

Optimization of Passing Skills Using the Inside of The Foot in Football Games for Students of Mtss Nurul Ulum, Malang Regency

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Abstract

Based on the results of observations at MTSS Nurul Ulum, Malang Regency, researchers still found several students who did not understand the skills of several passing techniques in soccer games, especially in passing techniques using the inside of the foot, so that the game seemed haphazard. This was possibly caused by the students' inability to master passing using the inside of the foot. This study used the classroom action research (CAR) method. Generally speaking, in classroom action research, there are four stages that are commonly passed, namely, (1) planning, (2) action, (3) observation, (4) reflection. From the results of the study, it can be concluded that there is an increase in passing skills using the inside of the foot in students at MTSS Nurul Ulum, Malang Regency.

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1. INTRODUCTION

Football is a team game played by eleven players, including a goalkeeper. It's a very popular game, often played by children, adults, and even adults. Football is essentially a very simple game, involving running, kicking, and heading the ball. The main objective in a football match is to score as many goals as possible in the opponent's goal. Football is a sport prioritized for development. To support football activities, football experts agree that a crucial and influential factor, essential for the game, is basic football techniques, which students must master.

Football is one of the most popular sports across all levels of Indonesian society, from children to adults, especially men. Many men indulge their hobby by playing football. Boys are psychologically more attracted to games that require a variety of movements, as most boys are constantly demonstrating their motor skills in a variety of situations. Football is played by two teams, each consisting of eleven players (Nusufi, 2012).

According to Sudjarwo (2005), there are several basic skills in soccer, such as: stopball (stopping the ball), shooting (kicking the ball towards the goal), passing (passing), heading (heading the ball), and dribbling (dribble). In training to master basic skills, it can be done without friends, for example by using a wall to bounce the ball, or with the ball hanging. Soccer games are dominated by fast passing ball control between players. Fast play is usually supported by good passing quality because it is needed to create the rhythm of the game and control the ball on the field.

Passing is the technique of transferring the ball's momentum from one player to another in a soccer match. Mastering the passing technique is crucial for successful play, whether in attack or defense. Passing in soccer is the technique of passing or moving the ball from one player to another. Therefore, passing techniques must be learned and mastered by all soccer players, regardless of position. Passing ability determines the smoothness of the game. In soccer, there are three types of passing, all of which must be mastered. Because in certain situations, passing techniques also vary: passing with the outside of the foot, passing with the inside of the foot, and passing with the instep or toe.

Based on the results of observations in MTSS Nurul Ulum Malang Regency, researchers still found several students who did not understand the skills of several passing techniques in football, especially the passing technique using the inside of the foot, so that the game seemed haphazard. This was possibly caused by the students' inability to master passing using the inside of the foot.

2. RESEARCH METHOD

This research uses the classroom action research (CAR) method. Broadly speaking, there are four stages that are commonly followed in classroom action research, namely: (1) planning, (2) action, (3) observation, (4) reflection.

3. RESEARCH RESULTS AND DISCUSSION

3.1 Research result

The results of this study are field observations regarding student learning outcomes in soccer learning, especially in passing techniques using the inside of the foot, at MTSS Nurul Ulum, Malang Regency. The results of this study include test and non-test results during the study. The test results are in the form of a knowledge test of soccer game material and a performance test on the skill aspect, while the non-test results are obtained from observations of attitudes on the affective aspect. Physical education learning in soccer games is through practice in the field which is carried out twice a week, namely cycle I and cycle II.

Pre-cycle

The initial conditions of the study were measured from field observations and data from physical education teachers. In the pre-cycle, the condition of students at MTSS Nurul Ulum, Malang Regency, in learning football, especially basic passing techniques using the inside of the foot, was still low. The results of the observation showed that out of 23 students, only 3 students had achieved the KKM score. It is known that the physical education learning process that occurred at MTSS Nurul Ulum, Malang Regency was not optimal, students had not been taught how to properly use basic passing techniques, in addition to the available media being inadequate to support learning. Student participation in participating in physical education learning was still low, seen from the low learning outcomes. Students were not interested in learning that seemed monotonous, namely students were only given a ball and immediately played football without being taught basic football techniques. As a result, football skills, especially passing using the inside of the foot, among students at MTSS Nurul Ulum, Malang Regency were still low, students were only careless in passing.

Based on observations in the research process, it shows that students' initial abilities need effective guidance in achieving the desired learning outcomes in order to show an increase in students' skills in playing soccer using the inside-foot passing technique. Therefore, the researcher felt the need for learning improvement actions, presented systematically in the form of cycles. This learning with real practice was created to

increase students' enthusiasm and motivation to participate in the learning. Before playing this soccer game, students were first taught the basic technique of passing using the inside of the foot first. The teaching technique of passing using the inside of the foot was created with various training models so as to increase students' enthusiasm and enthusiasm for participating in the learning which ultimately would improve student learning outcomes.

The recapitulation of data from observations of pre-cycle passing using the inside of the foot is as follows:

Table 1. Values of the Inside Foot Passing Skill Results in the Pre-Cycle

Criteria	Mark	Number of students	Presented (%)
Very well	80-100	1	4,30%
Good	70-79	2	8,70%
Enough	60-69	8	35,00%
Not enough	50-59	7	30,00%
Less than once	0-49	5	22,00%

As can be seen from the pre-cycle results, only 3 students achieved completion. To determine the average grade for students in terms of inside-foot passing ability, the following calculation can be made:

$$KB = \frac{\text{Number of Students Completed}}{\text{Total Number of Students}} \times 100\%$$

$$KB = 3/23 \times 100\%$$

$$KB = 13\%$$

Thus, in the pre-cycle activities, the average learning completion score of students at MTSS Nurul Ulum Malang Regency was 13%. These results indicate that the average score for passing using the inside of the foot has not yet reached the success indicator and the specified standard, which is 75%. These results also conclude that the ability to pass using the inside of the foot is still low. A new strategy or technique in teaching is needed to be applied to create a better learning process and to improve the quality of passing using the inside of the foot. Therefore, the implementation of direct practice in the field can improve the ability to pass using the inside of the foot in students.

Cycle I

In cycle I, researchers and collaborators carried out PTK activities by carrying out the following preparations and steps:

1. Planning

Based on the pre-cycle results above, the researcher and the physical education teacher used these results as a basis or initial data for conducting the research. Before conducting the research, the researcher and the physical education teacher identified problems experienced by students during the pre-cycle observations. The researcher

then addressed any shortcomings and errors they encountered. Then, they formulated a work pattern for observing students.

Cycle I will be implemented in one meeting. As a teaching tool or guideline for this research, the researcher will prepare a Lesson Implementation Plan (RPP) with soccer material and using soccer games.

2. Action

The learning process takes place in one meeting, lasting 3 x 45 minutes. The steps in the implementation process are as follows:

- a. Starting from the teacher/researcher conditioning the class,
- b. Arranging student lines on the field, praying, taking attendance, apperception, and warming up,
- c. The teacher/researcher explains the learning material on inside foot passing
- d. At the end of the lesson, a passing skills test will be conducted using the inside of the foot using a soccer game including a student observation sheet.

3. Observation

In Cycle I, one meeting was held. This lesson focused on practicing basic passing techniques using the inside of the foot. At the end of the session, a test was administered to determine the students' progress with the training method.

Students were enthusiastic about the training method provided so that students listened carefully to feedback on mistakes made by students, so that there were still students who were not yet able to perform the inside foot passing technique. From the observed aspects and field notes then discussions with the physical education teacher, several things were found that became obstacles to learning in the first cycle, namely students tended to pay less attention when explained about the basic technique of passing using the inside of the foot, in addition to that students were not serious in doing the passing.

4. Reflection (reflection)

In general, the actions taken in cycle I were in accordance with the plan, but the findings of the observation results indicated the need to improve student performance, so that they could be more skilled in performing passing techniques using the inside of the foot. Through reflection and discussion between the researcher and the physical education teacher, each aspect of the assessment will be taught more intensively and effectively in the next cycle. Based on the results of the observation of cycle I, it shows that learning to pass using the inside of the foot through soccer games is not optimal, so research is needed in the next cycle to improve the quality of learning and learning outcomes of passing using the inside of the foot.

From observations and discussions with physical education teachers regarding the implementation of passing lessons using the inside of the foot through soccer games, there are several notes:

- a. The foot's contact with the ball did not hit the center of the ball, so the ball deviated from the target.
- b. Students still pass with the tips of their toes, so that the ball they kick bounces.

When passing the foot, the focus is not on the side of the ball, so the direction of the ball is not accurate to the target.

Based on cycle I, there was an improvement in the learning outcomes of passing using the inside of the foot compared to before the intervention, although it did not reach the expected target. Therefore, more effective planning and action are needed in cycle II.

Cycle II

Cycle II was conducted based on the reflections from the previous cycle. In addition to developing the inside-foot passing method in soccer, the researchers also developed a revised plan based on the reflections from Cycle I to achieve better results. The explanation of Cycle II is as follows:

1. Planning

Based on the results obtained from cycle I, where the results of the passing skills using the inside of the foot obtained by students have not reached the desired target. Therefore, to overcome this problem, it is necessary to hold this cycle II. Seeing the problems experienced by students in cycle I, the design of the learning plan for cycle II is as follows: the first step, together with the physical education teacher before the action is carried out, includes identifying data on the results of the passing skills using the inside of the foot of students, formulating the problems faced in learning with the following steps:

- a. Preparing a lesson
- b. Prepare materials and teaching aids
- c. Explain the trees learning about passing using the inside of the foot.
- d. Explain the specific learning objectives to be achieved
- e. Ask students to pass using the inside of the foot according to the training plan.
- f. Observe the movement of the feet when passing using the inside of the foot.

2. Action

The researcher implemented the actions based on the lesson plan during the implementation phase. The study was conducted on April 8, 2022, and lasted for three lesson hours. During this session, the researcher provided a preliminary understanding before the lesson began and explained the results and shortcomings of the inside-foot passing technique in the cycle.

The researchers then guided the students in prayer, followed by a warm-up on the field. The activities in this meeting focused on improving techniques and movements deemed inadequate. This included practicing basic inside-foot passing techniques using media, followed by training on inside-foot passing through soccer games.

3. Observation

This observation stage was similar to the previous one, where the researcher was assisted by the physical education teacher in the teaching and learning process. The lesson began with the researcher first preparing the tools and teaching materials. The researcher explained that at the end of the lesson there would be a scoring session on passing techniques using the inside of the foot through a soccer game. Then the researcher appointed a class leader to lead the warm-up and stretching. A weakness in this study was that there were still students who arrived late to the lesson.

4. Reflection

The actions in Cycle II positively impacted the learning process of passing skills using the inside of the foot. The practice phase of providing soccer games with fundamental improvements, tailored to student needs, positively impacted the teaching and learning environment and ultimately improved student learning outcomes in passing techniques using the inside of the foot.

Based on the classroom action research procedure, designed and implemented systematically and planned, this study can collect research data which is important information from the research results. The application of basic passing technique

training using the inside of the foot through soccer games has a positive impact on improving students' skills in performing passing techniques. From the research data, it shows that all students in grade VII at MTSS Nurul Ulum, Malang Regency experienced an increase in grades and an increase in the percentage of completion, which the researcher presents in the following table:

Table 2 Improvement in Students' Inside Foot Passing Results Per Cycle

No.	Level of Learning	Class Average	Decisiveness
1	Pre Cycle	58	3
2	Cycle I	70	13
3	Cycle II	78	19

At the beginning of the study, it was discovered that students' skills in passing using the inside of the foot were not yet good. Based on observations of inside-foot passing techniques during the pre-cycle, the average score was 58, with 3 students completing the technique and 20 students not completing it. This was due to several factors, including many students still using their fingertips to pass, and kicking the ball far from the side with their supporting foot.

Although it has not shown satisfactory results, in cycle I there has been an improvement in the inside foot passing technique, namely an average score of 70 with details of 13 students having completed it, and 10 others not yet completed it. The improvement in the inside foot passing technique in cycle II showed quite good changes, this can be seen from the average results of 78 students, with details of 19 students having been declared completed and 4 others not yet completed. Based on reflection from the analysis of the collected data, the results of classroom action research show that at the end of the cycle there was an increase in the quality of learning passing using the inside foot.

The research conducted in Cycle I did not produce satisfactory results in improving students' skills in passing using the inside of the foot. Obstacles that emerged during this learning process included students' lack of understanding of the correct technique for passing using the inside of the foot, and a lack of commitment to the learning process. Although the results were not satisfactory, Cycle I did show improvement compared to the results from the pre-cycle.

Through discussions with the physical education teacher to address issues encountered in Cycle I, the learning process in Cycle II focused more on implementing soccer games to improve students' passing skills using the inside of the foot. Providing more varied motivation and exercises created enthusiasm and a more conducive learning environment. Student progress was demonstrated by increased enthusiasm for passing using the inside of the foot.

The improvement of skills in cycle II showed quite good changes, where the average score of students was 78 with details of 19 students having completed and 4 not yet completed. The improvement of skills in doing inside foot passing when differentiated between male and female students, it turns out that male students adapt faster in learning, supporting factors for implementing movements in the

components of courage and confidence and male students play football more often. While in female students the level of mastery of the inside foot passing technique is not yet so mastered but the sincerity and desire to try are so great and want to be able to do the passing technique using the inside of the foot.

3.2 DISCUSSION

Pre-cycle

During the implementation of this initial activity, researchers conducted observations on the physical education learning process. From the observation, it was found that the basic football technique skills, especially passing using the inside of the foot in class VII MTSS Nurul Ulum Malang Regency, were still low. In implementing the passing technique using the inside of the foot, students appeared to be less able to carry it out with the correct technique, most students were still careless in executing inside-foot passes. The skill of performing inside-foot passes was still low, for example, in executing passes, many students still passed off target and did not go to their teammates.

From the above explanation, it can be concluded that passing skills using the inside of the foot are still low, therefore researchers are trying to improve passing skills using the inside of the foot in football games.

Cycle I

Based on the results of the first cycle of learning, many students still haven't successfully executed the basic inside-foot passing technique correctly. Students are still unfamiliar with the game of soccer. They often pass using the inside of their feet haphazardly.

Learning outcomes are taken from 3 aspects, namely as follows:

a. Aspects of Knowledge

The learning outcomes of the knowledge aspect in physical education learning in football games through football games can be seen as follows:

Table 3 Learning Outcomes of Knowledge Aspect of Cycle I

Number of students	MOH	The highest score	Lowest Value	Rate-rate	Completed	Not yet finished
23	7 5	100	53	75	15	8

From the results of learning the knowledge aspect in physical education learning in soccer games, 15 students or 65% completed the game, while 8 students or 35% did not complete it.

b. Aspects of Attitude

The learning outcomes of the attitude aspect in physical education learning in football games through the triangular goal game can be seen as follows:

Table 4 Learning Outcomes of Attitude Aspects of Cycle I

Number of Students	MOH	The highest score	Lowest Value	Rate-rate	Completed	Not yet finished
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23	5	100	73	78	17	6
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Based on the learning outcomes for the attitude aspect of physical education learning in soccer, 17 students (74%) completed the lesson, while 6 students (26%) did not. The reason for the incompleteness of the attitude aspect in cycle I was that some students lacked discipline during the lesson.

c. Skill Aspect

The learning outcomes of the skills aspect in physical education learning in soccer games through the triangular goal game can be seen as follows:

Table 5 Learning Outcomes of Skills Aspects in Cycle I

Number of Students	MOH	The highest score	Lowest Value	Rate-rate	Completed	Not yet finished
23	75	83	42	70	13	10

From the learning results of the skills aspect in physical education learning in soccer games, 13 students or 57% completed the game, while 10 students or 43% did not complete it. Students who did not complete the skills aspect in cycle I were due to some students still being careless in passing using the inside of the foot during soccer games. Based on the results of cycle I, it can be concluded that the level of completion of the skills aspect is still low because it has not met the minimum learning completion criteria, which is still below 75%.

d. Recapitulation of Learning Results for Cycle I

The results of physical education learning in football learning for students at MTSS Nurul Ulum, Malang Regency, are as follows:

Table 6 Learning Results of Cycle I

Number of Students	MOH	The highest score	Lowest Value	Rate-rate	Completed	Not yet finished
23	75	82	62	74	15	8

The results of the first cycle of learning, as presented in the table, show that 15 students (65%) successfully completed the basic passing technique using the inside of the foot in soccer, while 8 students (35%) failed to complete the task. The reason for this was that each aspect of the learning cycle was still low.

Cycle II

Following the learning in Cycle I, Cycle II focused more on soccer. The learning outcomes and students' soccer skills improved. Many students achieved scores above the minimum passing grade.

The learning outcomes are taken from 3 aspects, as follows:

a. Aspects of Knowledge

The learning outcomes of the knowledge aspect in physical education learning in soccer games can be seen as follows:

Table 7 Learning Outcomes of Knowledge Aspect of Cycle II

Number of Students	MOH	The highest score	Lowest Value	Rata Rata	Completed	Not yet finished
23	75	100	73	84	21	4

Based on the learning outcomes of the knowledge aspect in physical education learning in soccer, 21 students (91%) completed the learning, while 2 students (9%) did not complete it. Based on the results of cycle II, it was concluded that the level of completion of the attitude aspect was good, with the number of students completing it increasing from cycle I.

b. Aspects of Attitude

The learning outcomes of aspects of physical education learning in football games can be seen as follows:

Table 8 Learning Outcomes of Attitude Aspects of Cycle II.

Number of Students	MOH	The highest score	Lowest Value	Rate-rate	Completed	Not finished yet
23	75	91	64	82	20	3

Based on the learning outcomes for the attitude aspect of physical education learning in soccer, 20 students (87%) completed the activity, while 3 students (13%) did not. Students who did not complete the attitude aspect in cycle II were due to a lack of discipline during the learning process. Based on the results of cycle II, it was concluded that the level of completion of the attitude aspect was good.

c. Skill Aspect

The learning outcomes of the skills aspect in physical education learning in soccer games can be seen as follows:

Table 9 Learning Outcomes of Skills Aspects in Cycle II.

Number of students	MOH	The highest score	Lowest Value	Rate-rate	Completed	Not Yet Sprout
23	75	92	50	78	19	4

From the learning outcomes of the skills aspect in physical education learning in soccer games, 19 students or 83% completed the skills, while 4 students or 17% did not complete them. Students who did not complete the skills aspect in cycle II were because some students were still not optimal in performing inside foot passes during soccer games. Based on the results of cycle II, it can be concluded that there was an increase from cycle I. The average value in cycle II also increased to 78%.

Recapitulation of Learning Results for Cycle II

The results of physical education learning in football learning for students at MTSS Nurul Ulum, Malang Regency, are as follows:

Table 10 Learning Outcomes of Cycle II

Number of Students	MOH	The highest score	Lowest Value	Rate-rate	Completed	Not yet finished
23	75	91	71	82	22	1

The results of the second cycle, as shown in the table, indicate that students' success rate in performing basic passing techniques using the inside of the foot in soccer has increased. Twenty-two students, or 96%, completed the task, while one student, or 4%, failed. The average score for the second cycle also increased to 82% from 74% in the first cycle.

Learning Completion Cycle I and Cycle II

The classroom action research conducted in physical education lessons in soccer was able to improve learning outcomes and enhance student learning outcomes during the lesson. To determine this improvement, the researchers collaborated with the physical education teacher to observe written and performance tests at the end of the physical education lesson in soccer.

Table 11 Learning Completion Results for Each Aspect in Cycle I and Cycle II

As	Cycle I			Cycle II		
	K	A	P	K	A	P
Completed	15	17	13	21	20	19
Presentation	65%	74%	57%	91%	87%	83%

The completion of student learning outcomes in each cycle was averaged across cognitive, affective, and psychomotor aspects. The completion of cognitive learning in cycle I was 65%, and in cycle II it was 91%. The completion of effective learning in cycle I was 74%, and in cycle II it was 87%. The completion of psychomotor learning in cycle I was 57%, and in cycle II it was 83%.



Figure 1 Diagram of Learning Completion for Each Aspect in Cycle I and Cycle II

Based on the learning outcome completion diagram in cycles I and II, it shows an increase in each aspect. The cognitive learning completion in cycle I was 65%, and in cycle II it was 91%. The affective learning completion in cycle I was 74%, and in cycle II it was 87%. The psychomotor learning completion in cycle I was 57%, and in cycle II it was 83%.

Table 12 Learning Outcomes of Cycle I and Cycle II

Information	Cycle I	Cycle II	Improvement
Completed	15	22	7
Presentation	65%	96%	30%

The results of physical education learning in soccer in cycle I were 15 students, or 65%, completing the lesson. In cycle II, 22 students, or 96%, completed the lesson. The percentage increase in physical education learning outcomes in soccer from cycle I to cycle II was 30%, or an increase of 7 students.



Figure 2 Diagram of the increase in the completion of learning outcomes in cycle I and cycle II

The increase in physical education learning outcomes in soccer games from cycle I to cycle II for MTSS Nurul Ulum students in Malang Regency cannot be separated from the efforts of researchers and teachers in creating innovative learning.

4. CONCLUSION

Based on the research results and discussions that have been described, it can be concluded that there is an increase in passing skills in soccer games using the inside of the foot in MTSS Nurul Ulum Malang Regency students. The increase in inside-foot passing skills can be seen from the scores in cycles I to II. In cycle I the completeness score was 56.5%, and in cycle II it became 83%. The average score for inside-foot passing skills also increased, namely in cycle I was 70, in cycle II it became 78. These data show an increase in inside-foot passing skills from pre-cycle to cycle two.

Based on the research results above, it can be concluded that the research has been successful, according to the minimum completion criteria that have been set, and in accordance with the learning objectives, namely improving passing skills using the inside of the foot of students at MTSS Nurul Ulum, Malang Regency.

5. BIBLIOGRAPHY

- Ahmad, F. (2020). Model Latihan *Smash* Bulutangkis Untuk Pemula Usia 8-10 Tahun. *Jurnal Olympia*,2(1),15-21. <https://doi.org/1033557/jurnalolympia.v2i1.883>
- Doine.(2018). Meningkatkan Keterampilan Pukulan *Drived* dalam Permainan Bulutangkis dengan perbaikan kekuatan genggam tangan (Preprint).INA-Rxiv, [https //doi.org/1031227/gkyz](https://doi.org/1031227/gkyz).

- Welianto, A. (2020). Sejarah Bulu Tangkis. In Kompas (p. 1). <https://www.kompas.com/skola/read/2020/03/25/120000969/sejarah-bulutangkis?page=all>
- Welianto, A. (2020). Sejarah Bulu Tangkis. In Kompas (p. 1). <https://www.kompas.com/skola/read/2020/03/25/120000969/sejarah-bulutangkis?page=all>
- Fatih, M., & Aydos, L. (2017). The Effect of Shadow Badminton Trainings on Some the Motoric Features of Badminton Players. 11–28.
- Zulpikar Ilham. (2021) Pengembangan Variasi Latihan Footwork Bulu Tangkis Pada Ekstrakurikuler SMA. <http://journal.unucirebon.ac.id/index.php/ijpess>
- Ardo Yulpiko Putra & M Hasahatan Lubis. (2024). Pengaruh Metode Latihan Foorwork dan Shadow Terhadap Kelincagan Pemain Bulutangkis. *Jurnal Pendidikan Jasmani, Kesehatan, dan Rekreasi*
- Hamid, A., & Aminuddin, M. (2019). Pengaruh Latihan Footwork terhadap Agility pada Pemain Bulutangkis PBSI Tanah Laut Usia 12-15. *Multilateral: Jurnal Pendidikan Jasmani dan Olahraga*, 18(1). ISSN: 1412-3428.
- Hidayat, T., Munandar, R. A., Pratama, S. A., & Susila, L. (2023). *Buku Ajar Bulu Tangkis Dasar*. Penerbit NEM.
- Islamiah, S., & Sepdanius, E. (2019). Pengaruh Latihan Footwork dan Latihan Shadow terhadap Agility pada Atlet Putra Persatuan Bulutangkis ILLVERD. *Jurnal Stamina*, 2(10), 54-64. ISSN 2655-1802.
- Muthiarani, A. (2017). Pengaruh Latihan Shadow Menggunakan Langkah Berurutan dan Langkah Bersilangan Terhadap Kelincahan Footwork Atlet Bulutangkis PB. *Wiratama Jaya Yogyakarta. Pend. Kepelatihan Olahraga-S1*, 1(3).
- Muthiarani, A., Lismadiana, L., & Yuniana, R. (2021). The Effect Of Shadow Training Using Consecutive Steps And Cross Steps On The Agility Of The Footwork Of Badminton Athletes. *Jurnal Keolahragaan*, 9(1), 108-117. ISSN 2339-0662.
- Sepdanius, A. Rifki, M, S. Komaini, A. (2019). *Tes dan Pengukuran Olahraga*. Depok: PT. Raja Grafindo Persada.
- Sugiyono. (2018). *Metode Penelitian Kualitatif, Kuantitatif dan R&D*. Bandung: ALFABETA. ISBN : 979-8433-64-0.
- Wibowo, F. P. A., Novita, A. Y., Denatara, E. T., & Candra, J. (2022). Influence of Shadow and Shuttle Run Exercises on Badminton Sports Footwork Aged 13-15 Years at PB Jaya Raya Jakarta. ISSN: 2775-3808.