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The Effect of Dodge Ball Game Modification On Volleyball Bottom Passing Skills In Elementary School

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ABSTRACT

This study investigated the effectiveness of the traditional "dodge ball" game in improving underhand passing accuracy and control among elementary school volleyball players, hypothesising a significant positive influence. A quantitative pre-experimental design with a one-group pretest-posttest model was applied to 23 students from SD Negeri Parakanmuncang II's extracurricular volleyball program, selected via total sampling. Underhand passing skills were measured using a wall-passing accuracy test. Data collection involved a pretest, eight sessions of a modified "dodge ball" game where defenders used underhand passing to block thrown balls, and a posttest. Data was analyzed using SPSS 26.0, including Shapiro-Wilk normality, Paired Sample t-test, and R-Square regression analysis. Results indicated that both pretest (Sig. 0.381) and posttest (Sig. 0.383) data were normally distributed. The t-test showed a significant difference between pretest and posttest scores (Sig. 0.000, t = -6.442), with average scores increasing from 4-11 to 6-14. The R-Square value of 0.413 confirmed that the modified game explained 41.3% of the variation in underhand passing improvement. These findings suggest that incorporating modified "dodge ball" games effectively enhances underhand passing skills in elementary school students by providing an engaging and collaborative learning environment, fostering motor, cognitive, and affective development.

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B. Acquisition of data;
C. Analysis and interpretation of data;
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INTRODUCTION

Volleyball is a globally popular sport enjoyed by people of all ages, from children to adults (Adolph, 2016). It's a dynamic and strategic game that demands high athletic skill, including explosive vertical jumps for spiking and blocking, speed and agility for court movement, and precise hand-eye coordination to control the ball (Berli & Perdima, 2024). Beyond individual prowess, volleyball heavily emphasizes teamwork and effective communication, with each position playing a crucial role in the team's overall strategy (Yusmar, 2017). Among the many fundamental techniques, underhand passing is paramount, especially for receiving serves and spikes from opponents and for accurately passing the ball to teammates to initiate offensive plays (Valensi & Wahyudi, 2024). This

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technique is complex, involving precise execution through phases of approach, contact, and follow-through. Despite its fundamental importance, observations conducted on April 20, 2025, in an elementary school in Sumedang Regency revealed that while students generally perform well in serving, spiking, and blocking, many struggle to master the underhand passing technique effectively. Specifically, students often fail to direct the ball accurately, using excessive force that leads to uncontrolled passes, hindering their ability to create attacking opportunities and maintain ball control. This practical problem significantly impacts the flow of the game, as ineffective underhand passing can easily disrupt play and prevent offensive sequences (Pamungkas, 2020).

Addressing the challenges in mastering underhand passing among elementary school students, recent studies have explored various approaches to enhance this crucial skill. For instance, (Faiq & Pramono, 2021) conducted a study in Indonesia utilizing a modified "Benthik Volleyball" game with fifth-grade elementary students, showing significant improvement in underhand passing ability through a classroom action research method. Their findings indicated a 35% success rate in the first cycle, which increased to 65% in the second cycle, demonstrating the positive impact of modified games on learning outcomes. Furthermore, (Andriansyah et al., 2022) highlighted the importance of underhand passing for directing the ball to teammates, emphasizing its role as the starting point of any offensive strategy. They stressed that the ability to cushion hard-hit balls and direct them accurately is vital for setting up subsequent plays (Abrasyi et al., 2018). However, many conventional training methods often prove monotonous and fail to motivate young learners, leading to low skill acquisition. This points to a need for more engaging, interactive, and effective training methodologies that can foster better control and accuracy in underhand passing, particularly for elementary school-aged children who are still developing their motor skills and coordination (Mahesha et al., 2024).

Despite existing research on improving underhand passing through various modified games, there remains a discernible gap in studies specifically focusing on the effectiveness of "dodge ball" (bola beracun), a traditional game, as a targeted method for enhancing underhand passing accuracy and control in the context of volleyball training for elementary school students (Roostin dkk., 2022),. While some studies have touched upon modified games, the unique characteristics of "dodge ball" – which inherently involve active movement, quick decision-making, and defensive maneuvers to avoid being "hit" by a ball – make it particularly relevant for developing the reactive speed, anticipation, and body positioning crucial for effective underhand passing (Hary, 2021),. Previous research has primarily explored general modified games or other specific traditional games (like "dodgeball" as briefly mentioned in a related study, though not thoroughly investigated for its direct impact on underhand passing accuracy). Therefore, a focused investigation into "poison ball" offers a novel approach to address the persistent difficulties observed in underhand passing among young players, moving beyond the limitations of often unengaging traditional drills (Pendidikan & Rizkal, 2024).

Based on the identified problem and the existing research gap, this study aims to investigate the effectiveness of the traditional "dodge ball" game as a training method to

improve the accuracy and control of underhand passing in elementary school students learning volleyball (Gustian, 2020). Specifically, the research questions are: (1) Can the implementation of the "dodge ball" game significantly improve students' ability to perform accurate underhand passes in volleyball? (2) How does the "dodge ball" game affect students' control over the ball during underhand passing? The novelty of this research lies in its specific focus on adapting the traditional "poison ball" game, with its inherent emphasis on evading a moving ball and quick defensive reactions, to directly address the observed deficiencies in underhand passing among elementary school-aged volleyball players. It seeks to provide a practical and enjoyable training alternative that fosters key passing skills in a dynamic and engaging environment, thereby offering a valuable contribution to physical education methodologies (Amiruddin et al., 2024).

METHODS

This study uses a quantitative approach to objectively measure how a modified "dodge ball" game influences underhand passing skills in volleyball. We chose this method because it lets us collect measurable, systematic data that can be statistically analyzed. This helps us understand the exact impact of the training.

Our research uses a pre-experimental design with a one-group pretest-posttest model. This means we first measured the students' initial underhand passing skills (the pretest). Then, they participated in training sessions using the modified "dodge ball" game (the treatment). Finally, we measured their skills again (the posttest) to see any changes. This design allows us to observe and statistically measure improvements before and after the intervention, as quantitative research is inherently systematic and structured, relying on numerical data for clear interpretation Suharsimi, (2010). The design is represented as O1 X O2, where O1 is the pretest, X is the treatment, and O2 is the posttest.

The population for this study includes all 23 students who are part of the extracurricular volleyball program at SD Negeri Parakanmuncang II for the 2024/2025 academic year. We selected this group because they're actively involved in volleyball, making them ideal for researching how to improve basic skills like underhand passing. For our sample, we used a total sampling technique, meaning all 23 students from the extracurricular program participated in the study.

To measure underhand passing skills, we used a wall-passing accuracy test. This test involved simple equipment: a wall with a target area, three volleyballs, and a stopwatch. Each student stood under the target and threw a ball at the wall. When the ball bounced back, they had to perform an underhanded pass, aiming to hit or touch the target. We counted valid touches using proper underhand passing technique for one minute. Balls caught, uncontrolled, or those that hit the floor before being passed weren't counted. This test was designed to assess ball control, accuracy, and consistency in a way that mimicked real game situations.

Our data collection involved two main phases: planning and implementation. During the planning phase, we identified the problem of low underhand passing skills in

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students. We then designed the modified "dodge ball" game as a fun and appropriate learning alternative for elementary students. We also prepared research tools like the skill test, observation sheets, and a schedule. We consulted with our supervisors and coordinated with the school, including the principal and the PJOK teacher at SD Negeri Parakan Muncang 2, to get permission and support. We also conducted a small pilot test to ensure the procedures were clear and the modified game was effective.

The implementation phase began after all preparations were complete. First, students took the pretest using the wall-passing accuracy test. After the pretest, students received the treatment, which was 8 sessions of the modified "dodgeball" game. This game aimed to improve reflexes, targeting, and underhand passing in a fun, competitive environment. The activities were conducted in groups, led by the researcher and the PJOK teacher. After all sessions, students took a posttest identical to the pretest to measure their skill improvement. All pretest and posttest data were then analyzed quantitatively to see the significant impact of the modified game (Hasmarita & Nursyamsi, 2023). In the modified "dodgeball" game, students were divided into two teams: attacking and defending. The attacking team formed a shape (circle, square, or triangle) around the defending team in the center. The attackers threw balls at the defenders, who tried to avoid being hit by running or blocking the ball using an underhanded passing position. If hit, a defender was "poisoned" and out. The game continued until all defenders were out, then teams switched roles. This game fostered cooperation, agility, and strategic thinking against opponents (Gustian, 2020).

For data analysis, we used numerical, quantitative data from the pretest and posttest. We analyzed this data using SPSS 26 for Windows to determine the influence of the modified "dodge ball" game on underhand passing. The analysis involved three main steps: First, we conducted a Normality Test using the Shapiro-Wilk test because our sample size was less than 50. This test checked if our data was normally distributed. Data is normal if the Sig value is greater than 0.05. Second, we performed a Hypothesis Test using the Paired Sample t-test to see if the modified "dodge ball" game significantly impacted underhand passing. Our hypothesis (H1) stated that there would be an influence. We would accept H1 if the Sig (2-tailed) value was less than 0.05. Finally, we conducted an R-Square Test using simple linear regression analysis to model the relationship between the pretest and posttest scores, indicating the proportion of variance in underhand passing explained by the intervention.

RESULTS AND DISCUSSION

Result

Normality Tests

Normality tests were performed to find out whether the data from the experimental group of samples were normally distributed or not. The calculation of the normality test was carried out using SPSS 26.0 for Windows. The normality test in this study used Shapiro-Wilk because the sample count was less than 50.

Table 1.
Normalitas test

	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest	,956	23	,381
Posttest	,956	23	,383

Based on Table 1 of the results of the normality test using the Shapiro-Wilk test shown in the table above, the significance value (Sig.) for the pretest data was 0.381, and the posttest was 0.383. These two values are greater than the significance limit of 0.05, so it can be concluded that the pretest and posttest data are normally distributed. This indicates that the normality assumptions are met and the data are feasible for further analysis using parametric tests (if other assumptions are also met) or that non-parametric tests can also be considered if other assumptions are not met. Thus, pretest and posttest data can be further processed to test the research hypothesis.

Hypothesis Test

Hypothesis Test After the treatment process using poisonous ball game modifications in the experimental group was completed, a posttest was carried out to determine the level of students' passing skills (Yam & Taufik, 2021). Before doing the t-test, a normality assumption test is first carried out. The results of the analysis showed that the data were eligible for the t-paired sample t-test, because the data were normally distributed. The following are the results of the t-test tested in the SPSS software version 26.0:

Table 2.
Hypothesis

	Mean	Std. Dev	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pretest-posttest	-2,348	1,748	,364	-3,104	-1,592	-6,442	22	,000

Based on the results of the t-test shown in Table 2, a t-value of -6.442 was obtained with a degree of freedom (df) of 22 and a significance value (2-tailed) of 0.000. This significance value is less than 0.05, so it can be concluded that there is a significant difference between the pretest and posttest scores. The mean value of the difference of -2.348 indicates that there was an increase in scores from pretest to posttest, although the average score of the difference was negative because the posttest was minus the pretest. Thus, the results of this t-test indicate that the influence of the modification of the poisonous ball game given in this study has a significant effect on the improvement of the students' volleyball bottom passing skills measured through the test.

Test R Square

Test R Square. The R-Square test is a test used to find out how much the modification of the toxic ball game affects the bottom passing skills of volleyball.

Table 3.
R Square

Model Summary	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,643[a]	,413	,386	1,662

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Based on the results of the regression analysis shown in Table 4.4, a correlation coefficient value (R) of 0.643 was obtained, which shows a fairly strong relationship between the modification of the poisonous ball game and the bottom passing skills of volleyball in this study. The R-Square value of 0.413 indicates that 41.3% of the variation that occurs in the dependent variable can be explained by the independent variables, while the remaining 58.7% is influenced by other factors outside the research model. The Adjusted R Square value of 0.386 indicates that after adjusting for the number of variables and sample size, this regression model still has a fairly good explanatory power. Meanwhile, the standard error of the estimate value of 1.662 indicates the magnitude of the standard deviation from the model's prediction to the actual value. Overall, these results show that the regression model used has a good enough predictive ability to model the relationship between the variables in the study.

Discussion

How much influence does the modified toxic ball have on volleyball's bottom passing?

Based on the results of the data analysis that has been carried out, this study shows a significant improvement in the bottom passing skills of students after being treated in the form of modification of the poisonous ball game. This can be seen from the results of the t-test, which showed a significance value (2-tailed) of 0.000 ($p < 0.05$) and a calculated t-value of -6.442, which means that there is a significant difference between the pretest and posttest results. The average score of students' pretests before treatment was in the range of 4 to 11, while after treatment (posttest) increased to 6 to 14, with a relatively stable standard deviation value, namely 2.011 in the pretest and 2.120 in the posttest. The results of the R Square test also showed that the modification of the poisonous ball game contributed 41.3% to the improvement of students' lower passing skills, while the remaining 58.7% was influenced by other factors not studied in this study.

These findings are in line with research (Faiq & Pramono, 2021), which revealed that the use of modified games in volleyball learning significantly improved students' lower passing ability. In addition, the results of this study also support the opinion of Pokhrel (2024), which states that game modification can improve students' learning motivation and technical skills through a fun learning atmosphere and in accordance with the developmental characteristics of elementary school students. Thus, the modification of the poisonous ball game not only improves the bottom passing skills technically but also provides a more engaging and meaningful learning experience for students. Poison ball games modified with volleyball bottom passing techniques provide students with the opportunity to practice in a more communicative, collaborative, and fun context, thus supporting the holistic development of motor, cognitive, and affective skills.

Thus, it can be concluded that the modification of the poison ball game has a considerable influence on the improvement of the bottom passing skills of elementary school students (Astuti, 2018). This shows that a modified game-based learning approach can be an effective alternative in improving basic sports skills, especially in the context of volleyball learning in elementary school.

CONCLUSION

Based on the results of the research that has been carried out, it can be concluded that the modification of the poison ball game has a significant influence on the improvement of the bottom passing skills of elementary school students. This is evidenced by the results of the t-test, which showed a significance value (2-tailed) of 0.000 ($p < 0.05$), which means that there is a significant difference between the pretest and posttest results. In addition, the results of the R Square test showed that the contribution of toxic ball game modifications to students' lower passing skills reached 41.3%, which reflects a considerable influence. Thus, the application of toxic ball game modifications has been proven to be effective in improving the bottom passing skills of elementary school students, while supporting a fun and participatory learning atmosphere.

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