Improving Volleyball Lower Serve Ability after Push-Up and Pull-Up Training for 6 Weeks in Junior High School Students

Barirohtul Umdah[1*], Heni Yuli Handayani[1], Haryo Mukti Widodo[1], Septyaningrum Putri Purwoto[1]

[1]Program Studi Pendidikan Olahraga, STKIP PGRI Bangkalan, Bangkalan, Indonesia

*ubarirohtul@gmail.com

ABSTRACTS: This research aims to improve the volleyball bottom serve ability by applying push-up and pull-up exercises to NU Arosbaya Middle School students. The method used in this research is quantitative with an experimental approach. A sample of 20 male students was taken using probability sampling with simple random sampling. The research design used is a true experimental design. The research uses a true experimental design, namely, a pretest-posttest control group design. This research instrument determines the bottom serviceability using the bottom service test. This research was conducted for six weeks, with training carried out one week three times. From the descriptive test results, the pre-test has a value of 16.25, and the post-test post-test results have a value of 24.25. From the paired sample t-test results, the t-count value was -11.830 and a sig (2-tiled) of 0.00. Because the sig value is < 5% (a), it can be concluded that there is a difference in the pre-test and post-test post-test scores. This research concludes that push-up exercises and pull-up exercises have a significant influence on improving the volleyball bottom serve ability of NU Arosbaya Middle School students.

KEYWORD: Volleyball, bottom serve, push-up, pull-up.

1. INTRODUCTION

One of the sports favored by Indonesian people is volleyball. Volleyball is a sport that uses large balls. Volleyball moment This has Already developed with fast goods internationally and in Indonesia (Atimianti et al., 2022). This matter can be used as basic capital for PBVSI in particular, and volleyball coaches generally Keep going, develop, and improve the abilities of the candidates, athletes, or athletes alone. Volleyball has four techniques: serve, pass, smash, and block (Tinovega et al., 2023). Volleyball players must know all over technique base, especially service, because service greatly influences print points and earns the victory. Besides that service, as a marker, it started the game; if the player No Smart does the technique service correctly, it will potentially be bad because against will be considered a trivial player (Saputra & Gusniar, 2019). Therefore, the technique used in volleyball is an important and necessary element.

Preliminary studies related to service quality have been carried out; researchers have found several problems in learning volleyball. Among them, 85% of students in class VII's ability services still need to be higher. Besides, based on an interview with that teacher, no method exercises are carried out for practice service.

One technique in volleyball is a lower or underhand serve (Hidayat & Iskandar, 2019). Not only do they know the technique, but players must also know about the component physique influencing the ability to do service lower correctly. Component condition physics performs lower service, such as the muscle arm (Kamadi, 2020). Strength muscle arms are very important when doing service bottom because they move for interest to the back. Then, with contraction, maximum movement is reflected on the muscles' arm so

JSES : Journal of Sport and Exercise Science, Vol 6, No 2, 2023 (79-85)
Improving Volleyball Lower Serve Ability after Push-Up and Pull-Up Training for 6 Weeks in Junior High School Students
Barirohtul Umdah[1*], Heni Yuli Handayani[1], Haryo Mukti Widodo[1], Septyaningrum Putri Purwoto[1]

that it withholds strength and blow service (Saharudin et al., 2021). The muscle arm is the point center of energy, so the strong muscle arm supports power in the part of the body (Kamadi, 2020).

Various types of exercise are needed to practice muscle arm. Lots are already done. One exercise for practicing muscle arm is push up and pull up. According to the KBBI, push-up is pushing the body up and down with the hand. In other words, push-ups are one of the exercises that are Very well done. Load's benefits include strengthening chest muscles, shoulders, and arms and arranging the respiratory system. Pull is a movement made with a method that depends on lifting the body up and down until the chin is parallel with an iron or crossbar handle (Saputra et al., 2018).

Previous research conducted by Kamadi (2020) found that there is a significant and linear contribution of strength muscle arm to ability service under volleyball, there is a significant and linear contribution to coordination eye-hand to ability service under volleyball, there is a significant and linear contribution to balance to ability service lower volleyball, and there is a significant contribution and linear fusion strength muscle arms, coordination eye hands, and balance to ability service lower volleyball. Basri (2018) researched an influence variation exercise for increased ability service volleyball game lower hand student extracurricular activities at State Middle Schools in 22 cities in Pekanbaru. Based on a previous study, push-up or pull-up exercises can increase the strength of the muscle arm. However, Not yet. Once There is a combination of push-up and pull-up exercises. So, the research has a novelty: the push-ups and pull-up exercises to improve the ability to service.

From the above explanation, the study aims to know the influence of push-ups and pull-up pull-ups on ability service under volleyball at NU Arosbaya Middle School students.

2. METHODS

The type of research carried out in the study is quantitative and uses an experimental approach. Location of research: This is located at the NU Arosbaya Middle School in the village of Berberuk Kec. Arosbaya, Regency Bangkalan, East Java. The population used in the study consists of students in 7th grade at NU Arosbaya Middle School, with a population of 38 students. Sample from the study: This is a student in 7th grade at NU Arosbaya Middle School, numbering 20 out of 38 students. The sample was taken using probability sampling with simple random sampling. This means the researcher only takes a sample of male students in one class.

The research design used is a true experimental design. The study uses a true experimental design from a pre-test- post-test post-test control group design (Wardana & Rivaldiyah, 2019). In this design, two groups are selected randomly and then given a pre-test for known circumstances. There is a difference between group experiments and group control—good pre-test results when marking group experiments. There is no significant difference. Form design True Experimental Design was used in the study as a pre-test, post-test, and post-test control group design (Wardana & Rivaldiyah, 2019).

In research, this test is done twice, namely before and after the experiment, and thereby, the treatment results can be known more accurately because they can be compared with circumstances before the treatment (Burhan, 2022).

Test this uses a test service that is lower in volleyball. The goal is to strengthen students' ability to do service under volleyball. The required tools for the test include balls, volleyball courts, books, and notes. How to do it is that the students do service lower ten times, and the assessment by the ball falls in the area target, the ball not over the net or go out of field given value 0. According to Furkan & Shandi (2019), target test ability service lower depicted as follows:
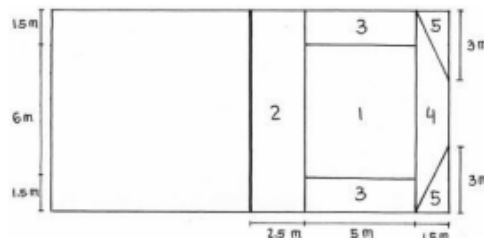
JSES : Journal of Sport and Exercise Science, Vol 6, No 2, 2023 (79-85)
Improving Volleyball Lower Serve Ability after Push-Up and Pull-Up Training for 6 Weeks in Junior High School Students
Barirohtul Umdah[1*], Heni Yuli Handayani[1], Haryo Mukti Widodo[1], Septyaningrum Putri Purwoto[1]

Figure 1. Goals Test Service Ability

There are test norms in doing test service lower, according to (Baqer & Bawono, 2019) as following:

Table 1. Lower service test norms

No	Son	Category
1.	> 27	Very well
2.	21-26	Good
3.	15-20	Enough
4.	8-14	Not enough
5.	<7	Very less

3. RESULT

Study This own characteristic samples, characteristics in a study can explained in the following table:

Table 2. Sample characteristics

No	Name	Gender	Age	Weight	Height
1.	M.E	Man	13	45	159
2.	US	Man	13	50	130
3.	AN	Man	14	30	129
4.	A-Z	Man	14	43	150
5.	AR	Man	14	35	129
6.	CR	Man	13	47	145
7.	FA	Man	15	55	150
8.	IS	Man	14	48	155
9.	JA	Man	13	39	165
10.	M.F	Man	13	35	130
11.	MV	Man	13	33	135
12.	MS	Man	14	45	150
13.	M.A	Man	14	70	165
14.	M.S	Man	14	49	169
15.	N.M	Man	14	65	150
16.	RM	Man	13	35	130
17.	SA	Man	13	40	135
18.	UA	Man	14	39	140
19.	HF	Man	14	40	150
20.	RP	Man	13	49	149

Description of result data study using the IBM SPSS Statistics series 25 program, then served in the form table with an explanation as follows:

Table 3. Descriptive statistical test

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest_ServiceabilityBelow	20	6	27	16.25	6,189
Posttest_Serviceability Below	20	18	31	24.05	3,663
Valid N (listwise)	20				

JSES : Journal of Sport and Exercise Science, Vol 6, No 2, 2023 (79-85)
Improving Volleyball Lower Serve Ability after Push-Up and Pull-Up Training for 6 Weeks in Junior High School Students
Barirohtul Umdah[1*], Heni Yuli Handayani[1], Haryo Mukti Widodo[1], Septyaningrum Putri Purwoto[1]

The results of the spss can explain that the N values test and post-test have the haveme value, namely,y 20, which means the sample the data held is .e., valid. Minimum and maximum values have increased in the columnist and post-test, and values in the column mean also increased. Deviation values have declined in the pre-test and test columns.

Table 4. Normality Test

Bottom Serviceability	Shapiro-Wilk		
	Statistics	df	Sig.
Pre-test	,943	20	,276
Post-test post-test	,958	20	,512

The SPSS results show that the pre-test and post-test data are normally distributed because the sig values on both numbers are bigger than 0.05. From the normality test results, Shapiro—Wilk found that the data was normally distributed, and possible statistical tests were carried out, such as a paired t-test.

Table 5. Paired T Test

Paired Sample Test				
Bottom Serve Results	Mean	Std. Devotion	n	Sig (2-Tailed)
Pretest t and Posttest	-7,800	2,949	20	0,000

From the output above, the pre-test and post-test post-test average are -7,800, with a standard division of 2,949. Furthermore, with paired sample t-test results t- the calculated value is -11.830, and sig (2-tiled) is 0.00. Because the sig value is <5% (a), it can be concluded that There is a difference in the value of the pre-test and post-test post-test t.

4. DISCUSSION

In Table 3, researchers used statistical tests to see the minimum value, value maximum, average, and standard deviation from research data (Purba et al., 2021) can explain that results from descriptive tests own N value on pre-test and post-test post-test on the same value namely 20 which means sample data held, i.e., valid. Minimum and maximum values have increased numbers in the pre-test and post-test post-test columns, and the mean values in the column also increase. The standard deviation value owns decline numbers from the pre-test to the post-test.

After descriptive tests are carried out, further statistics, namely a normality test, can be done. The normality test determines whether variables in the study have a normal distribution. The calculation of the normality test uses Kolmogorov–Smirnov Z (Na'afisari et al., 2023). Table 4 explains that pre-test and post-test data have normally distributed data because the sig value on both has a higher number than numbers and is bigger than 0.05.

After the normality test, own values normally distributed can be next with a paired t-test (paired t-test); the paired t-test is one method testing hypotheses where the data is used No free (in pairs). The most frequent characteristic encountered in paired cases is that One individual (object research) got two pieces of different treatments. Although using the same individual, the researcher still obtains two types of sample data: data from treatment first and data from treatment second (Montolalu & Langes, 2018). Table 5 shows that the pre-test and post-test post-test average is -7,800 with standard division, namely 2,949. Furthermore, with paired sample t-test results t- the value is -11.830, and sig (2-tiled) is 0.00. Because the sig value is <5% (a), it can be concluded that There is a difference in the value of the pre-test and post-test post-test t.

From the explanation, one can explain the significant results. This means there is influence from push-up and pull-up exercises' ability to serve under volleyball. Component condition physics is used To

JSES : Journal of Sport and Exercise Science, Vol 6, No 2, 2023 (79-85)
Improving Volleyball Lower Serve Ability after Push-Up and Pull-Up Training for 6 Weeks in Junior High School Students
Barirohtul Umdah[1*], Heni Yuli Handayani[1], Haryo Mukti Widodo[1], Septyaningrum Putri Purwoto[1]

service the lower body, which is the muscle arm (Kamadi, 2020). Strength muscle arms are very important when doing service bottom because they move for interest to the back. Then, with contraction maximum, do movement reflection on the muscles arm so that strength blow service is withheld (Saharudin et al., 2021). The muscle arm is the center of energy, so the strength of the muscle arm will support power in the body part (Kamadi, 2020).

Various exercises for practicing muscle arms have already been done (Duhe, 2020). Push-ups and pull-ups are exercises for practicing muscle arms. According to previous research done by Triyogo (2021), push-up exercises significantly influence the accuracy of service to students (Massa, 2019). Pull-up exercises significantly influence the accuracy of the service to students. There is a significant influence between exercise push-ups and exercise pull-ups on accuracy service for students. More push-ups are better than exercise pull-ups in increased accuracy service for a lower SMA Negeri 1 Mediterranean Island student son.

Push-ups and pull-ups are excellent and effective loads because they involve muscles, arms, and shoulders (Wahyono et al., 2024). Moreover, service Under volleyball also involves the strength of muscle arms. The strength of the muscle arm is the force produced by muscles moving the arm with degrees of freedom (Abi et al., 2022; Kayantaş, 2020). Because increasing strength in the muscle arm is appropriate behavior or increases ability service (Saparuddin, 2019), to increase strength, muscle the so there must be an exercise program containing exercises that athletes will perform, and the results must be achieved by the trainer (Adi & Indarto, 2021).

Before creating training programs, sets, reps, and recovery must be measured first. This is to know how strong the sample is before doing a six-week treatment to avoid injury or undesirable outcomes. If the exercise program is already based on the given treatment of the sample, there is influence from the treatment carried out.

With that, the training program push-ups and pull-ups improve service to lower Balll volleyball students at NU Arosbaya Middle School. So, push-ups and pull-ups can be used as exercises To increase the ability to service lower. The statistical results show that NU Arosbaya Middle School students who took part in exercise push-ups and exercise pull-ups for six weeks experienced enhancement services under volleyball. Students can train happily or monotonously by providing training programs, push-ups, and pull-up exercises with various variations. Enhancement service is lower than the average pre-test and post-test change. From the existing data obtained, the results were 16.25, and the results post-test post-test were 24.25. This means that exercise push-ups and exercise pull-ups have a significant influence on the enhancement of ability service. Ability service lower can increase if exercise is done in a way programmed and carried out with Correct.

5. CONCLUSION

Based on the explanation above, push-up and pull-up exercises influence the volleyball serviceability of NU Arosbaya Middle School students. The increase in straight strokes can be seen in the comparison of the pre-test and post-test post-test average changes. From the data obtained, the pre-test result is 16.25, and the post-test result is 24.25. This means that push-ups and pull-up exercises significantly influence improving lower-serve ability. Moreover, the statistical results of the paired sample t-test produced a t-count value of -11.830 and a sig (2-tailed) of 0.00. Because the sig value is <5% (a), it can be concluded that there is a difference in the pre-test and post-test post-test scores

JSES : Journal of Sport and Exercise Science, Vol 6, No 2, 2023 (79-85)
Improving Volleyball Lower Serve Ability after Push-Up and Pull-Up Training for 6 Weeks in Junior High School Students
Barirohtul Umdah[1*], Heni Yuli Handayani[1], Haryo Mukti Widodo[1], Septyaningrum Putri Purwoto[1]

REFERENCE

Abi, P. D., Widyah, K. N., Nurhasan, Hari, S., Zainal, A. M., & Putri, P. S. (2022). Enhancing Strength, Leg Muscle Explosive Power, And Muscle Hypertrophy Using Hurdle-Box Jump Plyometric. Physical Education Theory and Methodology, 22(1), 113–120. https://doi.org/10.17309/TMFV.2022.1.16

Adi, F. A., & Indarto, P. (2021). Effect of Bounce Ball Drill Training on Improving Volleyball Underpassing Skills . Jurnal Porkes, 1-8.

Atimianti, A. N., Handayani, H. Y., Purwoto, S. P., & Anwar, K. (2022). Improving Bottom Passing Skills in Learning Volleyball Using Plastic Balls. Jurnal Penelitian Bidang Pendidikan, 25-34. doi:http://dx.doi.org/10.24114/jpbp.v28i2.37484

Baqer, S., & Bawono, M. N. (2019). The Contribution of Concentration to Top Service Accuracy Results in Men's Volleyball Extracurricular Participants at Smpn 3 Madiun. Jurnal Kesehatan Olahraga, 536.

Basri, I. (2018). The Effect of Variation Training on the Lower Serving Ability of Volleyball Extracurricular Students at SMP Negeri 22 Pekanbaru City. Jurnal Penjaskesrek, 1-4.

Burhan, Z. (2022). Comparison of the Effect of Pull Up and Push Up Exercises on Improving Extracurricular Basketball Chest Pass Skills. Jurnal Ilmiah Global Education, 48. doi:https://doi.org/10.55681/jige.v3i1.168

Duhe, E. D. P. (2020). Latihan Fisik Untuk Kekuatan dan Daya Tahan Olahraga Voli. Jambura Journal of Sports Coaching, 2(1).

Kayantaş, I. (2020). Effect of plyometric training on back and leg muscle strength: A meta-analysis study. African Educational Research Journal, 8(2), 342–351. https://doi.org/10.30918/AERJ.82.20.078

Massa, R. S. (2019). Latihan Metode Dril Terhadap Ketepatan Jump Service Pada Atlet Bola Voli Putera. Jambura Journal of Sports Coaching, 1(2).

Wahyono, M., Setijono, H., Wiriawan, O., Harmono, B. A., Nuryadi, A., Pranoto, A., Purwoto, S. P., Kholis, M. N., Zawawi, M. A., & Puspodari, P. (2024). The effect of ladder drill exercises on some physical abilities in male junior high school students. SPORT TK, 13, 1–8. https://revistas.um.es/sportk

Furkan, & Shandi, S. A. (2019). Penyusunan Battery Test Olahraga Bola Voli. Jurnal Pendidikan Mandala, 268. doi:http://dx.doi.org/10.58258/jupe.v4i5.876

Hidayat, A., & Iskandar, D. (2019). Effectiveness of Underhand Serve in Straight Position and Side Position on Underhand Service Accuracy. Jurnal Olahraga, 64. doi:https://doi.org/10.33222/juara.v4i1.452

Kamadi, L. (2020). Contribution of Physical Conditions to Lower Serving Ability in Volleyball Games. Journal Coaching Education Sports, 1-10. doi:https://doi.org/10.31599/jces.v1i2.369

Kayantaş, I. (2020). Effect of plyometric training on back and leg muscle strength: A meta-analysis study. African Educational Research Journal, 8(2), 342–351. https://doi.org/10.30918/AERJ.82.20.078

Massa, R. S. (2019). Latihan Metode Dril Terhadap Ketepatan Jump Service Pada Atlet Bola Voli Putera. Jambura Journal of Sports Coaching, 1(2).

Montolalu, C. E., & Langes, Y. A. (2018). The Effect of Basic Computer and Information Technology Training for Teachers with Paired T-Test (Paired Sample T-Test). Jurnal Matematika Dan Aplikasi, 56. doi:https://doi.org/10.35799/dc.7.1.2018.20113

Na'afisari, I., Anwar, K., Hidayatullah, F., & Purwoto, S. P. (2023). The Effect of Learning Shuttle Run Variations on Learning Results for 100 Meter Sprint Running in Class Xi Students of Brajaguna Bangkalan High School. JTIKOR, 16. doi:10.17509/jtikor.v8i1.60355

JSES : Journal of Sport and Exercise Science, Vol 6, No 2, 2023 (79-85)
Improving Volleyball Lower Serve Ability after Push-Up and Pull-Up Training for 6 Weeks in Junior High School Students
Barirohtul Umdah[1*], Heni Yuli Handayani[1], Haryo Mukti Widodo[1], Septyaningrum Putri Purwoto[1]

Purba, D. S., Tarigan, W. J., Sinaga, M., & Tarigan, V. (2021). P Training on Using SPSS Software in Multiple Linear Regression Processing for Students of the Faculty of Economics, Simalungun University During the Covid 19 Pandemic. Jurnal Karya Abadai, 205. doi:https://doi.org/10.22437/jkam.v5i2.15257

Saharudin, Hakim, H., & Ishak, M. (2021). The Relationship between Wrist Flexibility and Arm Muscle Strength and Upper Serve Ability in Volleyball Games among FIK UNM Students. JOCCA, 93. doi:https://doi.org/10.26858/sportive.v4i1.17168

Saparuddin. (2019). Pthe Effect Of Push-Up And Pull-Up Exercises On Arm Muscle Strength In Perpani Archery Athletes, Banjar District. Jurnal Pendidikan Olahraga, 36-43. doi:http://dx.doi.org/10.31602/rjpo.v2i2.2480

Saputra, D. I., & Gusniar. (2019). Improving Volleyball Bottom Passing Learning Results by Playing Throwing the Ball. Jurnal Pendidikan Jasmani dan Olahraga, 1-10. doi:https://doi.org/10.31539/jpjo.v3i1.862

Saputra, Syafrial, & Sofino. (2018). The Effect of Upward Pushing and Upward Pulling Exercises on the Ability of Straight Strikes in Pencak Silat Sports in Extracurricular Students at SMP Negeri 1 Bengkulu City. Jurnal Ilmiah Pendidikan Jasmani, 1-7.

Tinovega, A., Dewi, C., Pamungkas, G. R., Imam, M. F., Dzaikirin, M. H., Dwiputra, R. C., & Nugroho, Y. A. (2023). The Effect of Push Up Training on Arm Strength for Volleyball Athletes at Semarang State University. Jurnal Analisis, 133-138. Retrieved from https://jurnalilmiah.org/journal/index.php/analis/article/view/599/428

Triyogo, T. (2021). The Influence of Push Ups and Pull Ups on the Accuracy of Volleyball Serving for Male Students of SMA Negeri 1 Mediterranean Island. Jurnal Ilmiah, 1. doi:https://doi.org/10.33659/cip.v9i2.206

Wahyono, M., Setijono, H., Wiriawan, O., Harmono, B. A., Nuryadi, A., Pranoto, A., Purwoto, S. P., Kholis, M. N., Zawawi, M. A., & Puspodari, P. (2024). The effect of ladder drill exercises on some physical abilities in male junior high school students. SPORT TK, 13, 1–8. https://revistas.um.es/sportk

Wardana, M. S., & Rivaldiyah, Y. (2019). Application of the Problem Based Learning Model to Cognitive Learning Results in Mathematical Problem Solving. Thinking Skills and Creativity Journal, 21-22. doi:https://doi.org/10.23887/tscj.v6i2.66763