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Contribution of Medicine Ball Throw Training and Arm Muscle Power to Smash Ability in STKIP Harapan Bima Volleyball UKM

Muhadi [1], Imaduddin Saitya[2]
[12]Program Studi, Pendidikan Olahraga, STKIP Harapan Bima

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Abstract
This research used quantitative research where quantitative research is research in the form of numbers and analysis using statistics (Sue4giyono, 2016). This research aims to determine the effect of arm muscle power on STKIP Harapan Bima volleyball UKM using medicine ball throw exercise. This type of research is experimental with a pretest-posttest design. And the population in this study was all Men's and Women's volleyball UKM STKIP Harapan Bima with a total 20 students divided into 2 groups, namely the High intensity interval training group and the control group. The sampling technique is quota sampling. The instrument used in this research is the medicine ball throw, namely the distance of the throw and the power ability of the arm muscles in the pushing movement. Data was collected using measurement techniques using the Bleep Test tool the measure VO2max. The data were analyzed using the MANOVA technique, using a 0.005. The research results showed that the effect of high intensity interval training on increasing VO2max was with a value of a p=0.005, then effect of running 30 meters with a value of p=0.005. From these two exercises, it turns out that high intensity interval training is better than running 30 meters in creasing VO2max. So based on the result, it can be concluded that there is a significant influence of medicine ball throw training and arm muscle power on smash ability in STKIP Harapan Bima Volleyball UKM.

Corresponding Author:
Muhadi
STKIP Harapan Bima
Email : Blackboxx1512@gmail.com

1. INTRODUCTION

"Sports development and development is part of efforts to improve the quality of Indonesian people, directed at improving the physical, mental and spiritual health of the community, and aimed at forming character and personality, discipline and high sportsmanship as well as increasing achievements that can arouse a sense of national pride." Likewise, in order to anticipate the era of national revival where quality development is to realize the complete Indonesian human being, the orientation of national development in the field of sports must be aimed at improving the quality of human resources.[1] Exercise functions to keep the body healthy and ensure that the body's organs are still healthy. Exercise is important, because in a strong body there is a healthy soul. The opinions of certain people differ, but in general, sport, which is physical activity, is important to do in everyday life. Either with directed movements (sport) or others that contain elements of movement. In sports, especially in performance sports, achieving success is not easy and short to get. It requires a long process, requires cooperation between experienced coaches and athletes, knowledgeable in sports science and truly involved in the field of coaching. Training or training is the implementation of a plan to improve the ability to exercise which contains theoretical and practical material, methods and implementation rules in accordance with the goals and objectives to be achieved. [2]

Volleyball is a team sport, so players must work together and support each other to form a cohesive team.[3]. Thus, to become a unified squad or team, players must master the basic techniques of playing volleyball individually. To get good or perfect basic techniques, you can master them by doing regular and precisely programmed exercises. Appropriate training methods will reduce the mistakes made by a player.[4] . In the game of volleyball, there are several basic techniques that must be mastered by every player, including serving, passing, smashing and blocking and excellent

physical elements supported by speed, strength, agility, flexibility, balance, endurance, explosive power and coordination of movements.[5]

Medicine Bal throw exercise is a form of plyometrics exercise which aims to increase the strength of the arm and finger muscles. And medicine ball training uses the whole hand in its implementation, this is very supportive in efforts to increase the power of the arm muscles and fingers which influences smash skills in volleyball.[6]. The implementation of the medicine ball exercise in this study was the same medicine ball throw and medicine toss exercise, the difference is the way you stand when throwing the medicine ball.[7]. Maximum sporting performance is not easy to achieve, but rather by going through a fairly long process, including nurturing, coaching and improving performance. To get maximum results, training for each component must be carried out specifically. Physical training is the basis of every training program, therefore the physical component is the first factor that must be improved, because without good physical abilities, it is difficult to improve other components. The supporting effect in achieving maximum performance is the component of good and excellent physical condition.

Through observations, the author saw that many STKIP Harapan Bima Volleyball UKMs did not achieve optimal results in the sports of table tennis, badminton, tennis, swimming and others. This can be seen from every match held in the city of Mataram and Porprov. Physical training never gets the attention of a coach or athlete themselves, as a result of what happens in every match the players very quickly experience a decline in the mobility of their punching movements or arm swings, they do not realize that achieving achievement is really supported by excellent physical condition. Power is the ability to release maximum force in the shortest possible time. Power must be demonstrated by the movement of the body, or object through the air where the muscles must exert force at high speed in order to carry the body and object during the execution of the movement to reach a distance. For this reason, male students at STKIP Harapan Bima need satisfactory physical conditions, so they need power, strength and speed. (Power) is the ability of muscles to overcome loads or resistance with high contraction speeds.

2. RESEARCH METHOD

This research uses quantitative research where quantitative research is research in the form of numbers and analysis using statistics (Sugiyono, 2016). This research aims to provide an overview of a variable that will be studied, namely the physical fitness aspect of balance in students. So to be able to describe based on facts as they are, statistics or labels are used, so that in this research it can be known as quantitative research using descriptive methods. And this research uses the observation method with data collection techniques using tests and measurements. The use of this research is STKIP Harapan Bima students. In this study, quota sampling was used, which was obtained by 20 students, divided into 10 male students and 10 female students. This research used arm muscle power to assess the level of physical fitness, balance.

The instruments needed in this research are as follows:

1. Medicine Ball
2. Stopwatch
3. Meter
4. Dry Location and
5. Assistant.

The steps for carrying out the medicine ball throw test are:

1. Sit upright in the chair provided
2. Hands straight forward holding the medicine ball
3. Place the belt on the tester's chest so that there is no additional movement
4. Order assist, then push the ball using your arms as hard as possible.
5. The assistant starts the stopwatch

6. Do it for 3 attempts
7. Take the best results from the 3 times done

Table 1. Arm Muscle Power Test Norms

Gender	Very well	Good	Currently	Not enough
Man	> 6 Meters	5.26-5.98 Meters	4. 27-5-25 Meters	3.52-4.26 Meters
Woman	> 3 Meters	2.26-2.98 Meters	1.27-2.25 Meters	1.25-2.24 Meters

Figure 1. Arm Muscle Power Test
(Personal Documentation)

The data collection technique in this research uses a practical test method obtained from secondary data and document studies with the implementation of data collection utilizing secondary data through measurement tests. The data collection technique used in this research requires the sample to carry out tests and re-tests. This research carries out a normality test, the aim of which is to ascertain whether the data obtained is symmetrical or normally distributed, that is, the distribution of numbers is mostly in the middle, and the further to the right/left, the distribution of numbers becomes smaller, so it resembles a bell or curve shape (Maksum, 2012) . The normality test is carried out to determine whether the research data is normally distributed or not and there are several ways to carry out the normality test, namely with Lilliefors (Kolmogorov-Smirnov) where if the significance value of the Kolmogorov-Smirnov test results is > 0.05, normality is assumed (Parlina, 2017). Test This research tested normality using the Kolmogorov-Smirnov test in SPSS version 25

The data analysis technique used in this method is descriptive statistics which is for research purposes. The term statistics means quantitative data, which is also called statistical data, is data in the form of numbers that can provide an overview of certain circumstances and events (Solikhah, 2017). This research uses percentages, percentages are a comparison in the form of numbers up to 100 which are usually shown identically with the % symbol, the aim of which is to compare and find out what percentage level is obtained so that conclusions can be drawn. The percentage formula that I use was proposed by (Jasmalinda, 2021).

Percentage Formula:

P = mgd /t = Joules/second

Information:

P = *Power*(joules)
m = body mass (Kg)
g = gravity

t = Time required to cover the distance (seconds)

3. RESEARCH RESULTS AND DISCUSSION

3.1.Research result

Results of strength measurement test data with a sample size of n=20 carried out before and after Single Leg and High Intensity Interval Training (BEP) exercise treatment. A description of the average data results and standard deviation (SD) can be seen in the table as follows:

Table 1 Description of VO2max test results (ml/kg/min)

Variable	Mean ± SD (Seconds)		
	K1	K2	K3
Pretest	37.41 ± 5.76	33.21 ± 5.16	17.65 ± 5.02
Post test	40.14 ± 4.52	34.76 ± 23.39	17.50 ± 4.64

The description of the results of the agility measurement data in the table shows that the pretest results in group (K1) were 37.41 ± 5.76 Kg, group (K2) was 33.21 ± 5.18 Kg and group (K3) was 17.65 ± 5, 02 Kg. Then after treatment (exercise) a post test was carried out and the results obtained increased in group (K1) by 40.15 ± 4.52 Kg, group (K2) by 34.76 ± 23.39 Kg and group (K3) by 17, 50 ± 4.64 Kg

For more clarity, a description of the strength variable is presented in the following figure:

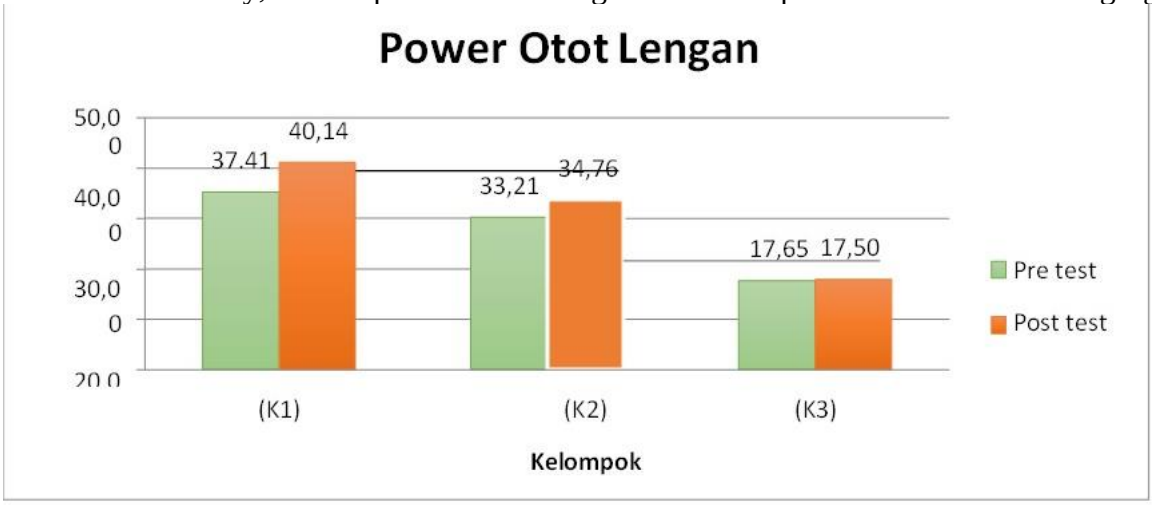

Figure 1: Average strength before and after treatment in the group *Tabata*, High Intensity Interval Training and Control.

3.2.Discussion

Post Hoc Test

After carrying out the MANOVA test, a post hoc test was then carried out using the LSD test on the strength and speed variables. The results of the post hoc test can be seen in the following table.

Table 3 Post hoc test results for the Agility variable.

Dependent Variable	Group	Group	Sig.
Arm *Power*	K1	K1	0,000
			0,000
	K2	K3	0.003

P<0.05 there is a significant difference

The results of the LSD test on the strength variable showed that there were significant differences between the Tabata group and the High Intensity Interval Training group (p=0.000), the Tabata group and the Control group (p=0.000), the High Intensity Interval Training group and the Control group (p=0.000) . Furthermore, the results of the LSD test on the speed variable showed that there were significant differences between the Tabata group and the High Intensity Interval Training group (p=0.000), the Tabata group and the Control group (p=0.003), the High Intensity Interval Training group and the Control group (p=0.003

4. CONCLUSION

Based on the results of research data analysis conducted, there is a significant influence on medicine ball throw and arm power training on smash ability in STKIP Harapan Bima Volleyball UKM. and it is recommended to carry out further research to find out the measuring tools for the newest training methods.

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