JIPES

THE EFFECTIVENESS OF EXERCISE SPIN SERVE MODEL ON LAWN TENNIS BASED KINOVEA

[1]Ians Aprilo, Moch. [2]Asmawi, [3]James Tangkudung

[1]State University of Makassar, State University of Jakarta, State University of Jakarta
[2]Universitas Negeri Jakarta, Postgraduate Sport Education

ians.aprilo@unm.ac.id
asmawi.moch@yahoo.co.id
james.tangkudung@gmail.com

Abstract

The purpose this article is explain about influence the exercise spin serve on lawn tennis model based kinovea. The article will expose result of research in an effort to improved spin serve skills on lawn tennis. Method the research is experiment pretest - posttest control group design. The participant is 60 college student which can played lawn tennis with average abilities. The participant divided two group, the treatment and control group, 30 participants each. The research was conducted on sport science faculty state University of Makassar for two months. Implementation of treatment thrice e weeks and total 18 meetings. Data analysis have used parametric statistic. Researchers have tested data normality, homogeneity, as well independent and paired test, have used computer with SPSS program. The results of study have shown that there have been significant differences before and after exercise using spin serve model based of kinovea. Statistical result obtained by the t value of 3.08, the average value of -8.60m degree of freedom = 29, and sig. 0.000 (P<0.05). There has also been a significant difference between the treatment and control groups, it is obtained the statistical t value of 13.36, degree of freedom=58, and the sig. 0.000 (P<0.05).

Keyword : spin serve, exercise, lawn tennis, kinovea.

INTRODUCTION

The phenomena of serve on modern lawn tennis is the weapon to get points quickly (Roetert & Kovacs, 2011). The big serve on lawn tennis will make difficult receiver to return serve, so perhaps server to get ace or easily shoot to kill for finish the game. In the other word sever as the actor to manage of the course of the match. So, it is a big loss if server losses the points, therefore the serve is very important on lawn tennis (O'Donoghue & Brown, 2008); (Meffert, O'Shannessy, Born, Grambow, & Vogt, 2018); (Reid, Whiteside, & Elliott, 2011). Players who have relatively high

posture will benefit more to produce a more perfect serve (Vaverka & Cernosek, 2013). The result of previous studies indicate that there is a correlation between body height and the speed of service produced (Vaverka & Cernosek, 2016). In addition to body height, the success of a service to be used as a weapon in produce points is influenced by the performance of the correct pattern movement of service, varying types of service, and the point target of service. The importance of servicing has been a lot of effort through a scientific approach, as has been done by (Hernández-Davo, Urbán, Sarabia, Juan-Recio, & Javier Moreno, 2014); (Abrams, Sheets, Andriacchi, & Safran, 2011); (Bahamonde, 2000); (Chow et al., 2014); (Gordon & Dapena, 2006); (Guillot, Genevois, Desliens, Saieb, & Rogowski, 2012); (Martin, Bideau, Nicolas, Delamarche, & Kulpa, 2012); (Đurović, Lozovina, & Mrduljaš, 2008); (Sakurai, Reid, & Elliott, 2014).

There are three types of serve on lawn tennis, including flat serve, slice serve, and spin serve or kick serve (Sisters, 2004); (Brown & Soulier, 2013); (Hoskins-Burney & Carrington, 2014); (Giampaolo & Levey, 2013); (Anderson, 2009); (Williams, Rive, & Williams, 2012); (Sakurai et al., 2014). Each type of serve has its own characteristic which are its advantages and disadvantages. Flat serve tends to be faster and harder, less spin on the ball, and the bounce of the ball goes straight. Unlike the slice type serve, the ball speed is slower than flat serve, the ball has a fast rotation to the side, and the bounce of the ball slides to the right or left of the court depending on the server position, on the right or left side of court. While the spin or kick serve, more popularly called the American twice has the characteristic of the ball having a fast spin to the front of the right side (right hand), the ball speed is slower than flat serve and faster than the slice serve, and has a high bounce and off the court according to server position.

The three types of serve, spin serve is rarely used, because it is very difficult to do it correctly, but if practicing properly and correctly the spin serve skills can be performed perfectly. There are many spin serve training models that can be used, one of which is the spin serve training model based of kinovea. This training model has been developed by utilizing the kinovea application in the computer program (Aprilo, Asmawi, & Tangkudung, 2019). Kinovea is a computer application to analyzing motion biomechanics through motion video recordings. The spin serve training model based of kinovea consists of 7 basic service exercise and there are 30 exercise variation. In this training model, train in part and coordinate the 7 stages of complete service motion. Including coiling, toss, backswing, uncoiling, strike zone, follow through, and fall in (Giampaolo & Levey, 2013). The basic concept of exercise is to condition and develop motor and neuromuscular habituation according to the goals at each stage of pattern movement training (Tangkudung, 2012). Although this training model has many variations of movement, it remains a unified goal of the overall exercise of motion, so that the practice is not boring (Bompa & Haff, 2009).

There have been many studies using the kinovea application, including; (Hong & Moon, 2018); (Hisham, Nazri, Madete, Herawati, & Mahmud, 2017); (Welling, Benjaminse, Seil,

Lemmink, & Gokeler, 2018); (Felix & Rosa, 2015); (Puig-Diví et al., 2017); (El-Wardany, El-Sayed, & Ali, 2016); (Abd Elrahim, Embaby, Ali, & Kamel, 2016); (Cesar Guzmán-Valdivia, A. Blanco-Ortega, Marco Antonio Oliver-Salazar, 2013); (Obo & Iedma, 2015); (de Hoyo, Rueda, Carrasco, Sañudo, & Pozo-Cruz, 2014).

METHOD

The research that has been done is a quantitative research with experimental methods and uses a pretest-posttest control group research design. The sample was divided into two groups, namely the treatment group and the control group, and each group consisted of 30 sample. Before each group was given the treatment, they were given a spin serve skill test. The spin serve test provided to the sample have been subjected to internal and external validation tests. Furthermore, the treatment group was given a kinovea-based spin serve exercise program, while the control group was not given treatment. The training program has carry out for 18 meetings and 3 times a week. The treatment procedure is given a gradual exercise of the spin serve model consisting of 7 core motion exercise with 30 variations of motion. Method of training uses video modeling, command, and practice. The tools used on treatment consist of a tail ball, scout sticks, tennis ball and racket. The posttest is carry out after finishing treatment with the same test as the pretest. Data analysis that has been used is the normality test, homogeneity test, and, paired test and paired independent test. The treatment procedure in this study was a kinovea-based spin serve model exercise, as in the following table;

Table 1. Treatment of spin serve

Meet	Exercise	Variations	Rept	Set per meet
1,2	Coiling	1. Rotate the trunk to the right and left up to 90^0 on tiptoe, both arms straight forward, both hands holding the stick in front of the chest. 2. Same exercise as first but wider leg angle, 3. Position ready for service, straightened stick movement behind the body 180^0 and rotate the body up to 45^0 clockwise. 4. Same as in three, but the body rotated up to 270^0 clockwise. 5. Using the racket rotated the body 45^0 clockwise.	10	2

3,4	Toss	6. The stick is held by both hands shoulder width apart, the starting position of the arms is straight until the right arm is in line with the right leg, the rotation on the shoulder makes a hollow motion pattern. 7. The throwing hand throws the ball up and catches it again. 8. Same as exercise 7, the ball is thrown at an angle of 35^0 and the ball falls behind the body on the target provided. 9. Place the racket right above the head, racket 35^0 leaves to left of the body. Perform toss until the ball falls right on the racket leaf. 10. Toss and hit the ball at the highest achievement of racket.	10	2
5,6	Backswing	11. Using a ball's tail, left arm toss, right arm holding the ball's tail (modified) do a rotational motion in the shoulder joint in counter-clockwise direction, up to the back of the head, continue to move straight arms up and down across the front of the chest to the side of the left body, and continue the movement as from the beginning. 12. Same as exercise 11, added coiling motion. 13. Using the racket, do coiling, toss, and backswing.	10	2
7	Uncoiling	14. Using the stick, do coiling, and turn counterclockwise. 15. To do coiling, toss, backswing movements, and the continue roasting the body counterclockwise until the left arm crosses the front of the chest and folds the elbow of the right arm.	10	3
8,9,10	Strike zone	16. Using the stick on the right hand and make a circular motion over the head, and counterclockwise, the motion base of shoulder.		

17. The stick is held by both hands above the head, and supination movements and continued with maximum pronation on the right arm, and the left hand releases the stick.
18. To do toss movements with a stick held by both arms (variation 6) and continue variation 17.
19. Using the racket and ball, pinch the tennis ball on the racket string above head, forearm pronation motion, rub the ball with the racket until the ball comes off and rotates forward.
20. Lean back 120^0 position, do variation 19, until the body and legs straight back.
21. Do variations 20, starting with the toss movement.
22. To do coiling, toss, backswing, uncoiling, and strike zone movement, continuous (chain).

11,12,13	Follow through	23. Make a circular motion with the stick in front of the chest at the shoulder joint.
		24. As the variation 17, (strike zone) and continue the follow through movement until crossing the front of the chest to the side of the body and the stick is greeted by the left hand
		25. Do a coiling, toss, backswing, strike zone, follow through using a tail ball, and adjust left hand as a counterweight.
		26. As variation 25, and use the racket and ball and target on the sevice.
14,15,16,17,18	Fall in	27. Do coiling, toss, backswing, strike zone, the heighest level so that both feet lift off the floor and land the left foot followed by the right foot.
		28. Do variation 27, and left foot lands inside the base line, followed by right foot.
		29. The overall pattern movement of spin serve, from coiling, toss, backswing, uncoiling, strike zone, follow through and fall in. the foot

that lands first is the left foot and enters the
base line.

30. The coordination movement of the whole
series of spin serve pattern, namely coiling,
toss, backswing, uncoiling, strike zone,
follow through and fall in continuously using
a racket and ball. Target on the service areas.

RESULT

The results of descriptive statistical analysis showed that there was an increase in spin serve
skills before and after the subject was given a spin serve training program, both in the treatment
group and in the control group, as shown in table 2;

Table 2. Exercise group

The average of the spin serve skills before treatment was 40.12%, and after treatment increased to
70.83%. The control group average of pretest 38.33%, and posttest 42,90%, as shown in table 3;

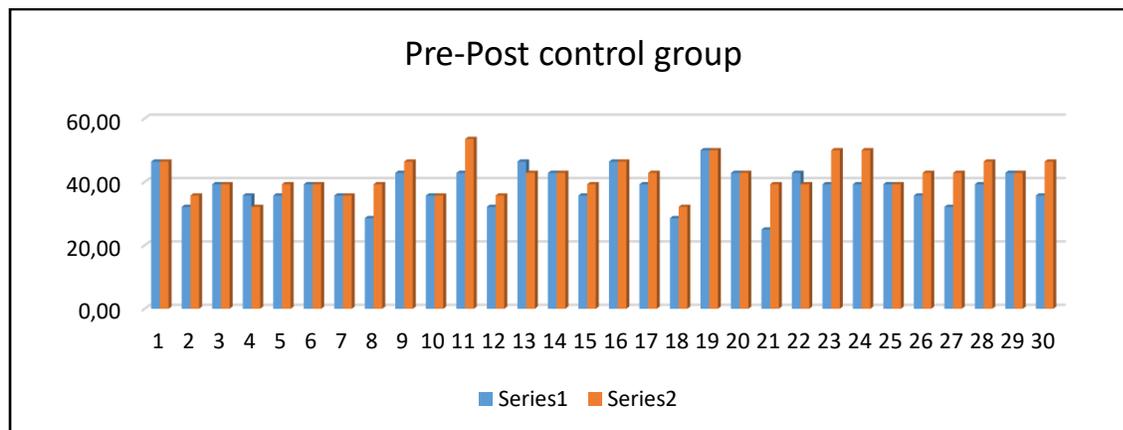Table 3. pre-post control group

Table 4. below describes the comparison of the mean improvement in the treatment and control groups of posttest data.

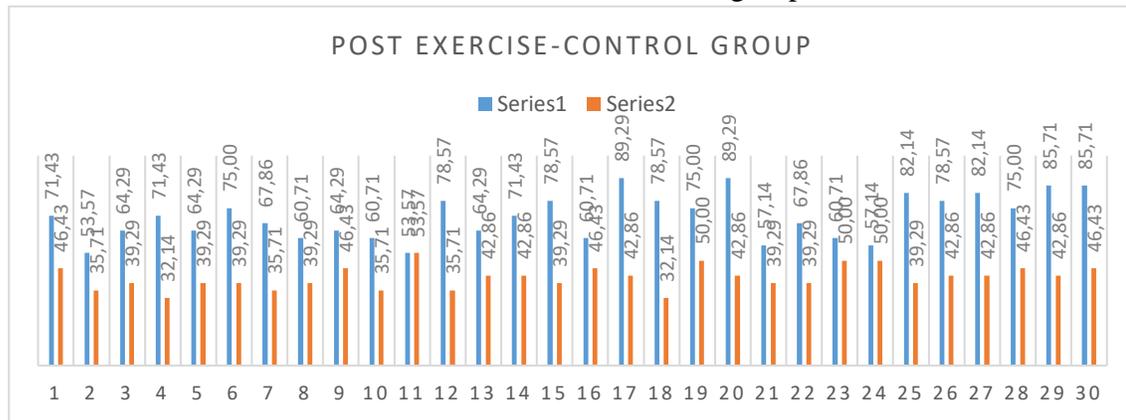Table 4. Posttest of exercise-control groups

Table 5. shows the skills of spin serve in the treatment group an average strike zone item of 77.50, un coiling 74.17%, backswing, 73.33%, the same toss and follow through of 72.50%, coiling 70.83%, and fall in 55.00%. while on table 6 shows the control group achievement, the average each item is strike zone 47.50%, toss 45.00%, backswing and follow through 44.17%, coiling 39.17%, and fall in 32.50%.

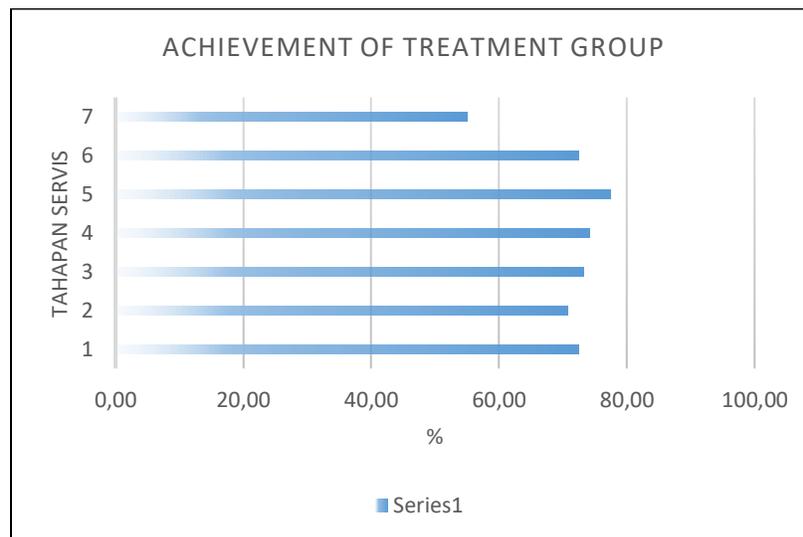Table 5. Stages of spin serve on treatment group

Table 6. Stages of spin serve on control group

The result of the data normality test analysis are shown in table 7 below that the data of this study in the treatment and control groups each followed the normal curve, meaning that all normal data.

Table 7. Normality test

Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest of treatment	0,154	30	0,067	0,948	30	0,153
Posttest of treatment	0,132	30	0,192	0,957	30	0,252
Pretest control	0,131	30	0,198	0,968	30	0,440
Posttest control	0,153	30	0,070	0,958	30	0,270

Table 8 shows the results of the data homogeneity test of this study which illustrates that data for the treatment and control groups are homogeneous.

Table 8. Homogeneity test

	Levene Statistic	df1	df2	Sig.

Pretest treatment-control	Based on mean	0,026	1	58	0,873
	Based on median	0,017	1	58	0,897
	Based on median and with adjusted df	0,017	1	57,261	0,897
	Based on trimmed	0,020	1	58	0,888

The test results differed between before and after treatments which used paired sample t test shown in table 9 bellow;

Table 9. Paired test

	Mean	T	df	Sig. (2tailed)
Pretest-Postest of treatment	-8,600	3,08	29	0,000
Pretest-Posttest of control	-1,000	1,42	29	0,001

The statistical result is a significant difference spin serve skills in the treatment group with a statistical value of t = 3.08, and sig. 0.000 (P<0.05). whereas in the control group there was difference in the skill of spin serve, the statistic value 0.001 (P<0.05).

Table 10 below shows that value is 13.36 and the sig.0.000 (P<0.005). the independent paired test that a significant difference of skills spin service between treatment and control groups.

Table 10. Independent paired test

Independent paired test	Avarage of difference	t	df	Sig. (2 tailed)
Posttest treatment-control	8,10	13,36	58	0,000

JIPES

DISCUSSION

This study aims to reveal the effect to the kinovea-based spin serve training model this exercise model is designed with an emphasis on the process of the stages of motion in performing spin serve. The orientation of this training is on the correct process of motion by utilizing the laws of biomechanics. Through the biomechanical analysis of this exercise pattern of movement trains every movement and position of the body segment (Groppel, 1986). The statistical results in table 2 show an increase in the average skill of the spin serve movement after treatment by 30.71%, from 40.12 to be 70.83%. the success of this increase when analyzed and linked to the biomechanical analysis of service, is in the advantage of the training model which emphasizes more exercise on the legs, namely flexion, hip rotation, trunk rotation, arm/shoulder rotation, elbow extension-forearm pronation and wrist flexion, so that force is created from the ground is transferred through a series of body movement systems from the legs, hips, trunk, and upper limb (Groppel, 1986).

The result of this spin serve training model are shown in statistical analysis in table 9, where the skill movement the coiling technique is 72.50%, toss 70.83%, backswing 73.33%, uncoiling 74.11%, strike zone 77.50%, follow through 72.50%, and fall in 55.00%, achieved average of 70.83%. The coiling exercise emphasizes trunk rotation, strength and body balance. The purpose of these exercise is to prepare the strength of the legs and trunk flexibility and total body balance (Bahamonde, 2000); (Reid, Whiteside, Gilbin, & Elliott, 2013). Focus toss exercise to direct the ball throw at the right angle by training the series of motion of the two right and left arms when doing toss, as well as the leaves the palm. Backswing practice emphasizes the starting movement before making the strike zone. Uncoiling focus exercise for turning the body forward and balance. It is a result of coiling motion. Strike zone exercise emphasizes the strength of the supination and maximum pronation movement of the arm, and this exercise is the pinnacle of spin serve characteristics due to the ball's hiting angle between the number 11 and 12 in the "hour" (clock method) (Hoskins-Burney, 2014); (Gordon & Dapena, 2006). Follow though exercise emphasizes the right movement pattern to reduce the power of the movement after do strike zone. Exercise in this movement diagonally circular in front of the chest to the side of the body and greeted by the left hand. The final exercise is a fall in which focuses on the movement of the left leg that falls or falls within the base line. This exercise movement is the result of a previous movement pattern with optimal power that causes the body to lift upward after uncoiling and the strike zone. So the advantage of this kinovea-based spin serve exercise is to train in detail all movement in body segments through the uses of the laws of biomechanics (Kovacs & Ellenbecker, 2011).

CONCLUSION

Kinovea-based spin serve training model is very easy to do and recommended for tennis coaches, tennis players, and anyone in an effort to improve spin serve. The results of the research analysis previously described reveal that spin serve training model based of kinovea has a significant effect on improving the spin serve ability in tennis for players at advanced level age 14-16 years.

SUGGESTION

The results of this study are recommended to tennis coaches and tennis players in an effort to improve spin serve ability, this kinovea-based spin serve training model can be used. All the strengths and weaknesses of this research can be used as a foundation for broader research and in similar fields of study, in order to improve the results of this research.

ACKNOWLEDGEMENT

References

Abd Elrahim, R., Embaby, E., Ali, M., & Kamel, R. (2016). Inter-rater and intra-rater reliability of Kinovea software for measurement of shoulder range of motion. *Bulletin of Faculty of Physical Therapy*, *21*(2), 80. https://doi.org/10.4103/1110-6611.196778

Abrams, G. D., Sheets, A. L., Andriacchi, T. P., & Safran, M. R. (2011). Review of tennis serve motion analysis and the biomechanics of three serve types with implications for injury. *Sports Biomechanics*, *10*(4), 378–390.

Anderson, K. (2009). *Coaching Tennis Tactical Skills* (P. Sammann, L. Floch, & E. W. and L. Podesch, Eds.). United States of America: Human Kinetics.

Aprilo, I., Asmawi, M., & Tangkudung, J. (2019). *Concept Development on Spin Serve Exercise Model of Lawn Tennis Based Kinovea*. https://doi.org/10.2991/icamr-18.2019.8

Bahamonde, R. E. (2000). Changes in angular momentum during the tennis serve. *Journal of Sports Sciences*, *18*(8), 579–592. https://doi.org/10.1080/02640410050082297

Bompa, T., & Haff, G. G. (2009). *Periodization Theory and Methodology of Training-Human Kinetics* (Fith editi; M. S. Bahrke, A. S. Ewing, C. Syzch, E. Watson, & C. A. Gentis, Eds.). United States of America: Human Kinetics.

Brown, J., & Soulier, C. (2013). *Tennis: Steps to success* (Fourth; L. E. Podeschi, Ed.). United

States of America: Human kinetics.

Cesar Guzmán-Valdivia, A. Blanco-Ortega, Marco Antonio Oliver-Salazar, J. L. C.-E. (2013). Therapeutic Motion Analysis of Lower Limbs Using Kinovea. *International Journal of Computing and Engineering*, *3*(2), 359–365. https://doi.org/http://dx.doi.org/10.1016/S0032-9592(96)00006-4

Chow, J., Carlton, L. E. S., Lim, Y., Chae, W., Shim, J., Chow, J. W., … Chae, W. (2014). *Comparing the pre- and post-impact ball and racquet kinematics of elite tennis players ' first and second serves : a preliminary study Comparing the pre- and post-impact ball and racquet kinematics of elite tennis players ' first and second serves : a pre*. (April 2014), 37–41. https://doi.org/10.1080/0264041031000101908

de Hoyo, M., Rueda, D., Carrasco, L., Sañudo, B., & Pozo-Cruz, B. del. (2014). Validation of a Video Analysis Software Package for Quantifying Movement Velocity in Resistance Exercises. *Journal of Strength and Conditioning Research*, *30*(10), 2934–2941. https://doi.org/10.1519/jsc.0000000000000563

Đurović, N., Lozovina, V., & Mrduljaš, D. (2008). New Biomechanical Model for Tennis Serve. *Acta Kinesiologica*, *2*, 45–49. Retrieved from http://www.actakin.com/PDFS/BR0202/SVEE/04 CL 06 ND.pdf

El-Wardany, S. H., El-Sayed, W. H., & Ali, M. F. (2016). Interrater and Intrarater Reliability of Kinovea Computer Program in Measuring Cervical Range of Motion in Frontal Plane. *Med. J. Cairo Univ*, *84*(2), 55–62. Retrieved from www.medicaljournalofcairouniversity.net

Felix, A., & Rosa, E. (2015). a Gestão Documental Como Suporte Ao Governo Eletrônico : Caso Da Secretaria De Estado Da Saúde De Santa Catarina (Ses / Sc). *Journal of Dental and Allied Sciences*, *4*(1), 36–50. https://doi.org/10.1561/2200000016

Giampaolo, F., & Levey, J. (2013). *Championship tennis* (J. Klug, L. E. Podeschi, & T. M. Wolpert;, Eds.). United States of America: Human Kinetics.

Gordon, B. J., & Dapena, J. (2006). Contributions of joint rotations to racquet speed in the tennis serve. *Journal of Sports Sciences*, *24*(1), 31–49. https://doi.org/10.1080/02640410400022045

Groppel, J. L. (1986). The biomechanics of tennis: an overview. *International Journal of Sport Biomechanics*, *2*(3), 141–155.

Guillot, A., Genevois, C., Desliens, S., Saieb, S., & Rogowski, I. (2012). Motor imagery and "placebo-racket effects" in tennis serve performance. *Psychology of Sport and Exercise*,

13(5), 533–540. https://doi.org/10.1016/j.psychsport.2012.03.002

Hernández-Davo, H., Urbán, T., Sarabia, J. M., Juan-Recio, C., & Javier Moreno, F. (2014). Variable training: effects on velocity and accuracy in the tennis serve. *Journal of Sports Sciences*, *32*(14), 1383–1388. https://doi.org/10.1080/02640414.2014.891290

Hisham, N. A. H., Nazri, A. F. A., Madete, J., Herawati, L., & Mahmud, J. (2017). Measuring Ankle Angle and Analysis of Walking Gait using Kinovea. *International Medical Device and Technology Conference*, (September 2017), 247–250. Retrieved from https://www.researchgate.net/publication/323725128_Measuring_Ankle_Angle_and_Analysis_of_Walking_Gait_using_Kinovea

Hong, Y. R., & Moon, E. (2018). Reliability and validity of free software for the analysis of locomotor activity in mice. *Yeungnam University Journal of Medicine*, *35*(1), 63–69. https://doi.org/10.12701/yujm.2018.35.1.63

Hoskins-Burney, T. (2014). *Tennis Drill Book*.

Hoskins-Burney, T., & Carrington, L. (2014). *The Tennis Drill Book, 2E*. Human Kinetics.

Kovacs, M., & Ellenbecker, T. (2011). An 8-stage model for evaluating the tennis serve: Implications for performance enhancement and injury prevention. *Sports Health*, *3*(6), 504–513. https://doi.org/10.1177/1941738111414175

Martin, C., Bideau, B., Nicolas, G., Delamarche, P., & Kulpa, R. (2012). How does the tennis serve technique influence the serve-and-volley? *Journal of Sports Sciences*, *30*(11), 1149–1156. https://doi.org/10.1080/02640414.2012.695079

Meffert, D., O'Shannessy, C., Born, P., Grambow, R., & Vogt, T. (2018). Tennis serve performances at break points: Approaching practice patterns for coaching. *European Journal of Sport Science*, Vol. 18. https://doi.org/10.1080/17461391.2018.1490821

O'Donoghue, G. P., & Brown, E. (2008). The Importance of Service in Grand Slam Singles Tennis. *International Journal of Performance Analysis in Sport*, *8*(3), 70–78. https://doi.org/10.1080/24748668.2008.11868449

Obo, M. A. J. C., & Iedma, E. N. H. E. (2015). *A b f - -f f s v a a h f a*. *29*(9), 2661–2665.

Puig-Diví, A., Padullés-Riu, J. M., Busquets-Faciaben, A., Padullés-Chando, X., Escalona-Marfil, C., & Marcos-Ruiz, D. (2017). Validity and Reliability of the Kinovea Program in Obtaining Angular and Distance Dimensions. *Preprints*, (October). https://doi.org/10.1109/WSC.1999.816845

Reid, M., Whiteside, D., & Elliott, B. (2011). Serving to different locations: Set-up, toss, and racket kinematics of the professional tennis serve. *Sports Biomechanics*, *10*(4), 407–414. https://doi.org/10.1080/14763141.2011.629206

Reid, M., Whiteside, D., Gilbin, G., & Elliott, B. (2013). Effect of a common task constraint on the body, racket, and ball kinematics of the elite junior tennis serve. *Sports Biomechanics*, *12*(1), 15–22. https://doi.org/10.1080/14763141.2012.724702

Roetert, E. P., & Kovacs, M. S. (2011). *TENNIS ANATOMY* (L. Plotzke-Garcia & C. McEntire, Eds.). United States of America: Human Kinetics.

Sakurai, S., Reid, M., & Elliott, B. (2014). Ball spin in the tennis serve : spin rate and axis of rotation. *Sports Biomechanics*, *(12)*, *1*(November 2014), 23–29. https://doi.org/10.1080/14763141.2012.671355

Sisters, W. (2004). *How to play Learn how to play tennis with the Williams sisters* (K. Simkins & J. March, Eds.). London: A Penguin Company.

Tangkudung, J. (2012). *Kepelatihan Olahraga*. Jakarta: Cerdas Jaya.

Vaverka, F., & Cernosek, M. (2013). Association between body height and serve speed in elite tennis players. *Sports Biomechanics*, *12*(1), 30–37. https://doi.org/10.1080/14763141.2012.670664

Vaverka, F., & Cernosek, M. (2016). Quantitative assessment of the serve speed in tennis. *Sports Biomechanics*, *15*(1), 48–60. https://doi.org/10.1080/14763141.2015.1123763

Welling, W., Benjaminse, A., Seil, R., Lemmink, K., & Gokeler, A. (2018). Altered movement during single leg hop test after ACL reconstruction: implications to incorporate 2-D video movement analysis for hop tests. *Knee Surgery, Sports Traumatology, Arthroscopy*, *26*(10), 3012–3019. https://doi.org/10.1007/s00167-018-4893-7

Williams, S. C., Rive, J., & Williams, S. C. (2012). *TENNIS Skills & Drills* (L. P. Garcia & C. Marty, Eds.). United States of America: Human kinetics.