

Eye-foot coordination and balance with serving ability: A correlation study in sepak takraw game

Ramli^{1abcd}, Tri Aji^{2bc}, Suwardi^{1ab}, Moh. Hanafi^{3ade}, Novi Yanti^{4cdef}.

¹Department of Physical Education, Health and Recreation, Faculty of Sports Science, Universitas Negeri Makassar, Indonesia.

²Department of Sports Coaching Education, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia.

³Department of Physical Education, Faculty of Pedagogic and Psychology, Universitas PGRI Adi Buana Surabaya, Indonesia.

⁴Department of Physical Education, Faculty of Teacher Training Education, Universitas Tanjungpura, Indonesia.

Received: 27 September 2023; Revised: 9 November 2023; Accepted: 20 December 2023; Available online: 29 December 2023.

Abstract

Serving in a sepak takraw game is one of the important techniques to determine success in the game. However, it needs to be understood that many factors influence the success of the sepak takraw service. This study is focused on examining the association between eye-foot coordination, balance, and the ability to serve in sepak takraw. The research adopts a descriptive approach with a correlational design and involves the entire student population of Gunung Sari II Elementary School in Makassar. Using purposive sampling, a sample of 40 male students was selected for the study. The instruments in this study are eye-foot coordination using the ball bounce test against the wall. Balance using (standing crane), sepak takraw using sepak takraw service test. Data analysis employed both single correlation (r) and multiple correlation (R) at a 95% significance level. The results showed a significance value of $0.000 < 0.05$, so it can be concluded that there is a significant relationship between eye-foot coordination and balance with serving ability in the sepak takraw game. This information can serve as valuable reference material for coaches and physical education instructors when teaching or training sepak takraw.

Keywords: sepak takraw, serving, eye-foot coordination, balance.

How to Cite: Ramli, R., Aji, T., Suwardi, S., Yanti, N., & Hanafi, M. (2023). Eye-foot coordination and balance with serving ability: A correlation study in sepak takraw game. *Jurnal SPORTIF : Jurnal Penelitian Pembelajaran*, 9(3), 483-495. https://doi.org/10.29407/js_unpgri.v9i3.21217

Authors contribution: a – Preparing concepts; b – Formulating methods; c – Conducting research; d – Processing results; e – Interpretation and conclusions; f - Editing the final version

INTRODUCTION

The serve in the sepak takraw game is one of the important parts that coaches and physical education teachers must consider in providing training because it can determine the victory in the match. This is because the serve is the first attack that can immediately get points or numbers

(Asrabuana et al., 2022; Murti et al., 2021). Failure to serve means giving points or numbers to the opposing side (Hanafi, 2020; Wulandari & Irsyada, 2019). In addition, the sepak takraw serve is also a kick to start the game (Wulandari & Irsyada, 2019). Semarayasa's (2016) statement suggests that the serve is a kick made by the tekong toward the opponent's field as a way to start the game. Therefore, the ability to serve in playing sepak takraw is needed in the sense that the service performed is a service that enters the opponent's field over the net and is directed to the opponent's weak point.

Therefore, to improve the ability to serve in sepak takraw games, there are several physical condition components needed, such as leg muscle strength, leg muscle explosiveness, flexibility, coordination, speed, agility (Syarifuddin & Hakim, 2020), balance and accuracy (Pratama & Wiyaka, 2021). A study revealed that one of the important elements in performing service ability movements is eye-foot coordination (Ardiansyah & Bulqini, 2020), which, in its implementation, involves vision with foot movements because the ball to be served is served by someone else. So, it requires a good level of eye and foot coordination.

Balance is needed when lifting one leg as a swing leg and one as a fulcrum leg (Purwanto, 2022). At such times, the balance of the body must be maintained so that the position of the ball to be kicked for service is in the proper position. Hartati et al. (2020) propose that balance refers to the body's capacity to respond to alterations in body positioning, ensuring the body remains stable. This concept of balance encompasses the ability to regulate the muscular and nervous systems efficiently, whether at rest or in motion. Meanwhile, according to Risangdiptya and Ambarwati (2016), balance is associated with self-coordination and, in specific skills, agility. Consequently, in order to sustain equilibrium during physical activities, movements must be closely coordinated to oversee all bodily motions effectively.

Studies conducted by Asrabuana et al., 2022; Murti et al. (2021) show that the basic skills of playing sepak takraw, including serving ability,

are important aspects of the game. In addition, other studies have also shown the contribution of eye-foot coordination to the ability to serve in sepak takraw games (Karim & Ikadarny, 2018). Nonetheless, it is important to remember that in selecting students to participate in a particular sport, such as sepak takraw, it is necessary to consider the level of mastery of basic skills by students.

Eye-foot coordination is an important element in performing service ability movements (Ardiansyah & Bulqini, 2020), where its implementation involves vision with foot movements because the ball to be served is floated by someone else. So, it requires a good level of eye-to-foot coordination. Papic et al. (2021) say that coordination is the ability to carry out a sequence of movements smoothly and accurately repeatedly. This may involve senses, muscle contractions, and joint movements. This statement clearly states that individuals with good coordination can control body movements according to their abilities (Marta & Oktarifaldi, 2020). In the implementation of the serve, it is inseparable from physiological anatomy and biomechanics (motion science), which requires good coordination to synergize the elements so that there are no obstacles such as in the movement of swinging, the legs must coordinate several elements, including leg movements, with the eyes (Dahlan et al., 2020; Hasanuddin, 2018), to get accuracy when kicking when serving to produce an incoming, hard and directed serve. Meanwhile, according to Nurkadri et al. (2021), coordination is the harmony of motion of a group of muscles during the performance of the movement to produce a skill.

Furthermore, eye-to-foot coordination is related to processing information to move (Ardiansyah & Bulqini, 2020); for example, swinging a leg to kick when serving in a sepak takraw game requires eye-to-foot coordination. Information obtained as a stimulus through the eyes, then processed, and will produce a series of motion implementations based on this information, which will ultimately produce footwork (Widodo, 2021), namely when swinging the leg and then kicking the serve requires harmony between footwork and information provided by the eyes so that

the ball is in the right position. Aside from eye-foot coordination, paying attention to game balance is also important.

Effective execution of a serve in the sport of sepak takraw relies significantly on good eye-foot coordination and maintaining proper body balance. Challenges in these aspects can lead to a decline in the quality and accuracy of serves and hinder a player's ability to adapt to changing game situations. Insufficient eye-foot coordination may result in difficulties directing the serve accurately along the desired path, and an unstable balance can adversely affect ball precision and control (Jufrianis et al., 2018). Understanding the significance of addressing eye-foot coordination and balance issues within the context of sepak takraw is pivotal in overcoming these obstacles. Challenges such as serving direction, timing inconsistencies and physical instability must be tackled to enhance players' serving quality (Ardiansyah & Bulqini, 2020).

Correcting this problem involves specific exercises to improve eye-foot coordination and body balance (Jufrianis et al., 2018). Management of stress and mental distress can also play an important role in overcoming balance issues. In addition, communication with coaches and teammates in addressing these issues can also help players achieve better serving performance. Overall, understanding and attention to eye-foot coordination issues (Basman & Gunawan, 2021) and balance in sepak takraw serving are important in improving players' playing quality and maintaining a high level of competition in the sport (Anggraeni et al., 2023).

This research focused on eye-foot coordination and balance in elementary school students, specifically evaluating their proficiency in serving in the sport of sepak takraw. Elementary school students were chosen as the study population due to their general involvement in sports, making them a suitable sample for assessing the correlation between eye-foot coordination and serving ability in the game of sepak takraw. Previous studies by (Asrabuana et al., 2022; Murti et al., 2021) underscored the significance of fundamental skills in sepak takraw, highlighting the importance of serving ability in the game.

Research on eye-foot coordination and balance in the context of sepak takraw serving ability in primary school students is important to understand the relationship between these factors and performance in this sport. The results of this study can assist in the improvement of training programs, the development of children's skills, and the identification of potential young athletes. So, students must get sufficient knowledge about the meaning and benefits of each activity carried out, especially in training and matches.

METHOD

This study is characterized as descriptive research with a correlational design. It encompasses two key variables: the independent variables, namely eye-foot coordination (X1) and balance (X2), and the dependent variable, which is proficiency in serving in the sepak takraw game (Y). The research population encompasses all Gunung Sari II Elementary School Makassar students. However, the accessible population is more narrowly defined, focusing on 100 male fifth- and sixth-grade students. To form the sample, the researcher narrows the selection to only 40% of the accessible population. This selection is made through a random sampling method, specifically by drawing lots among the fifth and sixth-grade students, resulting in a sample size of 40 students.

The data collection technique in this study is eye-foot coordination using the ball bounce test against the wall (wall). Balance using a static balance (standing crane). The sepak takraw service test instrument is based on (Hanif, 2015), which has gone through validity and reliability testing. Has gone through validity and reliability testing. This service test instrument has a validity of 0.99 and a reliability of 0.78. Furthermore, data analysis in this study went through a pre-test stage of normality, linearity, and correlation tests. The analysis was assisted by using the SPSS version 26 application.

RESULT

The results of descriptive analysis of variable data, eye-foot coordination, balance, and serviceability in sepak takraw games, can be seen in the summary of the analysis in the following table:

Table 1. Descriptive results of data variables of eye-foot coordination, balance, and serving ability in sepak takraw games

Statistics	Eye-foot coordination	Balance	Serving ability of sepak takraw
Amount of Data	40	40	40
Average	6.73	10.85	6.03
Standard deviation	0.91	1.98	1.07
Variance	0.82	3.90	1.15
Range	3.00	7.47	4.00
Minimum	5.00	6.33	4.00
Maximum	8.00	13.80	8.00
Total Data	269.00	433.78	241.00

The analysis requirement test must be met before calculating the correlation coefficient value, so first, the initial test is carried out as a requirement for parametric statistical analysis. The question test is the normality test of the research variable data. The technique of testing the normality of data for each variable in this study is to use the Kolmogorov-Smirnov normality test analysis method. Based on the data normality test results, the results are listed in Table 2 below.

Table 2. Normality test results

Results	Eye-foot coordination	Balance	Serving ability of sepak takraw
Kolmogorov-Smirnov Coefficient Z	1.545	0.710	1.221
Value. Sig. (2-sided test)	0.098	0.695	0.101

Based on the results of verifying the normality of the data using the Kolmogorov Smirnov test, the significance value on eye-foot coordination, balance, and sepak takraw service skills is ($p > 0.05$), it can be concluded that the data is normally distributed. Since the data in this research follows a normal distribution pattern, the study uses parametric statistical analysis and correlation methods to examine the research hypothesis.

Table 3. Results of correlation analysis between eye-foot coordination and serving ability in sepak takraw game

Variable	r	P	Description
Eye-Foot Coordination (X1) With Sepak Takraw Serving Ability (Y)	0,851	0,000	Significant

Referring to the provided table, it is evident that the correlation coefficient yielded a value of $r = 0.851$. The results show a significance value of $0.000 < 0.05$, it can be concluded that there is a significant relationship between eye-foot coordination and sepak takraw serving ability.

Table 4. Results of correlation analysis between balance and serviceability in sepak takraw game

Variable	r	P	Description
Eye-Foot Coordination (X1) With Sepak Takraw Serving Ability (Y)	0,735	0,000	Significant

Based on the above table, it can be seen that the results of the calculation of the correlation coefficient using the correlation test obtained a value of $r = 0.735$. The results show a significance value of $0.000 < 0.05$, so there is a significant relationship between balance and sepak takraw serving ability.

Table 5. Results of multiple correlation analysis between eye-foot coordination and balance with serving ability in sepak takraw game

Variable	R	R ²	F	P	Description
Eye-foot Coordination (X1) and Balance (X2) with sepak takraw Serving Ability (Y)	0,860	0,740	52,732	0,000	Significant

Based on the table above, it can be seen that the results of the multiple correlation coefficient analysis using regression analysis obtained a value of $R = 0.860$. The results show a significance value of $0.000 < 0.05$, so it can be concluded that there is a significant relationship between eye-foot coordination and balance with serving ability in the sepak takraw game.

DISCUSSION

The primary objective of this study was to uncover the correlation between eye-foot coordination and balance concerning one's proficiency in serving within the sepak takraw game. The findings demonstrate a discernible association between eye-foot coordination and balance and

their impact on the ability to serve in sepak takraw. The statistical analysis showed a significant correlation with a $r = 0.851$ ($P = 0.000 < 0.05$), indicating a substantial and meaningful relationship between eye-foot coordination and balance with speaking ability in sepak takraw. Relevant research shows that foot-eye coordination, balance, and flexibility contribute to the ability to serve in sepak takraw games (Karim & Ikadarny, 2018). Eye-foot coordination and agility in the ability to play sepak takraw have a significant relationship (Putra et al., 2021). Enhanced eye-foot coordination, kinesthetic perception, and increased self-confidence positively impact one's proficiency in serving during the sepak takraw game, as noted (Basman & Gunawan, 2021). The data analysis concerning the association between eye-foot coordination and balance with serving ability in sepak takraw validates this relationship. Furthermore, the alignment of the analysis results with the theoretical references is conducted to assess the congruence of the proposed theory with the study's outcomes.

Based on this significant relationship, in developing and improving the ability to serve in sepak takraw games, it is necessary to support the physical condition components of good eye-foot coordination ability. A study by Jufrianis et al. (2021) explained that physical condition components, including flexibility, speed, and coordination, can support the ability to play sepak takraw. The results obtained, when associated with the theoretical study, reveal that coordination is basically a form of cooperation that involves the nervous system and controls every movement on the part of the body into a synergistic and coordinated movement to produce motion in the joints that is harmonious, soft and accurate when performing motor tasks. This is in line with the opinion of Gunawan and Bhaktiar (2023) that coordination abilities include activities consisting of two or more abilities and motion patterns, including sepak takraw serving movements, which consist of various movements that occur. Furthermore, Yudanto and Fatimah (2022) also stated that

coordination is the ability to use feeling, vision, and hearing together with other body parts to perform precise and smooth movements.

Based on the explanation above, it is reasonable to conclude that if a player or student has a good level of eye-foot coordination according to the needs of serving in the sepak takraw game, his sepak takraw serving ability can be improved. On average, the ability to maintain the balance of Gunung Sari II Makassar Elementary School students is 10.85 seconds, this ability is related to the ability to serve in the sepak takraw game, a value of $r = 0.735$ ($P = .000$) is obtained, meaning that this value illustrates the importance of the role of body balance in efforts to demonstrate serving activities in sepak takraw games. The statement by [Dina et al. \(2023\)](#) states that good balance and flexibility are proven to improve serving ability in sepak takraw games. Therefore, when considering the obtained results in conjunction with the underlying theories, this study fundamentally aligns with the theory asserting that balance encompasses an individual's capability to maintain equilibrium within their body system, both in static and dynamic positions. This balance quality is paramount in executing movements, as it enables coordination of actions during serving. Additionally, balance is closely connected to self-coordination and, in certain skills, agility, as articulated by [\(Risangdiptya & Ambarwati, 2016\)](#).

Furthermore, it is posited that balance, or equilibrium, reflects an individual's ability to govern their neural functions during rapid movements, which encompass swift alterations in body weight. This applies to both stationary and dynamic states, as highlighted by [\(Purwanto, 2022\)](#). Moreover, [Sulaiman et al. \(2020\)](#) assert that balance entails an individual's capacity to regulate their body's position when executing movements, particularly when preparing for a serving action in a sepak takraw game.

Based on the explanation above, it is reasonable to conclude that if a player has an ideal level of balance as needed in sepak takraw serving, his sepak takraw serving ability can be improved. This is achieved through the interplay, or mutual support, of the two variables during the execution of the serving action in the sepak takraw game. Regarding the pattern of

service movements in the sepak takraw game, which begins with raising one leg and then swinging forward until contact with the ball, the level of coordination of the movements carried out can be controlled properly so that the body balance is maintained properly. Based on the explanation above, it is reasonable to conclude that if students have good eye-foot coordination skills and good body balance combined well, it is hoped that it will support good performance in performing serving skills in sepak takraw games as expected. However, it should be understood that this study did not consider other factors that might affect the ability to serve sepak takraw, such as the family environment, diet, and lifestyle of students.

CONCLUSION

Through data analysis and discussion, several theoretical studies discussed earlier have substantiated this study's findings. The results showed a significant relationship between eye-foot coordination and balance with the ability to serve sepak takraw. These results underline the importance of focusing on an individual's eye-foot coordination and balance to enhance their serving skills in sepak takraw. This information can serve as valuable reference material for coaches and physical education instructors when teaching or training sepak takraw. Furthermore, future research endeavors may explore the design of training programs to improve the ability to serve in sepak takraw.

ACKNOWLEDGMENT

The author thanks you for your cooperation in carrying out this research. Particularly to school principals, physical education teachers, and Gunung Sari II Makassar Elementary School students.

REFERENCES

- Anggraeni, E., Tomolius, T., & Sukanti, E. R. (2023). The Effect of Leg Muscle Strength, Leg Flexibility and Balance on the Ability to Service Sepaktakraw: Literature Review. *International Journal Of Multidisciplinary Research And Analysis*.
<https://doi.org/10.47191/ijmra/v6-i7-15>
- Ardiansyah, R. T., & Bulqini, A. (2020). Hubungan Koordinasi Mata Kaki

- Dan Fleksibilitas Sendi Panggul Terhadap Hasil Akurasi Servis Pada Tekong Atlet Sepak Takraw Smanor Jawa Timur. *JSES: Journal of Sport and Exercise Science*, 3(1), 01. <https://doi.org/10.26740/jses.v3n1.p01-08>
- Asrabuana, hasbullah bahmid, & divinubun siti. (2022). Pengaruh Latihan Sepak Sila Terhadap Ketepatan Long Servis dalam Permainan Sepak Takraw Pada Siswa SMA Negeri 11 Kabupaten Buru. *Jurnal Ilmiah Wahana Pendidikan* <https://Jurnal.Unibrah.Ac.Id/Index.Php/JIWP>, 8(1), 391–402. <https://doi.org/10.5281/zenodo.6616732>
- Basman, B., & Gunawan, E. (2021). Hubungan antara Koordinasi Mata Kaki dan Persepsi Kinestetik dengan Keterampilan Servis Permainan Sepak Takraw pada Sekolah Kebakatan Olahraga. *Jurnal Pendidikan Dan Kewirausahaan*, 10(1), 11–20. <https://doi.org/10.47668/pkwu.v10i1.335>
- Dahlan, F., Hidayat, R., & Syahrudin, S. (2020). Pengaruh komponen fisik dan motivasi latihan terhadap keterampilan bermain sepakbola. *Jurnal Keolahragaan*, 8(2), 126–139. <https://doi.org/10.21831/jk.v8i2.32833>
- Dina, D., Putra, M. F., & Wandik, Y. (2023). Analisis kontribusi kelentukan tungkai dan keseimbangan terhadap kemampuan servis dalam permainan sepaktakraw. *Multilateral: Jurnal Pendidikan Jasmani Dan Olahraga*, 22, 119. <https://doi.org/10.20527/multilateral.v22i4.16465>
- Gunawan, M., Bhakhtiar, S., Yulifri, Y., & Emral, E. (2023). Hubungan Koordinasi Gerak Terhadap Kemampuan Dribbling Pemain SSB Arafah Kota Payakumbuh. *Jurnal JPDO*, 6(9), 163-171. Retrieved from <http://jpdo.pj.unp.ac.id/index.php/jpdo/article/view/1529>
- Hanafi, M. (2020). Efek Metode Passing Dengan Tembok Terhadap Peningkatan Receive Dalam Permainan Sepak Takraw. *Jurnal Pendidikan Kesehatan Rekreasi*, 6(1), 44–49. <https://doi.org/10.5281/zenodo.3661573>
- Hanif, A. S. (2015). *Kepelatihan Dasar Sepak Takraw*. RajaGrafindo Persada.
- Hartati, Solahuddin, S., & Irawan, A. (2020). Latihan kelincahan dan keseimbangan untuk meningkatkan hasil dribble Sepak Bola. *Jurnal Ilmu Olahraga Dan Kesehatan*, 9(1), 38–46. <https://doi.org/10.36706/altius.v9i1.11557>
- Hasanuddin, M. I. (2018). Kontribusi antara kecepatan, kelincahan dan koordinasi mata-kaki dengan kemampuan menggiring bola dalam permainan sepak bola pada siswa mts negeri 1 Kotabaru. *CENDEKIA Jurnal Ilmiah Pendidikan*, 6(1), 96–119. <https://doi.org/10.33659/cip.v6i1.76>
- Jufrianis, Henjilito, R., Hernawan, Sukiri, Sukur, A., Abidin, D., Karakauki, M., Syed Ali, S. K., & Pratama, K. W. (2021). The effect of knowledge

level (iq) and physical conditions (power, flexibility and coordination) on smash technique learning skill in sepak takraw. *Physical Education Theory and Methodology*, 21(3). <https://doi.org/10.17309/TMFV.2021.3.10>

Jufrianis, J., Akbar, A., & Tangkudung, J. (2018). The Effect of Eye-Foot Coordination, Flexibility of the Limbs, Body Balance and Self-Confidence To the Accuracy of the Football of Sepak Takraw. *JIPES - JOURNAL OF INDONESIAN PHYSICAL EDUCATION AND SPORT*. <https://doi.org/10.21009/jipes.042.06>

Karim, A., & Ikadarny. (2018). Kontribusi Koordinasi Mata Kaki, Keseimbangan, dan Kelentukan Terhadap Kemampuan Servis pada Permainan Sepaktakraw Siswa SD Negeri Mamajang II Kota Makassar. *Jurnal Pengembangan Sumber Daya Insani*, 3(2), 363–369. <https://doi.org/10.26618/perspektif.v3i2.1668>

Marta, I. A., & Oktarifaldi, O. (2020). Koordinasi Mata-Kaki dan Kelincahan terhadap Kemampuan Dribbling Sepakbola. *Jurnal Pendidikan Jasmani Dan Olahraga*, 4(1), 1–14. <https://doi.org/10.31539/jpjo.v4i1.1201>

Murti, A. W., Leonda, D., Marani, Novitaria, I., & Rihatno, T. (2021). Pengaruh Kekuatan Otot Tungkai, Kelentukan Togok dan Keseimbangan Terhadap Servis Sepak Takraw. *Jendela Olahraga*, 6(1). <https://doi.org/10.26877/jo.v6i1.6358>

Nurkadri, Daulay, B., & Azmi, F. (2021). Coordination and agility: How is the correlation in improving soccer dribbling skills? *Journal Sport Area*, 6(2). [https://doi.org/10.25299/sportarea.2021.vol6\(2\).6355](https://doi.org/10.25299/sportarea.2021.vol6(2).6355)

Papic, C., Sanders, R. H., Naemi, R., Elipot, M., & Andersen, J. (2021). Improving data acquisition speed and accuracy in sport using neural networks. *Journal of Sports Sciences*, 39(5). <https://doi.org/10.1080/02640414.2020.1832735>

Pratama, S. M., & Wiyaka, I. (2021). Profil kondisi fisik, teknik, dan psikis atlet sepak takraw. *Jurnal Olahraga Dan Kesehatan Indonesia*, 1(2), 109–115. <https://doi.org/10.55081/joki.v1i2.307>

Purwanto, D. (2022). Quality of the physical condition and basic techniques of sepak takraw. *Jurnal SPORTIF: Jurnal Penelitian Pembelajaran*, 8(2), 241–258. https://doi.org/10.29407/js_unpgri.v8i2.18447

Putra, M. A., Ridwan, S., & Arsita. (2021). Hubungan Koordinasi Mata-Kaki Dan Kelincahan Dengan Kemampuan Sepak Sila Dalam Permainan Sepak Takraw. *Sport Education and Health Journal*, 2(1), 40–49. <https://journal.upp.ac.id/index.php/joset/article/view/874>

Risangdiptya, G., & Ambarwati, E. (2016). Perbedaan Antara Keseimbangan Tubuh Sebelum Dan Sesudah Senam Pilates Pada Wanita Usia Muda. *Jurnal Kedokteran Diponegoro (Diponegoro Medical Journal)*, 5(4), 911–916.

<https://doi.org/10.14710/dmj.v5i4.14452>

Semarayasa, I. K. (2016). Pengaruh Strategi Pembelajaran Dan Tingkat Motor Ability Terhadap Keterampilan Servis Atas Sepak. *Jurnal Pendidikan Jasmani Indonesia*, 12(1), 34–41.

<https://doi.org/10.21831/jpji.v12i1.10214>

Sulaiman, S., Hidayah, T., & Azwan, M. (2020). *Contribution of Leg Muscle Power, Leg Flexibility and Balance to Kedeng Smash Ability Sepaktakraw Game*. <https://doi.org/10.4108/eai.29-6-2019.2290463>

Syaifuddin, M., & Hakim, A. A. (2020). Profil Kondisi Fisik Atlet Sepak Takraw Putra Asian Games 2018 dan UKM UNESA. *Jurnal Kesehatan Olahraga*, 8(1).

<https://ejournal.unesa.ac.id/index.php/jurnal-kesehatan-olahraga/article/view/31652>

Widodo, A. (2021). Hubungan koordinasi mata-kaki dan kelincihan dengan kemampuan menggiring bola pada sekolah sepakbola bina bintang muda kepri. *Jurnal Bola*, 4(1), 1-17.

<https://doi.org/10.31004/bola.v4i1.2282>

Wulandari, D. A. R., & Irsyada, M. (2019). Analisis Gerak Servis Atas Sepak Takraw Pada Atlet Putra Di Sma Negeri Olahraga Sidoarjo. *Jurnal Prestasi Olahraga*, 2(4).

<https://ejournal.unesa.ac.id/index.php/jurnal-prestasi-olahraga/article/view/31079>

Yudanto, Y., & Fatimah, F. A. (2022). Hubungan Koordinasi Mata-Kaki dan Kelincihan dengan Keterampilan Penerimaan Bola Pertama pada Peserta Ekstrakurikuler Sepak Takraw Sekolah Menengah Pertama di Kabupaten Bantul. *Jendela Olahraga*, 7(2).

<https://doi.org/10.26877/jo.v7i2.12097>