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Futsal Training Innovation: Diamond Passing as a Strategy to Improve Futsal Students' Passing Accuracy

Sita Dwi Nurmaharani[1A-E*], Kartika Septianingrum[2B-D], Wening Sekar Kusuma[3B-D], Andy Widhiya Bayu Utomo[4B-D]

[1,2,3,4] Pendidikan Jasmani Kesehatan dan Rekreasi, STKIP Modern Ngawi, Jawa Timur, Indonesia

sitadwin4@gmail.com[1], kartikasept08@stkipmodernngawi.ac.id[2], weningsekar@stkipmodernngawi.ac.id[3], andywbu@stkipmodernngawi.ac.id[4]

ABSTRACT

This research aims to determine the effect of diamond passing training on passing accuracy among futsal extracurricular students at SMA Negeri 2 Ngawi Taruna Indonesia. This type of research uses an experimental method with a pretest-posttest control group design. The population in this study was 25 students, and the sample used was 20 students selected using a purposive sampling technique with certain criteria, each divided into 10 control groups and 10 experimental groups. The research was conducted for three months, from January to March 2025. The instrument used was a passing accuracy test using a small goal as a target. The data obtained were analysed using prerequisite tests, namely the normality test and homogeneity test, followed by hypothesis testing using the paired sample t-test. The research results show that there is a significant difference between the pretest and posttest results, with a significance value of 0.000 <0.05. This proves that diamond passing practice has a significant effect on increasing students' passing accuracy. This exercise is effective in improving coordination, accuracy and speed of decision making in futsal games. Thus, diamond passing training can be used as an alternative method for practising basic passing techniques in futsal extracurricular activities in the school environment.

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INTRODUCTION

Sport is a physical and spiritual activity carried out by individuals and groups (Sugiarto et al., 2020). Futsal is a very popular sport in Indonesia and even throughout the world. This sport has succeeded in attracting the attention of various groups, from children to teenagers and adults. In general, futsal is played by two teams, each consisting of five members who play on the field simultaneously. Apart from the core players, each team is allowed to have several reserve players who can be replaced at any time during the match. According to (Rafli Fauzan & Ishaq Gery, 2023), futsal is a type of ball game involving two teams, where each team tries to score as many goals as possible

against the opponent's goal while guarding their own goal so as not to concede. Apart from the five main players, futsal also has reserve players. The aim of futsal is similar to futsal, namely to score as many goals as possible. Apart from scoring goals, players also try to guard their own goal so as not to concede until the match ends and the winner is determined.

The game of futsal has accurate or precise passing, which is one of the basic skills that is very important for both professional and amateur players. Accuracy in passing the ball, using either the right or left foot, has a significant influence on the effectiveness of the game in maintaining possession of the ball and scoring goals. In research (Silalahi et al., 2023), it is stated that accuracy in passing the ball, both with the right and left foot, is very important to maintain possession of the ball and create opportunities to score goals. Meanwhile, according to Ilham Ismail et al. (2024), mastery of basic techniques such as effective passing contributes greatly to the success of game strategy, both for professional and amateur players.

The main thing that needs to be improved is the basic passing technique. In a study conducted by it was stated that "motor skills such as speed, agility and accuracy are very important in futsal to improve player performance (Rojabi et al., 2024). Meanwhile, according to (Rendra Pratama et al., 2024), basic techniques such as passing, controlling, dribbling and shooting are crucial elements that not only support individual play but also team strategy in futsal.

Basic passing techniques require several forms of training to improve performance in passing techniques. One form of training that is believed to improve passing accuracy is diamond passing training. The basic passing technique in futsal is a form of kicking which is intended to connect players on the field (Kurniawan, 2023). The opportunity to score goals and create goals will be greater if the player has good passing skills.

The game of futsal is not only known as a big ball game and coaching in a club or training association, but is also an extracurricular activity. One of the activities that can be carried out to realise quality education is extracurricular activities (Arif Setiawan et al., 2021). Futsal itself has been included in extracurricular activities at schools to channel and develop students' talents at school (Al Ghifary et al., 2024). One of the most effective methods for developing students' interests and talents in sports and supporting their achievements at school is through activities outside class hours, namely, extracurricular activities. Of the various types of extracurriculars, futsal is an extracurricular that is very popular in its development. Futsal extracurricular activities have been developed in many schools, one of which is at SMA Negeri 2 Ngawi Taruna Indonesia. Extracurricular futsal itself is an achievement development activity through coaching carried out at school and focuses on developing basic game techniques, strategic tactics, rules and shaping student sportsmanship. Futsal extracurriculars are also a place to channel talents and interests that can support student achievement. In futsal extracurricular activities, students are trained to improve basic techniques in playing futsal.

Based on the results of joint observations and interviews with a coach from

extracurricular futsal at SMA Negeri 2 Ngawi Taruna Indonesia, named Dody Hangga Wijaya. Produce information regarding the number of participants who joined extracurricular activities, 20 students, consisting of students from grades 10 to 12. The problem presented by the trainer to researchers was regarding the accuracy of passing by students who took part in futsal. For this reason, researchers want to provide a method or way to improve the ability to pass accurately by practising diamond passing. In connection with the problems described above, there is research that has been carried out and related to this research, this research has been carried out by (Syahfutra et al., 2023), showing that triangle passing and diamond passing exercises have a significant influence on increasing the passing accuracy of futsal players. The results of the analysis showed that both training methods provided a significant increase in accuracy, with the triangle passing exercise showing a higher increase (26.08%) compared to the diamond passing exercise (20.2%). This research emphasises the importance of varying training models in avoiding player boredom and increasing the effectiveness of training, especially in mastering basic techniques such as passing. Apart from that, forms of training based on geometric formations such as triangles and rhombuses (diamonds) have been proven to be able to improve coordination, speed and accuracy between players during the game.

In connection with the problems described above, there is research that has been carried out related to this research. This research has been carried out by Agustin & Nur (2024). The results of the analysis show that both training models provide a significant increase in passing accuracy, but the triangle passing training model shows a greater influence than the diamond passing model. This can be seen from the difference in the average post-test results, namely 35.08 for the triangle passing group and 32.58 for the diamond passing group. The significance value obtained from the t-test also supports the existence of a significant difference between the two training models, where the passing triangle produces a higher increase. Triangle passing drills that use a triangle pattern are considered more effective because they require speed, concentration and alertness from players in rotating the ball, thus having a direct impact on increasing passing accuracy.

It is hoped that research using a quasi-experimental approach can provide a clearer picture of the effectiveness of diamond passing training on passing accuracy among futsal extracurricular students at SMA Negeri 2 Ngawi Taruna Indonesia. In this research, the main objective is to determine the effect of diamond passing training on improving passing accuracy in players. Therefore, I chose the futsal extracurricular student at SMA Negeri 2 Ngawi Taruna Indonesia.

Based on the explanation of the problems that have been explained in the background, the researcher wants to conduct research to improve basic passing techniques with several training models, through research entitled "Futsal Training Innovation: Diamond Passing as a Strategy for Increasing Students' Passing Accuracy".

METHODS

This research is an experimental research design control group pretest-posttest design, which aims to find out the influence of training passing the diamond on accuracy passing futsal extracurricular students. The research was carried out at SMA Negeri 2 Ngawi Taruna Indonesia for three months, from January to March 2025. The population in this study was all 25 students who took part in futsal extracurricular activities. The sampling technique uses purposive sampling with a sample size of 20 students, selected based on certain criteria, namely: (1) students are active extracurricular futsal participants at SMA Negeri 2 Ngawi Taruna Indonesia, (2) willing to take part in a special training program for several meetings, (3) not currently sick or injured, and (4) students or players who have participated in futsal tournaments more than five times in the last two months.

The research procedure was carried out through three stages, namely pretest, treatment, and posttest. At the pretest level, students are first given an accuracy test to pass to determine initial capabilities. Next, the control group was given conventional training treatment implemented by the trainer, and the experimental group was given treatment in the form of training passing the diamond, which is carried out regularly in 18 meetings. After the treatment has been given, students are tested again through a posttest to see an increase in passing accuracy abilities. The research instrument is a test passing by using a small goal as a target, which is in the form of a field measuring 1.5 meters (width) and 0.5 meters (height), with a kicker distance of 9 meters from the starting line to the goal, and a distance from behind the goal of 9 meters and the legal boundary line is 1.5 meters wide.

Data analysis techniques using a paired sample t-test to see the difference in results between pretest and posttest, and an independent sample t-test to see the differences between the control group and the experimental group. Before carrying out the t-test, a prerequisite test is first carried out in the form of a data normality and homogeneity test. Analysis of the data was conducted using SPSS version 26 software.

RESULTS AND DISCUSSION

Result

This section presents the results of research on the effects of exercise on passing diamond to accuracy passing on futsal extracurricular students at SMA Negeri 2 Ngawi Taruna Indonesia. Data obtained from the control group and experimental group pretest and posttest were analysed to see an increase in accuracy capabilities after being given treatment. The analysis was carried out in stages, starting from presenting descriptive data to see a general picture of the results pretest and posttest, followed by prerequisite tests in the form of normality tests and homogeneity tests, as well as hypothesis testing using tests paired sample t-test and test independent sample t-test. Below are presented the complete results of this analysis.

Table 1.
Descriptive Pretest and Posttest Data for the Control Group

	N	Mean	Median	Mode	Std. Deviasion	Minimum	Maximum
Pretest Control Group	10	46	50	50	8,433	30	60
Posttest Control Group	10	60	60	60	8,165	50	70
Pretest Experimental Group	10	49	50	50	7,379	40	60
Posttest Experimental Group	10	81	80	80	8,165	70	90

The results from the table data above are the control group and the experimental group, each consisting of 10 students. Based on these data, the control group experienced an increase in the average score from 46 at the time pretest to 60 at the time posttest. This increase is also shown by the median and mode, which go up from 50 to 60. The minimum value increased from 30 to 50, while the maximum score increased from 60 to 70. The standard deviation also increased slightly from 8.433 to 8.165, indicating a slight increase in score variation within this group.

Meanwhile, the experimental group showed improvement in passing, which is much more significant. The average score increased from 49 at the time pretest to 80 at the time posttest. Median and modus also experienced a drastic increase from 50 to 80. The value range also changed markedly, with the value minimum increased from 40 to 70, and the maximum score from 60 to 90. The standard deviation also increased slightly from 7.378 to 8.165, indicating a slight increase in score variation within this group.

After the descriptive results above were known, the researcher then carried out the first prerequisite test, namely the normality test. The normality test was carried out to determine whether the data from the control group and experimental group were accurate passing students have a normal distribution. This test is carried out as a requirement to determine the type of statistical analysis used, especially in parametric hypothesis testing, the paired sample t-test. In this research, the normality test was carried out using the test Shapiro-Wilk with a significance level of 0.05. Data is declared to be normally distributed if the significance value (Sig.) is greater than 0.05. Below are presented the results of the normality test on the data pretest and posttest of Futsal extracurricular students' passing accuracy.

Table 2.
Normality Test

Group	P-Value	Significance	Information
Pretest Control Group	0,794	0,172	Normal
Posttest Control Group	0,802	0,135	
Pretest Experimental Group	0,833	0,136	
Posttest Experimental Group	0,833	0,135	

The normality test in the table above shows that the significance value is >0.05 for both the Control group and the Experimental Group at this time, pretest and posttest, which means the data is normally distributed.

The homogeneity test was carried out to determine whether the control group and experimental group data came from populations that had the same or homogeneous variance. Homogeneity test is carried out using the test Levene's Test at a significance level of 0.05. Data is declared homogeneous if the significance value (Sig.) is greater than 0.05. The following are the results of the homogeneity test on the accuracy data of passing control group and experimental group students during practice passing the diamond.

Table 3.
Homogeneity Test

Levene Statistics	df1	df2	significance	information
0,069	3	36	0,936	Homogeneous

Based on the results of the homogeneity test using Levene's Test, the significance value of 0.936. This value is greater than the significance level of 0.05, so it can be concluded that the data has a homogeneous variance. Thus, the data comes from a population that has the same variance and meets the requirements for further parametric statistical analysis, namely the paired sample t-test.

Hypothesis testing is carried out to determine whether there are significant differences between the results pretest and posttest, both from the control group and the experimental group. The test used in this research is a paired sample t-test because the data is normally distributed and homogeneous. Decision making is carried out by comparing the significance value (Sig.) with a significance level of 0.05. If the Sig value. < 0.05, then H_0 rejected and H_1 accepted. Below are presented the results of hypothesis testing using a paired sample t-test.

Table 4.
Control Group t Test Pretest Posttest

	Paired Differences							
				95% Confidence Interval of the Difference				
	Mean	Std. Dev	Std. Error Mean	Lower	Upper	t	df	Say. (2-tailed)
Pretest-posttest	-14,000	8,433	2,667	-20,032	-7,968	-5,250	9	0,001

Based on test results paired sample t-test was obtained, yielding a significance value (Sig. 2-tailed) of 0.001. This value is smaller than the significance level of 0.05, so it can be concluded that H_0 is rejected and H_1 accepted. Thus, there is a significant difference between the pretest and posttest accuracy control group.

Sita Dwi Nurmaharani[1A-E*], Kartika Septianingrum[2B-D], Wening Sekar Kusuma[3B-D], Andy Widhiya Bayu Utomo[4B-D]
sitadwin4@gmail.com[1]*

Table 5.
Experimental Group t-test Pretest Posttest

Paired Differences								
				95% Confidence Interval of the Difference				
	Mean	Std. Dev	Std. Error Mean	Lower	Upper	t	df	Say. (2-tailed)
Pretest-posttest	31,000	9,944	3,145	38,114	23,886	9,858	9	0,000

Based on test results paired sample t-test was obtained, obtained a significance value (Sig. 2-tailed) of 0.000. This value is smaller than the significance level of 0.05, so it can be concluded that H_0 is rejected and H_1 accepted. Thus, there is a significant difference between the pretest and posttest accuracy control group passing after being given a training treatment passing diamond. These results show that practising passing the diamond provides a significant influence on increasing accuracy passing on futsal extracurricular students at SMA Negeri 2 Ngawi Taruna Indonesia.

Table 6.
Independent Sample t-test

Group	a	Say.	Information
Control Class – Experiment Class	0,05	0,003	Significant

Based on the data in the table above, the results of data analysis show that the significance value obtained is 0.003. This significance value is smaller than the value a namely 0.003 < 0.05, so Ho is rejected and Ha is accepted. Thus, it can be concluded that there are differences between the control group and the experimental group.

Discussion

The research results show that exercise passing the diamond provides a significant influence on increasing accuracy passing on futsal extracurricular students at SMA Negeri 2 Ngawi Taruna Indonesia. This is shown from the results of hypothesis testing using a paired sample t-test, which produces a significance value of 0.000, which means it is smaller than the 0.05 significance level. Thus, there is a significant difference between the average values pretest and posttest, which indicates an increase in students' ability to pass after following the training program passing diamond.

Training passing diamond is a form of basic technical training in the game of futsal, which emphasises mastery of passing accurately with movements forming a triangle or diamond pattern. This pattern helps players hone their passing skills in various directions and positions, as well as getting players used to actively changing positions while maintaining the accuracy of ball passes. This exercise also stimulates teamwork, concentration and the ability to read space and the movements of teammates, which are very much needed in a real futsal game. By doing repeated and structured exercises, students become accustomed to passing with the correct technique and high accuracy.

Improving the passing ability of students in this study was also supported by a consistent training program, carried out in stages, and accordance with systematic training principles. The training is carried out over a certain period of time, for three months, with the intensity and volume of training appropriate to the participant's abilities. This is in line with the theory in coaching science that improving motor skills, especially basic sports techniques, can be achieved through planned, specific and repetitive practice. Specific exercises, such as diamond passing, have proven effective in improving passing technique performance because they are designed to stimulate real game situations.

These findings are in line with several previous studies, which highlight the effectiveness of various training models in improving passing accuracy in futsal and soccer. Research conducted by Aprianto et al. (2020) found that the small-sided games training method significantly increased players' passing accuracy. This method involves playing in a small area that requires players to interact more with the ball and teammates, thereby improving their passing skills. Although different in approach, the basic principle of this exercise is similar to the diamond passing exercise, namely, increasing the frequency and quality of interaction between players in game situations that are similar to real conditions.

Furthermore, research by Sari & Nugraha (2022) shows that wall pass training has a positive influence on the passing accuracy of female futsal players. Wall pass training emphasises the cooperation of two players in making quick passes by using the wall as a reflection, which increases the player's ability to control and direct the ball precisely. This exercise is similar to diamond passing in that it improves coordination and timing between players. In addition, research by Ahsani et al. (2023) revealed that a structured passing training model significantly increased the passing accuracy of futsal players. They emphasise the importance of varying passing drills adapted to game situations to improve players' passing skills. This supports the finding that diamond passing drills, which are a form of structured training, are effective in improving passing accuracy.

Practically, the results of this research provide the implication that sports teachers, coaches and futsal extracurricular coaches can utilise the diamond passing training method as an alternative training strategy for basic passing techniques that is fun, varied and effective. This method can also minimise student boredom in monotonous technical training, because dynamic training patterns can increase student motivation and active participation. Therefore, the use of diamond passing training can be used as part of an ongoing basic futsal technique development program in order to improve overall player performance.

CONCLUSION

Based on the results of research that has been carried out, it can be concluded that exercise passing the diamond provides a significant influence on increasing accuracy

passing in futsal extracurricular students at SMA Negeri 2 Ngawi Taruna Indonesia. This is proven through test results, a paired sample t-test, which shows a significance value of 0.000, which is smaller than the significance level of 0.05 in the experimental group. This means that there is a significant difference between the results pretest and the posttest after students are given training treatment passing the diamond. Training passing diamond proven effective in improving students' ability to direct the ball correctly at the target, through training patterns that emphasise movement, coordination and consistency of technique passing. This exercise also encourages students to be more active, focused, and to build good cooperation in game situations. Thus, the application of the practice passing diamond can be used as an appropriate alternative training method in developing basic skills passing, especially for futsal extracurricular coaches or coaches in the school environment. This research also strengthens theoretical studies that specific and structured technical training can significantly improve futsal playing skills.

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