

DIFFERENCE OF GROUNDSTROKE TRAINING METHOD AND EYE COORDINATION ON RALLY CAPABILITY OF 3 MINUTES

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Abstract

The research objectives are: Knowing the Difference between groundstroke training methods and analyzing the interaction between the Exercise and Eye-Hand coordination methods on the ability to rally 3 minutes on the TECAD junior tennis player (Tennis academy Andy) in Pekalongan Regency. Quantitative research design with a 2 x 2 factorial design. The population in this study was TECAD junior tennis player in Pekalongan Regency as many as 30 tennis players with sampling purpose sampling, as many as 24 tennis players. Initial data collection using eye-hand coordination test after it was divided into the experimental group and the control group in order to obtain the results of the training method is done by pairing the ability to rally test. The analysis technique uses the Kolmogorof Smirnov analysis technique at a significant level of 5% ($\alpha = 0.05$). The results are shown in the tests of Between-Subjects Effects table showing Sig. = 0.047 for Method variables, significance level $\alpha = 5\% = 0.05$, Sig value $<\alpha$ or $0.047 < 0.05$, the conclusion that there are differences in the ability to rally 3 minutes with the groundstroke training method on the TECAD junior tennis player in Pekalongan Regency, Sig. The result for the Coordination variable is Sig. = 0.009, using a significance level $\alpha = 5\% = 0.05$, Sig value $<\alpha$ or $0.009 < 0.05$, the conclusion that there is a difference in the ability of a 3 minute rally with hand-eye coordination on TECAD junior tennis player in Pekalongan Regency, Sig. The interaction between the groundstroke method and hand eye coordination is Sig. = 0.03, significance level $\alpha = 5\% = 0.05$, Sig value $<\alpha$ or $0.030 < 0.05$, the conclusion is drawn, then there is an interaction between the groundstroke training method and coordination an eye on the ability to rally 3 minutes at the TECAD junior tennis player in Pekalongan Regency. The amount of influence exerted from the interaction between the groundstroke method and hand eye coordination is 40.2%.

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INTRODUCTION

Sport is all systematic activities to encourage, foster, and develop physical, spiritual and social potential. Sports including secondary needs for the community, not only for entertainment after activity but also can maintain fitness and achievement (Rizal Pratama, 2015). Sports is also a form of effort to improve the quality of Indonesian people directed at the formation of character and personality, discipline, and high sportsmanship, as well as increased achievements that can arouse a sense of national pride Sports in modern life like this are a necessity that has been integrated in society because people are increasingly aware and understand the meaning and function of the sport itself. The role and attention of the government also has a positive impact on the development of sports. The development of sports to date has made a positive and tangible contribution to improving fitness, freshness and public health. Sports also play a major role in increasing the ability of the nation in implementing sustainable development systems (A. Palmizal. 2012). The role and attention of the government in paying attention to sports also has a very positive impact on the development of sports (Martha AAD, 2013). Tennis is a game that uses tools such as a racket, net, tennis ball, with various stroke techniques ranging from relatively slow to very fast. The game of tennis is beaten using a welcome racket welcomed by the playing partner facing each other across the net which is deliberately installed in the middle of the field which becomes a barrier between players A and B called the net which is mounted in a rectangular rectangular field which has a length of 23.77m and the width of the single pitch is 8.23m then the width of the double pitch is 10.97m (Ricko. 2014). Tennis is a branch of small ball sports. Tennis is one of the main sports that can be done by children and parents, men and women, can be done single or double and mixed (Saputri IS, 2013). Tennis has reached a very rapid development stage and is attracting the attention of some people. Since the opening of world-class competition events, which have participated in it

has pushed the spread of this sporting game throughout the world, given serious tennis lessons regardless of age or gender (Ferry Cahyo S, Soedjatmiko, 2015). The basic techniques that must be mastered in tennis include: 1) Ball control that is setting the time when it is appropriate to hit the ball. 2) Grips are ways to hold the racket. 3) The Element of Basic Strokes is the basic stroke technique. Strokes in tennis play are classified into three groups, namely: Groundstroke, Volleys and Overhead Stroke (Oksa Slamet Riswanto, Soedjatmiko, 2015). According to Maghetty in Maulidin (2017) as for the basic techniques of playing tennis one of which is the technique of punching. The technique of stroke in playing tennis is divided into four parts, namely: service stroke, forhand drive, backhand, volley, and smash. According to Brown, J (2007: 31) ground stroke is a blow after the ball bounces to the field. Groundstroke forehand leads to the side of the body when holding a racket. Forehand is a form of tennis stroke that is often done and the easiest to learn. Groundhand stroke backhand leads to the opposite side.

According to Brewer L (1981: 68) in the Thesis Martha Atika (2013), there are various types of exercises that can be used to improve the ability of groundstroke placement including groundstroke exercises with the rhythm drill method, modified two on one method, passing short method, and tree method ball drill. Groundstroke training using the rhythm drill method is a form of groundstroke exercise that is done in pairs by two players starting from the back of the court using a certain rhythm, ie the ball is hit straight and crosses in the back corner of the field, the groundstroke exercise with the modified two on one method is almost the same as training with rhythm drill method, with two players starting from the back of the court using a straight and crossing rhythm, but one of the players does not move and the partner hits straight and crosses to the left and right side of the field, while training with the passing short method and the tree ball method drill is a method of groundstroke training carried out with the help of a feeder (Martha AAD, 2013).

Coordination is the ability of a person to combine several elements of motion into one harmonious movement (Juita A, 2013). Coordination is the ability of a person to perform a variety of different movements into a single movement pattern effectively coordination is the ability to perform a series of efficient movements. Eye-Hand Coordination is a very complex biomotoric skill which in its implementation consists of several physical elements that interact with one another. Harsono (2003: 219) in Galih Wisnu M (2014) said that coordination is very closely related to speed, strength, endurance and flexibility. Coordination is a person's skill to combine several movements into an effective and efficient movement pattern. To be able to hit a fast moving ball well requires a good level of eye and hand coordination (Novri A, 2017). Groundstroke training method above researchers are interested in examining the method of groundstroke exercise with the rhythm drill and modified two on one method because the two forms of exercise have different advantages and disadvantages, where the groundstroke exercise with the rhythm drill and modified two on one methods both develop capabilities groundstroke, in the rhythm drill method the player is trained to perform a straight and crossed groundstroke directed at the rear corner of the opponent's pitch from the left and right sides of the field but on the groundstroke practice with the modified two on one method one player is only in one place and do not move to the left and right of the field. And Eye-Hand coordination is a component of physical fitness that supports tennis because tennis in the field relies on the ability to move quickly, maximum, which is sudden. Based on the description above, the purpose of this study is to obtain different methods of groundstroke training and eye-hand coordination, better training methods and the interaction of training methods with eye-hand coordination.

METHOD

This study uses a quantitative approach, where the quantitative approach can be

interpreted as a research method based on the philosophy of positivism, used to examine specific populations or samples, data collection using research instruments, quantitative / statistical data analysis with the aim to test the hypotheses that have been set (Marini, 2012). This research step begins with the determination of specific study objects, the theoretical framework in accordance with the object of study, determination of hypotheses, data collection instrumentation, determination of sampling, data analysis and drawing conclusions. The design used in this study is quantitative research using pure or true experimental research methods (Suliswa, 2017). Given the selection of samples used in the study was random. Experimental method in 2x2 factorial design is applied by arranging treatment by dividing groups based on the ability of eye-hand coordination and the ability to rally so that each individual can be the subject simultaneously in two different factors which each factor consists of several levels. The research design can be seen in table 1 below:

Table 1. Research design

Athlete's Hand Coordination (B)	Exercise Method (A)	
	<i>Rhythm drill</i> (A1)	<i>Modified two on one</i> (A2)
Height (B1)	A1B1	A2B1
Height (B2)	A1B2	A2B2

The population in this study is the TECAD club tennis player which is a total of 30 tennis players and then the sample of this study is 24 tennis players of the TECAD tennis club taken by means of purpose sampling. The research instrument was a sample to conduct a hand-eye coordination test in order to obtain a high and low hand-eye coordination group then to conduct a 3-minute rally test so that two training methods groups were obtained so that an experiment and a control group would be obtained. Initial data collection using eye-hand coordination test after it was divided into experimental groups and control groups in order to obtain the results of the training method is done by pairing the ability to rally tests. The analysis technique uses the

Kolmogorof Smirnov analysis technique at a significant level of 5% ($\alpha = 0.05$).

The data analysis technique uses the two way ANOVA test. If there are more than two independent variables, for example work and gender categories, then it is called ANOVA two ways. For example, we want to find out whether there are differences in previous work experience as seen from work and gender categories. Through the two ways Anova, we can also analyze the moderating relationship between independent category variables by interacting between independent variables (Ghozali, 2011). The significance criteria can be seen if $P_value \leq 0.05$ or if $F_count > F_table$. Then the proposed hypothesis can be accepted or supported, whereas if $P_value \geq 0.05$ or if $F_count < F_table$, then the hypothesis proposed cannot be accepted or rejected.

RESULTS AND DISCUSSION

This study aims to obtain the results of differences in groundstroke training with rhythm drill and modified two on one methods as well as high and low eye-hand coordination exercises on the ability to rally three minutes in junior tennis athletes in the TECAD Tennis Club in Pekalongan Regency, and find out whether there is any interaction between the training methods and eye-hand coordination of the ability to rally three minutes at the junior tennis player TECAD Tennis Club. The population in this study were 30 junior tennis athletes of the TECAD Tennis

Club in the age range of 12-18 years, who were then selected 24 junior tennis players in the age range of 14-18 years to be used as research samples. The results are shown in the tests of Between-Subjects Effects table showing Sig. = 0.047 for Method variables, significance level $\alpha = 5\% = 0.05$, Sig value $< \alpha$ or $0.047 < 0.05$,.

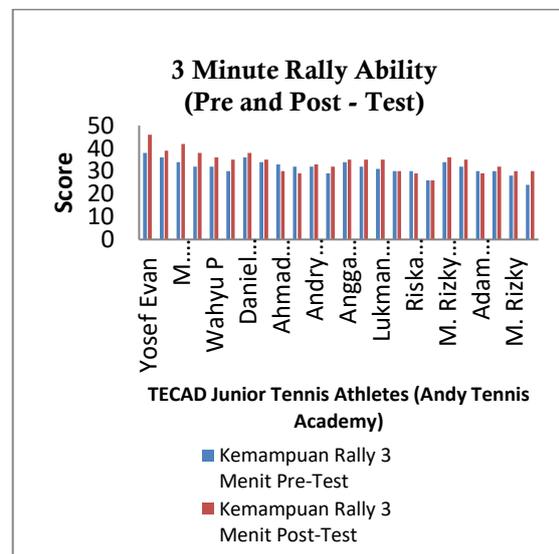
The results of the 3-minute rally ability obtained by each junior tennis athlete of the TECAD Tennis Club, shows that there are mixed results, both the increase and decline in results. The results of the central tendency of the ability to rally 3 minutes junior athletes of the TECAD Tennis Club, it is known that as many as 24 athletes were tested the ability to rally 3 minutes before and after being given treatment to then be used as pre-test and post-test scores. Average athlete's 3 minute rally ability at the time of the pre-test was 31.62 strokes with the highest ability score of 38 strokes and the lowest of 24 strokes. The resulting standard deviation of 3.146 shows that each of the results of the ability to rally 3 minutes at the time of taking the pre-test value is not too far from the average due to a small standard deviation. Average athlete's 3 minute rally ability at the time of the post-test was 33.96 strokes with the highest ability score of 46 strokes and the lowest 26 strokes. The resulting standard deviation of 4,620 shows that each result of the ability to rally 3 minutes at the time of taking the post-test score was not too far from the average due to a small standard deviation. The results of the study can be seen in full can be seen from the following table 2:

Table 2. Rally Ability research results 3 minutes (Pre and Post-Test) high eye-hand coordination

No	Nama	Skor	
		Pre-Test	Post-Test
1.	Yosef	38	46
2.	Zeka Azka	36	39
3.	M. Subkhan HW	34	42
4.	Ahmad Haikal	32	38
5.	Wahyu P	32	36
6.	Ahmad Hanif	30	35
7.	Daniel Hadi	36	38
8.	Falakh August	34	35
9.	Ahmad Bagas	33	30
10.	Martino Yuana	32	29
11.	Andry Nur H	32	33
12.	M. Faqih	29	32

Table 3. Research results on Rally Ability 3 minutes (Pre and Post-Test) Low eye-hand coordination

No	Nama	Skor	
		Pre-Test	Post-Test
1.	Angga Setiawan	38	46
2.	M. Hanif	32	35
3.	Lukman P	31	35
4.	Maftuh Qolbi	30	30
5.	Riska Irawan	30	29
6.	Rendra Akmoro	26	26
7.	M. Rizky S	34	36
8.	AdityaNugroho	32	35
9.	Adam Allansyah	30	29
10.	M. Zahlul H	30	32
11.	M. Rizky	28	30
12.	M. Faqih	24	30



The average ability to rally 3 minutes of junior tennis athletes at the TECAD Tennis Club after being given a groundstroke exercise treatment with the rhythm drill and modified two on one method is higher than the ability to rally 3 minutes of tennis athletes before being given

groundstroke training, this is also supported by the highest ability value junior tennis athletes get after they are given groundstroke training compared to before being given training. The average ability to rally 3 minutes before being given the rhythm drill method to tennis athletes with high hand-eye coordination was 33.67 strokes while after being given treatment it increased by 5.67 to 39.33 strokes. The average ability to rally 3 minutes before being given the rhythm drill method to tennis athletes with low hand-eye coordination was 30.50 strokes while after being given treatment it increased by 1.17 to 31.67 strokes. The average ability to rally 3 minutes before being given a modified two on one method to tennis athletes with high hand-eye coordination was 32.67 strokes while after being given treatment it increased by 0.17 to 32.83 strokes. The average ability to rally 3 minutes before being given a modified two on one method to tennis athletes with low hand-eye coordination was 29.67 strokes while after being given treatment it increased by 2.33 to 32.00 strokes. Based on the results obtained, the highest average increase in the ability to rally 3 minutes was obtained by tennis athletes after being given groundstroke training with the rhythm drill method with high eye-hand coordination and the lowest average increase being obtained by tennis athletes after being given groundstroke training with the modified two on one method with high eye-hand coordination.

Normality test is carried out to find out whether the data used is from a normal distribution population or not. The initial hypothesis (H_0) is expressed with data derived from a normally distributed population and an alternative hypothesis (H_1) is stated with data not from a normally distributed population. H_0 rejection occurs if the Sig. resulting from testing using SPSS $<\alpha$, where α is used at 5% (0.05). Normality test results, it is known that Asymp. Sig. (2-tailed) produced for the variable ability to rally 3 minutes in the pre-test was 0.766 and the ability to rally 3 minutes in the post-test was 0.754. This shows that the value of Sig. > 0.05 or Sig value $> \alpha$ for data capability rally 3 minutes at pre-test and post-test. Due to the value of Sig. $>$

A , H_0 is accepted or it can be concluded that the data used are from normally distributed populations so that the normality prerequisite tests are met.

Homogeneity test is done with the aim to find out whether the research data has the same variance (homogeneous) or not. In this study, the homogeneity test was performed using the Levene test. The initial hypothesis (H_0) is expressed with the data having the same variance (homogeneous) and the alternative hypothesis (H_1) is expressed with the data having a different variance (not homogeneous). H_0 rejection occurs if the Sig. resulting from testing using SPSS $<\alpha$, where α is used at 5% (0.05). Homogeneity test, it is known that the Sig value for 3 minute rally ability for pre-test results is 0.836 and Sig value for 3 minute rally ability for post-test results is 0.717. This shows that the Sig value > 0.05 or Sig value $> \alpha$ for both results. Due to Sig. $> A$, it can be concluded that the data used have the same or homogeneous variance, so that the Two Way Anova assumptions are met. In order to answer the hypotheses that have been formulated in this study, it is known by conducting data testing using parametric statistical analysis of the two way anova test (aided by SPSS statistical application) (PASW Statistics 18). The use of SPSS version 18 was chosen as a statistical analysis software that is easy to use and there are no striking differences with the latest version or version below. Based on the table Sig. generated for the Method variable is 0.047. Because the significance level $\alpha = 5\% = 0.05$, this value indicates that H_0 is rejected because the value of Sig. $< A$ or $0.047 < 0.05$, so it can be concluded that there is a difference in the ability to rally 3 minutes with the groundstroke training method with the rhythm drill method and modified two on one in the TECAD Tennis Club junior player. Based on the Sig. The resulting result for the Coordination variable is Sig. = 0.009. Due to the significance level used $\alpha = 5\% = 0.05$, the value of Sig. $< A$ or $0.009 < 0.05$, this value indicates that H_0 was rejected because the Sig value $< \alpha$ or $0.009 < 0.05$, so that conclusions can be drawn that there is a difference in the ability of a 3-minute rally with

high and low hand-eye coordination on the TECAD Tennis Club junior tennis player. Based on the table Sig. The result for interaction between groundstroke method and eye-hand coordination is Sig. = 0.030. Due to the significance level used $\alpha = 5\% = 0.05$, the value of Sig. $< \alpha$ or $0.030 < 0.05$, this value indicates that H_0 is rejected because the Sig value $< \alpha$ or $0.030 < 0.05$, it can be concluded that there is an interaction between the groundstroke training method and eye-hand coordination on the ability of a 3 minute rally on the TECAD Tennis Club junior tennis player. The amount of influence exerted from the interaction between the groundstroke method (rhythm drill and modified two on one) and eye-hand coordination is 40.2%.

CONCLUSION

Based on the research that has been done, it can be concluded that there is a difference in the ability of a 3 minute rally with the groundstroke training method with the rhythm drill and modified two on one method and there is a difference in the ability to rally 3 minutes with the coordination of high and low hand-eye on the junior tennis club TECAD Tennis and there is an interaction between there is an interaction between the 3 minute rally of the junior tennis player of the TECAD Tennis Club to the ability of the 3 minute rally on the junior tennis player of the TECAD Tennis Club. Groundstroke training with the rhythm drill method is balanced with high hand-eye coordination which is very suitable to be applied to improve the ability of the 3 minute rally of tennis athletes.

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