

# A Variation of Push Up for Overhead Pass on Volleyball Games

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**Abstract** This study aims to determine the effect of various push up exercises on the results of passing over in extracurricular volleyball activities for male students of class VIII Muhammadiyah Junior High School Megang Sakti, Musi Rawas. This type of research is a quasi experiment with a pretest-posttest one group design. The sample in this study amounted to 30 people. The instrument used was a passing test on the wall. The treatment in this study was in the form of various push-up training methods, after being given exercise for 6 weeks with a frequency of training 3 times a week. Based on the results of research and data analysis with statistical t test with a significant level of  $\alpha = 0.05$ , it was obtained  $t_{count} (0.10)$  while  $t_{table} (1.70)$ , then  $t_{count} > t_{table}$ , then  $H_a$  was accepted and  $H_o$  was rejected. Thus  $H_a$  can be submitted it can be accepted, that the push up exercise varies with the results overhead pass in the volleyball extracurricular activities of male students class VIII Junior High School Muhammadiyah Megang Sakti Musi Rawas. The findings in this study are the results of training methods of variation push up that can be used to improve the ability overhead pass volleyball. The implication of this research is that various push up exercises can be used as a type of exercise to improve of the volleyball overhead pass ability. This research was conducted in junior high schools and the samples were students who took volleyball extracurricular activities, so this study was aimed at novice athletes or new to volleyball, so this research is suitable for beginners.

**Keywords** Variety of Pushup Exercises, Volleyball Overhead Pass

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## 1. Introduction

Students play volleyball optimally. A player must know and practice the basic techniques in this game. Some of the basic techniques include passing the ball, smashing the ball, blocking the ball, and servicing the ball. These four basic techniques must be mastered well; there are two basic techniques of passing the ball in volleyball, namely upper passing and lower passing. Good passing mastery will help a feeder provide good ball feed according to certain agreed codes [1]

Students can produce good and correct over passes in addition to routine training must be supported by good physical training to support the muscle strength needed in passing volleyball according to [2] volleyball is closely related to an-aerob movements, and volleyball athletes that you should look for are athletes who have the fast tuwis muscle type. Movement characters in volleyball require physical conditions, including speed, strength, explosive power, flexibility, agility and endurance. The tests that trigger movement in volleyball include various push-ups which aim to determine the strength and endurance of the hand muscles.

One of the most difficult basic techniques for students to do is passing over, and over passing in the opinion of [3] passing over is a pass that is carried out when the ball is at shoulder level or higher.

Based on observations and observations that have been

made on extracurricular activities at Muhammadiyah Junior High School, Megang Sakti District, Musi Rawas District, there are still many students who have not mastered the basic techniques of good volleyball. This can be seen due to the lack of achievements. In fact, if it is viewed from the facilities and infrastructure, it is good enough for students to achieve better performance in volleyball games.

In addition, one of the obstacles faced by students in developing volleyball games is poor physical ability when students do the results of passing over to teammates who do not reach the target or do not have maximum passing over them. Whereas in the game of volleyball, good physicality is needed so that it supports volleyball game skills. One of them is the basic technique of passing on volleyball, therefore there must be an appropriate training method to improve the physical abilities of these students.

In accordance with the problems faced, especially when passing over, suitable physical training methods are varied push-ups because this exercise aims to increase the strength and endurance of the hand muscles in increasing the results of passing over repulsion in volleyball.

From the results of observations made from 30 male students who took part in volleyball extracurricular activities, only 10 students could pass the top well. This is influenced by the lack of variation in physical exercise and poor hand muscle strength so that the results of passing over do not reach the target. Previous research by [4] passing exercise on double contact in pairs can improve the results of playing volleyball, in addition, [5] development of overhand serves learning techniques in volleyball game can improve service results for volleyball games, in addition, [6] the implementation of underpass learning techniques volleyball for junior high school from this study there are several ways that can improve the results of the game under volleyball. It stands to reason that varied push-ups are a form of physical exercise that aims to increase hand muscle strength and produce maximum passing repulsion. Based on the description above, the researcher conducted a study entitled "The Effect of Varied Push Up Exercises on Upper Passing Results in Volleyball Extracurricular Activities for Boys Class VIII Junior High School Muhammadiyah Megang Sakti District Musi Rawas District". This study is useful to see the effect of variation push up training on passing volleyball by knowing its effect, and the results of this study will greatly benefit the development in the field of training, especially volleyball.

## 2. Materials and Methods

The research is a quasi experiment using the research design / design "pretest and posttest one group" [7] The first step taken is measurement (pretest), then the treatment is carried out within a certain period of time,

which is then continued with re-measurement (posttest) to see whether or not there is a difference before and after giving treatment. The instrument used was a passing test on the wall. The treatment in this study was in the form of various push-up training methods, after being given exercise for 6 weeks with a frequency of training 3 times a week. The experimental method is a method that provides or uses a symptom called exercise. With the training given, it will be seen a cause and effect relationship as a result of the exercise. In this study, the authors wanted to find out whether there was an effect of varied push-up training on the results of passing on volleyball extracurricular activities for male students of Class VIII Junior High school Muhammadiyah Megang Sakti District, Musi Rawas Regency. The population in this study was 30 male extracurricular students. After the initial test or pretest was carried out, then a sample of 30 was given an exercise program for six weeks. After going through eight weeks of practice, then the final test or posttest is carried out. This implementation was carried out on 14 October - 10 November 2019. The sample used is not given the name, only to showed the basic training ground so that it is clear where and when this research was conducted, because the sampling method is purposive sampling, the sample must be in accordance with the objectives of the study.

Push-ups and its variations have examined muscle activation of push-ups typically examining variations in hand placement, or a specific variation in exercise technique, many variations of push-ups such as conditions that include elevated feet or hands. These different types of push-ups can be readily prescribed in fitness settings potentially offering variation to the program and a range of low to higher intensity options.

Subjects were instructed in and received demonstration of each push-up variation including a regular push-up, and those performed with flexed knee, feet elevated on a 30.48-cm box, feet elevated on a 61 cm box, hands elevated on a 31 box, and hands elevated on a 61 cm box. For all warm-up, practice, and test push-ups, subjects' hand placement was defined as the width equal to the distance of contralateral acromion processes measured from the inside border of each hand with hands placed under the shoulders in the beginning position, which was characterized by full elbow extension.

Subjects warmed up by performing 3 repetitions of each push-up variation in a randomized order. After 1,5 minutes of rest, subjects performed 2 repetitions of each push-up variation in randomized order. Subjects rested for, 5 minute in between each push-up variation. A metronome was used to control the cadence of the push-up repetitions with each repetition performed for a count of 2 seconds in each of the eccentric and concentric phase. A relatively fast pace was desired because previous research demonstrated higher levels of power and work for fast compared to slower cadences and the 2-second cadence has been demonstrated to be effective at

increasing upper body strength

The research was conducted for 8 weeks with 18 meetings every Monday, Thursday and Saturday. When doing the initial test or pretest, each student is given 1 chance to do a pass over the wall and the highest score is used as the student's pretest ability. After doing the pretest, being given the treatment in the form of varied push up exercises for 18 meetings. Furthermore, a final or posttest assessment was held to determine how significant the effect of varied push-up exercises was on the results of passing over on volleyball extracurricular activities for male students of class VIII Junior High School Muhammadiyah Megang Sakti District Musi Rawas.

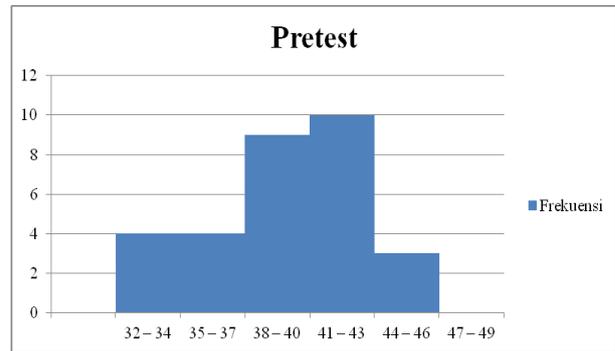
**2.1. Result**

At the beginning of the study, the initial test or pretest was first carried out in the experimental group and after being given treatment in the form of varied push-ups for 6 weeks with a frequency of training 3 times a week after that the final or posttest test was carried out to see whether or not there was a change after being given treatment, as follows, this is the pretest result of the experimental group. The results of the pretest conducted on October 14, 2019 for the experimental group, were obtained as follow.

Based on table 1, it can be seen that the highest value is 39, the lowest score is 27, the range is 12, the mean obtained from the pretest is 33.9 and the standard deviation obtained from the pretest results is 84.5752.

Based on the results of table 2, the distribution list of the results of the passing over test on the wall (pretest) can be seen that the frequency is 30, the number of middle values (x) 211, the number  $\sum x^2$  7587, the number  $\sum f \cdot x$  1017, and the number of  $\sum f \cdot x^2$  is 241913 based on the list pretest distribution, which can be described in a histogram

table as follows: Figure 1.



**Figure 1.** Pretest histogram

Based on Figure 1, the data were obtained on the pre-test passing over on the wall, the middle value (test results 27-29) is 3 people, the middle value (test results 30-32) is 8 people, the middle value (test results 33 - 35) are 6 people, the middle value (test results 36 - 38) there are 9 people, the middle value (test results 39 - 41) there are 4 people, the middle value (test results 42 - 44) there are 0 people.

Based on the above analysis, it is found the Km value for the experimental group pretest data. Because Km is -0.02 and this price is between (-1) and (+1), the pretest data for the experimental group are normally distributed.

The results of research are from 30 samples taken at Junior High School Muhammadiyah Megang Sakti District, Musi Rawas District. From the pretest data, the highest datum is 44, the lowest datum is 27, the mean 33.9 standard deviation is 84.5752 and the slope of the curve is -0.02. Posttest data obtained the highest data 49 lowest data 32 mean 39.4 standard deviation 22.728 and the slope of the curve -0.17.

**Table 1.** Data Distribution of passing over instruments on the wall (pretest)

Variable	N	Highest Amount	Lower Amount	Range	Mean	Sd
Overheadpass	30	39	27	12	33,9	84,5752

**Table 2.** Table of Test Instruments Passing over on the wall (pretest)

Class interval	frequency (f)	Middle value (x)	$X^2$	$f \cdot x$	$f \cdot x^2$
27 - 29	3	28	784	84	7056
30 - 32	8	31	961	248	61504
33 - 35	6	32	1024	192	36864
36 - 38	9	37	1369	333	110889
39 - 41	4	40	1600	160	25600
42 - 44	0	43	1849	0	0
Total	30	211	7587	1017	241913

**Table 3.** Table of test instrument passing over on the wall (posttest)

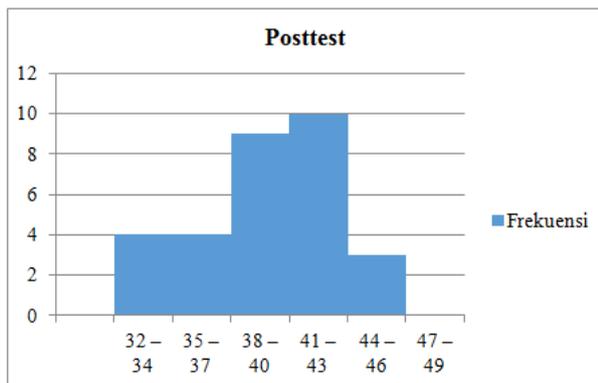
Variable	N	Highest Amount	Lowest Amount	Range	Mean	Standard deviation
Overheadpass	30	44	32	12	39,4	22,728

Table 3. shows that the highest value is 44, the lowest score is 32, the range is 12, the average obtained from the posttest is 39.4 and the standard deviation obtained from the posttest results is 22.728.

**Table 4.** Table of Test Instruments Passing over on the wall (posttest)

Class interval	frequency (f)	Middle value (x)	X <sup>2</sup>	fi.xi	fi.xi <sup>2</sup>
32 – 34	4	33	1098	132	17424
35 – 37	4	36	1296	144	20736
38 – 40	9	39	1521	351	123201
41 – 43	10	42	1764	420	16800
44 – 46	3	45	2025	135	18225
47 – 49	0	48	2304	0	0
<b>Jumlah</b>	<b>30</b>	<b>243</b>	<b>10008</b>	<b>1182</b>	<b>196386</b>

Based on the results of table 4 the distribution list of the results of the passing over the wall (posttest) test, it can be seen that the frequency is 30, the number of middle values (x) 243, the number x<sup>2</sup> 10008, the number fi.xi 1182, and the number of fi.xi<sup>2</sup> is 196386. Based on the distribution list posttest, it can be described in a histogram table as follows:



**Figure 2.** Posttest histogram

Based on Figure 2, the data obtained on the posttest passing over on the wall, the middle value (test results 32 - 34) are 4 people, the middle value (test results 35-37) are 4 people, the middle value (test results 38-40) are 9 people, the middle value (test results 41 - 43) were 10 people, the middle value (test results 44 - 46) were 3 people, the middle value (test results 47 - 49) were 0 people.

Data on table 5, the comparison of the pretest and posttest results with a total N of 30 can be seen in the table above the pretest results with the highest number of 44 and the lowest number of 27 with a mean of 33.9 mode 36.24 and deviation deviation of 84.5752. The data from the posttest results with the highest number of 49 and the lowest number with 32 mean 39.4 mode 40.75 and deviation deviation is 22.728 so that the mean pretest and posttest can increase by 5.5.

Testing in data normality, the formula used is the slope of the curve or Km person test. Based on the above calculations, it is known that the slope value for the experimental group pretest data is (-0.02) then the slope value for the experimental group posttest data is (-0.17). Based on these values, both the data at the pretest and posttest were normally distributed, namely between (-1) and (+1). Data from the statistical calculation "t test" obtained results while the T table is 1.70 which is obtained from the T distribution table with dk (30-2) = 28 and the confidence level of 95% (α = 0.05), listed in the table. The criteria for testing the hypothesis accept H1 if Tcount > Ttable (1-α), and reject H0 if Tcount < Ttable (1-α), because tcount (0.10) > ttable (1.70) then there is a significant difference between post- test and pre-test, thus hopotesis H0 is rejected and hypothesis H1 is accepted H1 statement is "There is an effect of varied push up training on the results of passing on extracurricular volleyball activities for male students of class VIII Muhammadiyah Junior High School, Megang Sakti District, Musi Rawas Regency".

**Table 5.** List of Improved Pretest and Posttest Results

Result	N	Max Value	Min Value	Mean	Increase in Mean Pretest and Posttest	Modus	SD
Pretest	30	44	27	33,9	5,5	36,24	84,5752
Posttest	30	49	32	39,4		40,75	22,728

## 2.2. Discussion

According to Soerjono Soekanto [8], Research is a scientific activity based on analysis and construction which is carried out systematically, methodologically and consistently and aims to reveal the truth. According to Ismaryati [9] (2008: 123-124), push-ups have become a routine exercise to do, if they are done regularly, you will not feel heavy, and will get great benefits. The treatment in this study was in the form of various push-up training methods, after being given exercise for 6 weeks with a frequency of training 3 times a week. The purpose of training as well as the main goal of training or training is to help athletes improve their skills and performance as much as possible. To achieve this, there are four aspects of training that need to be considered and trained carefully by athletes, namely physical training, technical training, tactical training, and mental training [10]. The process of physical conditioning exercises that are carried out carefully, repeatedly with increasing training load allows a person's physical fitness to be more skilled, strong and efficient in his movements. According to [11] [12] said that: "the increase in training occurs within 2-6 weeks but usually 4 weeks (1 month). This thing that needs to be considered is the increase in training if the exercise is done at least 3 times a week. The more often and the more exercises, the faster the improvement, but you must pay attention to the principles of training so as not to overtraining. For this reason, the development of the best physical condition components also helps an athlete to be able to follow the next training in an effort to achieve the highest achievement.

Based on the results of research and data analysis with statistical t test with a significant level of  $\alpha = 0.05$ , it was obtained  $t_{count} (0.10)$  while  $t_{table} (1.70)$ , then  $t_{count} > t_{table}$ , then  $H_a$  was accepted and  $H_o$  was rejected. Thus  $H_a$  can be submitted it can be accepted, that the push up exercise varies with the results of passing over in the volleyball extracurricular activities of male students class VIII Junior High School Muhammadiyah kec. Megang Sakti Kab. Musi Rawas. [13] push-up training has given more significant results to the results of flying shoots in students of the Bekasi Unisma Handball community, [14]. Normal push-up exercises have a better effect on the results of throws in players Puslat Garuda, [15] that push-up training can improve smash accuracy in volleyball players at Club Sigma Palu, besides that [16] push up training has a significant effect on student arm muscle strength in. Surabaya, another research by [17], there is an effect of Crocodile Push training -Up and Burpee on arm muscle strength and the results of Flying Shoot Shooting Handball Students of STKIP PGRI Sumenep. The results of the above research indicate that push-ups contribute to the arm muscles where passing on the ball game in the implementation of motion is dominated by arm muscle strength., beside that [18] the

findings research that multimedia macroflash is effectively used to improve the learning outcomes of passing skills on the game of volleyball, next research [19] the circuit weight training can be used to improve strength in volleyball player, beside that in another research. This study is useful to see the effect of push-up training on the results of playing volleyball, by knowing the effect of the results of this exercise, it can be used as a reference in volleyball game training, especially overhead pass.

## 3. Conclusions

There is an effect of various push-up exercises on the results of overhead pass in volleyball extracurricular activities for male students of class VIII Muhammadiyah Junior High School, Megang Sakti Musi Rawas Regency. The implementation of this research is for the players (coaches and players) of variation pushup to be a choice of exercises that can be used to improve the playing field of volleyball, beside that practitioners in fitness settings should use the body weight coefficient data presented in this study to understand the progression of push-up intensity from lower to higher intensity push-up variations. These data can also be used to quantify the approximate load as a percentage of body mass for the purpose of quantifying load and volume in a resistance training program to enhance upper body fitness. This research was conducted in junior high schools and the samples were students who took volleyball extracurricular activities, so this study was aimed at novice athletes or new to volleyball, so this research is suitable for beginners.

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