

## The Influence of Volley Training Method and Agility on Tennis Players' Backhand Volley Accuracy

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### Abstract

The result of observation in UNWAHAS College Tennis Club, backhand volley placement skill has not been optimal yet. The objective of this research are to find out the influence of training method on backhand volley's accuracy; the influence of agility on students' agility; interaction between training method and agility on backhand volley's accuracy. The method used in this research is experimental method with 2x2 factorial experiment design. Sample collection method used is purposive sampling, thus obtained 20 people as sample. The Independent variables of this research are training method and accuracy while the dependent variable is shot accuracy. The result of the research indicated that there is difference in the influence of Volley training method in backhand volley accuracy with the average of Volleys Against the Fence method is 20.8 and the average of Down The Line Volley is 15.5. Further test to find out the difference between cells conducted through Tukey test can be concluded that volleys against the fence training method would be better given to the tennis players with high agility, rather than layers with low agility. Conclusion: there is difference of training method and agility on backhand volley accuracy.

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## INTRODUCTION

The fundamental factor that needs to be mastered by tennis players is the mastery of basic technique. There are several basic techniques in tennis which are: (a) groundstrokes consist of forehand and backhand, (b) volley also consists of forehand and backhand, (c) service, (d) lob, and smash (Sukadiyanto, 2002).

The basic shots of tennis can be categorized into three categories which are: groundstroke, volley and overhead stroke. Volley is a shot which is executed before the ball touches the ground. (Jones & Buxton, 2009).

There are 4 training aspects that need to be concerned which are (1) physical training, (2) technical training, (3) tactical training, (4) mental training. (Harsono, 1988).

The trainings given are technique, endurance, speed, agility, movement coordination and strength training. The result of observation in tennis club Wahid Hasyim University Semarang, the volley placement skill when executing volley shot, especially backhand volley has not been optimal yet. This is caused by the mastery of drill technique when conducting training and the tennis players own ability when conducting forehand volley training has not been optimal, therefore improvement is needed, which are in the form of physical, technical, and tactical training.

Agility is the ability to change the direction and position of the body quickly and accurately while moving, without losing balance and awareness of one's own body position. In executing backhand volley agility is need in order to move quickly to intercept the ball and execute the backhand volley. (Pasurney & Sidik, 2006)

Volley shot is more difficult than groundstroke forehand and backhand because it needs the strength of the wrist, racket grip and strong arms also faster reflex (Page, Frank & Lardner, 2010). From the researcher's observation in the field, it was found out that students' backhand skill was not quite good. It was probably caused by method or form of the training used was not suitable with athletes' condition and characteristic. Mentioned in the

field of motor skills it is important to consider basic motor abilities as well as specific tennis capacities (Filipic, 2000). Based on researcher's observation, the coach did not pay enough attention to the athlete's initial ability in selecting the supplementary training to improve backhand skill. The coach considered unnecessary to conduct initial ability test, thus the students with high ability and low ability were treated similarly. This were of course not match with the aimed objectives, therefore the selected training method could not work effectively and efficiently. Based on the description of the problem above, it would be interesting to conduct a research on the influence of volley training method and agility on the backhand volley's ability of the tennis players of Wahid Hasyim University Semarang Tennis Club.

## METHODS

Experimental research is a research to investigate the influence of a certain variable on other variable in a highly controlled situation. (Sunarno & Sihombing, 2011)

Factorial experiment is an experiment which almost or all levels of one factor are combined with levels of each other factors in the experiment. (Sudjana, 2017)

This research uses 2x2 blocks factorial experimental design which is two variables measured at the same time to observe each of the free variables' effect, separately and simultaneously on the dependent variable. Attribute variables in this research are the high agility and low agility, so these two levels in every factor is not compared and only comparing the influence of training models which are volleys against the fence and down the line. The samples in this research are the players of Wahid Hasyim University Semarang College Tennis Club. The sample collection method in this research is purposive sampling by choosing 20 tennis players and the other 10 players were not used in the sampling because they were still taking the agility pre-test.

Research instrument is a tool used to measure the observed phenomenon. (Sugiyono, 2010).

## RESULTS AND DISCUSSION

The data of the research result are described in Table 1 as follows.

**Table 1.** The Summary of Research Data

Agility (B)	Information	Training method		Total
		Volleys against the fence training (A <sub>1</sub> )	Down the line volleys training (A <sub>2</sub> )	
High (B <sub>1</sub> )	ΣX	128.0	84.0	ΣX <sub>b1</sub> = 212.0
	X <sub>average</sub>	25.6	16.8	X <sub>b1 average</sub> = 21.2
	Min	21.0	11.0	nb <sub>1</sub> = 10
	Max	29.0	22.0	
	SD	2.9	4.7	
	n	5	5	
Low (B <sub>2</sub> )	ΣX	80.0	71.0	ΣX <sub>b2</sub> = 151.0
	X <sub>average</sub>	16.0	14.2	X <sub>b2 average</sub> = 15.1
	Min	14.0	11.0	nb <sub>2</sub> = 10
	Max	18.9	16.0	
	SD	1.6	1.9	
	n	5	5	
Total	ΣX <sub>k</sub>	208.0	155.0	ΣX <sub>t</sub> = 363.0
	X <sub>kaverage</sub>	20.8	15.5	X <sub>taverage</sub> = 18.2
	nk	10	10	n <sub>t</sub> = 20

Data of the backhand volley training by using volleys against the fence method of high agility group shows the range of the score from 21.0 up to 29.0 with the average of 25.6 and standard deviation of 2.9. Backhand volleys sample distribution are as follows: 0% of the students have backhand volley accuracy which belongs to good enough category, 20% of the students have backhand volley accuracy in good, also 80% of the students have backhand volleys in very good category.

Data from backhand volleys accuracy training by using volleys against the fence on low accuracy training shows the range of score between 14.0 up to 18.9 with the average of 16.0 and standard deviation 1.6. The distribution of backhand volleys samples are as follows: 0% of the students have agility in good enough category; 100% of the students have agility in

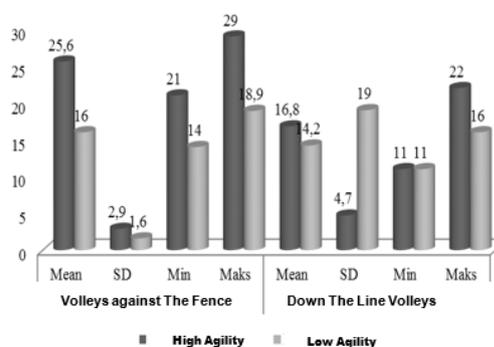
good category and 0% of the students have agility in very good condition.

Data from backhand accuracy training result by using down the line volleys method on high agility shows score ranging from 11.0 up to 22.0 with the average of 16.8 and standard deviation 4.7. The distribution of backhand volley's accuracy is as follows: 20% of the students have backhand volley accuracy in good enough category, 80% of the students have backhand volley accuracy in good category and 0% of the students have backhand volley accuracy in very good category.

Data from backhand accuracy training result by using down the line volleys method on low agility shows score ranging from 11.0 up to 16.0 with the average of 14.2 and standard deviation of 1.9. The distribution of students' backhand volleys are as follows: 20% of the students have backhand volley accuracy in good enough category, 80% of the students have backhand volley accuracy in good category, and 0% of the students have backhand volley accuracy in very good category. Data is presented in figure 1.

Normality test of the sample was conducted by using lilliefors test or Kolmogorov-smirnov test (Sudjana, 2017). Data testing in this research was conducted by using computer assistance. The complete result of Kolmogorov-smirnov test can be found in the appendix while summary can be seen in table 2.

Population homogeneity was done by conducting Lavene test (Santoso, 2001). The significance level used was 95% ( $\alpha = 0.05$ ).



**Figure 1.** Data of Research Results

**Table 2.** The Summary of Normality Test of The Samples on the Significance Level of  $\alpha = 0.05$

Data group	n	P	$\alpha$	Conclusion
A <sub>1</sub> B <sub>1</sub>	5	0.969	0.05	Normal
A <sub>2</sub> B <sub>1</sub>	5	1.000	0.05	Normal
A <sub>1</sub> B <sub>2</sub>	5	0.987	0.05	Normal
A <sub>2</sub> B <sub>2</sub>	5	0.884	0.05	Normal

The complete calculation can be found in the appendix, while the summary can be found in table 3 as follows.

**Table 3.** The Summary of Population's Varian Test Results on Significance Level of  $\alpha = 0.05$

Data group	n	df <sub>1</sub>	df <sub>2</sub>	Conclusion
A <sub>1</sub> B <sub>1</sub>	5			
A <sub>2</sub> B <sub>1</sub>	5	1	18	0.055
A <sub>1</sub> B <sub>2</sub>	5			
A <sub>2</sub> B <sub>2</sub>	5			

From the results of two ways ANOVA calculation as seen in table 4 above, it is found out that  $F_{\text{value}}$  is 15.308 with probability of 0.001. Thus the probability is less than 0.05, so  $H_0$  which stated that "there is influence of Volleys Against The Fence and Down The Line Volleys training methods on backhand volleys accuracy" can be accepted. While the alternative hypothesis which

stated that "there is no influence of Volleys Against the Fence and Down The Line Volleys training methods on backhand volleys accuracy" is rejected because its truth cannot be proven in this research. The comparison of mean of students group who got Volleys Against The Fence training method, which was 20.8, differ greatly or much better than the mean of students group who got the Down The Line Volleys training method which was 15.5.

The Two Ways ANOVA calculation result shows the difference between backhand volleys accuracy and agility. It was found out that  $F_{\text{value}}$  was 20.278 with the probability of 0.000. Therefore the probability is less than 0.05, which means there is influence of backhand volley accuracy's difference between tennis players with high agility and low agility. Meanwhile the alternative hypothesis which stated that "there is no difference in backhand volleys accuracy between tennis players who have high agility and those who have low agility" cannot be accepted since the truth cannot be proven in this research. This is different or better than the tennis players with low agility which is 15.1.

**Table 4.** The Summary of Two Ways ANOVA Calculation Results on Significance Level of  $\alpha = 0.05$

Source	Type III	df	Mean square	F	Sig.
Corrected model	387.750 <sup>a</sup>	3	129.250	14.087	.000
Intercept	6588.450	1	6588.450	718.087	.000
Training method	140.450	1	140.450	15.308	.001
Agility	186.050	1	186.050	20.278	.000
Training method * agility	61.250	1	61.250	6.676	.020
Error	146.800	16	9.175		
Total	7123.000	20			
Corrected total	534.550	19			

Based on two ways ANOVA calculation results as in table 4 above, it was found out that  $F_{\text{value}}$  is 6.676 with the probability of 0.020. Since the probability is less than 0.05, so  $H_0$  which stated "there is interaction between Volleys Against The Fence and Down The Line Volleys training methods on the backhand volley accuracy of the tennis players" can be accepted, while the alternative hypothesis which stated that "there is no interaction between Volleys Against The Fence and Down The Line Volleys training methods on the backhand volley accuracy of the tennis players" is rejected since the truth cannot

be proven in this research. Further test to find out the difference of influence between cells was conducted by using Tukey test and the result is presented in the table 5.

Based on table 5, several conclusions can be drawn as follows:

1. From the comparison between group A<sub>1</sub>B<sub>1</sub> and A<sub>2</sub>B<sub>1</sub>, it was found out that the mean difference of 8.80 with significance level of 0.002 which is less than 0.05, thus it can be said that both sample groups have significant score difference.

2. From the comparison between group  $A_1B_1$  and  $A_1B_2$ , it was found out that the mean difference of 9.60 with significance level of 0.001 which is less than 0.05, thus it can be said that both sample groups have significant score difference.
3. From the comparison between group  $A_1B_1$  and  $A_2B_2$ , it was found out that the mean difference of 11.40 with significance level of 0.000 which is less than 0.05, thus it can be said that both sample groups have significant score difference.
4. From the comparison between group  $A_2B_1$  and  $A_1B_2$ , it was found out that the mean difference of 0.800 with significance level of 0.975 which is more than 0.05, thus it can be said that both sample groups do not have significant score difference.
5. From the comparison between group  $A_2B_1$  and  $A_2B_2$ , it was found out that the mean difference of 2.60 with significance level of 0.542 which is more than 0.05, thus it can be said that both sample groups do not have significant score difference.

From the comparison between group  $A_1B_2$  and  $A_2B_2$ , it was found out that the mean difference of 1.80 with significance level of 0.784 which is more than 0.05, thus it can be said that both sample groups do not have significant score difference.

**Table 5.** The Summary of Tukey Test Results

Compared groups	Average score	Mean difference	Sig.	Notes
$A_1B_1 >< A_2B_1$	25.60 – 16.80	8.80	0.002	Significant
$A_1B_1 >< A_1B_2$	25.60 – 16.00	9.60	0.001	Significant
$A_1B_1 >< A_2B_2$	25.60 – 14.20	11.40	0.000	Significant
$A_2B_1 >< A_1B_2$	16.80 – 16.00	0.80	0.975	Insignificant
$A_2B_1 >< A_2B_2$	16.80 – 14.20	2.60	0.542	Insignificant
$A_1B_2 >< A_2B_2$	16.00 – 14.20	1.80	0.784	Insignificant

Information:

$A_1B_1$ = the group trained with volleys against the fence method with high agility

$A_2B_1$ = the group trained with down the line volleys with high agility

$A_1B_2$  = the group trained with volleys against the fence method with low agility

$A_2B_2$  = the group trained with down the line volleys with low agility

The results indicate that training by using volleys against the fence method is better compared to down the line volleys method to train the accuracy of backhand volleys of the tennis players from Wahid Hasyim University College Tennis Club 2018.

The accuracy of backhand volley which was obtained from players who got volley training by using volleys against the fence was greatly different or far better than those of the players were trained by using down the line volleys.

There are several factors that can influence the accuracy of players' backhand shot. Some of the influencing factors are training method and agility. Shot distance in tennis is closely related to agility. Tennis player with high agility have the ability to hit the ball for a long distance, but on the other hand the accuracy of the shot become less optimal since it paid less attention into proper movement aspect in the beginning of training. On

the contrary, those with low agility have the ability to learn the technique of movement well and properly so the accuracy of the shot can be optimal.

To explore on that matter, backhand training method in tennis is closely related to with the training pattern between speed and accuracy. Based on the long shot distance and the use of high agility, relies on the speed usage pattern because the use of high agility when hitting the ball will affect the fast swing of the racket, on the contrary, the close shot distance and the use of low agility when hitting the ball will affect the slow swing of the racket but the result of the shot will be more accurate. Based on the testing of three hypotheses above, it indicates that volleys against the fence can improve the backhand accuracy of Wahid Hasyim University Semarang College Tennis Club Players of 2018.

## CONCLUSION

The subject of this research is the influence of training method and agility on backhand volley accuracy. Data from the research's results which have been obtained then analyzed by using ANOVA test technique, therefore based on the research, several conclusion can be drawn as follows:

Volleys against the fence training method is the right training method to be used on the tennis material which is volley technique. This was obtained from students training results after the aforementioned training method was given and the result shows significant improvement. Therefore when the lecturer or coach teach by using volleys against the fence training method on tennis material, the volleys against the fence method on each agility levels (high and low) has higher improvement then down the line volleys on each agility levels (high and low). It is because volleys against the fence method have a role in improving training result of tennis material (volley technique) even though the students are in low agility category.

Level of agility has a role in tennis material, because tennis material in the form of volley technique has a movement which uses footwork in training and improving the result of training. Students with high agility will move quickly and will face no difficulty when given tennis material which is volley technique.

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