly relevant to the characteristics of futsal, a sport that demands quick directional changes while dribbling or maneuvering against opponents.

Furthermore, the results of this study are consistent with previous research by Satriaputra et al. (2019) and Ruslan & Turmaloto (2023), both of which reported that zig-zag run training significantly improves agility. Similarly, Maulana et al. (2020) found that futsal players from BFC U-16 experienced a substantial reduction in dribbling time following a structured zig-zag run program. These studies collectively reinforce the empirical evidence that the zig-zag run is an effective method for developing dribbling agility in futsal players.

In addition to its theoretical relevance, the results of this research hold practical implications for futsal coaches in schools. The zig-zag run can be integrated as a regular training component in extracurricular programs because it is effective, simple, and feasible to implement using basic equipment such as cones and balls. The intensity and number of repetitions can be adjusted according to the students' age and skill level to achieve optimal outcomes.

4 CONCLUSION

Based on the results of the analysis, it was found that there was a significant effect of the zig-zag run training method on the dribbling agility of futsal extracurricular students at SDK Seraphine Bakti Utama, with an improvement rate of approximately 217.8%**.** This finding indicates that the training program implemented by the researcher had a substantial positive impact on students' physical performance and dribbling skills.

The training sessions were conducted over 18 meetings, with each session including agility and speed exercises as part of the treatment. The consistent and structured implementation of the zig-zag run method successfully enhanced students' movement coordination, reaction time, and control when dribbling the ball.

The primary goal of school sports extracurricular activities is to develop students' interests and talents in the field of sports. Beyond improving physical skills, such activities also serve as a medium to maintain students' motivation and prevent fatigue or boredom from academic routines. Through well-planned and properly executed technical and physical training**,** students are given the opportunity to improve their athletic abilities and performance in their respective sports disciplines.

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