EDUKASIA: Jurnal Pendidikan dan Pembelajaran
Vol. 6, 1 (June, 2025), pp. 413-424
ISSN: 2721-1150; EISSN: 2721-1169; DOI: 10.62775/edukasia.v6i1.1433

The Effect of Volleyball Game Modifications (KASVOL) on Students' Learning Motivation in Physical Education Learning

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ARTICLE INFO

Keywords:

game-based learning;
learning motivation;
physical education;
volleyball modification
.

Article history:

Received 2025-04-08
Revised 2025-05-18
Accepted 2025-06-30

ABSTRACT

This study aims to determine the effect of volleyball game modifications on students' learning motivation in physical education learning. The background of the research lies in the observation that conventional volleyball games often present challenges for students, such as difficulty in mastering techniques and limited involvement, which can reduce motivation. A quasi-experimental method with a pre-test-post-test control group design was used in this research. The sample consisted of 25 junior high school students divided into two groups: an experimental group that received learning through modified volleyball games and a control group that followed standard volleyball instruction. Data on learning motivation were collected through a validated questionnaire and analyzed using descriptive and inferential statistics. The results showed a significant increase in students' learning motivation in the experimental group compared to the control group. The modifications, including smaller courts, lighter balls, simplified rules, and fewer players, made the game more accessible and enjoyable, enhancing engagement and motivation. These findings suggest that volleyball game modifications (kasvol) effectively improve students' motivation in physical education learning.

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1. INTRODUCTION

Education must be provided so that each individual is ready to adapt to circumstances in everyday life. Education is not only a tool for obtaining academic information but also a method for improving personal qualities and influencing the country's future generations. It is hoped that the existence of education can realize educational goals to make the nation's life intelligent and develop the potential in individuals (Fitriady et al., 2020). Proper education will produce graduates with the strengths and talents their country needs. Human education has potential because it allows individuals to develop their potential through the learning process, enabling students to learn in a classroom environment

(Dewi & Verawati, 2021; Imran Akhmad, 2022). The learning process at school helps students develop their potential to gain knowledge, change attitudes, and develop life skills to achieve the expected learning goals (Supriadi & Dewi, 2022; Supriadi & Mesnan, 2022). During teaching and learning activities, students can increase potential that they may not have had before. Physical education, or what is currently called PJOK, is one of the subjects in school (Chief Curriculum Development Officer (Physical Education) (2007), 2017; Trisnawati et al., 2024). Physical education is a process in which a person adapts and learns through various physical activities that include biological components, neuromuscular, intellectual, social, cultural, emotional, and aesthetic (Nugroho Putro et al., 2024) (Endriani et al., 2024; Sinaga et al., 2022).

Physical education is a science that studies movement activities through sports. For example, volleyball is a game that contains elements of strength, speed, and flexibility played by two teams, with each team consisting of six people (Ferraz et al., 2024; Pamot Raharjo & Wira Yudha Kusuma, 2025). The main objective in this game is to hit the ball to the opponent's field so that the opponent cannot return (Bailey, 2024). Physical education emphasizes developing movement skills through physical activity and instilling values, character, and attitudes in a structured manner (Akhmad et al., 2024). This indicates that Physical Education includes more than just physical development activities and must be integrated into the overall education curriculum (Dapp et al., 2021).

Physical education requires the creativity of educators in implementing learning to encourage the success of the learning and teaching process in an interactive, innovative manner and paying attention to individual characteristics. Educators must implement learning in-game activities that are easy to modify but still interesting for students. Playing big ball is a fundamental competency (KD) in physical education lessons. Teachers use large balls as teaching aids for physical education and sports at school, including changes to volleyball games.

An easy and simple understanding is very important so that students can grasp the material well and increase their motivation to participate in physical education learning activities. One interesting material that can fulfill the objectives of physical education learning is the game of volleyball. Volleyball involves various movements such as smashing, passing, serving, and blocking. Additionally, jumping is also a critical component in this game (Fitriani et al., 2021; Rama et al., 2022; Suharta et al., 2021). By using volleyball material, it is expected that the learning process becomes more engaging and students become more enthusiastic.

Learning motivation is an individual's desire or drive to make various efforts to achieve the desired learning goals (Haryani et al., 2022; Supriadi & Dewi, n.d.; Syamsuar & Zen, 2021). Factors influencing student learning motivation do not only come from within the students themselves but are also affected by the school environment where they study (Dewi & Faridah, 2022). Teachers play an important role in the learning process, not only as instructors but also as motivators who can encourage students to have the motivation to learn better (Cahyani & Mustadi, 2021).

One effective way to increase students' learning motivation is by modifying the games used in learning. Variations and interesting learning methods are necessary so that students feel more attracted and motivated (Mesnan, 2021). In the context of physical education, innovation through game modification is very important to make the learning process more effective and efficient. This modification not only increases students' interest but also makes the learning atmosphere more enjoyable and dynamic (Badaruddin & Untung, 2020).

One example of volleyball game modification is a game called kasti-voli or kasvol, which is a combination of two sports, baseball and volleyball. However, in kasvol, baseball bats and baseballs are not used; instead, volleyballs and students' hands are used. Kasvol is more competitive and fun because students can learn how to serve in a competitive environment while practicing their skills practically (Endriani, Akhmad, et al., 2022; Endriani, Sitompul, et al., 2022). With modified games like this, students' learning motivation is expected to increase so that physical education learning can run more optimally.

The Kasvol model, a modified volleyball game incorporating elements of the traditional *kasti*, effectively boosts students' learning motivation through a fun, inclusive, and culturally relevant approach (Endriani et al., 2024; Akhmad & Mesnan, 2019). Compared to the *Teaching Games for Understanding* (TGfU) model, which emphasizes tactical understanding, and traditional physical education, which focuses on technical drills, Kasvol promotes active participation and aligns with constructivist and self-efficacy theories by providing enjoyable and achievable learning experiences (Savitri et al., 2020; Rahmiati, 2021; Supriadi & Dewi, 2022). This makes Kasvol particularly effective in engaging junior high school students in physical education (Dwi Putri et al., 2024; Hayati & Hidayat, 2023).

Previous studies on game modification in physical education learning (Dwi Putri et al., 2024; Heni Hendrik et al., 2024; I Kadek Dipa Pratama et al., 2024)—generally focused on technical adjustments within a single sport. These adjustments included changes in court size, equipment, or instructional models aimed at improving teaching effectiveness and student motivation. For example, altering ball size, reducing the number of players, or simplifying game rules have proven effective in reducing student anxiety and helping them gain confidence in participating. However, such approaches remain limited, as they often overlook sociocultural aspects and leave little room for innovation based on local wisdom (Salimim et al., 2020).

In contrast, this study offers a novel contribution through the implementation of *Kasvol*, a hybrid game that combines elements from *kasti*—a traditional Indonesian game—and volleyball. This modification goes beyond technical aspects, creating a new type of gameplay that is more competitive, inclusive, and enjoyable. The uniqueness of *Kasvol* lies in its integration of basic volleyball skills such as passing and serving with running and throwing movements from *kasti*. This innovation represents an effort to develop learning models that support students' physical development while reconnecting them with culturally familiar values (Destriani et al., 2019).

Kasvol also facilitates the development of fundamental motor skills simultaneously, including coordination, speed, and accuracy. Students rotate roles between the defending and attacking teams, which indirectly enhances communication and collaboration among peers. This dynamic promotes an active and participatory learning atmosphere that improves intrinsic motivation. Such motivation is essential to address one of the main challenges in physical education: low student engagement due to competitive pressure or overly technical instruction (Irawan et al., 2021).

Moreover, this game-based approach allows teachers to be more creative in designing adaptive instructional strategies that align with students' characteristics and classroom contexts. *Kasvol* offers flexibility for educators to modify rules, time allocations, and team formats, consistent with the principles of the Merdeka Curriculum, which emphasizes differentiated and student-centered learning. Thus, *Kasvol* serves not only as a tool for enhancing physical skills but also as a medium for character building through values such as cooperation, discipline, and sportsmanship (Nurshafa et al., 2024).

The *Kasvol* approach presented in this study offers a significant advancement over prior game-modification research. It is not only effective in quantitatively improving students' learning motivation but also rich in contextual relevance, reflecting students' social and cultural environments. This innovation demonstrates that physical education can be developed holistically through the integration of technique, teacher creativity, and local values—ultimately providing students with a more meaningful and engaging learning experience. Therefore, *Kasvol* is highly recommended as an alternative instructional model for physical education at various levels (Hayati & Hidayat, 2023; Dapp et al., 2021).

Based on the results of observations at junior high schools in Medan City, it did not run smoothly when physical education learning on volleyball material took place. During learning, there is a lack of a form of play in learning that can raise students' enthusiasm. Volleyball games are only played by a few students. The rest tend to be passive and have no interest in playing volleyball. The learning atmosphere does not encourage students' motivation to participate, resulting in these students experiencing boredom, boredom, being less active during sports learning activities, and decreasing

motivation to join in PJOK learning. The school is equipped with adequate facilities and infrastructure that can support the implementation of the learning process well. Therefore, it is necessary to implement a teaching concept that involves the direct participation of students in the process by modifying the volleyball game to determine its effect on student learning motivation. Several related previous studies (Dwi Putri et al., 2024; Heni Hendrik et al., 2024; I Kadek Dipa Pratama et al., 2024) explain the findings of this research, modification of the volleyball game can influence student learning motivation. Alterations to the volleyball game can increase students' learning motivation in learning PJOK with an average increase of 18. Based on researchers are interested in researching the effect of modifying the volleyball game on whether it can increase learning motivation.

2. METHODS

This research applies quasi-experimental research using a quantitative approach to measure the effectiveness of treatment for students (Sugiyono, 2023). This study uses a One Group Pre-test-Post-test Design with two variables: student learning motivation as the independent variable and modification of the volleyball game as the dependent variable. The population consisted of 150 junior high school students, and the sample of 25 students was selected through cluster random sampling. A standardized questionnaire of 25 items was used to measure students' learning motivation based on indicators of attention, relevance, confidence, and satisfaction, employing a Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The instrument was tested for validity and reliability, with a Cronbach's Alpha value exceeding 0.70, indicating good reliability.

The flowchart presents the systematic stages of implementing the *kasvol* game, from preparation to evaluation. Its purpose is to provide a practical overview for teachers or researchers in applying this model to enhance students' learning motivation through volleyball game modification. the *kasvol* game in Figure 1 illustrates the gameplay sequence from the beginning (START) to the end (FINISH). The game begins with initialization, where the player enters the game and is presented with brief instructions on how to play. After that, the player is directed to choose a level or type of challenge to face. This level selection is important because it determines the difficulty level and the variety of questions provided in the game.

Next, the player enters the main gameplay session consisting of several stages of questions or activities. Each stage is designed to test specific skills, such as logic, quick thinking, or comprehension of material in line with the educational goals of the KASVOL game. The system provides immediate feedback on the player's answers, indicating whether they are correct or incorrect, and the score is updated automatically. If the player successfully completes all challenges at that level, they are given the option to proceed to the next level or replay the current one.

The process continues until the player finishes all levels or chooses to exit the game. At the final stage (FINISH), the game displays the final results in the form of total score, completion time, and achievements earned. This flowchart helps developers and users understand the overall structure of the game and facilitates evaluation and further development of the *kasvol* game.

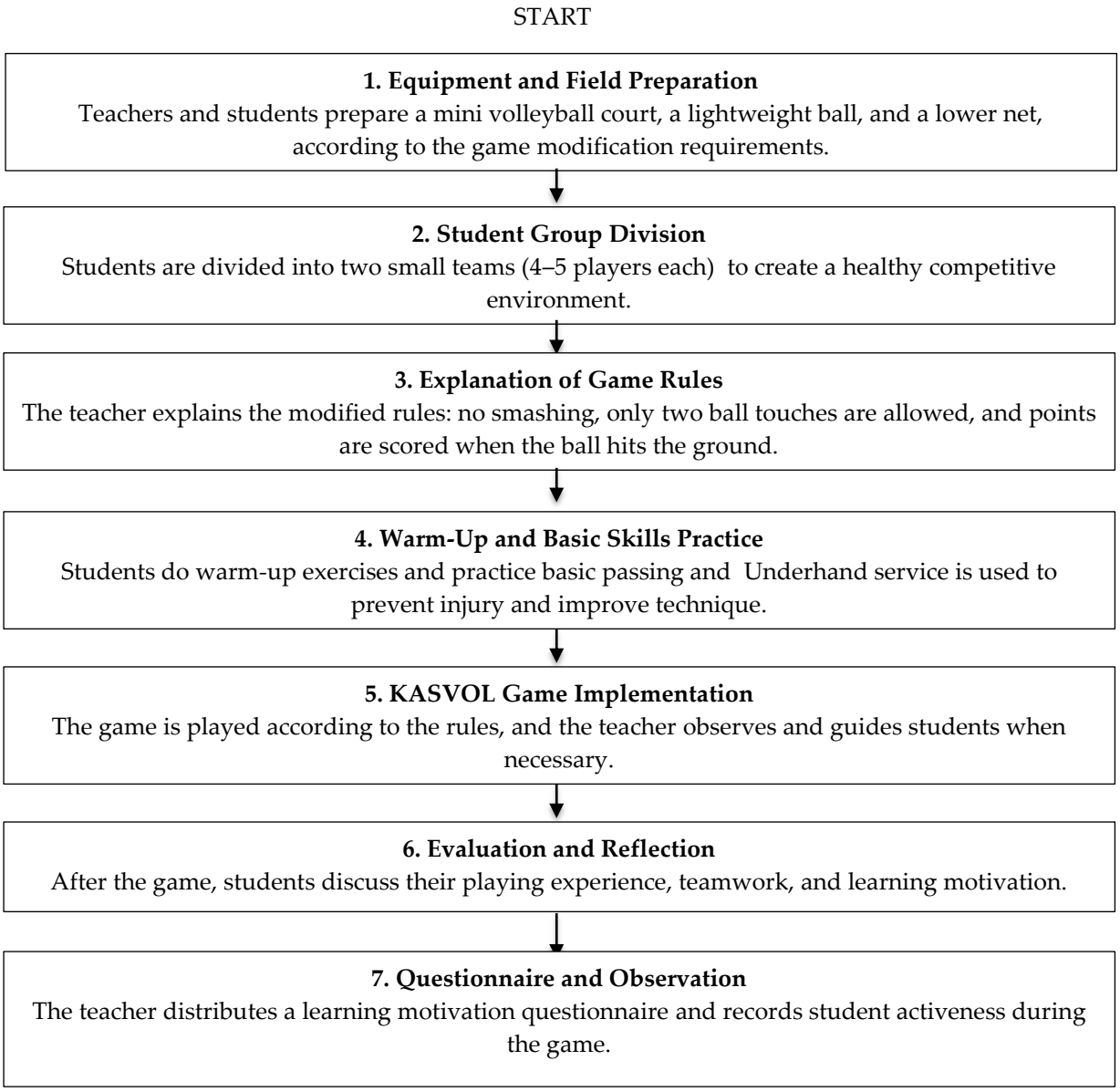

Figure 1. Flowchart KASVOL Game

Data analysis was done using SPSS, including descriptive statistics (mean, median, and standard deviation), a paired t-test to test the hypothesis, and a measurement of the percentage increase.

3. FINDINGS AND DISCUSSION

This research aims to determine whether modifications to the volleyball game can influence students' motivation in physical education learning. Data analysis in this research is based on pre-test and post-test findings on junior high school students. The following are the findings of this research.

Table 1. Descriptive Statistics of Motivation Questionnaire

Variable	N	Mean	Std. Deviation	Min-Max
Pre-test	25	112.54	13.415	80-126
Post-test		124.54	10.224	104-139

Table 1 above is the result of calculations using a learning motivation questionnaire for students who have not been given learning (pre-test) out of 25 students with an average score of 112.54, with a deviation from 13.415 with a value range between 80 and 126. The results of calculating the learning motivation questionnaire for junior high school students after being given treatment learning (post-test) have an average value of 124.54, a deviation from 124.54 with a value range between 104 and 139. This shows an increase in the average after implementing game modifications. The normality test was conducted to test whether the data obtained was correctly distributed normally before carrying out the paired t-test with the Kolmogorov-Smirnov normality test used in this study. The following is a table of data from the normality test results of the motivation questionnaire.

Table 2. Normality Test of Student Learning Motivation Questionnaire

Variable	**Sig.**
Pre-test	0,200
Post-test	0,200

Table 2 shows a significance value in the pre-test and post-test of 0.200. So, it can be seen that the data obtained is normally distributed because the significance value obtained is >0.05. Because it meets the normality requirements, the next stage is hypothesis testing via a paired sample t-test, which compares pre-test and post-test scores after students receive treatment.

Table 3. T-test results sample Pairing Student Learning Motivation

Variable	Mean	N	Std. Deviation	Sig.
Pre-test	16.00	25	7,234	0,000
Post-test				

The data in Table 3 shows that the average obtained is 16 with a deviation of 7.324, so the pre-test-post-test significance level is 0.00. Therefore, Ho is rejected, while Ha is accepted because the significance obtained is < 0.05. This implies that adapting volleyball games significantly influences students' learning motivation in Physical Education. Hayati & Hidayat's (2023) research found that adapted modifications to the volleyball game could influence students' learning motivation with a significance value of 0.00. (Heni Hendrik et al., 2024) conducted similar research by modifying the javelin-throwing game using rocket-throwing media, which can significantly influence learning motivation. (Dwi Putri et al., 2024) conducted similar research using hypothesis testing, and it was found that game modifications in PJOK learning affected students' learning motivation. The percentage increase is used to calculate how much improvement there is after students are given treatment regarding alterations to the volleyball game using the Kasvol game. The following formula is used.

It can be concluded that modifying the volleyball game with kasvol (volleyball castle) can increase students' learning motivation. The use of customized game modifications to improve student learning motivation has an impact of 6.7%. In this study, a modification of the volleyball game was used through the game of volleyball (kasvol) as a form of treatment given to the class that had been selected as the sample. Modification is one strategy instructors can use to overcome school limitations or student requests during the teaching and learning process (Sinulingga et al., 2023). This game is similar to rounders, using the rules of rounders. Only students use a volleyball ball and their hands as bats (Akhmad & Mesnan, 2019) (Asep Suharta et al., 2024).

The modifications made in this research are based on the basic concept of passing and serving in volleyball, which is intended to increase student learning motivation. The modification is a variation of the volleyball game over the net, where the ball is passed lower and then rushed to the opponent's court, especially in the back row, continuously taking turns. The ball is prohibited from touching the net or falling. Points are earned when the player can defend the ball and modify the volleyball game through the game of kasvol, played by six people in each team with one team as the guard and the player teams. Then, the player team performs basic volleyball passing or serving techniques, and the team that takes the shot runs toward the base provided. The guard is tasked with killing the player by touching the volleyball ball to the player's body.

This kasvol game has the aim of making learning basic volleyball techniques more enjoyable because it involves competitive play where basic volleyball movements are still achieved so that students have more freedom to carry out basic volleyball techniques without being pressured by the demands of having to cross the net or having to enter the court, as in most volleyball games. This research was carried out in 3 meetings. At the first meeting, after determining the sample, students were asked to fill out a learning motivation questionnaire.

Before playing kasvol, learning about the basic movements of volleyball is carried out so that when implementing game modifications, it can run efficiently. At this meeting, learning was carried out with three tasks: passing face to face, passing over a triangle pattern, and modifying the game of volleyball over the net. Furthermore, two tasks were carried out in the second meeting: serving (bottom and top) and practicing the kasvol game. At the last meeting, students played the kasvol game and then filled out a learning motivation questionnaire as a form of post-test after playing the kasvol game. When conducting research, researchers provide examples to students as treatment when learning using game modifications that have been chosen. Students will receive treatment, namely basic passing and serving methods. In its implementation, students in one class will be divided into two groups of six people: the playing team and the guard team. The player's team is responsible for scoring points by hitting the ball and then sprinting to posts 1, 2, and 3 or directly to the hitting area.

Meanwhile, the guard team is responsible for killing players by touching the volleyball to the opponent's body. If a player's team dies, the team will change positions. When the research was taking place, with the introduction and modification of the game of volleyball in the form of a game of kasvol, students seemed very enthusiastic in learning PJOK and active in demonstrating basic volleyball techniques, and students were more confident in carrying out these basic techniques. This is because this game is straightforward in terms of instructions and understanding. Apart from that, the PJOK teacher had never previously provided game modification material in volleyball games. So that students are interested in playing the game.

Several elements listed above occurred during the research, so it can be imagined that implementing adjustments to the volleyball game impacted the learning motivation of high school students. According to (Rahmiati, 2021) in his publication "Five Key Ingredients For Improving Student Motivation," motivation is an important aspect that can be targeted by educators or teaching staff to improve the quality of learning. Motivation is classified into two types: internal and external motivation. According to (Putra et al., 2021), internal motivation is a component that comes from within an individual that encourages them to achieve something. Meanwhile, external motivation comes from outside the individual, influencing the willingness to learn. Adapted volleyball games make physical education teaching easier and more fun for students, thereby motivating students to learn. (Savitri et al., 2020). Learning objectives can be achieved through game media so that learning runs effectively and efficiently. This is because learning through media that is packaged interestingly can increase students' learning motivation to receive learning followed by a sense of enjoyment, resulting in a high level of student concentration when receiving the material (I Nyoman Agus Adi Kesuma1, 2021).

This study presents significant theoretical implications for the development of learning motivation theory, particularly in the context of physical education. The findings indicate that modified games such as *kasvol* can substantially enhance students' learning motivation. This aligns with Bandura's self-

efficacy theory, which emphasizes the importance of self-confidence and successful experiences in shaping intrinsic motivation. In the *kasvol* game, students experience a fun and accessible form of learning that fosters confidence and encourages active participation in physical education lessons (Supriadi & Dewi, 2022; Rahmiati, 2021).

The instructional approach employed in this model also reflects constructivist principles, where students learn actively through relevant, engaging, and meaningful activities. Thus, *kasvol* functions not only as a medium for teaching basic volleyball techniques but also as a means of creating contextual and hands-on learning experiences. This supports the view that experiential and interactive learning is more effective in enhancing student motivation than conventional teaching methods (Endriani et al., 2024; Sinaga et al., 2022; Dapp et al., 2021).

Specifically, the results of this study strengthen the theoretical foundation of modified game-based learning in physical education. The *kasvol* game, which combines elements of traditional Indonesian *kasti* and volleyball, maintains essential volleyball skills like serving and passing while providing a more inclusive and enjoyable format. The competitive yet relaxed atmosphere allows students of varying abilities to participate actively without feeling pressured (Akhmad & Mesnan, 2019; Endriani, Akhmad, et al., 2022).

This learning approach also expands teachers' strategies for designing meaningful learning experiences. By introducing game modifications, teachers can employ creative and adaptive alternatives to address challenges such as limited equipment or diverse student abilities. In *kasvol*, students not only develop physical skills but also practice important values such as cooperation, communication, and sportsmanship (Dwi Putri et al., 2024; Cahyani & Mustadi, 2021).

As a further implication of these findings, a new learning model can be proposed: the *Modified-Game-Based Physical Education Model* (MP-PGM). This model consists of five key stages: identifying student and facility needs, designing game modifications, implementing structured learning phases, evaluating student motivation and participation, and revising the game based on feedback. The model is designed to be flexible and applicable across various educational contexts (Sinulingga et al., 2023).

Physical education teachers can widely adopt the MP-PGM model to overcome instructional challenges such as lack of sports facilities, low student motivation, and uniform teaching methods. This approach makes learning more inclusive and responsive to students' needs while fostering sustainable intrinsic motivation. Thus, *kasvol* serves not only as a game but also as a pedagogical strategy for transforming the learning environment (Hayati & Hidayat, 2023).

The successful implementation of *kasvol* also highlights the importance of integrating local cultural values into learning. By incorporating elements of *kasti*, a traditional Indonesian game, students feel a greater cultural and emotional connection to the activity. This cultural relevance enhances comprehension of game rules and boosts engagement, as students find the activity both familiar and exciting (Endriani, Sitompul, et al., 2022).

In addition to enhancing motivation, *kasvol* also improved students' confidence in mastering basic volleyball techniques. Students who were previously passive and disengaged became more active, demonstrated enthusiasm, and confidently performed passing and serving skills. This shows that when students are supported by a positive and enjoyable learning environment, they become more open to acquiring new skills (Fitriani et al., 2021; Rama et al., 2022).

This study contributes significantly both theoretically and practically to the development of physical education learning strategies. It introduces an effective and enjoyable alternative to conventional learning while enhancing participation, motivation, and student engagement. The proposed model and findings are expected to inspire teachers, curriculum developers, and policymakers to design contextual, adaptive, and student-centered physical education programs (Supriadi & Dewi, 2022; Supriadi & Mesnan, 2022).

4. CONCLUSION

Based on the research findings and data analysis, it can be concluded that modifying volleyball through the Kasvol game significantly increases students' learning motivation in physical education. As a local innovation combining elements of kasti and volleyball, Kasvol successfully creates a learning atmosphere that is more enjoyable, competitive, and inclusive. This game facilitates students' understanding of basic volleyball techniques, encourages active participation, builds self-confidence, and enhances learning enthusiasm. Kasvol's uniqueness lies in its ability to bridge pedagogical needs with local cultural values, making it a contextual and relevant alternative for implementation across various educational levels. Therefore, this study contributes to developing creative and meaningful game-based learning strategies in physical education.

This study suggests that physical education teachers should use modified games like Kasvol to boost student motivation by making activities more enjoyable and inclusive. Such adaptations can engage diverse students better and inspire curriculum developers to create student-centered, culturally relevant physical education programs.

REFERENCES

Akhmad, I., & Mesnan. (2019). Model Learning approach to spike a volleyball Play for junior high school students. *Journal of Physics: Conference Series*, *1387*(1). https://doi.org/10.1088/1742-6596/1387/1/012057

Akhmad, I., Suharjo, Lubis, A. P., Destya, M. R., Nurkadri, Helmi, S., Hardiyono, B., Muslimin, & Fikri, A. (2024). The Relationship between Physical Activity and Physical Fitness of Elementary School Students. *International Journal of Human Movement and Sports Sciences*, *12*(1), 229–237. https://doi.org/10.13189/saj.2024.120124

Asep Suharta, Nurkadri, Rahma Dewi, Bessy Sitorus Pane, & Muhammad Reza Destya. (2024). Utilization of Volleyball Teaching Materials Based on Augmented Reality. *Journal of Education Research and Evaluation*, *8*(3), 461–468. https://doi.org/10.23887/jere.v8i3.77926

Badaruddin, M., & Untung, S. (2020). The Influence of Learning Motivation on the Learning Outcomes of Vocational Students at Lampung University. *International Journal of Advanced Science and Technology*, *29*(05), 133–140.

Bailey, R. and D. (2024). *Physical Education Learning Outcomes* (2nd ed., Vol. 2, pp. 1–46). UNESCO's World Sports. https://curriculum.gov.mt

Cahyani, N., & Mustadi, A. (2021). Learning Motivation of Elementary School Children: Is it Possible to be Increased Using the Teams Games Tournament Model? *Al-Bidayah: Jurnal Pendidikan Dasar Islam*, *12*(2), 183–198. https://doi.org/10.14421/al-bidayah.v12i2.583

Chief Curriculum Development Officer (Physical Education) (2007). (2017). *Physical Education* (Chief Curriculum Development Officer (Physical Education) (2007), Ed.; 1st ed.). Chief Curriculum Development Officer (Physical Education) (2007) .

Dapp, L. C., Gashaj, V., & Roebers, C. M. (2021). Physical activity and motor skills in children: A differentiated approach. *Psychology of Sport and Exercise*, *54*. https://doi.org/10.1016/j.psychsport.2021.101916

Dewi, R., & Faridah, E. (2022). Method and Motivation in Teaching Elementary School Students to Throw and Catch the Ball. *AL-ISHLAH: Jurnal Pendidikan*, *14*(3), 3507–3516. https://doi.org/10.35445/alishlah.v14i3.1635

Dewi, R., & Verawati, I. (2021). The Effect of Manipulative Games to Improve Fundamental Motor Skills in Elementary School Students. *International Journal of Education in Mathematics, Science and Technology*, *10*(1), 24–37. https://doi.org/10.46328/ijemst.2163

Destriani, D., Destriana, D., Switri, E., & Yusfi, H. (2019). The development of volleyball games learning for students. *Jurnal SPORTIF : Jurnal Penelitian Pembelajaran*, *5*, 16. https://doi.org/10.29407/js_unpgri.v5i1.12605

Dwi Putri, A., Wijaya, A., Jasmani, P., Rekreasi, dan, Ilmu Keolahragaan dan Kesehatan, F., Kunci, K., Belajar, M., Pjok, P., & Bola Voli, P. (2024). Pengaruh Modifikasi Permainan Bola Voli terhadap Motivasi Belajar Siswa dalam Pembelajaran PJOK Info Artikel. *SPRINTER: Jurnal Ilmu Olahraga*, *5*. http://jurnal.icjambi.id/index.php/sprinter/index

Endriani, D., Akhmad, I., & Daulay, B. (2022). Development of E-Book Based Volleyball Learning Model. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, *6*(2), 363–370. https://doi.org/10.33369/jk.v6i2.21915

Endriani, D., Gultom, S., Verawati, I., & Destya, M. R. (2024). Kinestetik : Jurnal Ilmiah Pendidikan Jasmani Level of Sports Development Assessed Through the Sport Development Index in Deli Serdang Regency. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, *8*(4). https://doi.org/10.33369/jk.v8i4.38221

Endriani, D., Sitompul, H., Mursid, R., & Dewi, R. (2022). Development of a Lower Passing Model for Volleyball Based Umbrella Learning Approach. *International Journal of Education in Mathematics, Science and Technology*, *10*(3), 681–694. https://doi.org/10.46328/ijemst.2508

Ferraz, R., Ribeiro, D., Alves, A. R., Teixeira, J. E., Forte, P., & Branquinho, L. (2024). Using Gamification in Teaching Physical Education: A survey review. *Montenegrin Journal of Sports Science and Medicine*, *20*(1), 31–44. https://doi.org/10.26773/mjssm.240304

Fitriady, G., Sugiyanto, & Sugiarto, T. (2020). Gelanggang Pendidikan Jasmani Indonesia. *Gelanggang Pendidikan Jasmani Indonesia*, *3*(2), 82–90. http://journal2.um.ac.id/index.php/jpj

Fitriani, A., Widiastuti, & Hernawan. (2021). Volley Ball Passing Learning Model for Students Age 11-12 Years. *Gladi : Jurnal Ilmu Keolahragaan*, *12*(02), 93–101. https://doi.org/10.21009/gjik.122.02

Haryani, S., Minardo, J., & Astuti, A. P. (2022). The Correlation Between Online Learning and Student's Motivation During Covid-19 Pandemic. *Scientific Journal Of Nursing*, *8*(4), 571–576.

Heni Hendrik, S., Anitra, R., & Buyung, B. (2024). The Relationship Between Anxiety and Numerical Literacy of Elementary School Students. *EDUKASIA: Jurnal Pendidikan Dan Pembelajaran*, *5*(2), 149–158. https://doi.org/10.62775/edukasia.v5i2.1081

I Kadek Dipa Pratama, Wahjoedi, & Hidayat, S. (2024). Model pembelajaran dan Minat Belajar Terhadap Hasil Belajar Bolavoli. *Jurnal Ilmu Keolahragaan Undiksha*, *12*(1), 16–21. https://doi.org/10.23887/jiku.v12i1.68913

I Nyoman Agus Adi Kesuma1, I. K. Y. , S. H. (2021). Pengaruh Model Pembelajaran Dan Motivasi Terhadap Hasil Belajarpjok Pada Siswa SMP. *Jurnal Penjakora Volume 8, Nomor 1, April 2021*, *8*(1), 62–70.

Imran Akhmad, S. H. R. D. A. S. (2022). The Effects of Learning Strategies on Senior High School Students' Motivation and Learning Outcomes of Overhead Passing in Volleyball. *International Journal of Education in Mathematics, Science and Technology*, *10*(2), 512–527. https://doi.org/10.46328/IJEMST.2291

Irawan, B., Muhyi, M., & Wiyarno, Y. (2021). Pengembangan Permainan Kasvol Terhadap Minat Siswa Untuk Bermain Bolavoli Saat Pembelajaran PJOK Pada Siswa Kelas VI MI Baiturrahman Kedurus Surabaya. *Jendela Olahraga*, *6*, 189–196. https://doi.org/10.26877/jo.v6i1.6766

Mesnan, M. (2021). The Influence of Organizational Culture and Work Motivation on the Performance of Physical Education Teachers in Medan High Schools. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *4*(1), 432–440. https://doi.org/10.33258/birci.v4i1.1621

Nugroho Putro, B., Rozi, F., Nugroho, D., Syaifullah, R., Mukholid, A., Zulqarnain, M., & Nasir, M. (2024). Evaluation on The Implementation of Physical Education, Sports, And Heath In Elementary Schools. *ELEMENTARY Islamic Teacher Journal*, *12*(2), 353–380. https://doi.org/10.21043/elementary.v12i2.30688

Nurshafa, D. A., Lengkana, A. S., & Saptani, E. (2024). Efforts to Improve Learning Outcomes in the Game of Volleyball Through Modification of Learning Tools and Media. *Indonesian Journal of Sport Management*, *4*(2), Article 2. https://doi.org/10.31949/ijsm.v4i2.8889

Pamot Raharjo, H., & Wira Yudha Kusuma, D. (2025). Evaluation Of Physical Education, Sports And Health Learning In Special Schools In Soppeng Regency, South SULAWESI PROVINCE. *Journal of Physical Education and Sports*, *14*(1). http://journal.unnes.ac.id/sju/index.php/jpes

Putra, I. M. W., Panca Adi, I. P., & Wijaya, M. A. (2021). Hubungan antara Motivasi Belajar dengan Hasil Belajar PJOK. *Indonesian Journal of Sport & Tourism*, *2*(2), 59. https://doi.org/10.23887/ijst.v2i2.34859

Rahmiati, N. (2021). Teori Belajar Accelerated Learning dalam Meningkatkan Motivasi Belajar. *Jurnal Pemdidikan Tambusai*, *5*(1), 255–260.

Rama, A., Septiana, S., Pasundan, I., Septiana, R. A., Gustiana Komara, F., & Jatnika, H. W. (2022). Penerapan Model Pembelajaran Kooperatif Team Assisted Individualization untuk Meningkatkan Passing Bawah Bola Voli Application of Team Cooperative Learning Model Assisted Individualization To Improve Bottom Passing Volley Ball. In *Journal of Physical and Outdoor Education* (Vol. 4, Issue 1).

Salimim, N., MINHAT, N., Elumalai, G., Shahril, M. I., & YSU, G. (2020). COGNITIVE DEVELOPMENT BASED ON THE VOLLEYBALL GAME PLAY IN PHYSICAL EDUCATION. *International Journal of Physiotherapy*, *7*. https://doi.org/10.15621/ijphy/2020/v7i1/193673

Savitri, D. A. P., Kanca, I. N., & ... (2020). Pengaruh Model Pembelajaran Kooperatif Terhadap Hasil Belajar Bolavoli Ditinjau Dari Motivasi Belajar. *… Pembelajaran …*, *10*. https://ejournal-pasca.undiksha.ac.id/index.php/jurnal_tp/article/view/3393

Sinaga, F., Reza Destya, M., Negeri, S., Dairi, K., & Kepelatihan Olahraga, P. (2022). Giving Sports Burden to Behavior of Students of the Faculty of Sports Science, Universitas Negeri Medan. *East Asian Journal of Multidisciplinary Research (EAJMR)*, *1*(8), 1519–1526. https://journal.formosapublisher.org/index.php/eajmr/index

Sinulingga, A., Bangun, S., & Wicaksono, Y. (2023). Is Scientific Learning Better Than Conventional Learning on Creativity and Student Learning Outcomes? *Journal Coaching Education Sport*, *4*(1), 45–58. https://doi.org/10.31599/jces.v4i1.1903

Sugiyono. (2023). Edisi Revisi XXI metode penelitian kuantitatif kualitatif dan r&d. intro (PDFDrive).pdf. In *Bandung Alfabet* (Vol. 1, Issue XXI, p. 143). https://digilib.stekom.ac.id/ebook/view/Metode-Penelitian-Kuantitatif-Kualitatif-DAN-RND

Suharta, A., Supriadi, A., & Nurkadri, N. (2021). Design of Digital Based Volley Ball Basic Techniques Test Instrument. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *4*(2), 3170–3176. https://doi.org/10.33258/birci.v4i2.2049

Supriadi, A., & Dewi, R. (n.d.). The Effectiveness of Learning Media and Motivation on Dribbling Learning Outcomes in Football Game. In *Journal of Positive School Psychology* (Vol. 2022, Issue 6). http://journalppw.com

Supriadi, A., & Dewi, R. (2022). The Effectiveness of Learning Media and Motivation on Dribbling Learning Outcomes in Football Game. In *Journal of Positive School Psychology* (Vol. 2022, Issue 6). http://journalppw.com

Supriadi, A., & Mesnan, M. (2022). Development of Application Based Football Learning. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, *6*(2), 297–304. https://doi.org/10.33369/jk.v6i2.21852

Syamsuar, S., & Zen, Z. (2021). Teaching game for understanding model: increasing motivation and students' physical fitness. *JPPI (Jurnal Penelitian Pendidikan Indonesia)*, *7*(1), 128–136.

Trisnawati, S. A., Ridwan, M., Setiawan, E., & Ahmedov, F. (2024). Edu Sportivo Indonesian Journal of Physical Education Integrating interactive video media in physical education: a study on critical thinking and learning motivation. *Edu Sportivo: Indonesian Journal of Physical Education*, *5*(3), 289–305. https://doi.org/10.25299/es:ijope.2024.vol5(3).19073