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The Impact of Hanging Ball Training Method on Volleyball Under Passing and Hands Eye Coordination

Hikmawati[1], Hartati[2], Meirizal Usra[3]
[1,2,3] Universitas Sriwijaya, Palembang, Indonesia; hartati@fkip.unsri.ac.id

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ABSTRACT

The hanging ball training method in a ring through a rope is one option to improve underhand passing practice and hand-eye coordination in volleyball. The choice of this method is based on the position of the hand when passing down. The purpose of this study was to determine the impact of hanging ball exercises in a circle on the results of volleyball underhand passing and eye-hand coordination in elementary school students. This study used an experimental method with the type of group pretest-posttest design. This research was conducted at Sekayu 8 Public Elementary School and started from October to November 2022. The sample of this study amounted to 22 students. The data was gathered through assessments measuring both motor skills and visual-motor coordination. The data analysis in this study involves conducting tests to assess normality, homogeneity, variance-covariance homogeneity using the box-M matrix, multicollinearity, and hypotheses. The study findings indicated a notable impact of doing hanging ball exercises in a circular motion on both the passing ability and hand-eye coordination of students during volleyball activities. The findings of this study have significant consequences for teachers' comprehension in formulating diverse volleyball training methodologies, particularly aimed at enhancing lower passing capabilities and eye-hand synchronisation, so equipping students with proficient volleyball playing skills.

Corresponding Author:
Hartati
Universitas Sriwijaya, Palembang, Indonesia; hartati@fkip.unsri.ac.id

1. INTRODUCTION

Learning to play volleyball at school is not only oriented towards knowledge of volleyball but also teaches sports with a tactical approach (Beard & Mathias, 2020). Thus, there must be a consistent contribution to playing volleyball (Croitoru, Grigore, Badea, & Hantau, 2013). However, Physical Education teachers must also pay attention to the level of volleyball practice in the context of the material presented in the curriculum. One of the Physical Education, Sports and Health materials for elementary school students starting from grade 4 to grade 6 is the big ball game. One of the big ball sports that is taught by elementary school students is volleyball. Volleyball has traditionally been seen as a sport that is difficult to introduce to elementary school students. Teachers can use training methods that can foster students' motivation, enthusiasm and skills in learning volleyball. The material for

volleyball games taught to grade 5 students includes activities for variations in basic locomotor, and non-locomotor movement patterns, manipulative underpass, overpassing, and underserving in more complex volleyball games (Sugiyanto, 2021)

However, learning volleyball in elementary schools is not easy and faces various obstacles. The results of preliminary research observations and the experience of researchers as educators at Sekayu 8 Public Elementary School in grade 5 students found that 13 students (59.09%) of the 22 students could not do the bottom pass properly, because when leaving to do the bottom pass they tend to place the arms are too high, then the knees are not bent when receiving the ball, the arms are not pressed together, and the ball is hit on the upper arms. In addition, it can be seen that the movements of the hands and eyes in welcoming the ball to be passed are not quite right, so the ball that is passed is not right or even comes out of the intended target area. Another problem that was found was the lack of contribution of students' hand-eye coordination when carrying out the downward passing movement of volleyball, namely 7 students (31.82%) had moderate eye-hand coordination, and 8 students (36.36%) were included in the good category lacking, and 7 students (31.82%) were classified as very lacking. In addition, the tendency of educators to deliver theory-centred material in textbooks, and the lack of educator initiative to develop various training methods or games that make it easier for students to master basic volleyball technical skills, especially underhand passing. So, there are problems in volleyball underhand passing exercises and hand-eye coordination.

Therefore, teachers must innovate learning models of volleyball underhand passing that suit the needs of students (Aini, 2021; Rohendi et al., 2022; Sujito, 2020). Other studies have shown the use of games to improve hand-eye coordination strength (Jafarzadehpur, Aazami, & Bolouri, 2019). As has been proven in previous studies, hanging ball exercises can improve lower passing ability (Hadi Purnomo, Sir, Amir, & Purnomo, 2022). The hanging ball training method has an impact on much better smash power. High arm muscle strength has much better smash results (Yogi et al., 2022; Zainudin, 2021). Hanging ball practice can also contribute and there are smash skills, especially open smash accuracy (Putri et al., 2021).

From the problem findings, the hanging ball training method in a ring through a rope is one option to improve underhand passing training and volleyball hand-eye coordination. The choice of this method is based on the position of the hand when passing down. Students can put all five fingers together in one fist and palm over the other fist and continue with a clenched fist. Students also practice in the ideal position to make contact with the ball slightly above the wrist and try to straighten the elbows and push the hanging ball upwards in a coordinated manner by starting from the lower body. This concept is a novelty that wants to be presented in this research. So, the gap that this research illustrates with previous research is the hanging ball method to master underhand passing and volleyball hand-eye coordination to be more precise. Apart from that, there has not been much research that focuses on aspects of applying hanging ball training to lower passing training and hand-eye coordination in volleyball games.

Therefore, the purpose of this study was to determine the impact of hanging ball exercises in a circle on the results of volleyball underhand passing and eye-hand coordination in elementary school students. The results of the research are expected to contribute to the development of various training methods to improve volleyball underhand passing skills and eye-hand coordination. Moreover, learning activities in elementary schools require training contexts that are appropriate to their level of needs. So, the results of this study can be a guideline for Physical Education teachers in teaching volleyball underhand passing and training hand-eye coordination.

2. METHODS

2.1 Research Design

This study used an experimental method with the type of group pretest-posttest design (Sugiyono, 2018; Creswell, 2012):

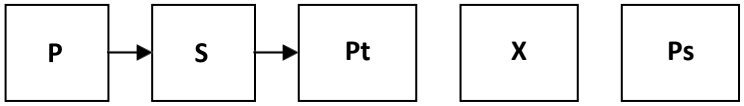

Figure 1. Pretest-Posttest Control Group Design

Note;
P = Population X = Treatment / experiment
S = Sample Pt = Pretest Ps = Posttest

2.2 Place and Time

This research was conducted at Sekayu 8 Public Elementary School which is located at Jalan Muara Teladan, Serasan Jaya Village, Sekayu District, Musi Banyuasin Regency, South Sumatra Province. The time for conducting the research starts from October to November 2022, which includes 16 experiments using the hanging ball training method, and 2 tests (pretest and posttest).

2.3 Population and Sample

The population in this study were fifth-grade students at SD Negeri 8 Sekayu in the 2022/2023 school year with a total of 67 people. The sample in this study was taken using a simple random sampling technique, which is a sampling technique in which members of the population are taken randomly without regard to strata in the population. So, the sample of this study amounted to 22 students.

2.4 Data Measurement Technique

Data was collected using a test used to determine volleyball underhand passing ability and eye-hand coordination.

1. The volleyball underpass test is a test that has been used in previous studies (Nurhasan, 2013). The score is taken from the number of touches of the ball that hits the target area for 30 seconds.
2. Eye-hand coordination test (Ismaryati, 2018)

To determine the level of students' volleyball passing ability and eye-hand coordination tests are interpreted using the 5 norm limits (Sudijono, 2015)

Table 1. Norm Range

	Norm Range	Category
1.	≥ M + 1,5 SD	Very well
2.	M + 0,5 SD s.d < M + 1,5 SD	Well
3.	M – 0,5 SD s.d M + 0,5 SD	Currently
4.	M – 1,5 SD s.d M – 0,5 SD	Not enough
5.	< M – 1,5 SD	Less once

2.5 Data Analysis

The data analysis in this study involved conducting tests to assess normality, homogeneity, variance-covariance homogeneity using the box-M matrix, multicollinearity, and hypotheses. The normalcy test was conducted via the Kolmogorov-Smirnov Z formula through the SPSS 26 software. If the obtained significance value is greater than 0.05, it indicates that the data is regularly distributed. Below are the findings of the normality tests conducted on the research data.

Table 2. The result of the normality data test

		Under Passing		Eye-hand coordination	
		Pretest	**Posttest**	**Pretest**	**Posttest**
N		22	22	22	22
Normal Parameters[a]	Mean	14.45	16.45	5.00	6.50
	Std. Deviation	1.535	1.595	.976	1.144
Most Extreme Differences	Absolute	0.207	0.203	0.182	0.169
	Positive	0.207	0.203	0.182	0.169
	Negative	-0.116	-0.152	-0.182	-0.169
Kolmogorov-Smirnov Z		0.973	0.952	0.853	0.792
Asymp. Sig. (2-tailed)		0.300	0.325	0.461	0.557

a. Test distribution is Normal.

Table 2 shows the value of Asymp. Sig (2-tailed) and the volleyball pretest passing under the column of 0.300 greater than 0.05 or 0.300 > 0.05, and Asymp.Sig (2-tailed) posttest 0.325 > 0.05. So, it can be concluded that the pretest and posttest passing volleyball data under test are normally distributed. Likewise, the results of the eye-hand coordination test showed Asymp. Sig (2-tailed) and the pretest column of eye-hand coordination of 0.461 which is greater than 0.05 or 0.461 > 0.05, and the value of Asymp.Sig (2-tailed) posttest 0.557 > 0.05. So, the pretest and posttest data of eye-hand coordination tested were normally distributed.

The homogeneity test was carried out using the ANOVA test, if the analysis results show a p-value> 0.05, then the data is homogeneous, but if the results of data analysis show a p-value < 0.05, then the data is not homogeneous. The result of homogeneity is presented below;

Table 3. The result of homogeneity

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	5.025	2	2.513	17.241	0.000[a]
	Residual	5.975	41	0.146		
	Total	11.000	43			

a. Predictors: (Constant), eye_hand, under_Passing

b. Dependent Variable: Test

The results of the ANOVA test or in the output column F obtained a value of 17.241 with a significant level of 0.000. Because the probability is 0.000 <0.05, then H_0 is rejected and Ha is accepted, meaning that the pretest-posttest data for volleyball underhand passing and hand-eye coordination are homogeneous.

The research data was followed by a box-M test conducted to test whether the data on the two dependent variables had the same variance-covariance matrix for the independent variables. If the sig value obtained is > 0.05, it means that the dependent variable has the semivariance–-covariance as the independent variable. Vice versa if the sig value < 0.05. Whereas the multicollinearity test with SPSS uses the VIF (Variance Inflation Factor) or tolerance guidelines, where the VIF value is the opposite of the tolerance value (VIF = 1/tolerance). Hypothesis testing used Multivariate Variance. The guideline for testing the hypothesis is that if the sig value is <0.05, it can be concluded that H_0 is rejected, conversely, if the sig value is > 0.05 then H_0 is accepted.

3. FINDINGS AND DISCUSSION

3.1 Finding

Data in the form of volleyball underhand passing pretest-posttest values and eye-hand coordination are described based on ability level categories, as each can be seen in the following table:

Table 4. Description of Volleyball Underpass Category

Score Interval	Category	Post-test		Pre-test	
		F. Absolut	F. Relative	F. Absolut	F. Relative
> 18,85	Very Good	3	13,64%	0	0,00%
17,25 - 18,85	Good	4	18,18%	0	0,00%
15,65 - 17,25	Enough	8	36,36%	6	27,27%
14,05 - 15,65	Less	5	22,73%	3	13,64%
< 14,05	Very Less	2	9,09%	13	59,09%
	Total	22	100,00%	22	100,00%

Table 4 shows that there were 3 students (13.64%) who obtained the results of the posttest passing under volleyball in the very good category and higher than the pretest (0.00%), as well as the good category for the posttest results, there were 4 students (18.18%)) while the pretest results were nil (0.00%), then in the moderate and poor categories the posttest results were higher than the pretest (36.36% > 27.27% and 22.73% > 13.64%). However, in the very poor category, the posttest results were lower than the pretest with a percentage of 9.09% < 59.09%. The following table shows the category level of the results of the eye-hand coordination test

Table 5. Description of Eye-Hand Coordination Category

Score Interval	Category	Post-test		Pre-test	
		F. Absolut	F. Relative	F. Absolut	F. Relative
> 8,22	Very Good	1	4,55%	0	0,00%
7,07 - 8,22	Good	3	13,64%	0	0,00%
5,93 - 7,07	Enough	13	59,09%	7	31,82%
4,78 - 5,93	Less	5	22,73%	8	36,36%
< 4,78	Very Less	0	0,00%	7	31,82%
	Total	22	100,00%	22	100,00%

Table 5 shows that there was one student (4.55%) who obtained posttest hand-eye coordination results in the very good category and was higher than the pretest (0.00%), as well as in the good category for the posttest results, there were 4 students (18.18 %) while the pretest results were nil (0.00%), then in the moderate and poor categories, the posttest results were higher than the pretest (36.36% > 27.27% and 22.73% > 13.64%). However, in the very poor category, the posttest results were lower than the pretest with a percentage of 9.09% < 59.09%.

Table 6. The result of the descriptive statistic under passing and eye-hand coordination

Category		Under Passing		Eye-Hand Coordination	
		Pre-test	Post-test	Pre-test	Post-test
N	Valid	22	22	22	22
	Missing	0	0	0	0
Mean		14.45	16.45	5.00	6.50
Median		14.00	16.00	5.00	6.50
Mode		14	16	5	7
Std. Deviation		1.535	1.595	.976	1.144
Variance		2.355	2.545	.952	1.310
Range		5	5	4	4
Minimum		12	14	3	5
Maximum		17	19	7	9

Then, the result of the box–M test is presented in the following table;

Table 7. Box's Test of Equality of Covariance Matrices

Box's M	2.658
F	0.840
df1	3
df2	317520.000
Sig.	0.472

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.
a. Design: Intercept + Group

Table 7 shows the Box's-M value of 2.658 with a significance of 0.472. Because the significance value is 0.472 > 0.05, accept H_0 which states that the covariance variance matrix is homogeneous. The result of multicollinearity tests is presented in the following table.

Table 8. Multicollinearity Testing

		Collinearity Statistics	
Model		**Tolerance**	**VIF**
1	Under Passing	0,834	1,199
	Eye-Hand Coordination	0,834	1,199

a. Dependent Variable: Kelompok

The result of the calculation of the Tolerance value is that there is no dependent variable that has a Tolerance value of > 0.10 or 0.834 > 0.10, and VIF < 10 or 1.199 < 10. So, the research variables do not show any symptoms of multicollinearity for Multivariate Variance. The following are the results of hypothesis testing from the experimental and control groups, whether viewed simultaneously or partially.

Table 9. Partial Hypothesis Testing
Multivariate Tests[b]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.992	2467.024[a]	2.000	41.000	.000	0.992
	Wilks' Lambda	0.008	2467.024[a]	2.000	41.000	.000	0.992
	Hotelling's Trace	120.343	2467.024[a]	2.000	41.000	.000	0.992
	Roy's Largest Root	120.343	2467.024[a]	2.000	41.000	.000	0.992
Gender	Pillai's Trace	0.457	17.241[a]	2.000	41.000	.000	0.457
	Wilks' Lambda	0.543	17.241[a]	2.000	41.000	.000	0.457
	Hotelling's Trace	0.841	17.241[a]	2.000	41.000	.000	0.457
	Roy's Largest Root	0.841	17.241[a]	2.000	41.000	.000	0.457

a. Exact statistic

b. Design: Intercept + test

Table 9 shows Pillai's trace value showing a positive value of 0.457 with a significance of 0.000. Increasing this value gives a significant value to the model or there is a significant average difference between groups of data. Wilk's lambda value is 0.543 with a significance of 0.000 which means there is an average difference between the data groups. Likewise, for the Hotelling trace and Rpy's largest root, each obtained a value of 0.841 and a significance of 0.000. Based on the four tests, a significance value of <0.05 was obtained.

Table 10. Partial Experimental Group Hypothesis Testing

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Under Passing	44.000[a]	1	44.000	17.958	.000	0.300
	Eye-Hand Coordination	24.750[b]	1	24.750	21.884	.000	0.343
Intercept	Under Passing	10509.091	1	10509.091	4289.046	.000	0.990
	Eye-Hand Coordination	1454.750	1	1454.750	1286.305	.000	0.968
Gender	Under Passing	44.000	1	44.000	17.958	.000	0.300
	Eye-Hand Coordination	24.750	1	24.750	21.884	.000	0.343
Error	Under Passing	102.909	42	2.450			
	Eye-Hand Coordination	47.500	42	1.131			
Total	Under Passing	10656.000	44				
	Eye-Hand Coordination	1527.000	44				
Corrected Total	Under Passing	146.909	43				
	Eye-Hand Coordination	72.250	43				

a. R Squared = ,300 (Adjusted R Squared = ,283)

b. R Squared = ,835 (Adjusted R Squared = ,327)

The results of the test of between-subject effects above provide an overview of the univariate model test. The p-value is significant for the variable passing under volleyball, a value of 0.000 <0.05, which means that there is a difference in the average value of passing under volleyball between the pretest and posttest. The significance value for eye-hand coordination is 0.000 <0.05, there is a difference in the average value of hand-eye coordination between the pretest and posttest. Based on the results of this analysis, it was concluded that there was a significant effect of the hanging ball training method in a circle on the results of volleyball underhand passing and eye-hand coordination in class V students at Sekayu 8 Elementary School (Bela, Sari, & Guntur, 2017; Zuhermandi, Sahputra, & Wakidi, 2015).

3.2 Discussion

This finding is consistent with the results of research (Permana & Febrianty, 2016) which concluded that there is a linear and significant functional relationship between hand-eye coordination and passing ability in volleyball games. Karim & Ikadarny (2021) concluded that there was a significant contribution between eye-hand coordination, arm muscle strength and flexibility together on the ability of underhand passing in volleyball. The results of other studies also show the contribution of arm muscle strength, balance, and hand-eye coordination to volleyball passing ability (Afifah, Aminudin, & Abduloh, 2020; Kamadi & Hasyim, 2020; Sari & Guntur, 2017; Thiago A.G., Maurício G. Bara, Bernardo, Daniel G.S. de, & Jeferson M., 2021). Therefore, the results of these findings provide an in-depth understanding that hanging ball exercises to improve underhand passing ability and eye-hand coordination can be developed with a variety of media or other types of games (Aprianto, Triansyah, & Yunitaningningrum, 2016; Mariadi, Ilham, & Widowati, 2020; Pardini, 2021; Sahabuddin, 2020; Zainudin, 2021). This is of course related to the character and learning environment of students at school.

These findings illustrate that the consistency of training is systematic, planned, programmed, measurable, regularly carried out repeatedly, and has the goal of providing increased fitness (Nasrulloh et al., 2018). Even exercises that are done three times (3x) a week can already develop endurance, strength and flexibility (Bafirman & Wahyuri, 2019). During the training, students actively and seriously followed the instructions given by the researcher. The hanging ball training model in the

circle consists of types, namely maintaining the underpass, underpass with one hand, underpass with movement to the right and left, and underpass from low movement forward. In addition to these exercises, the researchers provided a variety of exercises, such as: throwing and catching the ball in pairs, bouncing the ball against the wall, passing in pairs, zig-zag running, and push-ups, so students don't get bored quickly in doing the exercises.

A coach must be creative in presenting his training program, the trainer must be good at finding and implementing variations in training (Hasyim & Saharullah, 2019). Thus, teachers must be able to innovate effective volleyball learning models, so that the learning model is suitable for teaching volleyball to students in elementary school classes, especially since each student and the school environment has different characteristics or needs (Jaya, Insanistyo, Sofino, & defliyanto, 2018; Suganda & Suharjana, 2013). This is an important finding point in this study. The hanging ball exercises provided are appropriate to the needs of students and the sports infrastructure at school.

4. CONCLUSION

Based on the results of the data analysis, it was concluded that the average pretest passing under volleyball for students was 14.45 and the posttest was 16.45, with an increase of 2.0. While the average pretest hand-eye coordination was 5.0 and the post-test was 6.5, with an increase of 1.5. In addition, the results of testing hypothesis 1 stated that there was a significant effect of the hanging ball training method in a circle on the results of volleyball underhand passing, as well as the second hypothesis stated that there was a significant effect of the hanging ball training method in a circle on hand-eye coordination, and on testing. The third hypothesis also states that there is a significant effect of the hanging ball training method in a circle on the results of volleyball underhand passing and eye-hand coordination in class V students at Sekayu 8 Elementary School.

The results of the study recommend that Physical Education teachers in elementary schools use hanging ball exercises in a circle to improve volleyball underhand passing abilities and students' hand-eye coordination. While schools can meet the needs for facilities and infrastructure for hanging ball practice during volleyball lessons, they can also support teachers in developing various variations of exercises according to the context of student characteristics and the school environment. Therefore, future researchers can add more varied types of exercises in modifying the types of exercises both in the use of tools, the field and other media so as not to cause boredom in students, and it is hoped that further research results will be more perfect.

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Conflicts of Interest: no conflict of interest

REFERENCES

Afifah, M. A., Aminudin, R., & Abduloh, A. (2020). THE EFFECT OF DRILL TRAINING METHOD ON UNDER PASSING TECHNIQUES VOLLEYBALL IN STUDENTS OF SMPN 2 PANGKALAN. *Jurnal Speed (Sport, Physical Education, Empowerment)*, *3*(2), 136–142. Retrieved from https://journal.unsika.ac.id/index.php/speed/article/view/3975

Aini, K. (2021). Improving passing skills on volleyball using target games approach. *Journal Sport Area*, *6*(1), 22–28. https://doi.org/10.25299/SPORTAREA.2021.VOL6(1).5288

Aprianto, T., Triansyah, A., & Yunitaningningrum, W. (2016). PENGARUH LATIHAN MEDIA BOLA GANTUNG TERHADAP TEKNIK DASAR SMASH BOLA VOLI SISWA EKSTRAKULIKULER SMKN 03. *Jurnal Pendidikan Dan Pembelajaran Khatulistiwa (JPPK)*, *5*(11). https://doi.org/10.26418/JPPK.V5I11.17433

Bafirman, & Wahyuri, A. S. (2019). *Pembentukan Kondisi Fisik*. Raja Grafindo Persada.

Beard, J., & Mathias, K. E. (2020). Volleyball: A Pedagogical Conundrum. *Strategies*, *33*(1), 28–40. https://doi.org/10.1080/08924562.2019.1680331

Bela, Y., Sari, C., & Guntur, G. (2017). Pengaruh metode latihan dan koordinasi mata-tangan terhadap hasil keterampilan servis atas bola voli. *Jurnal Keolahragaan*, *5*(1), 100–110. https://doi.org/10.21831/JK.V5I1.12773

Creswell, J. W. (2012). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (4th ed.). Boston: Pearson.

Croitoru, D., Grigore, G., Badea, D., & Hantau, C. (2013). Training Contributions at Mini-volleyball Level. *Procedia - Social and Behavioral Sciences*, *93*, 724–726. https://doi.org/10.1016/j.sbspro.2013.09.269

Hadi Purnomo, D., Sir, I., Amir, A., & Purnomo, D. H. (2022). Using a Hanging Ball For Primary School Students on Volleyball Down Passing. *ETDC: Indonesian Journal of Research and Educational Review* , *1*(3), 363–370. https://doi.org/10.51574/IJRER.V1I3.300

Hasyim, & Saharullah. (2019). *Dasar-dasar Ilmu Kepelatihan*. Makasar: UNM Press.

Ismaryati. (2018). *Tes dan Pengukuran Olahraga*. UNS Press.

Jafarzadehpur, E., Aazami, N., & Bolouri, B. (2019). The Influence of Learning Approeach and Eye-Hand Coordination on The Learning Outcomes of Mini Volleyball Passing Skill. *Journal of Physical Education and Sports*, *8*(1), 39–43. https://doi.org/10.1111/J.1600-0838.2005.00535.X

Jaya, H., Insanistyo, B., Sofino, S., & defliyanto. (2018). Pengaruh Model Latihan Modifikasi Bola Gantung Terhadap Kemampuan Servis Atas Putra Ekstrakurikuler Smkn 3 Kota Bengkulu. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, *2*(2), 153–159. https://doi.org/10.33369/JK.V2I2.6494

Kamadi, L., & Hasyim, H. (2020). Analysis of Arm Muscle Strength, Balance, and Hand-Eye Coordination toward Passing Ability in Volleyball Games for Students of SMP Negeri 1 Duampanua, Pinrang Regency. *Proceeding of International Conference on Science and Advanced Technology*, *0*(0). Retrieved from https://ojs.unm.ac.id/icsat/article/view/17575

Karim, A & Ikadarny, I. (2021). Kontribusi Koordinasi Mata Tangan, Kekuatan Otot Lengan dan Kelentukan Terhadap Kemampuan Passing Bawah Permainan Bola Voli SMA Negeri 14 Gowa. *Jendela Olahraga*, *6*(1), 106–112. https://doi.org/10.26877/JO.V6I1.6947

Mariadi, D., Ilham, I., & Widowati, A. (2020). Pengembangan Alat Servis Atas Bola Gantung Pada Sepak Takraw. *Jurnal Manajemen Pendidikan Dan Ilmu Sosial*, *2*(1), 426–434. https://doi.org/10.38035/JMPIS.V2I1.580

Nasrulloh, A., Prasetyo, Y., & Apriyanto, K. D. (2018). *Dasar-dasar Latihan Beban*. UNY Press.

Nurhasan. (2013). *Tes dan Pengukuran dalam Pendidikan Jasmani*. Universitas Terbuka.

Pardini, G. C. (2021). Pengaruh Alat Modifikasi Bola Gantung Terhadap Keterampilan Passing Bawah Dalam Permainan Bola Voli. *SPORTIF: Jurnal Pendidikan Jasmani, Kesehatan, Dan Rekreasi*, *6*(1), 1–8. https://doi.org/10.54438/SPORTIF.V6I1.261

Permana, D., & Febrianty, M. F. (2016). Hubungan Antara Koordinasi Mata-Tangan Dengan Kemampuan Passing Bawah Permainan Bolavoli. *Jurnal Kepelatihan Olahraga*, *8*(2), 59–69. https://doi.org/10.17509/JKO-UPI.V8I2.16075

Putri, S. A. R., Dlis, F., Samsudin, Fajar, M., Wanto, S., & Sari, P. S. (2021). The Effect of Smash Training Using Hanging Balls on the Accuracy of Open Smash. *Horizon Research Publishing(HRPUB)*, *9*(1), 135–139. https://doi.org/10.13189/SAJ.2021.090119

Rohendi, A., Pasundan, S., Cimahi, I., Pembelajaran, P. M., Bawah, P., Voli, B., & Bermain, P. (2022). Pengembangan Model Pembelajaran Passing Bawah Bola Voli dengan Pendekatan Bermain. *Journal of Physical and Outdoor Education*, *4*(1), 8–15. https://doi.org/10.37742/JPOE.V4I1.145

Sahabuddin. (2020). Pengaruh Latihan Smash Bola Gantung Dan Bola Lambung Terhadap Kemampuan Smash Dalam Permainan Sepaktakraw. *SPORTIVE: Journal Of Physical Education, Sport and Recreation*, *3*(2), 105–111. https://doi.org/10.26858/SPORTIVE.V3I2.17003

Sari, Y. B. C., & Guntur, G. (2017). Pengaruh metode latihan dan koordinasi mata-tangan terhadap hasil keterampilan servis atas bola voli. *Jurnal Keolahragaan*, *5*(1), 100. https://doi.org/10.21831/JK.V5I1.12773

Sudijono, A. (2015). *Pengantar Statistik Pendidikan*. Grafindo Persada.

Suganda, M. A., & Suharjana, S. (2013). PENGEMBANGAN MODEL PEMBELAJARAN BOLAVOLI PADA SISWA SEKOLAH DASAR KELAS ATAS. *Jurnal Keolahragaan*, *1*(2), 156–165. https://doi.org/10.21831/JK.V1I2.2571

Sugiyanto, S. (2021). *Modul Ajar PJOK SD/MI Fase C Kelas V*. Jakarta.

Sugiyono. (2018). *Metode Penelitian Pendidikan*. Bandung: Alfabeta.

Sujito, S. (2020). Pengembangan model pembelajaran passing bawah bolavoli. *JURNAL PENJAKORA FAKULTAS OLAHRAGA DAN KESEHATAN*, *7*(1), 30–39. https://doi.org/10.23887/PENJAKORA.V7I1.24587

Thiago A.G., H., Maurício G. Bara, F., Bernardo, M., Daniel G.S. de, F., & Jeferson M., V. (2021). Season Impact on the Technical and Physical Training Load in Professional Volleyball. *International Journal of Sports and Exercise Medicine*, *7*(1), 183. https://doi.org/10.23937/2469-5718/1510183

Yogi, A., 1∗, H., Wahyudi, A., & Rahayu, S. (2022). The Influence of Training Methods and Arm Muscle Strength Towards Volleyball Smash at Youth and Sports Department of Kendal (Dissporsa). *Journal of Physical Education and Sports*, *11*(1), 76–82. https://doi.org/10.15294/JPES.V11I1.54198

Zainudin, M. (2021). Latihan bola gantung terhadap smash permainan bola voli. *Prosiding Seminar Nasional Pendidikan Jasmani Dan Kesehatan*, *1*(1), 300–305. Retrieved from http://ejournal.fkip.unsri.ac.id/index.php/semnaspenjas/article/view/214

Zuhermandi, Z., Sahputra, R., & Wakidi, W. (2015). Penerapan Media Bola Gantung Untuk Meningkatkan Aktivitas Smash Dalam Permainan Bola Voli Pada Siswakelas X B SMA Negeri 1 Nanga Pinoh. *Jurnal Pendidikan Jasmani Kesehatan Dan Rekreasi (Penjaskesrek)*, *2*(1), 18–29. https://doi.org/10.46368/JPJKR.V2I1.66