Differences in the Effect of Recovery Time in Distributed Practice on Accuracy of Bolavoli Bump Service Assessed from Blood Muscular Power on the Bolavoli Intermediate Putra Athlete

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Abstract

Various studies were conducted to try to improve the accuracy in performing the volleyball jump service, either by simple exercises to modification of the form of training. The purpose of this study was to determine the difference in the effect of recovery time in distributed practice and leg muscle power on the accuracy of volleyball jump service. This research was conducted on volleyball athletes at Vita Surakarta club. The research method used is an experimental method with a 2x2 factorial design, the sample size in this study was 40 athletes obtained through total sampling technique. Data analysis techniques in this study used ANOVA, Saphiro-Wilk test (Lilliefors test with α = 0.05) and variance homogeneity test (Leve's test with α = 0.05). The results showed that (1) athletes who were given training using long recovery times had a significant effect on the accuracy of the volleyball jump service compared to athletes who were given training using short recovery times. (2) athletes who have high leg muscle power have a significant effect on the accuracy of the volleyball jump service compared to athletes who have low leg muscle power. (3) there is an interaction between the recovery time and leg muscle power on the accuracy of the volleyball jump service.

I. Introduction

Volleyball is a sport that is popular among Indonesians from the lower to the upper middle class. Volleyball has a competitive nature with a simple form of play. This volleyball game quickly attracts attention because it only requires a few basic skills, is easy to master in a short training period and can be done by players with various levels of fitness, we can even find volleyball games carried out between villages or known as village gala who make games. Volleyball is so popular among the public Volleyball game is a game that is popular today. Its popularity can be seen in the enthusiasm of the audience in every championship, from the inter-school championships, POPDA, POPNAS, O2SN to Proliga.

Volleyball is a game played by two opposing teams. Each team has six players (Atmasubrata, 2012). The notion of volleyball is a sport that is played by two opposing groups where each group has six players. Between the two groups/teams the field is limited by a net barrier with a certain height (Indrakasih, 2019). Each team plays by entering the ball into the opponent's area by crossing the net as an obstacle and trying to win the game by turning off the ball in a certain way or technique. Volleyball games in Indonesia today can be said as sports that have been community, so the government seeks in order to develop sports activities as an effort to physical and spiritual development (Budiarti, 2019). The basic

techniques contained in the volleyball game state that the basic techniques in the volleyball game consist of serving, passing, block and smash". The basic techniques contained in the volleyball game greatly affect one's skills in playing volleyball (Ahmadi, N. 2007).

One of the service techniques that can produce a sharp and hard dive service that can cause difficulties for the opposing team to serve is the jump serve. In the jump serve, the starting position varies depending on the player, the start of the jump serve is generally done around 3 meters. This prefix is very useful for getting a solid starting position for high jumps, with precise timing being useful for hitting the ball hard. The spike serve is a service technique that is performed by jumping like a smash technique. The result of this hit will produce a top spin. The spike serve is a new serving technique that needs to be practiced and can be used to initiate attacks in volleyball.

In a sport, players must have the ability to master techniques, tactics according to the sport they are interested in, and have a good mentality, the facilities and infrastructure needed in training and games, and besides that, it is equally important to have good physical condition. The factors above are an integral part of each other and cannot be separated. Without good physical condition, it is impossible for someone to be able to realize good techniques and tactics and mentally, nor will they be able to produce maximum performance.

Distributed practice method is the arrangement of shifts to practice motor skills carried out with intermittent rest periods between exercises. Explains that distributed practice is a series of exercise activities by providing adequate rest between trying activities (Rusli, Lutan, 1988). One of the factors that is important in distributed practice is time off. Explains that adequate use of rest time is not a waste of time, but is an important part of the learning process for movement to obtain adequate recovery (Suhendro, Andi 2004). Meanwhile, explain that the given rest time does not need to wait until fatigue, but also not too often, the most important thing is to arrange for stimulation to the systems that produce body movement to be given sufficiently or not less, and not too much (Sugiyanto & Sudjarwo, 1994).

The explosive power of the leg muscles (power) is a component of the dominant physical condition in volleyball. Muscle explosive power (power) is a combination of strength and speed or the exertion of maximum muscle force with maximum speed (Rizaldianto, D. 2016). The power of the leg muscles is used by the player to jump and serve the jump. Mastery of the basic technique of jumping service in volleyball is very important, the success of a team in winning volleyball is largely determined by the first shot or from serving, because the jump service is the main deadly attack (Muchlisa, Widi 2017).

However, in practice, not all players are able to perform the jump serve movement optimally, it was found that there were problems in mastering the jump serve technique. One of them is the jump serve, which is a difficult technique to master. Performing the starting and jumping is always a basic difficulty in jumping serve. The jump serve is almost the same as the smash, but placement away from the net adds more difficulty than the smash.

Lack of explosive movements from the players when doing the jump serve movement, this is due to the lack of explosive training media during volleyball practice. Still not precise timing settings are needed when hitting the ball for maximum service results.

Power as a player's physical condition when making a jump serve is also an important factor in getting maximum service results. Therefore, the authors are interested in investigating the difference in the effect of recovery time in distributed practice on the accuracy of volleyball jump service in terms of leg muscle power in intermediate male volleyball athletes.

II. Research Methods

This research method uses an experimental method with a 2x2 factorial design. This research was carried out in the volleyball field of the VITA club in Surakarta City for 6 weeks with a frequency of 3 times a week. This research was conducted in February-April 2021. According to Sugiyono (2013:17) that the population is a generalization area consisting of objects and subjects that have certain qualities and characteristics determined by the author to be studied and then draw conclusions. The population in this study were the male athletes of the VITA volleyball club in Surakarta, totaling 40 athletes. According to Sugiyono (2013: 18) the sample is part of the number and characteristics possessed by the population. The sampling technique used in the study was total sampling, from the existing population, to be a sample must meet the following criteria:

1. Male gender
2. Physically and mentally healthy
3. Not doing activities or other physical exercises that are programmed
4. Be active in following the exercises
5. Willing to be a research sample

The technique of collecting data in this study through three stages, namely, making research designs, conducting research, and making research reports. While the data analysis technique in this study is the analysis of variance (Two-Way Anava) for hypothesis testing, while the requirements test uses the normality test (Liliefors test) and the homogeneity test (Bartlet test).

III. Results and Discussions

3.1 Results

The results of this study include statistical analysis to see the data normality test which shows the data is normally distributed, data homogeneity test and hypothesis testing as follows:

a. Data Normality Test

Table 1. Data Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual for servis lompat	.111	40	.200*	.976	40	.546

Based on the results of the analysis listed in table 1. it can be seen that the results of the Saphiro-Wilk normality test are 0.546. Because the significance value is greater than 0.05, it can be concluded that the data is normally distributed and ANOVA analysis can be continued with a parametric test.

b. Data Homogeneity Test

In this study, the homogeneity test is also one of the prerequisite tests which aims to determine whether the data group has variance or not. Homogeneity testing in this study used Lavene's test at the 5% significance level which was also carried out with the help of the IBM

SPSS 22.0 computer program. If the calculated significance is greater than 0.05, it can be concluded that the data has the same variance or homogeneity, conversely, if the calculated significance is less than 0.05, it can be concluded that the data has no similarity or variance. The results of the homogeneity test of this study used the Lavene's test as listed in the following table:

Table 2. Data Homogeneity Test

F	df1	df2	Sig.
.167	3	36	.918

Based on the results of the analysis of Lavene's test in Table 4.2, it can be seen that the data variance of the research variable is homogeneous of 0.918, because the significance value (Sig.)> 0.05, the independent variable data with the dependent variable is homogeneous.

c. Hypothesis Testing

1. Testing Hypothesis I (Recovery Time)

Table 3. Analysis Testing of Long Recovery Time and Short Recovery Time of the Accuracy of Volleyball Jump Service

Waktu Recovery	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
pendek	6.783	.827	5.105	8.460
panjang	13.000	.823	11.331	14.669

Table 3 shows that the mean volleyball jump service accuracy of athletes using short recovery times in distributed practice is 6,783 (SD 0.827). Whereas the average volleyball jump service accuracy of athletes using the long distributed practice recovery time is 13,000 (SD 0.823), it can be concluded that athletes who use long distributed practice recovery times are better at performing volleyball jump service accuracy than athletes who use the recovery time. Short in distributed practice.

2. Testing Hypothesis II (Leg Muscle Power)

Table 4. Testing the Analysis of Accuracy of Volleyball Jump Service for Athletes with High Leg Muscle Power and Low Leg Muscle Power

Power Otot Tungkai	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
rendah	7.227	.804	5.597	8.858
tinggi	12.556	.845	10.841	14.270

Table 4 shows that the average volleyball jump service accuracy of athletes who have low leg muscle power is 7,277 (SD 0.804). Meanwhile, the average accuracy of the volleyball

jump service for athletes who have high leg muscle power is 12,556 (SD 0.845). So it can be concluded that athletes who have high leg muscle power are better at performing the volleyball jump service accuracy than athletes who have low leg muscle power.

3. Testing Hypothesis III (Interaction between Recovery Time in distributed practice and Limb Muscle Power)

Table 5. Testing Interaction Analysis between Recovery Time in Distributed Practice and Leg Muscle Power Against Accuracy of Volleyball Jump Service

Power Otot Tungkai	Waktu Recovery	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
rendah	pendek	5.455	1.110	3.204	7.705
	panjang	9.000	1.164	6.640	11.360
tinggi	pendek	8.111	1.227	5.623	10.599
	panjang	17.000	1.164	14.640	19.360

Table 5. explains that the mean accuracy of the volleyball jump service in athletes who have low leg muscle power and who are given a short recovery time in distributed practice is 5.455 (SD 1.110). Meanwhile, the average volleyball jump service accuracy of athletes who have low leg muscle power and given a long recovery time in distributed practice is 9,000 (SD 1,164). While the average accuracy of the volleyball jump service for athletes who have high leg muscle power and given a short recovery time in distributed practice is 8.111 (SD 1.227), while the average accuracy of the volleyball jump service for athletes who have high leg muscle power and is given time long recovery in distributed practice of 17,000 (SD 1,164). Therefore, it can be concluded that athletes who have high leg muscle power and are given a long recovery time in a distributed practice are better than athletes who have low leg muscle power and are given a short recovery time or a long recovery time.

3.2 Discussion
a. There is a Difference in the Effect of the Long Recovery Time and Short Recovery Time in Distributed Practice on the Accuracy of the Volleyball Jump Service

Based on testing the first hypothesis, it is concluded that there is a significant difference in the effect between athletes who are given training with long recovery time and short recovery time in distributed practice. In the sample group given a long recovery time, the volleyball jump service accuracy was better than the sample group given a short recovery time for the volleyball jump service.

Based on the results of data analysis, it shows that the comparison of the average percentage increase in the accuracy of the volleyball jump service produced by the training group given a long recovery time is higher (13,000) than the training group given a short recovery time of (6,783).

b. There is a Difference in the effect of the Accuracy of the Volleyball Jump Service on Athletes who have High Leg Muscle Power and Low Leg Muscle Power

Based on the second hypothesis testing, it is concluded that there is a significant effect between athletes who have high leg muscle power and low leg muscle power on the accuracy of the volleyball jump service. In the sample group with high leg muscle power, volleyball jump service accuracy was (12,556) higher than the sample group with low muscle power, which resulted in volleyball jumping service accuracy of (7,227). The power of the leg muscles is fundamental to achieving better skills in performing precise volleyball jump serve.

The volleyball jump service movement is a fairly complex movement, because the volleyball jump service movement is a combined movement between jumping and whipping the ball that must be carried out in an integrated and harmonious manner. The accuracy in performing the volleyball jump service is influenced by the athlete's ability to perform movements in an integrated and harmonious manner. Leg muscle power can support the success of athletes in performing the volleyball jump service movement properly, because with the athlete having good leg muscle power, the athlete can control the movements performed so that they become more precise. Athletes who have high leg muscle power have the ability to be good and precise in performing the volleyball jump service movement than athletes who have low leg muscle power.

Based on the results of data analysis, it shows that the comparison of the average percentage increase in the accuracy of the volleyball jump service produced by the sample group with high leg muscle power is (12,556) than the sample group with low leg muscle power.

c. There is a Difference in the Effect of the Interaction between Recovery Time in Distributed Practice and Leg Muscle Power on the Accuracy of the Volleyball Jump Service

Based on the third hypothesis testing, there is an interaction between recovery time and leg muscle power on the accuracy of the volleyball jump service. It can be concluded that the results of the calculation of the two-factor analysis of variance are $F_{(1.39)} = 5.243$, $p = 0.28$. Because the significance value (Sig.) <0.05, it can be concluded that simultaneously leg muscle power and recovery time have a significant effect.

There is a difference in the effect of the average increase in the percentage of accuracy of the volleyball jump service produced by the exercise group given a higher recovery time of (13,000) than the training group given a short recovery time of (6,783). The statistical results show that there is a difference in the effect of the average value of jump service accuracy in the sample group given a high long recovery time compared to the sample group given a short recovery time ($p = 0.000$ <0.05).

There is a difference in the average effect of (12,556) higher than the sample group with low muscle power resulting in a volleyball jump service accuracy of (7,227). The statistical results showed that there was a difference in the effect of the average value of jump service accuracy in the sample group that had high leg muscle power compared to the sample group with low leg muscle power ($p = 0.000$ <0.05).

There is a difference in the effect of the mean accuracy of the volleyball jump service in athletes who have low leg muscle power and are given a short recovery time in distributed practice of 5,455 (SD 1,110). Meanwhile, the average volleyball jump service accuracy of athletes who have low leg muscle power and given a long recovery time in distributed practice is 9,000 (SD 1,164). While the average accuracy of the volleyball jump service for athletes who have high leg muscle power and given a short recovery time in distributed practice is 8.111 (SD 1.227), while the average accuracy of the volleyball jump service for athletes who have high leg muscle power and is given time long recovery in distributed

practice of 17,000 (SD 1,164). Therefore, it can be concluded that athletes who have high leg muscle power and are given a long recovery time in a distributed practice are better than athletes who have low leg muscle power and are given a short recovery time or a long recovery time (p = 0.028 <0.05).

Based on the results of the study, it can be concluded that the sample group given a long recovery time and those with high leg muscle power had a higher effect on the accuracy of volleyball jump service compared to the sample group who were given a short recovery time and those who had low and high leg muscle power.

IV. Conclusion

Based on the results of research on the difference in the effect of recovery time in distributed practice on the accuracy of volleyball service in terms of leg muscle power in intermediate male volleyball athletes, the results show that:

1. Athletes who are given training with long recovery times have a significant effect on the accuracy of the volleyball jump service compared to athletes who are given training with short recovery times. So it can be concluded that the effect of exercise with long recovery time is better than training with short recovery time.

2. Athletes who have high leg muscle power have a significant effect on the accuracy of volleyball jumping service compared to athletes who have low leg muscle power. So it can be concluded that the influence of athletes who have high leg muscle power is better than athletes who have low leg muscle power.

3. There is an interaction between recovery time and leg muscle power on the accuracy of the volleyball jump service, it can be concluded as follows:
   a. Athletes who are given training with a long recovery time are more suitable for athletes who have high leg muscle power.
   b. Athletes who are given training with short recovery times are more suitable for athletes who have low leg muscle power.

From the results of the above conclusions in this study, it produces an implication in designing an exercise program, especially in determining the right training to be used in increasing the accuracy of volleyball jump service in athletes, so that coaches, coaches and athletes in volleyball need to pay attention to methods, techniques and strategy properly and well. The methods, techniques and strategies used are the best and are maximized. The athlete's characteristics and training must match the selected exercise.

The results of this study showed that in training with a long recovery time and athletes who have high leg muscle power, it has a better effect on the results of the accuracy of the volleyball jump service. The results of this study can be accounted for scientifically, therefore sports coaches and coaches can apply the results of research in training their athletes, and utilize the available facilities and infrastructure. By paying attention to the characteristics of athletes and becoming a benchmark for determining the form of training and training strategies to be programmed, one of them is leg muscle power. athletes who have high leg muscle power will find it easier to master or perform jump service movements, so that the quality of athletes who have high leg muscle power can be said to be better than athletes who have low leg muscle power.

From the above review, the differences in athletes in terms of leg muscle power will have implications for coaches, coaches and trainers in determining the right methods, techniques and forms of training in the training process to improve the accuracy of volleyball jumping service.

Based on the results of this study, the coaches, coaches and sports enthusiasts of volleyball are given the following suggestions:

1. For the development of volleyball performance at the VITA Surakarta club, it is necessary to socialize the training by paying attention to the recovery time for each exercise as an effort to achieve the accuracy of volleyball jump service.
2. For coaches and coaches, in an effort to achieve correct volleyball jump service for athletes, it is advisable to design an appropriate and planned training program, considering the need for the ability to perform volleyball jump service accuracy is not necessarily suitable or suitable for all groups and classes.
3. Giving training with attention to recovery time to increase the ability of the volleyball jump service accuracy, it is necessary to pay attention to the existing factors, one of which is leg muscle power.

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