PAPER NAME

Artikel Jurnal Sinta Uny 2023.pdf

AUTHOR

wisnu mahardika

WORD COUNT

4912 Words

CHARACTER COUNT

26200 Characters

PAGE COUNT

8 Pages

FILE SIZE

280.4KB

SUBMISSION DATE

Jun 19, 2023 3:48 PM GMT+7

REPORT DATE

Jun 19, 2023 3:48 PM GMT+7

10% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

- 5% Publications database
- Crossref database
- Crossref Posted Content database
- 8% Submitted Works database

Excluded from Similarity Report

- Internet database
- Bibliographic material
- Quoted material
- Cited material
- Small Matches (Less then 10 words)

Available online at http://journal.uny.ac.id/index.php/jolahraga

Jurnal Keolahragaan, 11 (1), 2023, 33-40

The impact of hexagon drill on the agility of junior men's tennis players

Rivan Saghita Pratama[1], Teguh Santosa[2], Anggi Setia Lengkana[3], Fatkhul Imron[2], Wisnu Mahardika[2], Taufiq Hidayah[1]

[1] Universitas Negeri Semarang. Sekaran, Gunungpati, Kota Semarang, 50229, Indonesia
[2] Universitas Tunas Pembangunan, Kota Surakarta, Indonesia
[3] Universitas Pendidikan Indonesia, Bandung, Indonesia
* Coressponding Author. E-mail: rivan.saghita.pratama@mail.unnes.ac.id.

Received: 10 August 2022; Revised: 30 January 2023; Accepted: 15 April 2023

Abstract: The modern tennis games is characterized by an emphasis on quickness and strength. Rapid and multidirectional changes in the ball's speed necessitate a high level of agility. This study aimed to determine the impact of hexagon drill training on the agility of male junior tennis players. This research is a quantitative type with experimental methods. The research design uses a one group pre-test and post-test design. The population in this study were junior male tennis players in Jawa Tengah with the sampling technique using purposive sampling. The characteristics of the sample determined by the researcher were male, athletes under 18 years of age, and practicing in the Jawa Tengah area. The number of samples used in the study was 40 people. Data analysis used the t-test by first carrying out the normality test and homogeneity test. The results of the data normality test in this study were 0.06 > 0.05 (0.06 greater than 0.05), which means that the data is normally distributed in the population frequency. The results of the homogeneity test in this study were 0.15 > 0.05 (0.15 greater than 0.05), which means the data is homogeneous. After the data is normally distributed and homogeneous, the researcher continues data processing, namely the t-test. The results of the t-test showed a significance value of 0.000 so it was less than 0.05 or 0.000 <0.05 so there was a significant effect. The conclusion is that the hexagon drill exercise has an effect on increasing agility in junior men's tennis players in Central Java. Suggestions from researchers are that coaches can apply hexagon drill exercises to train junior tennis players under the age of 18 years.

Keywords: hexagon drill, agility, tennis, junior

How to Cite: Pratama, R. S., Santosa, T., Lengkana, A. S., Imron, F., Mahardika, W., & Hidayah, T. (2023). The effect of hexagon drill exercise on agility ability in junior men's tennis players. *Jurnal Keolahragaan, 11*(1), 33-40. doi: https://doi.org/10.21831/jk.v11i1.52532

INTRODUCTION

Sport is a bodily-beneficial activity that can encourage, nurture, and develop physical, spiritual, and social potential. General and specific goals are distinguished in sports; the general goal is to maintain fitness and health, while the specific goal is to win a game (Ratno & Simanjuntak, 2020). There are numerous varieties of sports, tennis being one of them. Tennis is a racket-and-ball sport that can be performed solo or with a partner. Tennis has become a popular sport in the world because it has been played by around 75 million participants (Pluim et al., 2018). Tennis players attempt to hit the ball into their opponent's court area while using proper technique in order to score points (Subekti et al., 2021).

Tennis is increasingly developing into a sport dominated by speed and power so tennis is a complex sport because it involves all components of the body (Bakhtiar & Ballard, 2015; Guntur et al., 2020). The physical components needed by a reliable tennis player are speed, agility, strength, endurance, coordination, and flexibility. The main requirement in tennis is to have skills and requires a physical component, namely strength, and agility (Baiget et al., 2015). Tennis is also an open-skill sport which means that movements in tennis are difficult to predict and tennis is also a dynamic sport that requires agility and speed (Paul et al., 2011). While a tennis match on average for points to be made in less than 10 seconds and the points between points are between 20 and 25 seconds apart, the average player changes direction more than 15 times during long rallies to earn points and during the match, the tennis player makes changes up to 1.00 times (Dawes, 2019).

This is an open-access article under the CC–BY-SA license.

The success of a tennis player depends on groundstroke and serve skills (Turner et al., 2022). The ability to disguise the direction of the blow has the advantage of interfering with the opponent's anticipatory response-ability (Dimic et al., 2023). The agility factor is one of the determinants of improving tennis groundstroke performance (Turner et al., 2022). Agility is a physical component that will help in the formation and development of techniques, tactics, and mental development (HB & Wahyuri, 2019). The definition of agility is the body's ability to change direction and position it precisely and quickly without losing balance and awareness (Hasyim & Saharullah, 2019; Miranda et al., 2016). Multi-directional movements require the agility of an athlete and a good response to the ball and/or opponent's position (Jansen et al., 2021). Rapid changes in direction of movement require good agility, especially when playing tennis on a grass court (Hotwani et al., 2021). Agility is built from a combination of several physical conditions, namely speed, flexibility, coordination, and power so without a combination of these physical conditions, agility cannot be disposed of properly (Narlan & Juniar, 2020).

To meet the competitive needs of tennis athletes, coaches, perents, and team members must comprehend the importance of adopting behaviors and training regimens (Guinoubi et al., 2022). Training is a process that is systematically arranged, programmed, measurable, planned, and carried out repeatedly (Nasrulloh et al., 2018, 2021; Prasetyo & Nasrulloh, 2017). Agility training will be able to help athletes, especially junior athletes, to go to a higher level because having good agility will help athletes get points because agility is an important physical attribute in tennis (Huggins, 2017). The volume of practice hours in junior tennis must be considered so that burnout does not occur in athletes (Mouelhi-Guizani et al., 2022). Exercise variations are necessary so that athletes don't get bored and stay focused on improving their performance.

Based on the findings of field research observers. The researcher made observations about how the junior tennis club athletes at the Kudus District Military Command performed various basic techniques in the sport of tennis. The basic techniques in tennis are groundstrokes, serves, lobs, and overheads (Hoskins-Burney & Carrington, 2014). The focus of the researcher's observation is on how athletes can win the rally, where the agility factor is very influential. Researchers conducted an initial test to determine the agility abilities of junior tennis club athletes in Jawa Tengah. The results of the agility test show that the agility ability of junior tennis club athletes in Jawa Tengah is still very low. This was reinforced by the opinion of the coaching team which confirmed that the agility ability of junior club athletes in Jawa Tengah was still lacking.

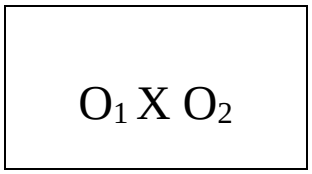
The hexagon drill is an agility drill to measure foot speed in changing directions between backward, forwards, and sideways. In addition, the hexagon drill exercise functions as an exercise to test the body's ability to maintain balance when changing directions quickly (Kovacs, M., Roetert, P., Ellenbecker, 2016). The hexagon drill consists of an equilateral hexagon-shaped line with a length of 61 cm and the size of each angle is 120° (Saputra & Ahmad, 2021). When doing the hexagon drill, flexibility and concentration are needed because you change direction while jumping with both feet.

In general, the hexagon drill is often used to improve the agility of athletes in table tennis and basketball (Saputra & Ahmad, 2021; Sari et al., 2021). Researchers have not found theoretically that the hexagon drill exercise is applied to junior tennis players. Based on the results of observations, the researchers found that several players lost their balance when chasing the ball so that the players could not return the ball properly which caused them to lose points during a match simulation. In this study, researchers offer a hexagon drill training model to provide solutions to problems that occur in junior club tennis athletes at Jawa Tengah. Researchers are interested in studying the effect of hexagon drill training on the agility of male junior tennis players in Jawa Tengah.

METHODS

This study consists of quantitative research. The experimental methodology is what was applied here. The experimental method is a technique used to clarify the casual link between two variables (Siyoto & Sodik, 2015). A one group pretest and posttest design is utilizes for the research. One research activity uses group pretest-posttest design in which the sample is given a preliminary test (pretest) before treatment and a final test (posttest) after treatment (Arikunto, 2013). The following describes the research pattern of the one group pre test-post test design (Sugiyono, 2013) as follows:

Copyright © 2023, Jurnal Keolahragaan, ISSN 2339-0662 (print), ISSN 2461-0259 (online)



O_1 = Pretest value
X = Training model *Hexagon Drill*
O_2 = Posttest Value

The independent variable is the hexagon drill exercise and the dependent variable is agility. The population is a generalization area composed of object/subject with specific qualities and characteristics determined by the researcher to be examined and then conslusions drawn (Sugiyono, 2017). The population in this study is junior male tennis players in Jawa Tengah. The method of sampling is a purposive sampling method, which takes into account specific criteria. The considerations in selecting the sample are that 1) are male, 2) are less than 18 years old, 3) have trained in Central Java. The number of samples in this study was 40 athletes. The instrument used is the hexagon test. Data analysis used several statistical calculations, namely describing research data, carrying out normality tests, conducting homogeneity tests, and conducting t-tests by comparing pretest and posttest values.

RESULTS AND DISCUSSION

Based on the results of research that has been done. Researchers will display data systematically. This data is in the form of descriptions of pre-test and post-test results, data on normality test results, data on homogeneity test results, and data on t-test results. The data from the pre-test and post-test results will be presented by the researcher in Table 1 below:

Table 1. Description of Hexagon Drill Pretest and Posttest Results

No.	Description	*Pretest*	*Posttest*
1.	N	40	40
2.	Minimal	19.57	14.31
3.	Maximum	9.53	8,62
4.	Mean	12.842	10.788
5.	Median	12.32	11.23
6.	Modus	12.7	11.23
7.	Standard Deviation	2.18	1.13

Table 1 shows that the value of N or the number of samples is 40. The minimum value of the pretest is 9.53 and the posttest is 8.62, the maximum value of the pretest is 19.57 and the posttest is 14.31, the mean or average value of the pretest is 12,842 and the posttest is 10,788, the median value or the mean value of the pretest was 12.32 and the posttest was 11.23, the mode value or the value that frequently appeared pretest was 12.7 and the posttest was 11.23, and the pretest standard deviation value was 2.18 and the posttest was 1.13.

The normality test was carried out to find out whether the data distribution was normal or not. The normality test uses Kolmogorov-Smirnov with the help of SPSS version 25. The data is said to have a normal distribution if the significant value is more than 0.05 or Sig. (2-tailed) > 0.05 and if less than 0.05 or Sig. (2-tailed) < 0.05 then the data distribution is not normal.

Table 2. Normality Test Results

		Pre-Test Hexagon Drill	Post-Test Hexagon Drill
N		40	40
Normal Parameters	Mean	12,8420	10,7885
	Std. Deviation	2,18900	1,13675
	Absolute	0,168	0,167
	Positive	0,168	0,167
	Negative	-0,103	-0,101
Test Statistic		0,168	0,167
Asymp. Sig. (2-tailed)		0,060	0,060

Copyright © 2023, Jurnal Keolahragaan, ISSN 2339-0662 (print), ISSN 2461-0259 (online)

According to Table 2, the normality test results for the pretest and posttest hexagon drill showed that the Sig. (2-tailed) shows a result of 0.06 so that the variable significance value is greater than 0.05 or 0.06 > 0.05. So from these results, it can be concluded that the data is normally distributed.

The homogeneity test aims to see whether the data is homogeneous or not. A homogeneity test is carried out if the data group is declared to be normally distributed. Homogeneity test using one-way ANOVA with the help of SPSS version 25. The data has a homogeneous variance if the significance value is more than 0.05 or Sig. (2-tailed) > 0.05 and the data has a homogeneous variance if the significance value is less than 0.05 or Sig. (2-tailed) < 0.05.

Table 3. Homogeneity Test Results

Test of Homogeneity of Variances					
		Levene Statistic	Df1	Df2	Sig
Hexagon Test	Base on Mean	6,396	1	78	0,013
	Base on Median	5,624	1	78	0,020
	Based on the Median and with adjusted df	5,624	1	68,926	0,021
	Based on trimmed mean	5,624	1	78	0,015

According to Table 3 indicate that the results of pre-test and post-test homogeneity tests for the hexagon drill are 0.15, so it is greater than 0.05 or 0.15 > 0.05. So it could be concluded that the data is homogeneous. After the data is declared to be normally distributed and has a homogeneous variance, the next step is to test the hypothesis using the t-test with a 95% confidence interval. There is a significant effect if the Sig. (2-tailed) < 0.05 and if the Sig. (2-tailed) > 0.05 there is no significant effect.

Table 4. T-Test

Paired Samples Test									
Paired Differences									
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Mean	Lower	Upper	T	Df	Sig. (2-tailed)
Pair 1	Pre-Test Hexagon Drill - Post-Test Hexagon Drill	2,05350	1,39386	22039	1,60772	2,49928	0,318	39	0,000

According to Table 4 indicate that the results of t-test value Sig. (2-tailed) is 0.000 so it is less than 0.05 or 0.000 < 0.05. It can be concluded that there is a significant effect of the hexagon drill exercise on the agility ability of junior male tennis players. Based on this data the researcher will describe the data and discuss the results based on the relevant theories. These theories are compiled based on books and articles published in Sinta and or Scopus-indexed journals.

RESULT AND DISCUSSION

The results of the pre-test hexagon drill have a minimum value of 19.57, a maximum value of 9.53, mean 12.842, and std. deviations 2.18900. The results of the post-test research data have a minimum value of 14.31, a maximum value of 8.62, a mean value of 10.788, and std. deviations 1.13675. The normality data value is 0.06 which is greater than 0.05 (0.06> 0.05), then the data is normally distributed. The homogeneity data value is 0.015 which is greater than 0.05 (0.015 > 0.05), then the data is homogeneous. Based on the prerequisite test where the data is normally distributed and homogeneous, the researcher continues the calculation of the next stage, namely the different test or t-test.

Copyright © 2023, Jurnal Keolahragaan, ISSN 2339-0662 (print), ISSN 2461-0259 (online)

The results of the t-test data show a significance value of 0.000 which is less than 0.05 (0.000 <0.05). These results have the conclusion that there is a significant effect of the hexagon drill exercise on the agility ability of junior male tennis players. Based on the data that has been presented, the hexagon drill exercise can increase 2.06 seconds. This data provides reinforcement that hexagon drill exercises can be recommended to improve agility in junior tennis players.

This study focuses on male tennis players because there are differences in agility abilities between male players and female players (Ali et al., 2020; Fernandez-Fernandez et al., 2022; Giles et al., 2021). Tennis is an intermittent sport characterized by repeated high intensities over varying periods (Sarvestan et al., 2018). The elite tennis position which is played at the highest level requires athletes to have high energy and must ensure that there is sufficient energy available during the competition schedule (Ellis et al., 2021). The coach also needs to understand in making a training program that the majority of injured players are not ready to face heavy loads and the coach needs to make a training program that is adapted to the athlete's physical condition (Myers et al., 2020). Things that need to be considered by the coach when providing a training program that focuses on agility, the athlete will experience a decrease in the graph related to technical ability (Brechbuhl et al., 2017).

Agility is one of the important motor skills in determining success in the performance of tennis athletes (Munivrana et al., 2022; Sinkovic et al., 2022). Agility is one of the physical components that become the basis for developing techniques, tactics, strategies, and mentality. Agility is an important skill for tennis players to be successful in winning rallies in which players must be able to move quickly in multiple directions in response to the ball and/or position of the opponent (Jansen et al., 2021). Agility is built from a combination of speed, flexibility, power, and coordination (Narlan & Juniar, 2020). Factors that affect agility among them are gender, body mass index, age, and reaction speed to stimuli (Hasyim & Saharullah, 2019). Increasing agility in tennis is generally determined by high intensity, type of exercise, and frequency of practice at least 3 times per week (Alim et al., 2021).

The hexagon drill training model is commonly used to improve agility in table tennis and basketball. This exercise has never been applied to tennis. This study revealed that the hexagon drill exercise had a significant effect on improving the agility abilities of junior tennis athletes at the Kudus District Military Command. This of course still pays attention to the intensity of the exercise, the volume of the exercise, and the repetitions applied in the exercise. Applying the right training intensity can have an impact on athlete performance (da Silva Bento et al., 2022). A well-planned periodic training approach by taking into account training volume and training load is possible to influence the peak performance of athletes in national and international competitions (González-Ravé et al., 2021). Variations of the hexagon drill exercise can also be developed, for example, combined with using the shadow training model that has been applied to badminton (Muthiarani & Lismadiana, 2021).

The previous explanation shows that hexagon drill exercises have a significant effect on increasing agility skills in the game of tennis. The results of the t-test that has been carried out show a result of 0.000. The results of the study also showed that the average posttest result was 10,788 and the pretest average result was 12,842. It can be seen that there is an average increase in the results of the pretest and posttest after the exercise. According to (Kovacs, M., Roetert, P., Ellenbecker, 2016) hexagon drill is one of the agility tests used in high-performance fitness testing. The hexagon drill, apart from being able to train agility, can also train footwork movements in tennis. Agility is needed in court tennis because when the ball is rallying the direction of the ball goes in all directions so players need to run and move so that agility is needed so that the body remains balanced when chasing the ball. This makes the coach not only prepare techniques but also prepare physical abilities so that players can get points when the match takes place.

CONCLUSION

According to the findings of the t-test, where the significance value is less than 0,05 and the mean or mean value increases after performing the exercise, there is a significant effect on the hexagon drill training model to increase the agility ability of junior tennis players in Central Java. This study suggests that junior tennis players' agility can be increased through the use of hexagon drill exercises.

Copyright © 2023, Jurnal Keolahragaan, ISSN 2339-0662 (print), ISSN 2461-0259 (online)

REFERENCES

Ali, S. M., Haider, M. H., & Ali, S. M. (2020). The Effect of Speed, Agility and Quickness (SAQ) Training on Developing the Effective Movement of Tennis Players. *International Journal of Psychosocial Rehabilitation*, *24*(04), 3354–3360. https://doi.org/10.37200/ijpr/v24i4/pr201448

Alim, A., Tomoliyus, T., & Fauzi, F. (2021). Development of High Intensity Interval Training (HIIT) for Reactive Agility Tennis: Literature Review and Validity of Aiken. *Research Square*, 1–17.

Arikunto, S. (2013). *Prosedur Penelitian* (2010th ed.). Rineka Cipta.

Baiget, E., Fernández-Fernández, J., Iglesias, X., & Rodríguez, F. A. (2015). Tennis play intensity distribution and relation with aerobic fitness in competitive players. *PLoS ONE*, *10*(6), 1–15. https://doi.org/10.1371/journal.pone.0131304

Bakhtiar, S., & Ballard, R. J. (2015). *Teori Action Method, Strength Condition dan Penerapannya dalam PEMBINAAN PRESTASI TENIS*.

Brechbuhl, C., Girard, O., Millet, G. P., & Schmitt, L. (2017). Technical Alterations during an Incremental Field Test in Elite Male Tennis Players. *Medicine and Science in Sports and Exercise*, *49*(9), 1917–1926. https://doi.org/10.1249/MSS.0000000000001303

da Silva Bento, A. F. P., Páez, L. C., & de Mendonça Raimundo, A. M. (2022). School-Based High-Intensity Interval Training Programs for Promoting Physical Activity and Fitness in Adolescents: A Systematic Review. *Journal of Teaching in Physical Education*, *41*(2), 288–300. https://doi.org/10.1123/jtpe.2020-0187

Dawes, J. (2019). *Developing Agility and Quickness -2nd edition*.

Dimic, M., Furuya, R., & Kanosue, K. (2023). Importance of disguising groundstrokes in a match between two top tennis players (Federer and Djokovic). *International Journal of Sports Science \& Coaching*, *18*(1), 257–269. https://doi.org/10.1177/17479541221075728

Ellis, D. G., Speakman, J., Hambley, C., Morton, J. P., Close, G. L., Lewindon, D., & Donovan, T. F. (2021). Energy Expenditure of a Male and Female Tennis Player during ATP/WTA and Grand Slam Events Measured by Doubly Labelled Water. *Medicine & Science in Sports & Exercise*, *Publish Ah*(12), 2628–2634. https://doi.org/10.1249/MSS.0000000000002745

Fernandez-Fernandez, J., Loturco, I., Pereira, L. A., Del Coso, J., Areces, F., Gallo-Salazar, C., & Sanz-Rivas, D. (2022). Change of Direction Performance in Young Tennis Players: A Comparative Study Between Sexes and Age Categories. *Journal of Strength and Conditioning Research*, *36*(5), 1426–1430. https://doi.org/10.1519/JSC.0000000000003484

Giles, B., Peeling, P., & Reid, M. (2021). Quantifying Change of Direction Movement Demands in Professional Tennis Matchplay. *Journal of Strength and Conditioning Research*, *Publish Ah*. https://doi.org/10.1519/JSC.0000000000003937

González-Ravé, J. M., Hermosilla, F., González-Mohíno, F., Casado, A., & Pyne, D. B. (2021). Training Intensity Distribution, Training Volume, and Periodization Models in Elite Swimmers: A Systematic Review. *International Journal of Sports Physiology and Performance*, *16*(7), 913–926. https://doi.org/10.1123/ijspp.2020-0906

Guinoubi, S., Mouelhi-Guizani, S., Chtara, M., & Crespo, M. (2022). Competence Needs Satisfaction in elite junior tennis: Gender differences. *International Journal of Sports Science & Coaching*, *0*(0), 174795412211289. https://doi.org/10.1177/17479541221128936

Guntur, G., Ngatman, N., Sridadi, S., & Broto, D. P. (2020). *tennis test " terhadap tingkat keterampilan bermain tenis Testing the validity , reliability , and relevance of the dyer tennis test assessment on tennis playing skills*. *8*(2), 195–203.

Hasyim, & Saharullah. (2019). *Dasar Dasar Ilmu Kepelatihan* (Vol. 1). Badan Penerbit UNM.

HB, B., & Wahyuri, A. S. (2019). *Pembentukan Kondisi Fisik* (1st ed.). PT Raja Grafindo Persada.

Copyright © 2023, Jurnal Keolahragaan, ISSN 2339-0662 (print), ISSN 2461-0259 (online)

Hoskins-Burney, T., & Carrington, L. (2014). *The tennis drill book*.

Hotwani, R., Dass, B., Shedge, S., & Bhatnagar, A. (2021). *Effectiveness of Speed and Plyometric Training on Agility in Lawn Tennis Players*. *25*(6), 18557–18569.

Huggins, J. (2017). Within - and between - Session Reliability of the Spider Drill Test to Assess Change of Direction Speed in Youth Tennis Athletes. *International Journal of Sports and Exercise Medicine*, *3*(5). https://doi.org/10.23937/2469-5718/1510074

Jansen, M. G. T., Elferink-Gemser, M. T., Hoekstra, A. E., Faber, I. R., & Huijgen, B. C. H. (2021). Design of a Tennis-Specific Agility Test (TAT) for Monitoring Tennis Players. *Journal of Human Kinetics*, *80*(1), 239–250. https://doi.org/10.2478/hukin-2021-0094

Kovacs, M., Roetert, P., Ellenbecker, T. S. (2016). *Complete Conditioning for Tennis* (2nd ed.). Human Kinetics.

Miranda, D. L., Hsu, W. H., Gravelle, D. C., Petersen, K., Ryzman, R., Niemi, J., & Lesniewski-Laas, N. (2016). Sensory enhancing insoles improve athletic performance during a hexagonal agility task. *Journal of Biomechanics*, *49*(7), 1058–1063. https://doi.org/10.1016/j.jbiomech.2016.02.022

Mouelhi-Guizani, S., Guinoubi, S., Teyeb, N., Chtara, M., & Crespo, M. (2022). Effect of practice hours on elite junior tennis players' burnout: Gender differences. *International Journal of Sports Science \& Coaching*, *17*(6), 1418–1427. https://doi.org/10.1177/17479541211064417

Munivrana, G., Jelaska, I., & Tomljanović, M. (2022). Design and Validation of a New Tennis-Specific Reactive Agility Test—A Pilot Study. *International Journal of Environmental Research and Public Health*, *19*(16). https://doi.org/10.3390/ijerph191610039

Muthiarani, A., & Lismadiana, L. (2021). Pengaruh latihan shadow menggunakan langkah berurutan dan langkah bersilangan terhadap kelincahan footwork atlet bulutangkis. *Jurnal Keolahragaan*, *9*(1), 108–117. https://doi.org/10.21831/jk.v9i1.32256

Myers, N. L., Aguilar, K. V., Mexicano, G., Farnsworth, J. L., Knudson, D., & Kibler, W. B. E. N. (2020). The Acute:Chronic Workload Ratio Is Associated with Injury in Junior Tennis Players. *Medicine and Science in Sports and Exercise*, *52*(5), 1196–1200. https://doi.org/10.1249/MSS.0000000000002215

Narlan, A., & Juniar, D. T. (2020). *Pengukuran Dan Evaluasi Olahraga (Prosedur Pelaksanaan Tes Dan Pengukuran Dalam Olahraga Pendidikan Dan Prestasi)*. Deepublish.

Nasrulloh, A., Apriyanto, K. D., & Prasetyo, Y. (2021). *Pengukuran dan Metode Latihan Kebugaran* (1st ed.). UNY Press. https://www.researchgate.net/publication/358403916_PENGUKURAN_DAN_METODE_LATIHAN_KEBUGARAN

Nasrulloh, A., Prasetyo, Y., & Apriyanto, K. D. (2018). *Dasar-Dasar Latihan Beban*. UNY Press.

Paul, M., Biswas, S. K., Shukla, G., & Sandhu, J. S. (2011). Effect Of Agility Training On Tennis Performance. *Journal of Sport and Exercise Psychology*, *18*(February 2011), 489–559.

Pluim, B. M., Groppel, J. L., Miley, D., Crespo, M., & Turner, M. S. (2018). Health benefits of tennis. *British Journal of Sports Medicine*, *52*(3), 201–202. https://doi.org/10.1136/bjsports-2017-098623

Prasetyo, Y., & Nasrulloh, A. (2017). Weight training with pyramid systems to increase the leg and back muscular strength, grip strength, pull, and push strength. *Man in India*, *97*(24), 193–201.

Ratno, P., & Simanjuntak, L. (2020). *PENGARUH LATIHAN LADDER DRILL TERHADAP PENINGKATAN KELINCAHAN KOMUNITAS TENIS LAPANGAN UNIVERSITAS NEGERI MEDAN*. *19*(1), 69–75.

Saputra, Y. D., & Ahmad, N. (2021). *Pengaruh Model Pelatihan Hexagon Drill Terhadap Kelincahan Pada Pemain Jombang Basketball Club (JBC) The Effect of Hexagon Drill Training Model on*

Copyright © 2023, Jurnal Keolahragaan, ISSN 2339-0662 (print), ISSN 2461-0259 (online)

Agility in Jombang Basketball Club (JBC) Players. *1*, 49–54.

Sari, L. P., Hendrawan, D., & Karo Karo, A. A. P. (2021). Hexagon Contribution Drill Training and Horizontal Swing Training on Table Tennis Skills. *Journal Physical Education, Health and Recreation*, *5*(1), 33. https://doi.org/10.24114/pjkr.v5i1.18601

Sarvestan, J., Alaei, F., Kazemi, N. S., Khial, H. P., Shirzad, E., & Svoboda, Z. (2018). Agility profile in collegiate athletes with chronic ankle sprain: the effect of Athletic and Kinesio taping among both genders. *Sport Sciences for Health*, *14*(2), 407–414. https://doi.org/10.1007/s11332-018-0453-2

Sinkovic, F., Foretic, N., & Novak, D. (2022). Reliability, Validity and Sensitivity of Newly Developed Tennis-Specific Reactive Agility Tests. *Sustainability (Switzerland)*, *14*(20), 1–7. https://doi.org/10.3390/su142013321

Siyoto, S., & Sodik, M. A. (2015). *Dasar Metodologi Penelitian* (Ayup (ed.)). Literasi Medis Publishing.

Subekti, N., Syaukani, A. A., Fatoni, M., Subroto, S., & Raihan, A. A. D. A. (2021). Exercise Speed, Agility and Quickness (SAQ) To Improve Physical Fitness. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, *5*(1), 95–101. https://doi.org/10.33369/jk.v5i1.14359

Sugiyono. (2013). *Metode penelitian pendidikan pendekatan kuantitatif, kualitatif dan R&D*. Alfabeta.

Sugiyono. (2017). *Metode Penelitian Pendidikan* (25th ed.). Alfabeta.

Turner, M., Russell, A., Turner, K., Beranek, P., Joyce, C., McIntyre, F., & Cruickshank, T. (2022). The association between junior tennis players' physical and cognitive attributes and groundstroke performance. *International Journal of Sports Science \& Coaching*, *0*(0), 17479541221106824. https://doi.org/10.1177/17479541221106824

Copyright © 2023, Jurnal Keolahragaan, ISSN 2339-0662 (print), ISSN 2461-0259 (online)

10% Overall Similarity

Top sources found in the following databases:

- 5% Publications database
- Crossref database
- Crossref Posted Content database
- 8% Submitted Works database

TOP SOURCES

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	**Universitas Indonesia on 2021-08-20** Submitted works	2%
2	**Birkbeck College on 2012-11-14** Submitted works	<1%
3	**University of Auckland on 2022-04-04** Submitted works	<1%
4	**General Sir John Kotelawala Defence University on 2019-09-27** Submitted works	<1%
5	**E Kharismayuni, T Feronika, L Yunita. "Implication of thinking maps ass...** Crossref	<1%
6	**President University on 2021-10-01** Submitted works	<1%
7	**Heri Sopian Hadi, Faturyani Faturyani, Marlina Marlina, Elyakim Nova S...** Crossref	<1%
8	**University of York on 2022-01-07** Submitted works	<1%
9	**Universitas Negeri Surabaya The State University of Surabaya on 2022-...** Submitted works	<1%

10	IAIN Salatiga on 2023-06-09 Submitted works	<1%
11	Universitas Mataram on 2021-07-27 Submitted works	<1%
12	Hendra Hermawan, Samsuri Samsuri, Diah Putri Kurniawati, Vinni Sofy... Crossref	<1%
13	Program Pascasarjana Universitas Negeri Yogyakarta on 2022-08-19 Submitted works	<1%
14	University of Durham on 2022-05-12 Submitted works	<1%
15	University of Hull on 2022-05-24 Submitted works	<1%
16	Coventry University on 2018-08-20 Submitted works	<1%
17	Dinda Dwi Cahyuni, Iyakrus Iyakrus, Wahyu Indra Bayu. "Development o... Crossref	<1%
18	Furqon Fauzi Wijaya, Pungki Indarto. "Effect of Speed Agility Training ... Crossref	<1%
19	Hanoi National University of Education Publication	<1%
20	Khoiril Anam, Sri Sumartiningsih, Dhias Fajar Widya Permana, Risti Nur... Crossref	<1%