



## The Effect of Shuttle Run Training on the Results of Dribbling Agility in Football Athletes

**Yuka Firdaus Kurniawan**<sup>\*a,b,c,d,e</sup>, **Herri Yusfi**<sup>2a,b,c,d</sup>, **Wahyu Indra Bayu**<sup>3a,b,c,d</sup>

Pendidikan Jasmani dan Kesehatan, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Sriwijaya, Jl. Masjid Al Gazali, Bukit Lama, Kec. Ilir Bar. I, Kota Palembang, Sumatera Selatan, 30128, Indonesia

e-mail: [yukafirdausk7@gmail.com](mailto:yukafirdausk7@gmail.com), [herriyusfi@fkip.unsri.ac.id](mailto:herriyusfi@fkip.unsri.ac.id), [wahyu.indra@fkip.unsri.ac.id](mailto:wahyu.indra@fkip.unsri.ac.id)

### Abstract

The low understanding of techniques in soccer games includes dribbling technique, which refers to ball control and maneuvering using the feet. The aim of this research is to determine the influence of Shuttle Run training on the agility of dribbling skills in soccer athletes. The research design employed is a quasi-experimental study. The population of the study consists of 30 athletes from Sumber Harta Musi Rawas Soccer Club, aged between 17 and 20 years. The sample for this study is comprised of all 30 athletes from Sumber Harta Musi Rawas Soccer Club. The data analysis technique used is the "t-test" to obtain the results, with a critical value of 1.70 derived from the T-distribution table with degrees of freedom (df) of 39. The conclusion drawn from the study is that Shuttle Run training has a significant impact on improving dribbling agility in soccer games for the athletes of Sumber Harta Musi Rawas Soccer Club. The research findings also indicate that Shuttle Run training is an effective method for enhancing agility.

**Keywords:** The Influence; Shuttle Run; Training on Dribbling Agility; Soccer

---

corresponding author:

**Artikel Info:**

Submitted: 27/12/2022

Revised: 01/01/2023

Accepted: 02/05/2023

Published: 17/05/2023

**How to Cite:** Kurniawan, Y, F., Yusfi, H., Bayu, W, I. (2023). The Effect of Shuttle Run Training on the Results of Dribbling Agility in Football Athletes. *Journal Coaching Education Sports*, 4(1), 1-12. <https://doi.org/10.31599/jces.v4i1.1791>

**Author's Contribution:** a) Research Design; b) Data Collection; c) Statistical Analysis; d) Manuscript Preparation; e) Fundraising



OPEN ACCESS

Journal Coaching Education Sports is licensed under a [Creatives Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

## **A. Introduction**

The sport of soccer is widely popular among the majority of the global population, as evident from the enthusiasm of people who eagerly watch every soccer match. This is especially true when renowned teams are competing. (Witono, 2017). Soccer is one of the outdoor sports played on a field or pitch by two teams. They face each other with the objective of scoring a goal by putting the ball into the opposing team's net.

The game of soccer requires various techniques, one of which is the dribbling technique or controlling the ball with the feet. According to (Taufik & Gaos, 2019) Dribbling is the ability to control the ball while moving from one place to another, which is useful for avoiding opponents and controlling the tempo of the game. Dribbling can be defined as the art of using different parts of the foot to continuously touch or roll the ball on the ground while running. Dribbling is a fundamental technique that is highly important and should be mastered by every soccer player (Ardianda & Arwandi, 2018), While according (Ilham, 2014) Dribbling is a technique used to push the ball towards the opponent's area or towards the goal in order to gain control of the game and create a scoring opportunity. Based on the understanding from several studies, it can be concluded that dribbling is the ability to

control the ball while moving from one place to another, with the aim of evading opponents and controlling the game's tempo. Dribbling can be seen as the art of using different parts of the foot to continuously touch or roll the ball on the ground while running. This dribbling ability is a fundamental technique that is highly important and must be mastered by every soccer player, as it aims to push the ball towards the opponent's area or the goal to create a scoring opportunity in the game of soccer. Generally, dribbling is performed in three ways: using the inside of the foot, using the outside of the foot, and using the sole of the foot.

Dribbling skills are essential for a soccer player to handle specific situations and match conditions that demand agility in order to control the ball and avoid potential collisions (Nurkadri & Kholil, 2021). Dribbling can be trained both individually and in group settings, with or without the ball. There are several training methods to enhance dribbling skills, including shuttle runs, squat thrusts, hurdle sprints, and zig-zag runs. Training methods are a means to improve the performance of athletes in sports (Ni Putu Anggreni et al., 2022).

The factors that influence agility are biomotor components, body type, age, gender, body weight, and fatigue (Sahabuddin, 2020). Agility is also necessary in dribbling past opponents while

attacking to create a goal, which ultimately leads to victory (Arifin & Warni, 2019). Various forms of agility training include shuttle runs, zig-zag runs, wind sprints, squat thrusts, dot drills, tree corner drills, down the line drills, grass drills, starting and stopping runs. Among the various forms of agility training, the researcher intends to use the shuttle run method. Shuttle run is a training method that involves running back and forth to measure an individual's agility in changing direction and body position while performing movements (Wibowo et al., 2022). Furthermore, the shuttle run is chosen based on several considerations, including factors related to equipment, instruments, funding, data availability, existing references, and practical usability for the consumers (users) (Wardani & Irawadi, 2020).

Agility is closely related to speed and flexibility; without both elements, a person cannot move swiftly (Wahyuni, 2020). The factor of balance also influences a person's agility. According to (Arifin & Warni, 2019) Agility is a form of skilled movement that requires high-speed actions to become explosive movements. An athlete or player with good agility can perform movements more effectively and efficiently. Agility is divided into two types: general agility and specific agility. General agility refers to a person's agility in performing sports in

general and facing various life situations. On the other hand, specific agility is the agility required in a particular sports discipline. This means that the required agility has specific characteristics according to the demands of the sports discipline being pursued.

According to (Arifin & Warni, 2019) Agility is an essential attribute because a soccer player must be able to carry or dribble the ball swiftly in order to prevent it from being taken by opponents. According to (Pasaribu, 2020) Agility is the ability to quickly change direction or body position while coordinating with other movements. Agility is the capability to rapidly alter direction and body position without losing balance and maintaining awareness of body positioning (Sovia wahyuni, 2020). Agility is also a prerequisite for learning and improving movement skills and sports techniques, especially movements that require motor coordination (Daryanto & Hidayat, 2015). Agility is a combination of several components, such as balance, strength, speed, and coordination of movements. Therefore, agility is highly valued in various sports disciplines (Satriaputra & Widodo, 2019). Agility is crucial for sports that require high adaptability to changing situations during a match. Agility is determined by factors such as reaction speed, the ability to handle

situations, and sudden movement control. Agility training significantly influences dribbling techniques, whether it is moving straight forward, facing opponents, or bypassing them. (Ketut et al., 2021) Agility is one of the essential elements of the body's biomotor components that allows for quickly changing body direction. The directions referred to are forward, backward, right, and left.

Based on the opinions of several experts mentioned above, agility is the ability to quickly and accurately change body direction and position while in motion, without losing balance and maintaining awareness of one's body position.

According (Sukirno, 2015) Training is a systematic process that is repeated over time, gradually increasing the training load. According to (Mlysidayu & Kurnawan, 2015) The definition of training, derived from the word "training," is a process of refining athletic abilities that involves theoretical and practical content, using methods and implementation rules with a scientific approach, employing planned and organized training principles, so that training goals can be achieved in a timely manner. According to (Siti Aminah, Syamsuramel, Sukirno, 2018) Training is a series of physical, technical, tactical, and mental activities aimed at achieving a goal, which is performance. Based on the opinions of experts mentioned above, it can

be concluded that training is a form of skill refinement carried out repeatedly with increasing training loads to achieve performance.

Based on interviews and observations conducted with the coach of Sumber Harta Musi Rawas Football Club, training sessions in the club are held three times a week, specifically on Tuesdays, Thursdays, and Saturdays. The average age of the athletes is between 17 and 20 years old, with a total of 30 participants. During each training session, the focus is mainly on game strategy, resulting in a lack of emphasis on technical components, particularly dribbling skills. Football is one of the most popular activities among children, as evidenced by their enthusiasm to participate in football training at Sumber Harta Club. However, not all participants possess sufficient basic skills, especially in dribbling techniques. Furthermore, the assessment of dribbling skills is acknowledged to be infrequent, making it difficult to gauge the participants' proficiency in dribbling.

The participants of Sumber Harta Musi Rawas Club also have limited knowledge regarding the factors influencing successful dribbling. Based on observations, only 10% or 3 students are able to perform dribbling well without being easily dispossessed by opponents. Additionally, 40% or 12 students can perform dribbling relatively

well but still struggle to fully control the ball, making it susceptible to being taken by opponents. Furthermore, 50% or 15 students have not yet mastered dribbling and are easily dispossessed by opponents. Therefore, to achieve the desired targets, maximum effort is required to develop the players' dribbling skills by providing an understanding of the factors influencing dribbling techniques.

The observations revealed several factors affecting dribbling skills among the children of Sumber Harta Musi Rawas Club, with one of them being agility. The children's agility when dribbling the ball is still considered rigid and slow. Agility is crucial during dribbling as it allows players to evade opponents while maintaining ball control. The athletes of Sumber Harta Musi Rawas Football Club have yet to effectively evade opponents, resulting in frequent ball dispossession. To address this issue, the researcher aims to propose a solution by implementing the shuttle run training method to improve agility and dribbling performance among the athletes.

Football is a team game played with each team consisting of 11 players and is usually played in two halves (2 x 45 minutes) with a 15-minute break between the two halves (Muhajir, 2021). Football is also defined as a game that aims to score goals by putting the ball into the opponent's

goal and defending one's own goal to prevent the opponent from scoring (Wiradihardja & Syarifudin, 2016). Football is one of the sports disciplines that requires individuals to have high skills in the game. The movements involved in the game are highly complex. To achieve success, these components must be trained and developed to their maximum potential (Effendi, 2017). Football is a sport that is widely loved and enjoyed by people of all ages, genders, and backgrounds (Atiq, 2012). According (Muhamad Halim, 2020) Football is a sport that can be played in a simple manner with just a field, a spacious yard, a dry field, and a ball. The mastered techniques include kicking and passing, while to become a skilled football player, one must be able to master the techniques of passing and ball control.

Based on the description above, it can be concluded that football is a simple team game that can be played by people of all ages, genders, and backgrounds. It is played in two halves, and the game requires good teamwork with the aim of scoring as many goals as possible against the opposing team. Based on previous research conducted by (Alfajri et al., n.d.) with the title "The Effect of Shuttle Run Training on Dribbling Agility in the Extracurricular Football Activity of SMK Az-Zawiyah Tanjung Batu," presents the results of data

processing and analysis using tests for data normality and hypothesis testing with the t-test formula. The study concludes that Shuttle Run training has an influence on the results of dribbling agility. Furthermore, the research conducted by (Malasari, 2019) with the title "The Effect of Shuttle Run and Zig-Zag Run Training on the Agility of Taekwondo Athletes," the method used in this research is a quasi-experiment with a pre-test and post-test design control group.

(Wardani & Irawadi, 2020) with the title "The Difference in the Effect of Shuttle Run Agility Training and Lateral Run Training on the Dribbling Ability of U-14 Students in SSB Putra Wijaya FC Padang," this research uses t-test. This means that both shuttle run and lateral run agility training have a significant effect on improving the dribbling ability of SSB Putra Wijaya FC Padang students. Therefore, lateral run training is more significant compared to shuttle run training.

Dribbling is a supporting factor for successfully mastering the technique of soccer gameplay. Dribbling is a technique of controlling the ball by moving it from one place to another or approaching the opponent's goal to prevent the ball from being intercepted by the opponent. (Wiradihardja & Syarifudin, 2016). According (Ilham, 2014) Dribbling is the technique of moving the ball into the opponent's area or goal area with the aim of

controlling the ball and the game to score goals and win the match. Additionally, according to (Maryono et al., 2017) Dribbling is one of the important techniques or skills that must be mastered, where players have to move the ball forward, sideways, and backward. According to (Luxbacher, 2014) Dribbling is one of the fundamental techniques in playing soccer that possesses its own artistic element and allure when compared to other basic techniques. Dribbling is the technique of maintaining control of the ball while facing opponents or advancing, using the inside, outside, back, and sole of the foot to control and dribble the ball. (Aprianova & Hariadi, 2016). Based on the description above, the researcher aims to conduct a study titled "The Effect of Shuttle Run Training on Dribbling Agility Performance in Athletes of Sumber Harta Musi Rawas Football Club".

## **B. Method**

This type of research is a quasi-experiment aimed at obtaining information that is an approximation to the information that can be obtained from an actual experiment in situations where it is not feasible to control or manipulate all relevant variables (Sugiyono, 2019). This research aims to determine the effect of shuttle run training on dribbling performance in athletes from Sumber Harta Musi Rawas Football Club.



3.253. The result of the data normality test is 0.023.

Based on the results of the pretest dribbling conducted by the players of Sumber Harta Musi Rawas Football Club with a sample size of 30, the highest data obtained was 15, the lowest data was 6, the mean was 10.50, and the standard deviation was 2.403.

After confirming that the data follows a normal distribution based on the normality test, a hypothesis test was conducted to further examine the theoretical assumptions. The following are the results of the hypothesis test using the t-test or hypothesis test.

**Table 1. Paired t-test**

Variable	t-count	Sig.	Level of Significant
<i>Pre-test &amp; Post-Test</i>	0,000	0,000	0,05
N: 30			

Source: SPSS 26

The calculated "t-test" results yielded a value, while the critical value (T-table) obtained from the T-distribution table with degrees of freedom (df) = 39 and a confidence level of 95% ( $\alpha = 0.05$ ) is recorded as 1.70. The standard speculation testing recognizes H1 if T-calculated > T-table (1- $\alpha$ ) and rejects H0 if T-calculated < T-table (1- $\alpha$ ). However, in the SPSS calculation, H1 is acknowledged if the significance value (2-tailed) < 0.05, because the calculated t-value (0.000) < T-table (1.70). There is a significant difference between the posttest and pretest. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted. The articulation of H1 is "There is an Influence of Shuttle Run Training on Dribbling Agility Results in Football Athletes."

### **Discussion**

Based on the research results, it is shown that shuttle run training can be used to improve dribbling agility in Sumber Harta Musi Rawas football club. This can be observed from the increase in pretest and posttest scores after undergoing shuttle run training. The training was conducted regularly and systematically for a duration of 6 weeks, with 3 repetitions per week. This is in line with Harsono (2017: 14), where the aim of a 6-week training is to achieve physiological and psychological regeneration of the central nervous system (CNS) before the start of the training season in the following year. The purpose of this study was to enhance dribbling agility through shuttle run training. Data collection was carried out on 30 players from Sumber Harta Musi Rawas football club. According



to (Pasaribu, 2020) Shuttle run is a form of training that aims to improve agility by rapidly changing direction. According to (Satriaputra & Widodo, 2019) Agility is the ability of an individual to change direction in specific positions within an arena. Therefore, shuttle run is a test to measure foot agility, but in the shuttle run test, the testee also has to move a beam over a distance of 4 x 10 meters, requiring quick agility to pick up the beam within a fast time. The purpose of the shuttle run is to train the body to change direction in a straight motion. The students run back and forth as quickly as possible from one point to another for a total of 10 times. Each time they reach a point, they must quickly turn their body around to run towards the next point (Indrayana & Hasibuan, 2021). Based on the opinions above, it can be concluded that shuttle run training is a physical exercise used to improve agility. The research results show that shuttle run training provided to Sumber Harta Musi Rawas soccer club has a positive impact on improving soccer dribbling. Specifically, the improvement in dribbling is tailored to the quality and support needed by soccer players. Soccer is the only type of ball game sport played with the feet by two teams, each consisting of eleven players who aim to win by scoring goals and defending their own goal to prevent the opposing team from

scoring, all for the sake of victory (A et al., 2020). Dribbling ability fundamentally requires agile basic movements and the ability to control the ball effectively. Dribbling is a technique used to maintain possession of the ball when facing opponents or advancing, utilizing various parts of the foot such as the inside, outside, back, and sole to control and maneuver the ball (Aprianova & Hariadi, 2016).

Based on previous research conducted by (Alfajri et al., n.d.) With the title "The Effect of Shuttle Run Training on Dribbling Agility in Extracurricular Soccer Activities at SMK Az-Zawiyah Tanjung Batu," the study involved data processing and analysis using tests for data normality and hypothesis testing with the t-test formula. The results indicated that Shuttle Run training has an impact on dribbling agility. This conclusion was drawn from the analysis of the data using the t-test formula, where the calculated t-value was greater than the tabulated t-value ( $30.5 > 1.70$ ) at a 95% confidence level ( $\alpha = 0.05$ ) with a sample size of 30. Thus, the proposed hypothesis was accepted, indicating that Shuttle Run training has an influence on dribbling agility. This study serves as a reference for conducting similar research in remote areas. The measured results from the "t-test" calculation showed that the obtained t-value was significantly different

from the tabulated t-value of 1.70, based on the T-distribution table with degrees of freedom (df) of 39 and a 95% confidence level (= 0.05). The testing standard accepts H1 if the calculated t-value is greater than the tabulated t-value (1-), and rejects H0 if the calculated t-value is less than the tabulated t-value (1-). In the SPSS analysis, H1 is accepted if the significance value (2-tailed) is less than (0.05), as in this case, the calculated t-value (0.000) is less than the tabulated t-value (1.70), indicating a significant difference between the post-test and pre-test. By rejecting the H0 theory using this method, the H1 speculation is accepted, and the articulation of H1 is "There is an Effect of Shuttle Run Training on Dribbling Agility in the Athletes of Sumber Harta Musi Rawas Football Club."

#### **D. Conclusion**

Based on the research findings and data analysis above, it can be concluded that shuttle run training has an influence on improving dribbling agility in soccer games at Sumber Harta Musi Rawas football club. The results of the study also indicate that shuttle run training is effective in enhancing agility.

#### **E. Acknowledgements**

I would like to express my gratitude to my supervisors, Mr. Herri Yusfi and Mr. Wahyu Indra Bayu, for their guidance and

support in completing this article successfully.

#### **F. Conflict of Interest**

There is no conflict of interest in this research.

#### **Reference**

- A, P., Munar, H., & Pasaribu, A. M. N. (2020). Pengaruh Latihan Tabata Terhadap Kemampuan Vo2Max Atlet Sepakbola PS.Tungkal Ulu U-21. *Journal Coaching Education Sports*, 1(1), 25–34. <https://doi.org/10.31599/jces.v1i1.83>
- Alfajri, M. A., Syafaruddin, & Victorian, A. R. (n.d.). Pengaruh Latihan Shuttle Run Terhadap Kelincahan Menggiring Bola. *Sains Olahraga : Jurnal Ilmiah Ilmu Keolahragaan*, 5(2), 2021. <https://doi.org/10.24114/so.v5i2.25728>
- Aprianova, F., & Hariadi, I. (2016). Metode Drill Untuk Meningkatkan Teknik Dasar Menggiring Bola ( Dribbling ) Dalam Permainan Sepakbola Pada Siswa Sekolah Sepakbola Putra Zodiac Kabupaten Bojonegoro Usia 13-15 Tahun. *Jurnal Kepeleatihan Olahraga*, 1(1), 63–74.
- Ardianda, E., & Arwandi, J. (2018). Latihan Zig-Zag Run dan Latihan Shuttle Run Berpengaruh Terhadap Kemampuan Dribbling Sepakbola. *Jurnal Performa Olahraga*, 3(1), 32–41. <https://doi.org/10.24036/jpo16019>
- Arifin, R., & Warni, H. (2019). Model Latihan Kelincahan Sepakbola. *Multilateral Jurnal Pendidikan Jasmani dan Olahraga*, 17(2). <https://doi.org/10.20527/multilatera1.v17i2.5702>
- Atiq, A. (2012). Tingkat Keterampilan Tehnik Dasar Sepakbola LPI SMP 3 Pontianak Tahun 2012. *Jurnal*

- Media Ilmu Keolahragaan Indonesia*, 2(1), 34–36.
- Daryanto, Z. P., & Hidayat, K. (2015). Pengaruh Latihan Kelincahan Terhadap Kemampuan Menggiring Bola. *Jurnal Pendidikan Olahraga*, 4(12), 201–212.
- Effendi, A. R. (2017). Meningkatkan Keterampilan Passing Menggunakan Kaki Bagian Dalam Pada Permainan Sepak Bola Menggunakan Metode Drill. *Jurnal Pendidikan Olahraga*, 6(2), 65–74.
- Ilham, Z. (2014). *Modul Mata Kuliah Sepak Bola*.
- Indrayana, B., & Hasibuan, M. U. Z. (2021). Tinjauan Kondisi Fisik (Vo<sub>2</sub>max) Pada Komunitas Pencinta Basket Paal 5 Jambi. *Journal Coaching Education Sports*, 2(2), 195–204. <https://doi.org/10.31599/jces.v2i2.737>
- Ketut, S. I., Santika, S. I. G. P. N. A., & Dei Agustinus. (2021). Pengaruh Pelatihan Circuit Training Terhadap Kelincahan Atlet Sepakbola. *Jurnal Pendidikan Kesehatan Rekreasi*, 7(1), 230–238.
- Luxbacher, J. A. (2014). *Soccer Steps To Succes "Fourth Edition"*. Human Kinetics.
- Malasari, C. A. (2019). Pengaruh Latihan Shuttle-Run dan Zig-Zag Run terhadap Kelincahan Atlet Taekwondo. *Gelanggang Olahraga: Jurnal Pendidikan Jasmani Dan Olahraga (JPJO)*, 3(1), 81–88. <https://doi.org/10.31539/jpjo.v3i1.828>
- Maryono, Rahayu, S., & Rustiana, E. R. (2017). Metode Latihan Kelincahan dan Fleksibilitas Pergelangan Kaki terhadap Keterampilan Menggiring Bola. *Journal of Physical Education and Sports*, 6(1), 66–71.
- Mlysidayu, A., & Kurnawan, F. (2015). *Ilmu Kepeleatihan Dasar*. Alfabeta.
- Muhajir. (2021). *Pendidikan Jasmani, Olahraga, dan Kesehatan Untuk SMA/MA Kelas X*. Erlangga.
- Muhamad Halim, R. M. (2020). PENGARUH PASSING GROUP TERHADAP PASSING PEMAIN SEPAKBOLA SMAN 4 SUMBAR FA KELOMPOK USIA 15-17 TAHUN. *Jurnal Patriot*, 3(3), 182–192.
- Ni Putu Anggreni, I Wayan Repiyasa, & Komang Ayu Krisna Dewi. (2022). The Effect of Jigsaw Cooperative Learning Model on Learning Outcomes of Dribbling and Passing Using the Back of the Foot Football Game in Class VII Students of SMP. *Journal Coaching Education Sports*, 3(2), 179–188. <https://doi.org/10.31599/jces.v3i2.1549>
- Nurkadri, & Kholil, R. (2021). Korelasi Kekuatan Otot Tungkai, Kelincahan Dan Koordinasi Mata-Kaki Terhadap Kecepatan Dribbling Dalam Permainan Futsal Pada Pemain Futsal Inang Fc Tahun 2021. *Journal Coaching Education Sports*, 2(2), 137–150. <https://doi.org/10.31599/jces.v2i2.706>
- Pasaribu, A. M. N. (2020). *Tes Dan Pengukuran Olahrag*. Yayasan Pendidikan dan Sosial Indonesia Maju (YPSIM). [http://repository.ubharajaya.ac.id/3283/2/5\\_6093657345676542150.pdf](http://repository.ubharajaya.ac.id/3283/2/5_6093657345676542150.pdf)
- Sahabuddin. (2020). Hubungan Koordinasi Mata Tangan, Kelincahan Dan Keseimbangan Terhadap Kemampuan Dribble Bolabasket. *Journal Coaching Education Sports*, 1(2), 133–144. <https://doi.org/10.31599/jces.v1i2.372>
- Satriaputra, G. C. D., & Widodo, A. (2019). Pengaruh Latihan Zig-Zag Run Terhadap Peningkatan Kelincahan Siswa Putra Usia 16-18 Tahun.

- Jurnal Kesehatan Olahraga*, 7(2), 189–194.
- Siti Aminah, Syamsuramel, Sukirno, D. (2018). Pengaruh Latihan Shuttle Run terhadap Hasil Tendangan Mawasi Karate pada Kegiatan Ekstrakurikuler SMA. *Ilmu Olahraga Dan Kesehatan*, 7(2), 175.
- Sovia wahyuni, D. (2020). VO2MAX, DAYA LEDAK OTOT TUNGKAI, KELINCAHAN DAN KELENTUKAN UNTUK KEBUTUHAN KONDISI FISIK ATLET TAEKWONDO. *Jurnal Patriot*, 2, 1–13.
- Sugiyono. (2019). *Metode Penelitian Pendekatan Kuantitatif, Kualitatif, dan R&D*. Alfabeta.
- Sukirno. (2015). *Dasar-Dasar Atletik Dan Latihan Fisik Menuju Prestasi Tinggi*. Unsri Press.
- Taufik, M. S., & Gaos, M. G. (2019). Peningkatan Hasil Belajar Dribbling Sepakbola Dengan Penggunaan Media Audio Visual. *Jp.Jok (Jurnal Pendidikan Jasmani, Olahraga Dan Kesehatan)*, 3(1), 43–54.  
<https://doi.org/10.33503/jp.jok.v3i1.540>
- Wahyuni, S., D. (2020). O2Max, Daya Ledak Otot Tungkai, Kelincahan Dan Kelentukan Untuk Kebutuhan Kondisi Fisik Atlet Taekwondo. *Jurnal Patriot*, 2(2), 640–653.  
<https://doi.org/10.24036/patriot.v2i2.639>
- Wardani, A. S. P., & Irawadi, H. (2020). Perbedaan Pengaruh Latihan Kelincahan Shuttle Run Dengan Latihan Lateral Run Terhadap Kemampuan Menggiring Bola Siswa U-14 Ssb Putra Wijaya Fc Padang. *Jurnal Patriot*, 2(1), 62–72.  
<https://doi.org/10.24036/patriot.v2i1.512>
- Wibowo, F. P. A., Novita, Yudhaprawira, A., Denatara, E. T., & Candra, J. (2022). Pengaruh Latihan Shadow Dan Shuttle Run Terhadap Footwork Olahraga Bulutangkis Usia 13—15 Tahun Pb Jaya Raya Jakarta. *Journal Coaching Education Sports*, 3(1), 57–68.  
<https://doi.org/10.31599/jces.v3i1.1056>
- Wiradihardja, S., & Syarifudin. (2016). *Pendidikan Jasmani, Olahraga, dan Kesehatan*. Kementerian Pendidikan dan Kebudayaan.
- Witono, H. (2017). *Buku Pintar Sepak Bola*. Anugrah.