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The Effect of Dynamic Movement Training Methods on Dribbling Ability in Futsal

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Abstract

This study presents empirical evidence describing the effect of dynamic movement training on futsal dribbling ability. The research was carried out in the futsal extracurricular program at SMP Yaspen Tugu Ibu 1 Depok, involving 15 participants selected through a saturated sampling technique. A pre-test assessment was conducted to determine the students' initial dribbling skill level. The research process was guided by identified problems, supported by theoretical foundations, a conceptual framework, and systematic data analysis. The findings reveal that dynamic movement training effectively improves dribbling skills among the participants. This effectiveness is demonstrated by the significant increase in scores from the pre-test to the post-test. The mean pre-test score was 52.33, reflecting the students' baseline ability before training intervention. After completing 14 training sessions, conducted three times per week, the mean post-test score rose to 73.00, indicating substantial improvement in performance. The success of the program was strengthened by the students' consistent attendance and disciplined participation throughout the training sessions. Overall, the study concludes that dynamic movement training is a beneficial and structured method to enhance futsal dribbling abilities in school-based extracurricular programs.

Keywords: Training Method, Dynamic Movement, Futsal Dribbling Ability

1 INTRODUCTION

In the learning process of physical education, one of the most favored activities among students is futsal. Futsal is a game-based sport that is highly popular in schools due to its dynamic, fast-paced, and challenging nature (Mudian et al., 2023). It requires high levels of physical and technical ability, including dribbling, kicking, passing, balancing, and body coordination (Herlambang et al., 2022). Among these basic skills, the ability to dribble the ball is a crucial technical element that every player must master. Dribbling is a fundamental skill used to move the ball into the opponent's area with full control, evade defenders, and create attacking opportunities (Mappaompo, 2024). A player with strong dribbling ability can dominate gameplay and contribute significantly to the team's performance. However, mastering this skill requires structured training and optimal physical preparation. One essential form of exercise that supports the improvement of dribbling ability is dynamic warm-up training.

Dynamic warm-up is a type of warm-up performed through a series of active movements that mimic the main activities in sports, such as light jogging, skipping, and side running. The primary purpose of dynamic warm-up is to prepare the body physiologically and psychologically before engaging in more intense physical activities. This warm-up increases muscle temperature, improves blood circulation, enhances joint mobility, and prepares the neuromuscular system to respond effectively to various movements (Yudha et al., 2020).

Dynamic warm-up involves active and progressive movements that engage the entire body (Firdaus et al., 2024). The movements typically imitate the patterns used in the main activity, providing specific benefits to the muscles and neuromuscular system. Unlike static

warm-up, which is passive and focuses on holding certain positions, dynamic warm-up requires continuous movement with gradually increasing intensity. Examples include light jogging, high knees, butt kicks, side shuffles, lunges, arm circles, skipping, leg swings, and carioca. These movements not only elevate body temperature and blood flow but also activate the nervous system, improve coordination, agility, flexibility, and motor readiness—essential components for physically demanding activities like futsal.

Previous studies have shown that dynamic warm-up training positively impacts performance in futsal, particularly ball dribbling skills. Research conducted by Yudha and Suryadi demonstrated that six weeks of dynamic warm-up training significantly improved dribbling ability among senior high school students (Yudha, 2020). Their findings concluded that dynamic warm-up enhances ball control, movement coordination, and dribbling speed.

Furthermore, dynamic warm-up has been recognized as an effective method to reduce the risk of injury among young athletes. By gradually activating major muscle groups and increasing joint mobility, this method helps prepare the body for sudden changes in movement, which are common in futsal. This is particularly important for school-age players who may have inconsistent physical conditioning or limited exposure to structured training programs. In addition to physical benefits, dynamic warm-up also contributes to psychological readiness. Students who perform dynamic warm-up before training tend to be more focused, confident, and mentally prepared to engage in complex motor tasks. This mental readiness is essential in futsal, where quick decision-making and situational awareness greatly influence performance, especially in dribbling situations that require rapid responses to opponents' movements.

Given the increasing emphasis on skill development in school-based sports programs, dynamic warm-up represents a practical and efficient training approach that can be easily integrated into futsal practice routines. Its proven effectiveness in improving dribbling ability and overall physical preparedness highlights its importance as a foundational component of training. Therefore, implementing dynamic warm-up consistently can support the development of more skilled, agile, and confident young futsal players in educational settings.

The purpose of this research is to determine the effectiveness of structured dynamic warm-up training in improving students' physical readiness and futsal dribbling skills at SMP Yaspen Tugu Ibu 1 Depok. The study responds to the low practice of performing dynamic warm-ups before training, where many students begin playing without adequate preparation. This lack of dynamic warm-up, which should involve active and progressive movements, has contributed to poor ball control, rigid body movements, and limited agility during dribbling activities. Students were often observed losing the ball easily when navigating obstacles or facing pressure from other players. These conditions indicate that insufficient dynamic warm-up may directly affect movement quality and motor skill performance in futsal. Therefore, through a structured intervention, this research aims to enhance students' readiness, improve their dribbling technique, and support better performance in the extracurricular futsal program by consistently implementing dynamic warm-up exercises.

The study conducted by Sutrisno Aji and Hendra Prasetyo found that dynamic warm-up has a positive and significant effect on improving basic futsal skills in young athletes. The implementation of dynamic warm-up exercises enhanced physical readiness, flexibility, coordination, and overall movement efficiency. As a result, athletes demonstrated better control of the ball, smoother body movements, and improved execution of essential techniques such as passing, dribbling, and shooting. The findings highlight that structured dynamic warm-up activities play an important role in preparing the body for training, reducing stiffness, and supporting optimal motor performance, thereby contributing meaningfully to the development of fundamental futsal skills in early-age athletes. (Sutrisno Aji and Hendra Prasetyo 2021).

2 RESEARCH METHODS

In this study, a quantitative research method grounded in the positivist paradigm was employed to examine measurable data from a specific population. Quantitative research is appropriate for hypothesis testing and identifying relationships between variables. The research design used was a pretest–posttest one-group experimental design, in which measurements were conducted before and after the treatment. This approach aimed to determine changes resulting from the intervention, which in this study was the application of dynamic warm-up training. The study examined two primary variables: the independent variable, dynamic warm-up training, and the dependent variable, dribbling ability among students participating in the futsal extracurricular program. Dribbling skills were assessed using a standardized dribbling test that measured speed, agility, and ball control. Through this quantitative experimental approach, the researcher objectively determined the extent to which dynamic warm-up training contributed to improving the dribbling ability of students in the Futsal Extracurricular Program at SMP Yaspen Tugu Ibu 1 Depok.

3 RESULTS AND DISCUSSION

3.1 Pre-test and Post-test Result

In this study, the initial test (pre-test) administered was the zig-zag run test, which aimed to assess the athletes' futsal dribbling abilities. The final test (post-test) also employed the zig-zag run test, which was used not only to evaluate the athletes' zig-zag run performance but also to measure their futsal dribbling outcomes. The results of the tests are presented as follows:

3.1.1 Pre-test Data Result

Table 1 Pre-test Result

NO	INTERVAL CLASS	FREQUENCY	
		ABSOLUT	RELATIVE
41 – 45	43	6	45%
46 – 50	71	5	34%
56 – 60	58	2	13%
71 – 75	73	2	13%
TOTAL		15	100%

Based on the table above and the figure below, it can be concluded that the highest frequency falls within the 40–45 interval with a percentage of 45%, while the lowest frequency appears in the 56–60 and 71–75 intervals, each with a percentage of 13%.

3.1.2. Post-test Data Result

Table 2 Post-test Result

NO	INTERVAL CLASS	FREQUECY	
		ABSOLUTE	RELATIVE
61 - 65	63	4	27%
71 - 75	73	6	40%

76 - 80	78	4	27%
81 - 85	83	1	6%
TOTAL		15	100%

Based on the table above and the figure below, it can be concluded that the highest frequency is found in the 71–75 interval with a percentage of 40%, while the lowest frequency occurs in the 81–85 interval with a percentage of 6%.

3.1.2 Paired Test Result

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
PreTest – PostTest	-20.66667	9.23245	2.38381	-25.77943	-15.55391	-8.670	14	.000

If the sig. (2-tailed) value is < 0.05, then there is a significant difference between the pre-test and post-test results. This indicates that the zig-zag run training has an effect on futsal dribbling ability. If the sig. (2-tailed) value is > 0.05, then there is no significant difference between the pre-test and post-test results. This means that the zig-zag run training does not have an effect on the athletes' futsal dribbling ability, and it does not significantly improve the dribbling skills of the futsal extracurricular students. Based on the data obtained from the Paired Sample Test calculation, the sig. (2-tailed) value is < 0.05, indicating a significant difference between the pre-test and post-test results.

3.1.3 Comparison of Pre-Test and Post-Test Results

Table 3 Comparison of Pre-Test an Post-Test Result

Score	*Pretest*	*Posttest*
Median	52,33	73.00

The comparison of pre-test and post-test results shows a clear improvement in students' futsal dribbling performance. The median pre-test score was 52.33, indicating the students' initial dribbling ability before receiving the training intervention. After completing the series of training sessions, the median post-test score increased to 73.00. This substantial rise demonstrates that the applied training program, particularly the zig-zag run method, effectively enhanced students' control, agility, and overall dribbling skills in the futsal extracurricular activity.

3.2. Determining the T-Table Value

The chosen level of significance = 0.05 (5%)
Degrees of freedom (df) = n – k / df = 15 – 2 = 13
T-Table value = 1.770

The statistical analysis in this study used a significance level of 0.05 (5%) to determine whether the difference between pre-test and post-test results was meaningful. With a sample size of 15 and two variables measured, the degrees of freedom were calculated as 13, producing a T-table value of 1.770 for comparison.

3.3. Statistical Value (t-calculated)

Based on the calculations using the Paired Sample t-Test, the obtained t-calculated value is 8.670.

3.4. Testing Criteria

H_0 is rejected and H_a is accepted if t-calculated > t-table.
H_0 is accepted and H_a is rejected if t-calculated ≤ t-table.

The calculation results serve as the basis for decision-making in hypothesis testing: H_0 is rejected if the significance value (p) < 0.05. Conclusion: since the Sig. (2-tailed) value of the dependent variables is < α (0.05), and based on the decision criteria for hypothesis testing, H_0 is rejected. The rejection of H_0 indicates that there is an effect of the zig-zag run training method on futsal dribbling ability before and after the treatment.

Based on the calculation results and the conclusion described above, the hypothesis of this study, which states that "There is an effect of the zig-zag run training method on the futsal dribbling ability of students in the extracurricular program at SMP Yaspen Tugu Ibu 1 Depok," is proven and accepted.

3.5. The Result of Discussion

The analysis indicates that the resistance band training method is both practically and theoretically effective in improving students' shot put performance. These findings support the acceptance of the research hypothesis, demonstrating a significant difference between students who used the resistance band method and those who did not. This is confirmed by the t-test results at a 5% significance level, where the t-calculated value (5.63) exceeds the t-table value (2.0063).

2 CONCLUSION

The comparison between pre-test and post-test scores shows a substantial improvement in students' futsal dribbling ability after receiving the zig-zag run training intervention. The mean pre-test score of 52.33 reflects the students' initial performance level, while the post-test mean score of 73.00 indicates a significant enhancement. This improvement confirms that the structured zig-zag run exercises effectively contributed to better control, agility, and coordination in dribbling. The results of the Paired Sample t-Test demonstrate that there is a statistically significant difference between the pre-test and post-test results. The analysis confirms that the training program generated measurable improvements in students' dribbling skills. The significant difference identified in the paired comparison supports the effectiveness of the zig-zag run training and validates its role as an appropriate method for improving technical performance in futsal dribbling. The statistical analysis produced a t-calculated value of 8.670, far exceeding the t-table threshold of 1.770. This strong statistical value indicates a pronounced effect of the zig-zag run training on students' dribbling performance. The magnitude of the t-calculated score demonstrates that the improvement observed was not due to chance but rather a direct result of the training intervention applied consistently over fourteen sessions. According to the

hypothesis testing criteria, the null hypothesis is rejected when the significance value is below 0.05 or when t-calculated exceeds t-table. In this study, both conditions were met, confirming a significant effect of the zig-zag run training method. The acceptance of the alternative hypothesis indicates that the training intervention positively influenced dribbling skills, validating the zig-zag run as an effective technique for enhancing futsal performance among students.

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