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The Effect of Zig-Zag Run Agility Training on the Dribbling Skills of Futsal Extracurricular Students at SMP Negeri 1 Banyuasin I

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Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh latihan *kelincahan zig- zag run* terhadap kemampuan *dribbling* siswa ekstrakurikuler futsal di SMP Negeri 1 Banyuasin 1. Jenis penelitian yang digunakan adalah eksperimen dengan desain *one group pretest-posttest design*. Sampel penelitian ini berjumlah 20 siswa yang tergabung dalam kegiatan ekstrakurikuler futsal. Teknik pengambilan sampel menggunakan total sampling, yaitu seluruh anggota populasi dijadikan sampel. Instrumen yang digunakan untuk mengukur kemampuan *dribbling* adalah *tes dribbling* futsal yang telah divalidasi. Data hasil penelitian dianalisis menggunakan uji t untuk mengetahui perbedaan antara hasil pretest dan posttest. Berdasarkan hasil analisis data diperoleh nilai thitung 9.597 >1,729 ttabel pada taraf signifikansi 0,05, yang menunjukkan adanya peningkatan signifikan pada kemampuan *dribbling* setelah diberikan latihan *zig-zag run*. Dengan demikian dapat disimpulkan bahwa latihan kelincahan *zig-zag run* berpengaruh secara signifikan terhadap peningkatan kemampuan *dribbling* siswa ekstrakurikuler futsal SMP Negeri 1 Banyuasin 1. Latihan ini dapat dijadikan salah satu metode efektif dalam program latihan futsal untuk meningkatkan kemampuan teknik dasar *dribbling* siswa.

***Kata kunci*:** latihan kelincahan, *zig-zag run, dribbling*, futsal, siswa SMP.

Abstract

This study aims to determine the effect of zigzag run agility training on the dribbling ability of futsal extracurricular students at SMP Negeri 1 Banyuasin 1. The type of research used is an experiment with a one group pretest-posttest design. The sample of this study amounted to 20 students who are members of futsal extracurricular activities. The sampling technique used total sampling, namely all members of the population were sampled. The instrument used to measure dribbling ability was a validated futsal dribbling test. The research data were analyzed using a t test to determine the difference between the pretest and posttest results. Based on the results of the data analysis, the t count value was 9.597>1.729 t table at a significance level of 0.05, which indicates a significant increase in dribbling ability after being given zigzag run training. Thus, it can be concluded that zig-zag run agility training has a significant effect on improving the dribbling ability of futsal extracurricular students at SMP Negeri 1 Banyuasin 1. This training can be used as an effective method in the futsal training program to improve students' basic dribbling technique skills.

Keywords: Agility training, zig-zag run, dribbling, futsal, junior high school students.

1. INTRODUCTION

Sports play a crucial role in developing students' physical fitness, health, and character (Ahmad Fadhillah, Damrah, & Emral, 2023). Among various sports, futsal is highly popular at the junior high school level due to its dynamic nature and fast-paced gameplay. Futsal requires not only technical skills but also strategic thinking, coordination, and agility (Alfarizal, Mandalawati, & Lisdiantor, 2023). One of the fundamental skills in futsal is

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dribbling, which enables players to control the ball, evade opponents, and create scoring opportunities. Mastering dribbling is essential for a player's overall performance and effectiveness during a match (Buya, Tamunu, & Sumarauw, 2021; Ahmad Fadhillah et al., 2023).

Despite its importance, many students still exhibit suboptimal dribbling skills. Observations of the futsal extracurricular program at SMP Negeri 1 Banyuasin I reveal that students often struggle with maintaining balance, controlling the ball's direction, and changing directions swiftly (Alrazid et al., 2026). Agility is a key factor influencing dribbling performance, as it allows players to move quickly and change direction without losing balance or ball control (Haryesa et al., 2020; Hariyanto, 2019). Therefore, developing agility is a primary focus for improving dribbling skills in young futsal players.

One effective method to enhance agility is the zig-zag run training. This exercise requires players to accelerate, decelerate, and change direction repeatedly, closely mimicking in-game movements in futsal (Candra & Widodo, 2019; Fathurrahman & Yulianingsih, 2024). Zig-zag run exercises train coordination, speed, and body control, all of which directly contribute to better dribbling performance (Juliansyah, Nurudin, & Nugraheni, 2023; Syam et al., 2026). Previous studies have shown that structured zig-zag run training significantly improves students' agility and dribbling skills in futsal (Alfarizal et al., 2023; Fikri, 2025; Saliku et al., 2026).

Moreover, integrating agility training into extracurricular futsal programs provides an engaging and practical learning experience. Students develop essential motor skills while simultaneously enhancing their tactical understanding and overall game performance (Najamuddin et al., 2025; Ruslan & Tumaloto, 2021). In addition, combining zig-zag run drills with other exercises, such as shuttle runs or ladder drills, has been proven to produce synergistic effects on agility and dribbling proficiency (Haryono, Amiq, & Fitriady, 2021; Syahri & Sundy, 2024; Universitas PGRI Adi Buana Surabaya, 2025).

Given these considerations, this study focuses on examining the effect of zig-zag run agility training on the dribbling skills of futsal extracurricular students at SMP Negeri 1 Banyuasin I. By implementing this targeted training, it is expected that students' dribbling performance, coordination, and agility will improve, thereby enhancing their overall futsal abilities and fostering a more effective extracurricular learning environment.

2. METHOD

In this research, an experimental research was used using a one group pretest posttest design. This research method is used to find the cause and effect or the influence of one variable on another variable (Sugiyono 2021). The research design can be seen as follows:

O1----------X----------O2

Description: O1: Initial test
X: Treatment (zig-zag run)
O2: Final test

A population is a generalized area consisting of objects or subjects possessing certain qualities and characteristics determined by the researcher to be studied and then conclusions drawn (Sugiyono, 2021:118). The population of this study was all 30 male futsal extracurricular students.

A sample is a portion of the population that will be used as data for the study. A sample represents a portion of the population and its characteristics (Sugiyono, 2021:118). The sampling technique used was total sampling. The sample to be tested in this study was all 30 futsal extracurricular students. In this study, the treatment design used was an experimental study using a one-group pretest-posttest design. This design involved a group of subjects who were given an experimental treatment. This design tested the effect of the treatment on the dependent variable.

The data collection techniques used in this study included pretests and posttests, which were useful for determining the results of the treatment given to the sample. The data collection techniques used in this study were tests and measurements. Tests, on the other hand, are measuring tools that can be used to collect objective data. Measurement, on the other hand, is the process of collecting data or information from a particular object, and the process of measuring data or information from a particular object, and the measurement process requires specific measuring tools or instruments.

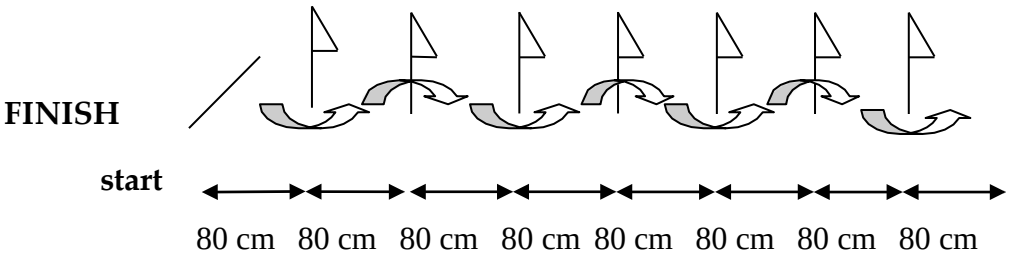


Figure 1. *Ball dribbling test*

3. RESULT AND DISCUSSION

This study aimed to examine the effect of zig-zag run training on the dribbling skills of students participating in the futsal extracurricular program at SMP Negeri 1 Banyuasin I. The research focused on 20 male students who were actively involved in the futsal extracurricular activities at the school. The selected participants represented a sample of students who regularly engaged in futsal training sessions, making them suitable for assessing the impact of targeted agility exercises, such as the zig-zag run, on their dribbling performance.

3.1 Description of Research Data

No	Nama	Pretest (detik)	kategori	Posttest (detik)	kategori
1.	AC	13.23	Baik	12.23	Baik
2.	DE	14.21	Sedang	13.10	Baik
3.	FR	13.22	Baik	11.22	Sangat baik
4.	GR	14.32	Sedang	13.20	Baik
5.	BD	15.57	Kurang	13.17	Baik
6.	CS	14.22	Kurang	12.22	Baik
7.	EA	15.10	Kurang	13.18	Baik
8.	WR	14.21	Kurang	11.14	Sangat baik
9.	TU	14.21	Kurang	13.06	Baik
10.	IK	16.17	Kurang sekali	13.17	Baik
11.	JI	16.15	Kurang sekali	14.15	Sedang
12.	GU	12.15	Baik	11.15	Sangat baik
13.	MA	16.25	Kurang sekali	13.25	Sedang
14.	FE	15.16	Kurang	12.16	Baik
15	RH	15.11	Kurang	14.11	Sedang
16	KL	12.12	Baik	11.22	Sangat baik
17	NR	15.05	Kurang	14.05	Sedang
18	DW	14.11	Sedang	12.15	Baik
19	WI	13.03	Sedang	12.03	Baik
20	NI	13.45	sedang	12.45	Baik

3.2 Descriptive Pretest-Posttest Zigzag Run

The data generated in the research process came from 20 male students participating in the futsal extracurricular program at SMP Negeri 1 Banyuasin I. This data consisted of pre- and post-test data taken from the dribbling test. The results are presented in descriptive statistics in the table below:

Tabel 2. Descriptive Statistics Pretest Posttest Zig-Zag Run

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
pretest_zigzag	20	14.32	18.25	16.9495	1.10953	1.231
postest_zigzag	20	12.22	17.15	15.0620	1.16801	1.364
Valid N (listwise)	20					

(Sumber : Dok Peneliti, 2025)

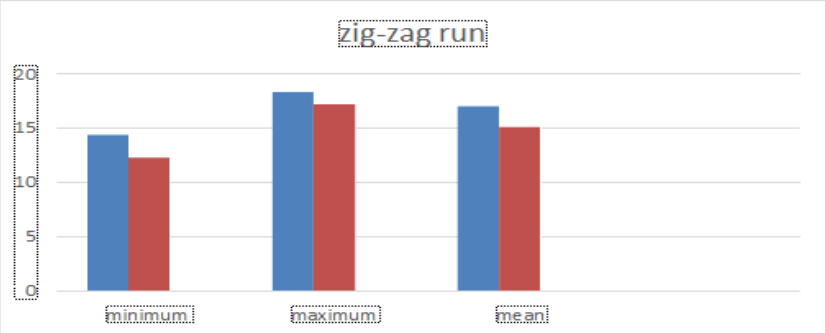


Figure 2. *Pretest-posttest zig-zag run diagram*

The Descriptive Statistics table above shows the descriptive statistics of the pretest and posttest data for the group given the zig-zag run exercise. This descriptive analysis is used to provide an overview of the minimum, maximum, average (mean), standard deviation, and variance of the test results before and after the exercise treatment.

The table explains the following: The sample size (N) in the zig-zag run group was 20 students. The minimum pretest score was 14.32, while the maximum score was 18.25, with an average (mean) of 16.9495. The standard deviation was 1.10953, and the variance was 1.231, indicating that the distribution of the pretest data was relatively homogeneous, or not too dispersed. After being given the zig-zag run training, the posttest results showed a minimum score of 12.22 and a maximum score of 17.15, with an average (mean) of 15.0620. The standard deviation was 1.16801 and a variance of 1.364.

These results show that the average posttest score (15.0620) was lower than the average pretest score (16.9495). Because time is measured in seconds, the decrease in the average time indicates that the students' running times were faster, indicating an increase in agility after being given the zig-zag run training.

3.2 Initial Data Frequency

Tabel 3. Frekuensi Data Awal

Condition	Frekuensi	Persentase
Kurang sekali	3	15%
Kurang	8	40%
Sedang	5	25%
Baik	4	20%
Sangat baik	0	0

(Sumber : Dok Peneliti, 2025)

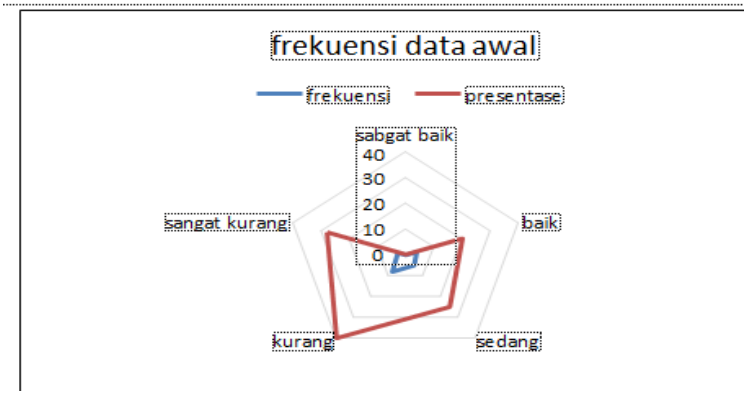


Figure 3. *Dribbling Graph Before*

The table above shows that: 3 students (15%) were in the very poor category, indicating that only a small number of students had very low agility abilities at the initial stage. 8 students (40%) were in the poor category, meaning that most students had below-average

agility abilities. 5 students (25%) were in the moderate category, indicating that a quarter of the sample had sufficient abilities. 4 students (20%) were in the good category, meaning that a small number of students already had good agility abilities before the training.

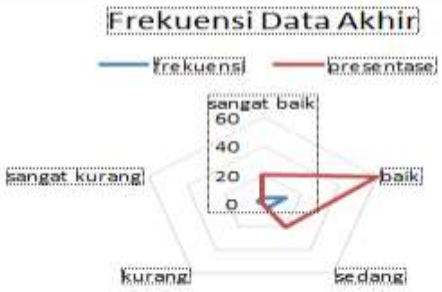
No students (0%) were in the very good category, indicating that none of the participants had optimal agility abilities at the initial stage of the study. From these distributions, it can be concluded that students' initial abilities tended to be in the low to moderate category, with the largest percentage in the poor category (40%). This indicates that before the training, the majority of students did not have optimal agility abilities, so a training program such as zig-zag running is needed to improve these abilities.

3.4 Initial Data Frequency

Tabel .4 Frekuensi Data akhir

Condition	Frekuensi	Persentase
Kurang sekali	0	0%
Kurang	0	0%
Sedang	4	20%
Baik	12	60%
Sangat baik	4	20%

(Sumber : Dok Peneliti, 2025)



Gambar .5 Grafik *Dribbling* Sesudah
(Sumber : Dok Peneliti, 2025)

Based on the table above, it can be explained that: No students (0%) were in the very poor category, meaning that all participants experienced an increase in their abilities, and none had very low abilities. No students (0%) were in the poor category, indicating that all students' abilities had reached a moderate to excellent level.

Four students (20%) were in the moderate category, meaning that a small number of students still had adequate agility skills, but had shown improvement compared to their baseline.

Twelve students (60%) were in the good category, indicating that the majority of students experienced a significant increase in their abilities after the training.

Four students (20%) were in the very good category, meaning that some students already had very optimal agility skills after the treatment. From these distributions, it can be concluded that after the training, students' abilities increased significantly. Before the training, the majority of students were in the poor (40%) and moderate (25%) categories, while after the

training, the majority moved into the good (60%) and excellent (20%) categories. This shows that the training program implemented, zig-zag run training, is effective in improving students' agility abilities.

3.5 Research Data Analysis

1. Normality Test

Tabel.5 One-Sample Kolmogorov-Smirnov Test

		pretest_zigzag	postest_zigzag
N		20	20
Normal Parameters[a,b]	Mean	14.3520	12.6205
	Std. Deviation	1.23475	.97535
Most Extreme Differences	Absolute	.122	.174
	Positive	.110	.124
	Negative	-.122	-.174
Test Statistic		.122	.174
Asymp. Sig. (2-tailed)		.200[c,d]	.115[c]

a. Test distribution is Normal.

(Sumber : Dok Peneliti, 2025)

A normality test was conducted to determine whether the zig-zag run pretest and posttest data were normally distributed. The test used was the One-Sample Kolmogorov-Smirnov Test with a significance level (α) of 0.05. Based on the test results listed in the table above, the following values were obtained:

Asymp. Sig. (2-tailed) for the zig-zag pretest was 0.200, and Asymp. Sig. (2-tailed) for the zig-zag posttest was 0.115. The decision-making criteria were as follows:

If the Sig. value is > 0.05, the data is normally distributed. If the Sig. value is < 0.05, the data is not normally distributed.

Based on these results, the pretest (0.200) and posttest (0.115) significance values are both greater than 0.05. Thus, it can be concluded that the pretest and posttest data in the zig-zag run group are normally distributed.

2. Hypothesis Testing

The hypothesis proposed in this study is that zigzag run training is expected to have an effect on dribbling skills of students in the Futsal Extracurricular Program at SMP Negeri 1 Banyuasin I. Hypothesis testing for the one-group pretest-posttest experimental design type was conducted using a paired sample t-test using SPSS 3.0. The test results can be seen in the table below:

Tabel 6. 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_zigzag - postest_zigzag	1.7315	.80688	.18042	1.35387	2.10913	9.597	19	.000

(Sumber : Dok Peneliti, 2025)

Based on the Paired Samples Test above, the following conclusions can be drawn:

a. Ha is accepted if t count > t table at α 0.05 Df = N-1

b. The t count is 9.597

c. The t table at α 0.05 Df = N-1 is 1.729

d. The conclusion is "there is an effect of zigzag running on dribbling among students in the Futsal Extracurricular Program at SMP Negeri 1 Banyuasin I because t count > t table (9.597 > 1.729).

Discussion

The results of this study indicate that zig-zag run agility training has a significant effect on the dribbling skills of students participating in the futsal extracurricular program at SMP Negeri 1 Banyuasin I. The descriptive statistics show a decrease in the average dribbling time from 16.9495 seconds (pretest) to 15.0620 seconds (posttest). Because lower times indicate faster performance in agility-based tasks, this demonstrates that students' agility and dribbling skills improved following the intervention. This finding aligns with previous research which shows that agility exercises, such as zig-zag runs, enhance the ability to change direction quickly and maintain ball control during high-intensity movements (Alfarizal, Mandalawati, & Lisdiantor, 2023; Candra & Widodo, 2019).

The initial data frequency indicated that most students began in the poor (40%) and moderate (25%) categories, showing that their baseline dribbling abilities were below optimal. Following the zig-zag run training, the majority of students shifted to the good (60%) and very good (20%) categories, illustrating a significant improvement in agility and dribbling performance. This pattern confirms that structured agility training can effectively enhance students' motor skills, coordination, and ball-handling abilities (Ahmad Fadhillah, Damrah, & Emral, 2023; Haryono, Amiq, & Fitriady, 2021).

The normality test confirmed that both pretest and posttest data were normally distributed ($p > 0.05$), and the paired t-test indicated a significant difference ($t = 9.597 > t$ table $= 1.729$, $\alpha = 0.05$). This statistical evidence supports the hypothesis that zig-zag run training positively affects dribbling skills. The improvement can be explained through the principle of specificity in training: exercises that mimic the movement patterns and physical demands of futsal, such as rapid directional changes and multidirectional sprints, directly translate into enhanced game performance (Fathurrahman & Yulianingsih, 2024; Najamuddin et al., 2025).

Moreover, the zig-zag run not only improves physical attributes such as speed, coordination, and balance but also fosters cognitive aspects of sports performance. Players must anticipate movements, make quick decisions, and maintain focus while changing direction—skills that are critical for effective dribbling (Syam et al., 2026; Frannanda et al., 2023). This is consistent with the findings of Haryesa et al. (2020), who highlighted the interaction between VO2max, agility, and dribbling efficiency in futsal players.

Additionally, the improvement in dribbling abilities reflects the benefits of game-related and structured training exercises in extracurricular contexts. Incorporating exercises such as zig-zag runs in futsal training aligns with contemporary methods of skill acquisition that emphasize active, repetitive, and specific drills to reinforce motor learning (Juliansyah, Nurudin, & Nugraheni, 2023; Alrazid et al., 2026). Students not only develop physical competence but also gain confidence and motivation, which are crucial for engagement in team sports.

In summary, the findings of this study support the conclusion that zig-zag run agility training is an effective method to enhance dribbling skills in junior high school futsal students. This reinforces the importance of implementing targeted agility exercises in futsal extracurricular programs to optimize student performance, physical fitness, and overall skill development.

4. CONCLUSION

The conclusion of this study is that zig-zag run training is proven to be effective in improving the dribbling skills of futsal extracurricular students at SMP Negeri 1 Banyuasin I. This training also enhances students' agility, balance, and coordination. Before the training, most students were in the low to moderate category, but after the training, their abilities improved to the good and very good categories. Therefore, zig-zag run training can be an effective strategy to improve students' technical skills and physical performance in futsal.

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