

## Efforts to Improve Backhand Short Service Skills in Badminton Learning through the Peer Teaching Learning Model

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### ABSTRACT

This research aims to improve students' backhand short-serve skills in badminton learning through a peer teaching-learning model. The subjects in this research were class IV students at SDN Bongkok, consisting of 11 female students and 15 male students. The research method uses classroom action research (PTK) with a quantitative, qualitative approach, with a Kemmis and Mc Taggart model research design that focuses on reflection and continuous action cycles. Each cycle consists of planning, implementation, observation, and reflection. This data analysis was carried out qualitatively and quantitatively. Based on the data analysis, the learning outcomes were that in cycle 1, 50% or 13 students were declared complete; in cycle 2, 76.92% or 20 students were completed; and in cycle 3, 100% were declared complete. For student activity in cycle 1, it was 72.11, increasing in cycle 2 to 80.12, and in cycle 3, it reached 90.70. The IPKG 1 and IPKG 2 assessments also increase each cycle; in cycle 1, the IPKG 1 is 69%, IPKG 2 70%; in the second cycle, IPKG 1 is 77%, IPKG 2 is 80% and increases at the end of cycle 3, namely IPKG 1 98.8 IPKG 2 100 %. In conclusion, the application of the peer teaching-learning model in badminton learning can improve students' learning outcomes for backhand short-serve skills.

**Keywords:** Peer Teaching; Badminton; Backhand Short Serve; physical education

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## INTRODUCTION

Physical Education is an overall education that can influence student development through physical and movement activities, including sports. Physical Learning is also a learning that is included in the educational curriculum at the elementary, junior high, and even high school levels, which has the aim of increasing student honesty, student sportsmanship, and also the main thing is increasing physical potential (Agus Setiawan, 2014). In addition to improving physical abilities, physical Education also has an important role in developing student character in the field of Education (Gandasari, 2022). Physical Education is an education that is carried out systematically, the goal is to grow the ability of students and improve everything related to psychomotor, cognitive, physical fitness, affective, social, and emotional students (Arifin, 2017). Badminton is one of the games in physical education learning. Of course, badminton is a game that requires full body coordination, and it can be said to be quite difficult



to play. Badminton is also a game with its own movement and technique characteristics (Anggraeni Tripuspa Laia, 2022). In learning badminton, there are several basic techniques that must be mastered, namely how to hold a racket, how to make a shot (short / long serve, loob, dropshot, smash, netting), basic position, and footwork (Zarwan, Arsil, 2011). If the basic techniques can be done well, it will be easier for students to play badminton.

In the game of badminton, the most dominant basic skill is the technique of blowing, one of the strokes in the game of badminton is serve. The serve is the opener in this game, the serve can also only be done or started by the team that gets the point. For this reason, students need to be able to make service movements in badminton games (Liu et al., 2021). Serve is a weapon in the game of badminton because with a good serve, the possibility of losing points due to own mistakes becomes minimal. Service is also divided into 2: short and long services, and then there are punches using backhand or forehand. Usually the service punch that is often used is the backhand short service (Gawin et al., 2013; Kamaruddin & Nur, 2020).

Based on the author's observations during teaching practice activities at SDN Hunchback, there are still many students where the hitting technique, especially the backhand short service, is still lacking in the technique, often it does not reach the opponent's court line, does not cross the net, and there is still improper coordination between the shuttlecock and the racket. This is following the results of skill evaluation in badminton games that there are still many students who have not achieved KKM at the competencies shown by the determination of KKM in educational units that have been determined at SDN Bongkok, Paseh District, KKM in physical education subjects, especially service under backhand, students are said to be complete if the score is 73. Based on the observations, a learning model is needed to deliver material on backhand short serves in badminton to improve students' academic scores to pass KKM. The peer teaching-learning model is one of the recommended learning models for use in learning.

In the learning process, the duties and responsibilities of a teacher are challenging, one of which is determining the learning model (Saputro, n.d.). The learning model is a conceptual framework that aims to achieve goals in learning obtained from learning experiences. The learning model is very functional for a teacher to teach and carry out learning activities as well as possible. Learning also improves humans from knowledge, attitudes, and emotions (Mulya, 2022). In this case, the achievement or purpose of learning is to make students able to improve short backhand service skills in learning sports physical education, especially badminton learning. Therefore, researchers want to examine using peer teaching-learning model strategies in the badminton learning process at SDN Bongkok to improve the ability of SDN Hunchback short service techniques. The peer teaching-learning model is recognized as one of the effective learning models for implementing learning because it has a strong role in it (Hu et al., 2023; Rusli et al., 2021). Remember That badminton is also a game that leads to physical and social activity, and peer teaching is a good learning model used in badminton learning (Kim, 2017). With the peer teaching-learning model, they become free and not shy to ask their tutors when learning because it is done with peers, so it is expected to improve the ability of short backhand serves. Peer teaching also creates a learning atmosphere to collaborate, discuss with friends, and support each other in the learning process. Later, students whose backhand backhand short service skill scores have met the KKM will be selected to

become tutors and then formed into small groups. That way, during the learning process, they will communicate and exchange solutions to the obstacles they feel (Mills et al., 2014).

The importance of this research is that in the game of badminton, the skill of service is one of the basics that students must master; service is also one of the weapons in the game of badminton, where service is also an opener.

## **METHOD**

This study used a classroom action research (PTK) design, using the quantitative and qualitative approach of the Kemmis and McTaggart model, which focuses on the cycle of reflection and continuous action. Data analysis is carried out qualitatively and quantitatively. This research analyzes learning activities as planned activities in class (Kardoyo, Ahmad Nurkhin, Muhsin, 2020). The subjects of this study were grade IV students of SDN Bongkok, Paseh District, Sumedang Regency, totaling 26 students, 11 female students and 15 male students.

In this study, there are 4 stages, namely Planning, Acting, Observing, and Reflecting. At the planning stage, researchers analyze the problem and find solutions to solve the problem by checking several sources from journals. Then, researchers also begin to compile lesson plans and prepare instruments used, namely backhand short service skill tests, student activities, IPKG 1 (Teacher Performance Implementation Indicators), and IPKG 2 (Teacher Performance Implementation Indicators).

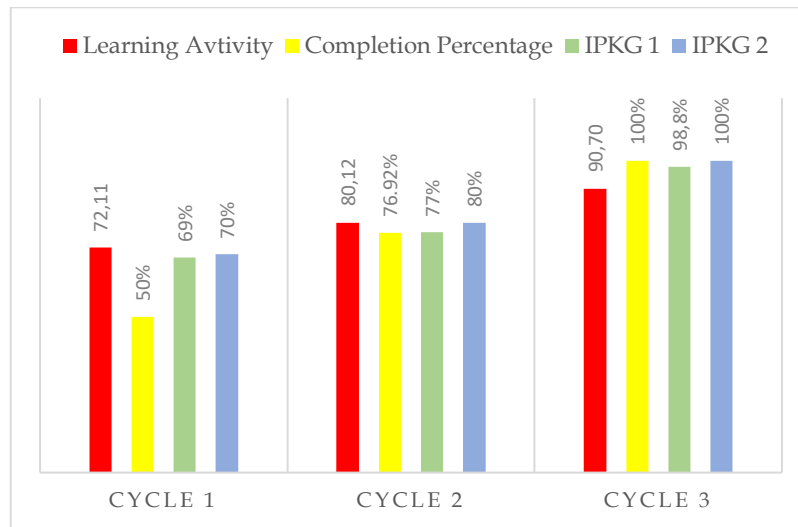
The action stage is the implementation of actions that have been planned at the planning stage. Here are some steps that researchers have scheduled to overcome existing problems. Namely, researchers make selections for peer tutors from students, where students who have good grades in previous learning and also can guide and motivate other students in the learning process will be selected to be tutors, and prepare various things for the selected tutor both from the preparation of material and methods in the implementation stage, divide students into groups, and at the end of each cycle the teacher will see again students who have met the KKM will be made tutors so that for the next cycle the number of tutors in each group will increase. In this peer teaching-learning, the teacher becomes a facilitator in the implementation of the learning process in implementing the RPP that has been made.

The observation and reflection stage is the stage where analysis of data from observations of learning in class is carried out. The results of observations are then discussed together between researchers and research partners about events that occur and are related to the learning process in the classroom. The results of analysis and discussion as a result of reflection on learning are then considered to be used in improving the implementation of the learning process in the next cycle. And so on until the study shows the required results. Data on student activity and learning outcomes before and after the application of peer teaching learning (peer tutors) were collected based on observer and post-test data documentation at the end of each research cycle.

The success indicator in this study is a requirement used to assess the PTK results if all students in grade IV of SDN Hunchback have at least completed the KKM or by the minimum completeness criteria of the score obtained, which is 73.

## RESULTS

After the data is obtained, the next step is to analyze and process the data. The following is a description of the data obtained:



**Figure 1.** Research Results Data

Based on Figure 1 above, applying the peer teaching-learning model can improve learning activities and student learning outcomes. In cycle 1, student learning activities were obtained which were 72.11 with a percentage of classical completeness of 50% or 13 students were complete, and 13 other students were not full, with the results of observation and evaluation of IPKG 1.68%, and IPKG 2.70%.

In cycle 2, student learning activities were obtained, which was 80.12, with the percentage of classical student completeness of 76.92%, or as many as 20 students, completed, and 23.08% of students were not completed. However, despite the classical improvement in student completeness, the research results still need to meet the prerequisites for success in research, namely where all students have at least completed KKM or achieved a score of 73. Thus, further action will be taken on research in cycle 3 by correcting the shortcomings contained in cycle 2 through the results of reflection obtained during the learning implementation process and the results of planning and implementation assessments obtained in cycle 2, namely IPKG 1 77% and IPKG 2 80%.

In cycle 3, student learning activities were obtained which was 90.70 with classical completeness of 100%, which means that all grade IV students of SDN Hunchback imply that they have reached KKM scores or more, with the acquisition of IPKG 1 98.8% and IPKG 2 100%, so that this research has advanced the prerequisites for research success with exposure to learning outcomes data and the results of each aspect of assessment as follows:

**Table 1.** Data Acquisition of Assessment Aspects of Each Cycle

Criterion	Pre PTK	NA Cycle 1	NA Cycle 2	NA Cycle 3
Average rating	-	69,53	79,07	90,46
Smallest Value	-	50	58	75
Greatest Value	-	83	100	100
Number of Students who	7	13	20	26

achieved KKM (73)				
Classical Completeness (%)	26,92%	50,00%	76,92%	100%
IPKG 1		69%	77%	98,8%
IPKG 2		70%	80%	100%

One aspect that is seen in improving student learning outcomes in short backhand service technique skills through the peer teaching-learning model is student learning activities that see more intense interaction between students; students are more enthusiastic about listening to their tutors when explaining, and also more courageous to ask questions if something is not understood. As stated in Figure 1, the average student learning activity in cycle 1 was obtained at 72.11, consisting of 3 indicators, namely confidence, discipline, and student responsibility during the learning process. In cycle 1, learning is still carried out classically, where the beginning of learning is still carried out with the teacher explaining first; after that, only continued learning has been divided into several groups. Each group has a tutor who has been selected from the results of the pre-cycle data. Reflection on student activities in cycle 1: when the teacher is explaining, students only focus on listening to what the teacher is explaining, but when allowed to ask questions, no students ask; even when doing warm-up activities, there are still students who lack discipline when marching. However, compared to the conditions when learning has been done with the tutor, students seem to be more enthusiastic about listening and following learning; students also do not hesitate to ask the tutor if there is something they don't understand so that the classroom conditions become more active so that teachers not only pay attention to the cognitive and psychomotor domains of students (Muhtar et al., 2021). The ability of teachers to plan and during the implementation of learning is also one of the sources of success of student learning outcomes. According to Mochammad et al., 2023 Evaluation is needed on the planning and implementation made by teachers to achieve learning objectives, which in this study can be seen through IPKG 1 and IPKG 2.

Cycle 2 learning is implemented with different learning patterns, where tutors in each group carry out direct learning. At the same time, the teacher becomes an observer of the learning process. In cycles 2 and 3 also, the number of tutors increases based on the results of observers and student learning outcomes carried out in the previous cycle so that in each group, there is an increase in the number of tutors in each cycle 2 to cycle 3. Before the implementation of cycles 2 and 3, the teacher again prepares the tutor for mastery of the short backhand service material. Based on the observations contained in the table above, in cycle 2, student activity in learning was obtained was 80.12, which means there was an increase of 8.01 from cycle 1 to cycle 2 with the reflection of students who were better at following the implementation of learning, more disciplined when learning began, more responsible for the role of each student both students who became tutors and students who valued tutors more in their respective groups. In cycle 3, there was an increase of 10.58 from cycle 2, namely the results of observations on student activities obtained by 90.70. In cycles 2 and 3, the teacher only becomes a facilitator in the implementation of learning so that learning runs by the lesson plan that has been made, but the teacher is still a reference for children to provide conclusions and reflect after the implementation of learning with



the tutor to correct existing misunderstandings to be used as a common view to achieve learning objectives.

In an educational environment, the affective realm is an important thing to encourage to achieve one of the educational goals because the purpose of learning is not only to educate students but also to develop moral and individual behavior. The affective realm relates to students' disposition, attitudes, character, emotions, and behavior. The functionality of the affective realm can be seen from how students give their attention when implementing learning, discipline, have a desire or enthusiasm in the learning process, have self-confidence that makes students more courageous to show themselves, and appreciate teachers and classmates (Sumaryanto, 2019). As can be seen in the table above, there is an increase in student activity from cycle 1, which can be 72.11%, to cycle 3, reaching 90.70%, which means that there is a growing attitude of discipline, responsibility, and confidence in students by applying the peer teaching-learning model in badminton learning to improve short service backhand skills. The results of this study are also reinforced by research that states that using the peer teaching-learning model can increase students' affective scores that measure group cooperation and student learning outcomes, which include following the rules of play, encouraging each other, respecting each other, and helping friends (Cakrawijaya, 2021). Based on the results of good student activities through the application of learning with peer teaching, there is also expected to be an increase in the learning outcomes obtained by students.

Improvements in student learning outcomes before and after the implementation of learning with the peer teaching model can be seen in the table above. Based on the table information above, it can be seen in cycle 1 the smallest value of student learning outcomes is 50, and the largest value is 83, with an average score of 69.53. As for classical completeness, 50.00% or 13 complete people and 50.00% or 13 other students still need to complete or reach the KKM score of 73. So, the pre-cycle to cycle 1 result data increase is 23.08% for classical completeness. In cycle 1, learning is carried out classically, where the teacher, before learning begins, in advance, discusses the material to be delivered by the tutors; after that, the students practice with the group and the tutor. Thus, learning is expected to be more active; students will play more roles in the learning process and feel more free to discuss the obstacles they think or something that is less understood.

The result of reflection in cycle 1 is that although there is an increase in classical completeness by 23.08% because the teacher still dominates learning, other students are still racing on what the teacher explains, so when the tutor says there are still some students who refute so that the tutor in the group is less optimal in delivering the material because in group learning the learning outcomes will increase if there are feelings in the group accepted, appreciated, and good in the way it is delivered, in the aspect of skill there are still students who have not been able to make a shot over the net line and have not been good in the beginning, execution, and end of the short service backhand skill. With a good relationship between students, students are expected to help their friends and have mutual respect (Mahendra & Darmawan, 2020). With these results, learning will be continued in cycle 2, with evaluation results also obtained from IPKG 1 with a score of 69% and IPKG 2 with a value of 70%. In cycle 2, the learning pattern will be changed, where the teacher only becomes a facilitator during the learning process so that the tutor who will carry out the learning, of course, in cycle 2, the number of tutors in each group also increases according to

the observation of the value of learning outcomes obtained in cycle 1, where students who have reached KKM will become tutors in learning in cycle 2. Before the implementation of cycle 2, tutors are also given reinforcement by the teacher regarding short backhand service skills.

In cycle 2, the learning pattern of peer tutors is focused on group tutoring learning because by trying to involve students actively and creatively and create a fun atmosphere, students will be more enthusiastic in following the learning process (Haris, 2018). Learning in cycle 2 begins with each group of tutors teaching their friend how to hold the racket, posture, and leg position. After that, learning continues with the tutor teaching friends with learning media that has been prepared by the teacher, namely cardboard attached to the wall to be used as a target so that there are variations of exercises instead of the net; this is done so that students do not feel bored in learning and also efforts so that students can do short backhand services and cross the net line with guidance exercises from their tutors. This is also reinforced by the research results, which state that target training can improve student learning outcomes on short backhand service skills (Rahman et al., 2022). Then, after doing target variation exercises, students continued with shuttlecock throwing games with the application of the final posture leg position, which is parallel between the right and left legs with a slight bend; all learning processes are carried out in groups and guided by each group tutor. Based on the post-test results obtained in cycle 2, the smallest value data was obtained, 58, and the largest value was 100, with an average value of 79.07. As for classical completeness, 76.92% or 20 students were completed, and 23.08% or 6 other students were incomplete, so the increase in cycle 1 to cycle 2 was 26.92% for classical completeness. The results of reflection in cycle 2 are that students at the time of learning implementation are more disciplined and more active in asking questions, and students who are not tutors can also help other students who have difficulty or do not understand well. Although the results in cycle 2 have reached classical completeness of 76.92%, cycle 2 has not achieved the specified prerequisite, namely that all students are complete with a minimum of going KKM, so action is needed in cycle 3 by correcting the shortcomings in cycle 2, also improving IPKG 1 which gets a score of 77% and IPKG 2 80% in cycle 2.

Before learning in cycle 3 begins, the teacher first ensures the tutors' understanding of short backhand service skills; this is necessary because tutors need to master the material that will be delivered to students in their group so that the material is delivered well. If the peer teaching-learning process goes well, motivation, learning outcomes, or the amount of active time students learn will also increase, and students' communication skills will also increase along with interaction and communication skills that indirectly continue to be trained through peer teaching-learning models (Rahayu et al., 2020). In cycle 3, learning begins with teachers using audiovisual learning media to emphasize techniques to students. After that, learning continued in groups guided by tutors in each group and ended with a mini-team game tournament in their respective groups. This was done so tutors could immediately see and improve if a position still needed to be improved and increase student enthusiasm for learning (Nurhasanah et al., 2016). In research by Rahmalia & Faridatula'la, 2023, applying the peer teaching-learning model using TGT can also improve students' skills.

Based on Table 1 above, the learning results from cycle 3 obtained the smallest value of 75 and the largest value of 100, with an average value of 90.46. As for classical completeness, 100% is accepted, or all grade IV students are declared to have reached

the KKM score or exceeded the KKM value so that the learning outcomes are by the prerequisites in this study, so the research is dismissed in cycle 3. In IPKG 1, 98.9 IPKG 2 100% was obtained. Reflection on cycle 3, students are active in asking about perceived difficulties; some students who have not reached the target in cycle 2 are also assisted by tutors, which means showing student responsibility as tutors so that students who have not completed in the previous cycle are more enthusiastic to follow learning.

## CONCLUSION

Based on the results of the study, it can be concluded that the use of a peer teaching-learning model can improve short backhand service skills in grade IV students of SDN Hunchback. This can be seen from student activities and learning outcomes that continue to increase in each cycle to achieve the target of all students completing at least KKM or more than KKM in cycle 3.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest

## REFERENCES

- Agus Setiawan, G. D. (2014). Penerapan Media Audio Visual Terhadap Peningkatan Teknik Servis Pendek. *JPOK*, 02, 341–344.
- Anggraeni Tripuspa Laia, A. T. (2022). JUMPER (Jurnal Mahasiswa Pendidikan Olahraga) Vol. 2, No.2, Mei 2022. *jumper*, 2(2), 71–81.
- Arifin, S. (2017). Peran guru pendidikan jasmani dalam pembentukan pendidikan karakter peserta didik. *Multilateral: Jurnal Pendidikan Jasmani Dan Olahraga*, 16(1).
- Cakrawijaya, M. H. (2021). Pengaruh Model Pembelajaran Peer Teaching Terhadap Kerjasama dan Hasil Belajar Jurus Pada Pembelajaran Pencak Silat. *Indonesian Journal of Physical Activity*, 1(2), 125–138.
- Gandasari, M. F. (2022). Application of physical education subjects to the development of student character values. *Indonesian journal of sport management*, 162–169.
- Gawin, W., Beyer, C., Hasse, H., & Büsch, D. (2013). How to attack the service: an empirical contribution to rally opening in world-class badminton doubles. *International Journal of Performance Analysis in Sport*, 13(3), 860–871.



- Haris, I. N. (2018). Model pembelajaran peer teaching dalam pembelajaran pendidikan jasmani. *Biormatika: Jurnal ilmiah fakultas keguruan dan ilmu pendidikan*, 4(01).
- Hu, L., Chen, G., & Wu, J. (2023). Teaching talk for thinking: The efficacy of a peer talk teaching program for improving group thinking. *Thinking Skills and Creativity*, 48, 101291.
- Kamaruddin, I., & Nur, M. (2020). *Distributed Practice Learning Model Using Audiovisual Media for Teaching Basic Skills of Badminton*. 6(2), 224–232.
- Kardoyo, Ahmad Nurkhin, Muhsin, H. P. (2020). Problem-Based Learning Strategy: Its Impact on students' Critical and Creative Thinking Skills. *European Journal of Education Research*, 9(3), 1141–1150. <https://doi.org/10.12973/eu-jer.9.3.1141>
- Kim, I. (2017). Teaching badminton through play practice in physical education. *Journal of Physical Education, Recreation & Dance*, 88(8), 7–14.
- Liu, T., Chen, W., Shih, Y., Lin, Y., & Yu, C. (2021). Better position for the wearable sensor to monitor badminton sport training loads. *Sports Biomechanics*, 00(00), 1–13. <https://doi.org/10.1080/14763141.2021.1875033>
- Mahendra, M. Y., & Darmawan, G. (2020). Pengaruh penerapan Metode Tutor Sebaya terhadap Hasil Belajar LOB Bulutangkis. *Jurnal Pendidikan Olahraga dan Kesehatan*, 8(1).
- Mills, J. K. A., Dalleywater, W. J., & Tischler, V. (2014). An assessment of student satisfaction with peer teaching of clinical communication skills. *BMC medical education*, 14, 1–5.
- Mochammad, Hendriawan, N., Lengkana, A. S., & Mulyanto, R. (2023). Analysis of Teacher Competencies in Physical Education Learning Achievement. *JUARA: Jurnal Olahraga*, 221.
- Muhtar, T., Supriyadi, T., Lengkana, A. S., Hadist, S., & Cukarso, I. (2021). Character Education in Physical Education Learning Model: A Bibliometric Study on 2011-2020 Scopus Database. *International Journal of Human Movement and Sports Sciences*, 9(6), 1189–1203. <https://doi.org/10.13189/saj.2021.090613>
- Mulya, G. (2022). The Effectiveness of Project Based Learning in Improving Student Learning Results and Motivation in Physical Education Learning. *Indonesian journal of sport management*, 273–279.
- Nurhasanah, S., Rukmana, A., Lengkana, A. S., Studi, P., Penjas, P., Kampus, U. P. I., Abstrak, S., Kelas, P. T., Tournament, T. G., Kunci, K., & Kaki, S. P. (2016). MENINGKATKAN GERAK DASAR SHOOTING BAGIAN PUNGGUNG KAKI DALAM SEPAKBOLA MELALUI MODIFIKASI MENGGUNAKAN TEAM GAME TOURNAMENT (Penelitian Tindakan Keas Pada siswa Kelas V-B SDN Cikoneng I Kecamatan Ganeas Kabupaten Sumedang). *SPORTIVE: Journal Of Physical Education, Sport and Recreation*, 21–30.
- Rahayu, R., Subroto, T., & Budiman, D. (2020). Implementasi Model Pembelajaran Pada Olahraga Permainan Bolatangan. *Physical Activity Journal (PAJU)*, 1(2), 107–114.
- Rahmalia, A., & Faridatula'la. (2023). The Advantages of Tactical Games and

Cooperative Learning Models in Football Shooting Technique Skills. *Indonesian journal of sport management*, 299–304.

Rahman, I., Munandar, W., & Walinga, A. N. T. (2022). Upaya Meningkatkan Hasil Belajar Servis Pendek Backhand Dalam Permainan Bulutangkis Melalui Variasi Target Pada Siswa. *Indonesian Journal of Physical Activity*, 2(2), 51–60.

Rusli, M., Degeng, N. S., Setyosari, P., & Sulton. (2021). Peer teaching: Students teaching students to increase academic performance. *Teaching Theology and Religion*, 24(1), 17–27. <https://doi.org/10.1111/teth.12549>

Saputro, A. A. (n.d.). Learning Management of Student Center Based Physical Education in Improving Student Character. *Indonesian journal of sport management*, 128–135.

Sumaryanto, A. (2019). Peer teaching: solusi untuk mengatasi ketimpangan kemampuan psikomotorik dan interaksi sosial dalam pembelajaran pendidikan jasmani. *Jurnal SPORTIF: Jurnal Peneliti Pembelajaran*, 5. [https://doi.org/10.29407/js\\_unpgri.v5i2.13186](https://doi.org/10.29407/js_unpgri.v5i2.13186)

Zarwan, Arsil, S. (2011). Majalah ilmiah. *Majalah Ilmiah*, 25(2), 149–158.