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Application of The Stad Type Cooperative Learning Model Towards Volleyball Underpassing Learning Outcomes

M Nur Ikhsan S[1A-E], Ramli[2B-D], Ahmad Rum Bismar[3B-D], Muh. Adnan Hudain[4B-D], Andi Ridwan[5B-D]

[1,2,3,4,5] University Negeri Makassar, South Sulawesi, Indonesia

ikhsanmuh3195@gmail.com[1], ramli@unm.ac.id[2], ahmad.rum.bismar@unm.ac.id[3], muh.adnan.hudain@unm.ac.id[4], andi.ridwan@unm.ac.id[5]

ABSTRACT

This study aims to analyse the application of the STAD (Student Teams-Achievement Divisions) cooperative learning model to the learning outcomes of volleyball underhand passing students at SMPN 3 Bontomarannu. The sample in this study consisted of 30 grade VII students. The study was conducted using a classroom action approach involving two cycles. In the pre-cycle, the initial evaluation showed that only 23% of students completed the learning. Then, in cycle I, improvements were made by implementing the STAD model, which resulted in 43% of students completing. In cycle II, student interaction and involvement were increased, with a total of 30 students participating. The results of the cycle I evaluation showed an average student score of 75.17 with 43% completion. However, after the implementation of improvements in cycle II, the average score increased to 80.83, with a completion percentage reaching 90%. This reflects a significant increase in students' understanding and skills in volleyball underhand passing techniques. In conclusion, the implementation of the STAD type cooperative learning model has proven effective in improving the learning outcomes of students' volleyball underhand passing at SMPN 3 Bontomarannu. Although there were challenges in the initial cycle, the improvements made in cycle II succeeded in increasing student engagement and achievement. This study suggests continuing the use of the STAD model and conducting ongoing evaluations to maximise student learning outcomes.

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INTRODUCTION

Physical education, especially in volleyball, plays a crucial role in the overall development of students (Juhanis et al., 2023; Nawir et al., 2023). Planned physical activities not only strengthen muscles and increase endurance, but also hone coordination, balance, and agility skills, which are very important for students' growth and development (Muh. Syahrul Saleh et al., 2024; Suwardi, Adnan Hudain, et al., 2024;

Suwardi, Muhammad Syahrul Saleh, et al., 2024). These motor skills are important for optimal physical development and prevention of future health problems. Regular sports activities can improve physical fitness and prevent various degenerative diseases (Adam Mappaompo et al., 2024; Arga, 2020, 2021). In addition to physical benefits, volleyball contributes to students' cognitive development through quick decision-making, problem-solving, and game strategy (Nugraha & Setiawan, 2021). This stimulates the brain to work more efficiently and improves critical thinking skills, in line with research by Prastowo & Cahyono (2020), which shows that team sports can improve students' executive functions and cognitive abilities. From a socio-emotional perspective, volleyball teaches cooperation, communication, and sportsmanship, which are very much needed in community life (Arga, 2023, 2025). Interaction within a team helps students accept victory and defeat with an open heart, as emphasised by Saputra et al. (2020) that team sports can develop students' positive character. Sports are also a means to reduce stress, improve mental well-being, and provide an escape from academic pressure. Although the importance of volleyball is recognised, the learning outcomes of students' underhand passing skills at SMPN 3 Bontomarannu are still below standard. Observations show that only 35% of students are able to perform the technique correctly, indicating the need for a more effective approach to learning (Arga et al., 2025; Tandi Rerung et al., 2025).

The high need to improve underhand passing skills makes this study very relevant in the context of modern physical education. The Student Teams Achievement Division (STAD) cooperative learning model can be the right solution to overcome this problem (Kurniawan & Sari, 2020). By focusing on teamwork, STAD encourages students to interact and share knowledge, which is very important for techniques that require repeated practice and direct feedback from peers (Permana & Hidayat, 2019).

The STAD model has been shown to be effective in increasing student learning motivation and learning outcomes in various fields of study, including physical education (Fitriyani & Wahyudin, 2021). Research by Mahendra & Priyono (2020) shows that the application of a cooperative model in sports learning can improve students' motor skills and positive attitudes towards learning. The advantage of the STAD model lies in its ability to accommodate various levels of student ability in one class, so that more advanced students can help their friends who are still having difficulty (Andriani & Subiyanto, 2019). Previous studies have shown the effectiveness of the STAD model in improving learning outcomes in various subjects, but few have examined its application in the context of physical education, especially motor skills. This gap is a motivation to further explore how STAD can improve volleyball underhand passing skills. A study conducted by Rahman & Sutopo (2021) showed that the cooperative learning model can improve basic volleyball technical skills by up to 30% compared to conventional methods.

Furthermore, research by Hartono & Wibowo (2020) revealed that a cooperative approach in sports learning not only improves physical skills but also develops students' social and emotional aspects. The STAD model has characteristics that are in accordance with motor skills learning because it provides opportunities for students to learn from

peers and get direct feedback (Dewi & Susanto, 2021). This is in line with social learning theory, which emphasises the importance of social interaction in the learning process.

This study aims to apply the STAD model in volleyball underhand passing learning with a systematic plan that includes several important stages. First, implementing the STAD model in teaching underhand passing by considering student characteristics and available facilities and infrastructure. Second, measuring the increase in student skills before and after the intervention using valid and reliable assessment instruments. Third, collecting feedback from students regarding their learning experiences during the implementation of the STAD model to evaluate the effectiveness and satisfaction of students with the learning methods applied.

This study has three main interrelated objectives. First, improving students' underhand passing skills through the application of the STAD model that is adjusted to the characteristics of physical education learning. Second, creating a more collaborative and enjoyable learning atmosphere can increase students' motivation and active participation in learning. Third, identifying factors that influence the success of the STAD model implementation in motor skills learning, especially volleyball underhand passing, so that it can provide valuable input for the development of more effective learning strategies. It is expected that the implementation of the STAD model will significantly improve the underhand passing skills of SMPN 3 Bontomarannu students compared to conventional methods. This study is expected to provide practical contributions for physical education teachers in developing more effective and innovative learning strategies. In addition, the results of this study are expected to be a reference for further research in the field of physical education, especially in the application of cooperative learning models to improve students' motor skills.

METHODS

In classroom action research, the research cycle begins with selecting a research project. Compiling records of the data that has been collected and analysing it. This process is repeated several times, depending on the scope and depth required by the research itself (Hardani et al., 2022). Classroom Action Research (CAR) is a research method carried out by teachers in their classes through self-reflection with the aim of improving their performance as teachers, so that student learning outcomes increase. The research time will be carried out around October 2024, after the proposal seminar and after being declared eligible to conduct research. The research location is at SMPN 3 Bontomarannu, precisely class VII. The research design includes planning, implementation, observation, and reflection.

In the context of implementing the STAD type cooperative learning model for volleyball underhand passing, CAR can be an effective tool to improve the quality of learning and student learning outcomes.

Based on the latest research on CAR, several characteristics and stages need to be considered:

M Nur Ikhsan S[1A-E], Ramli[2B-D], Ahmad Rum Bismar[3B-D], Muh. Adnan Hudain[4B-D], Andi Ridwan[5B-D]
ikhsanmuh3195@gmail.com[1]*

1. CAR Cycle
   CAR is usually carried out in several cycles, where each cycle consists of the stages of planning, action, observation, and reflection. In the context of volleyball underhand passing learning using the STAD method, each cycle can focus on a specific aspect of passing technique or STAD implementation.
2. Collaborative
   PTK often involves collaboration between teachers and researchers or fellow teachers. In the application of STAD for underhand passing, collaboration can be done between physical education teachers and other teachers or external volleyball coaches.
3. Focus on Improving Practice
   The main goal of PTK is to improve learning practices. In this case, the focus is on increasing the effectiveness of teaching underhand passing through the STAD method.
4. Data Collection
   PTK uses a variety of data collection methods such as observation, interviews, and performance tests. For underhand passing, this can involve technique assessments, skill tests, and observations during practice sessions.
5. Reflection
   Each PTK cycle ends with a reflection to evaluate the effectiveness of the action and plan for improvement (Kemmis et al., 2023). In the context of STAD and underhand passing, reflection can include analysis of student performance, group dynamics, and effectiveness of instruction.

Table 1.
Underhand Passing Skills Assessment

No	Technical Aspects	1	2	3	4	5	Total Score
1	Foot Position						
2	Body Position						
3	Hand Position						
4	Ball Introduction						
5	Advanced Movements						
Maximum Score: 25							

Description:
5 = Perfect: The movement is done with the correct and efficient technique
4 = Good: The movement is mostly correct with slight imperfections
3 = Sufficient: The basic movement is correct, but there are some technical errors
2 = Poor: There are fundamental errors in the movement
1 = Very Poor: The movement is very inconsistent with the correct technique

Description of technical aspects in volleyball underhand passing:

1. Foot Position: Feet are shoulder-width apart or slightly wider, Knees are bent, with the front foot slightly forward of the back foot, Body weight is on the front of the soles of the feet, Feet are in a ready-to-move position, not stiff

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ikhsanmuh3195@gmail.com[1*]

2. Body Position: The Body is slightly tilted forward, Back is straight, not hunched, Shoulders are relaxed and parallel to the net, Waist is slightly bent to provide flexibility
3. Hand Position: Both arms are straight and close together, Elbows are locked, not bent, both hands are together, with thumbs parallel, Hands form a flat and strong base, Wrists are bent downward
4. Ball Contact: The ball hits the proximal part of the arm, above the wrist. The point of contact is on the inside of the forearm. Both arms move upward simultaneously when touching the ball. The ball hits the centre point of the arm runway.
5. Advanced Movement: After contact, the arm follows the direction of the ball. The body and hands are swung forward and upward. The body weight is shifted forward, the gaze follows the direction of the ball, and the back leg steps forward to maintain balance.

Table 2.
Indicators of success in achieving student learning outcomes

No.	Range Value	Criteria	Description
1	> 92 – 100	Very Good	Completed
2	> 83 – 92	Good	Completed
3	≥ 75 – 83	Enough	Completed
4	< 75	Poor	Not Completed

RESULTS AND DISCUSSION

Result

The results of this study are data on the classical percentage ability of students in mastering the volleyball underhand passing technique through the application of the STAD Cooperative Learning Model to the learning outcomes of volleyball underhand passing of students at SMPN 3 Bontomarannu.

Based on the results of the study on the application of the STAD Cooperative Learning Model to the learning outcomes of volleyball underhand passing of students at SMPN 3 Bontomarannu, the following data processing results were obtained:

Pre-cycle

In an effort to collect data in the first cycle, activities were carried out in two meeting sessions. In the first meeting, the learning steps began with an explanation of the material, followed by a demonstration of the underhand passing technique. Meanwhile, in the second session, students were exposed to the direct learning process in the field. Before starting the learning activity, I first divided the students into predetermined groups. Each group consists of students with varying levels of ability, from those with the lowest to the highest scores.

This approach is expected to increase interaction and cooperation between students, as well as improve student learning outcomes in volleyball underhand passing techniques, in accordance with the focus of the study on the application of the STAD

M Nur Ikhsan S[1A-E], Ramli[2B-D], Ahmad Rum Bismar[3B-D], Muh. Adnan Hudain[4B-D], Andi Ridwan[5B-D]
ikhsanmuh3195@gmail.com[1]*

cooperative learning model at SMPN 3 Bontomarannu. The summary results of the pre-cycle or initial action assessment in this study can be seen in the following diagram.

Table 3.
Pre-cycle Learning Outcomes

Number of Students	KKTP	Highest Score	Lowest Score	Average	Completed	Not Completed	Percentage Completed	Percentage Not Completed
30	75	80	55	68	7	23	23%	77%

Based on the table above, the average learning evaluation results of students are 68. In the context of research on the application of the STAD type cooperative learning model to the learning outcomes of volleyball underhand passing at SMPN 3 Bontomarannu, this data provides a clear picture of the effectiveness of the method used. The highest score obtained by students was 80, while the lowest score was 55. Of the 30 students involved, only 7 students achieved the completion criteria, while 23 students did not complete, resulting in a completion percentage of 23% and a percentage of incomplete reaching 77%. These results indicate that most students still have difficulty in understanding and mastering the underhand passing technique. Therefore, further evaluation is needed on the application of this cooperative learning model to improve students' skills and learning outcomes in volleyball.

Cycle I

In cycle I, the focus will be on increasing student interaction and involvement through the STAD-type cooperative learning model. By dividing students into heterogeneous groups, it is hoped that each group member can support and help each other, thereby increasing collective understanding of the underhanded passing technique. In addition, adjustments in teaching methods and the use of visual or practical aids will be made to facilitate the learning process. These steps are expected to increase the percentage of student completion and, ultimately, student learning outcomes in volleyball techniques. The learning outcomes of Cycle I can be seen in the following table.

Table 4.
Learning Results of Cycle I

Number of Students	KKTP	Highest Score	Lowest Score	Average	Completed	Not Completed	Percentage Completed	Percentage Not Completed
30	75	90	65	75,15	13	17	43%	57%

Based on the table above, the assessment of the ability to pass under shows quite significant results in the context of research on the application of the STAD-type cooperative learning model at SMPN 3 Bontomarannu. From the total value obtained, the average student score reached 75.17. The highest score achieved was 90, while the lowest score was 65. 13 students completed, and 17 students did not complete. These results reflect variations in students' understanding and skills in the technique of passing under, which is the main focus of this study. However, although there were some students who achieved good scores, the data shows that only 43% of students completed, while 57% were still incomplete in this learning.

Cycle II

Cycle II will focus on the application of more interactive and interesting methods, as well as adjustments in group division so that each student can participate more actively. In addition, the use of various teaching aids and techniques that are more varied is expected to help students understand the concepts and skills needed. With these steps, it is expected that the student completion ratio can increase significantly, in line with the research objectives in improving learning outcomes through the STAD-type cooperative learning model. The learning outcomes of cycle II in the application of the STAD type cooperative learning model at SMPN 3 Bontomarannu can be seen in the following table,

Table 5.
Cycle II Learning Outcomes

Number of Students	KKTP	Highest Score	Lowest Score	Average	Completed	Not Completed	Percentage Completed	Percentage Not Completed
30	75	90	65	80,83	27	3	90%	10%

Based on the table above, the results in cycle II show a significant increase in the ability of volleyball underhand passing of students at SMPN 3 Bontomarannu. With a total average value of 80.83, 27 students completed, and 3 students did not complete, with a percentage of completion of 90% and 10% did not complete. These results reflect the effectiveness of the implementation of the STAD-type cooperative learning model. The highest value achieved remains 90, while the lowest value is 65, indicating that although there are variations, most students can achieve satisfactory results and have met the learning completion criteria in the class.

Discussion

Pre-cycle

One of the main reasons why students have not achieved maximum learning completion is the lack of interaction between students. In traditional learning, students often work individually, which limits students' opportunities to learn from each other. The STAD type cooperative learning model is designed to facilitate collaboration, but in the pre-cycle, the methods used have not fully utilised this potential. Inactivity in groups can lead to ignorance of the techniques being taught.

In addition, the lack of variation in teaching methods is also a factor that affects learning outcomes. In the pre-cycle, the approach used is more one-way, where the teacher delivers material without actively involving students. This makes students feel less interested and less motivated to learn. Monotonous learning can result in a lack of deep understanding of the techniques being taught.

The availability of adequate tools and facilities also plays an important role in learning. In the pre-cycle, the condition of the field and the tools used are not optimal, which can hinder students from practising. Without the right tools, students will have difficulty applying the techniques being taught, which will have an impact on student learning outcomes. In the context of volleyball, techniques that require practical practice are highly dependent on the quality of the facilities available.

In the pre-cycle, students may feel less comfortable practising in groups, especially if they feel less competent than their fellow students. This can cause students to withdraw from learning activities, reducing opportunities to learn from shared experiences. By looking at the various factors that influence learning outcomes in the pre-cycle, it can be concluded that the implementation of the STAD-type cooperative learning model needs to be optimised. Cycle I must be designed with better strategies to overcome these problems. For example, increasing interaction between students, using more varied teaching methods, and providing better practice facilities.

Cycle I

One of the factors that contributed to this improvement was better interaction between students. In the STAD model, students are divided into small heterogeneous groups, allowing students to share knowledge and help each other understand the techniques taught. With this kind of collaboration, students can learn from the experiences of their peers, thereby increasing students' self-confidence and motivation.

In addition, the use of more varied learning methods also plays an important role. In cycle I, the teacher applied various teaching techniques, including direct demonstrations, group discussions, and practical exercises. This approach helps students not only understand the theory but also be able to apply it directly in practice. Variations in teaching methods make students more interested and involved in the learning process.

The learning steps taken by the teacher also greatly support the improvement of learning outcomes. The teacher begins the session by explaining the learning objectives and the importance of the underhand passing technique in volleyball. After that, the teacher demonstrates the correct technique, followed by group exercises where students practice in turns. In each practice session, the teacher provides direct feedback to students, which helps students correct mistakes and improve skills.

The teacher also applies a transparent assessment system, where students can see their development. By providing regular assessments, students are motivated to try harder in practice. Clear assessments of individual progress in groups increase students' sense of responsibility for their learning while encouraging students to support each other.

The psychological aspects of students are also considered in Cycle I. The teacher creates a positive learning environment where students feel safe to try and practice without fear of being judged. By providing encouragement and praise when students do the exercises well, the teacher helps build students' self-confidence. This is especially important in sports, where self-confidence can affect performance. Although there was an increase, the learning outcomes in cycle I showed that there were still 57% of students who did not complete the exercises. This indicates that the strategies implemented need to be continuously improved. Therefore, further evaluations should be carried out to identify students who are still experiencing difficulties and to provide special attention to students.

With the steps taken in cycle I, it is hoped that in the next cycle, students' learning completion can increase further. This study shows that the application of the STAD-type cooperative learning model can have a positive impact on learning outcomes, and efforts to continuously improve and adjust teaching methods will be very important to achieve the expected goals.

Cycle II

One of the main reasons for this increase in learning completion is the increase in interaction and collaboration between students. In cycle II, the teacher emphasised the importance of working together in groups, so that students felt more comfortable sharing knowledge and experiences. Cooperative learning can improve students' academic achievement because students support and motivate each other. This was evident in cycle II, where students participated more actively in discussions and exercises.

The learning steps taken by the teacher also contributed to the improvement in learning outcomes. The teacher began the session by reminding students of the techniques they had learned previously, followed by a more in-depth demonstration of the techniques. After that, students were divided into groups to practice, with each group having a specific task to complete. This approach not only strengthened students' understanding of the techniques but also increased students' sense of responsibility for group learning.

In addition, the teacher provided more structured and constructive feedback during the practice session. By providing direct assessment and suggestions for improvement, students were able to immediately identify student errors and make improvements. Constructivist learning theory supports this approach, where students learn better when they get the right feedback and can collaborate with peers.

Although the results in cycle II were very satisfactory, there is still room for improvement. With 10% of students who have not completed, it is important to conduct further analysis to understand the challenges faced by these students. Remedial measures and additional support must be prepared to help students who are still experiencing difficulties, so that all students can achieve the expected learning completion.

The results of this study indicate that the application of the STAD type cooperative learning model can significantly improve student learning outcomes in volleyball underhand passing techniques. With the right steps and support from previous theories and research, it is hoped that student learning outcomes can continue to improve in the future. This study provides an important contribution to the development of more effective learning methods in physical education, especially in sports. This STAD-type cooperative learning provides an opportunity for students to work together to provide ideas and opinions from each student and consider the most appropriate answer in their group, so that the learning process is digested more quickly by students.

Thus, various improvements are attempted by considering existing shortcomings, such as problems in group personnel, how to learn in groups, lack of motivation, and dominance of very active students. Following the initial design, this study was continued to cycle II by making improvements including group formation, how to study in groups,

fostering internal motivation for students, and providing opportunities for other students to express their opinions in passing under, making maximum improvements in cycle II as stated by Hotimah in 2020 in her research.

Poor physical condition and health of students can also be factors that affect learning completion. When the study was conducted, some students may have had health problems, such as the flu or fatigue, which can interfere with students' concentration and absorption of learning materials. When students do not feel fit, students tend to find it more difficult to actively participate in learning activities, both individually and in groups. This certainly has an impact on students' understanding of the material being taught and, ultimately, on the final results that students obtain.

In addition, less than optimal physical conditions can affect students' moods and motivation. Students who feel unwell may become more anxious or unmotivated, which affects student performance in learning. The combination of learning methods that may not be entirely appropriate, psychological factors influenced by health conditions, and the inability to participate optimally can cause some students not to achieve completion. Therefore, it is important for teachers to pay attention to the physical and mental conditions of students and provide additional support for students who experience health problems during the learning process. This is what caused 3 students not to complete, but in terms of class completion, this learning model has been successful.

CONCLUSION

In the pre-cycle, only 7 students completed the course out of a total of 30 students, so the completion percentage was only 23%. However, in cycle I, the number of students who completed the course increased to 13, with the completion percentage reaching 43%, recording an increase of 20%. This increase continued in cycle II, where 27 students completed the course, so the completion percentage jumped to 90%. The increase from cycle I to cycle II reached 46.67%, indicating the effectiveness of the methods or interventions applied. Overall, these data show consistent progress in student learning outcomes, reflecting the success of the STAD learning model used with a total increase of 20 students or 66.67%.

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