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## The Effect of Learning Style in Improving Volleyball Upper Passing Skills in Junior High School Students

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### ABSTRACT

Learning style is an important method in learning to receive, manage and process external information in learning, but this has not yet received attention from teachers. This study aims to determine the influence of *auditory, visual* and kinesthetic learning styles (VAK) in improving *passing skills* over volleyball. This study uses the *Quasi Experimental method with Randomized Control Group Pretest-Posttest Design* with the intention of using this to determine the effects of before (*Pretest*) and after (*Posttest*) treatment. This study used *Systematic Proportional Random Sampling* with a percentage of 90% and the sample used amounted to 36 students, with group division by Ordinal Pairing Matching *technique*, and divided into *auditory, visual* and kinesthetic groups with a total of 12 students in each group. This research was carried out as many as 8 meetings during school learning. Data analysis with SPSS 25 started from descriptive statistics, normality test, *paired sample t-test* and ANOVA difference test with a significance level of 0.05. The results of the *paired sample t-test* showed that there were differences in *pretest* and *posttest* in all groups (*auditory* 0.000, *visual* group 0.000 and kinesthetic group 0.000) and the ANOVA difference test results the significance value between groups was 0.04 (P<0.05). The conclusion of the study was that there was an influence of auditory, visual and kinesthetic learning styles in improving volleyball passing skills by 17.7% and there was a difference in pretest and posttest learning style interventions in improving volleyball passing.

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### INTRODUCTION

Learning approaches in physical education have evolved and transformed. New learning approaches focus on the use of modified games, technical-tactical learning in similar sports, cognitive training, learning progressions, teaching tactics before teaching techniques, and problem solving. In addition, with the development of technology, there has been a drastic increase in the use of cutting-edge technology in the classroom (Padillah et al., 2020). Physical education is a field of knowledge that focuses on psychomotor as well as social construction. In this context, it is important to discuss materials related to learning approaches that can be applied in the classroom (Thomson et al., 2015). Questions are often found in physical education about the relevance of the content/materials chosen to

be implemented in physical education classes as well as the methods used to implement them. However, although there are questions about what should be procedurally present in physical education classes, most of the existing research or literature focuses on how teachers understand their students. This results in several questions, such as: (1) is it possible to learn the attitudinal elements and learning styles related to the sport curriculum in the physical education classroom? (2) can a relationship be established between learning these elements and the teaching style used by the teacher? Both in terms of objectives and methods.

In general, research suggestions by (Chatoupis & Vagenas, 2018) propose to identify teaching styles, this is due to the lack of research regarding the implications of using learning styles in physical education classrooms. This is due to the fact that in the few studies that have been conducted it was found that demonstrating how effective these styles are in improving student motivation and attitudes is one of the main concerns (Hein et al., 2012) . In addition, the influence of these styles on students' ease of learning is also less investigated. The view on motor skills is still unclear in several studies about determining whether learning styles can have an effect in motor learning in physical education classes specifically improving skills in a sport movement (Agung Wibowo et al., 2022) .

An explanation of how learning styles can affect physical education classes has been discussed in previous research by (Cuevas, 2015) explains that over the past 10 years teachers have under-prepared themselves in classroom learning activities and only use 1 learning style that will be carried out continuously by the teacher. This becomes another research review reinforcing the use of learning styles from teachers who can only use 1 learning style is forcing. Whereas in theory there are many learning styles that can be done by students in processing learning, especially in physical education. Learning styles include kinesthetic learning styles, *auditory* learning styles, and visual learning styles (Supit et al., 2023) .

The teaching style of the teacher is still commonly found with the lecture teaching style method, with this teaching style model the teacher can only provide information based on *auditory* learning styles. This can affect the learning process because students only receive information from lectures or teacher explanations without any practice provided. This can be a problem, because students get information or learning through visual, auditory and kinesthetic during learning. The learning process in physical education according to (Priya et al., 2020) states that students can use auditory and kinesthetic modalities to learn. Students who use visual learning styles use vision, students who use auditory learning styles use hearing, and students who use kinesthetic learning styles use movement and touch to learn. Although there are times when a person uses all three of these learning styles at once, most people prefer to use one of these three learning styles. In secondary education such as junior high school, MI, and MTS, physical education activities focus on motor development and physical fitness through play and one of the popular sports is volleyball (Krisnawati & Agyanur, 2023) .

Volleyball has many techniques that must be mastered, one of which is *passing*. *Passing* is an important part of starting an attack, and its frequency is most often used in volleyball is required, one of which is volleyball top *passing*. In developing volleyball top *passing* techniques, there are several principles that must be prepared by looking at the direction of the ball, adjusting the rhythm of the ball's arrival and feeling the ball in providing the *passing pass* given according to the purpose of the ball directed where (Amila et al., n.d.) . So that the learning style method that is adapted to the principle of upper *passing* is needed. By looking at the direction of the ball means there is a visual learning style, by determining the feeling ball with kinesthetic, and from the auditory learning style can listen to the teacher's direction on how the position and direction of the hands when passing volleyball (Delni Susmita et al., 2024) . So that the three learning style models can be done during volleyball learning. However, not many teachers/educators understand this, and there are still many students who have difficulty in passing volleyball.

Based on the results of observations as shown by the results of the observation test of volleyball top *passing* of Muhammadiyah 06 Dau Malang Junior High School students categorized as excellent, good, sufficient, less, and very less. The results show that many students still do not understand this basic method. The initial test results from 35 people from the population showed that 15 people, with a percentage of 42.8%, and 14 people, with a percentage of 40%, fell into the category of less and less than very good and a percentage of 17.2% fell into the category of quite-good once. Based on the background of the problems that have been put forward, therefore this study has the aim of wanting to know the effect of learning styles on improving the ability to *pass* over volleyball in class VIII students

## **METHODS**

**3** This study uses the *Quasi Experimental* method with the *Randomized Control Group Pretest-Posttest Design* design with the intention of using this to determine the effect of before (*Pretest*) and after (*Posttest*) treatment by using and comparing experimental groups and control groups (Rangkuti, 2019) . The learning style variable in this study uses 3 learning styles, namely (a) Visual learning style, (b) *Auditory* learning style, (c) *Kinesthetic* learning style.

The population of class VIII at SMP Muhammadiyah 06 was 40 students and the sample in this study used *Systematic Proportional Random Sampling* with a percentage of 90% and the sample used amounted to 36 students. The division of groups in this study used the *Ordinal Pairing Matching* technique where this technique has the aim of dividing / separating 2 groups more equally (Diarso & Diarto, 2018) . The sample size of 36 students was divided into 3 groups and each group consisted of 12 students. The *kinesthetic* group numbered 12 students, the *auditory* group numbered 12 students and the visual group numbered 12 students. The instrument in this study used the *Russel-Lange* method with a validity of 0.77 and a reliability of 0.79. This research was conducted for 8 meetings, 1 week 1x meeting.

The results of the data obtained were analyzed with SPSS 25 starting from descriptive statistics, normality test, paired sample t-test and ANOVA difference test. The normality test uses the Kolmogorov-smirnov method, the homogeneity of variance test, and proceeds to the sample t-test. Furthermore, ANOVA difference test was conducted to determine the difference of the specified variables, if there is a difference, a *Post Hoc LSD (least significance difference)* difference test will be conducted with a significance value using the 95% level or ( $P < 0.05$ ).

## RESULTS AND DISCUSSION

The results of data analysis of the effect of learning styles in improving volleyball top *passing* skills for the results of descriptive data analysis can be seen in table 1:

**Table 1.** Descriptive Analysis Results

No.	Group	Score					
		Pretest			Posttest		
		Mean	Sd	N	Mean	Sd	N
1	<i>Auditory</i>	28,00	2,256	12	42,33	4,960	12
2	<i>Visual</i>	27,33	2,462	12	45,08	5,435	12
3	<i>Kinesthetic</i>	26,83	2,329	12	47,50	3,656	12

Based on the results in table 1, it shows the average/mean volleyball top *passing* score of the *Auditory* learning style group at *pretest* 28 and *posttest* the average score increased to 42. Furthermore, in the visual learning style group the *pretest* mean in this group was 27.33 and at the time of the *posttest* the score was 45.08. And in the kinesthetic learning style group the average volleyball top *passing* score mean at *pretest* 26.83 and at *posttest* to 47.5.

**Table 2:** Results of *Pretest* and *Posttest* Difference Tests

No.	Group	N	Sig.	Description
1	<i>Auditory</i>	12	0,000	$P < 0,05$
2	<i>Visual</i>	12	0,000	$P < 0,05$
3	<i>Kinesthetic</i>	12	0,000	$P < 0,05$

Based on the results of the *paired sample t-test* in table 2, the significance value in the three groups is 0.000 ( $P > 0.05$ ) so it can be concluded that there are differences before the *pretest* and *posttest* in the *auditory*, visual and kinesthetic groups due to treatment.

Testing the hypothesis in this study to find out was done by calculating the difference between the *pretest* and *posttest* scores of volleyball top *passing* skills in each group using *one way anova* with significance ( $p < \alpha = 0.05$ ), can be seen in table 3.

**Table 3.** ANOVA Difference Test Results

	Sum Of Square	df	Mean Square	F	Sig.	Description
<i>Between Group</i>	160,389	2	80,914	3,564	0,04	$P < 0,05$
<i>Within Groups</i>	742,583	33	22,503			

Total	902,972	35
R <sup>2</sup>	0,177	

Based on the results of the anova difference test in table 3, the significance value between groups is 0.04 ( $P < 0.05$ ). This means that there is a difference between *auditory*, *visual* and kinesthetic learning style groups on improving volleyball top passing skills. Furthermore, based on R<sup>2</sup>, the coefficient value is 0.177, which means that the learning style intervention can have an effect of 17.7% on improving volleyball top passing in students. Furthermore, because there is a difference, it is continued in the LSD test.

**Table 4.** LSD (*Least Significance Difference*) Further Test Results

Group	Kinesthetic	Visual	Auditory
Auditory	0,012*	0,165	-
Visual	0,221	-	0,165
Kinesthetic	-	0,221	0,012*

The results of the LSD further test explained that in the auditory and kinesthetic groups there was a significant difference with a significance value of 0.012 ( $P < 0.05$ ). Furthermore, there is no difference in the auditory and visual groups with a value of 0.165 ( $P > 0.05$ ). And there is no difference in the visual and kinesthetic learning style groups with a value of 0.221 ( $P > 0.05$ ).

#### The Effect of Pretest and Posttest Auditory Learning Style on Volleyball Upper Passing Skills

Based on the results of the *pretest* and *posttest* difference test analysis in table 2, it is explained that the significance value is 0.000 ( $P < 0.05$ ) which means that there is a significant difference between the *pretest* and *posttest* due to the *auditory* learning style intervention, this is according to previous research explaining that the auditory learning style research results show that the application of a problem-based learning model to students with an auditorial learning style has a high effect on learning outcomes (Hendriana, 2018). Furthermore, it is strengthened by increasing learning outcomes with the auditory method by 11% (Jean Imaniar Djara et al., 2023). The increase due to learning styles can be influenced by the characteristics of students where they are more suitable to be given directions on how to position the hands when performing an upper pass. In addition, one of the most common learning approaches in physical education is lecture. So that by providing lecture methods to *audiotory* learning styles can make students' understanding of movement skills increase.

#### The Effect of Pretest and Posttest Visual Learning Style on Improving Volleyball Top Passing Ability

The results of the analysis in table 3 the value between before and after the intervention is 0.000 where the *p-value*  $< 0.05$  which explains that there is a significant difference between the *pretest* and *posttests* of the effect of visual learning styles on improving the ability to *pass* over volleyball. The increase can be based on the results of descriptive analysis of the initial mean score of the *pretest* was 27.33 and after the visual learning style intervention became 45.08. This is in accordance with previous research by (Dwi Saputra et al., 2022) using animated videos, there is a significant effect on the *passing*

ability of futsal extracurricular participants with a percentage increase of 37.72%.

The improvement of volleyball overhead *passing* ability in the visual group can be enhanced because it is influenced by greater linkages between knowledge and concept associations, which is typical of students (Perla et al., 2016) . As well as causing greater structuring of knowledge this shows how concepts come together to form more complex abilities in volleyball upper passing ability (Freitas da Silva et al., 2020) . By applying the visual learning style students' memory can capture and digest the concepts in the visual learning style (Fortes et al., 2020) . This explains that teachers must understand the context and understanding of learning styles in improving students' motor abilities and skills in volleyball top passing (Habibi Ar et al., 2023) .

### **The Effect of *Pretest* and *Posttest* Kinesthetic Learning Style on Improving Volleyball Upper Passing Ability**

The test results in table 3 show a significance value of 0.000 *pretest* and *posttest* which indicates that there is a difference before and after the kinesthetic learning style intervention on the results of the students' volleyball upper *passing* ability score. The increase is in accordance with previous research by (Riyadi et al., 2023) explaining with a touch learning method with reciprocal compared to inclusion on improving *passing* in volleyball games. Research from explains (Sumedi et al., 2020) there is a significant influence between the application of the bounce of the ball against the wall with hands on improving the ability to *pass* up and *pass* down volleyball in students.

The increase in volleyball upper *passing* skills in the kinesthetic group could be influenced by the variations provided in this study including back and forth *passing* movements, right and left sides, and more. Skills that explain that in an effort to improve student skills, teachers and coaches must provide different and interesting game models (Achilleopoulos et al., 2022) . In addition, variations in practice and the learning process are intended to prevent students from getting bored and make them feel comfortable while learning, so that they can achieve satisfactory learning outcomes (Hambali, 2016) . The research conducted shows that teachers and coaches must provide different and interesting game models. In addition, a fun learning method can make students more motivated in the learning process , so that students' understanding and abilities increase.

### **Auditory, Visual and Kinesthetic Learning Styles on Improving Volleyball Upper Passing Skills**

The effect of *auditory*, *visual* and kinesthetic learning styles on improving the ability to *pass* volleyball based on the results of table 3 in the ANOVA difference test the value is 0.04 which means the p-value <0.05 which explains that there are differences between *auditory*, *visual* and kinesthetic groups on improving the ability to *pass* volleyball for junior high school students. This difference is the same as previous research by (KN, 2022) explaining that there is an effect of learning style methods on improving learning outcomes and student motivation in learning volleyball. Reinforced by research (Nurjanah et al., 2022) explains that the VAK (*Virtual, Auditory, Kinesthetic*) method can significantly improve student learning outcomes. Reinforced by other research with the VAK method can improve

shooting skills in soccer players (Putra & Sudarso, 2019) . Based on table 1, it explains that the highest score value in the kinesthetic group with an average score of 42.33, the average mean of the visual group is 45.08 and in the *auditory* group is 42.33 and based on the results of  $R^2$  the value of the influence of auditory, visual and kinesthetic learning styles affects the improvement of volleyball top *passing* ability as much as 17.7%. Therefore, to find out the differences between groups can be through the results of the LSD (*Least Significance Difference*) further test in the table.

The difference between the auditory learning style group and the visual group results from the LSD *Least Significance Difference* further test (Table) the significance value is 0.165 which means the  $p\text{-value} > 0.05$  which states that there is no significant difference between the auditory group and the visual group. This is in accordance that by providing visual and auditory learning style treatment can improve passing skills in soccer athletes (Fadhoil et al., 2023) . In the visual group with kinesthetic also explained that there was no significant difference with a value of 0.221 ( $P > 0.05$ ), because the mean / average student score was also not much different with a score of 47.50 with 45.08 in the visual group. To create effective teaching strategies, it is important to understand student characteristics (Purwantoro et al., 2023) .

The results of the LSD test between the kinesthetic and *auditory* groups with a significant  $p$  value is 0.012 which  $P < 0.05$  explains that there is a significant difference in the two groups. And it can be seen in the descriptive analysis test results explaining that the average score value of *auditory* group students is 42.33 while in the kinesthetic group 47.50. This explains the difference between the two groups. This is in accordance with research from (Tatang & Hidayat, 2022) explaining that with the intervention of the VAK method on basketball lower passing techniques there is a significant difference in the results of the auditory learning style group with the kinesthetic group and the results of previous studies also explain that there is an effect of kinesthetic learning styles with audiovisual (Tatang & Hidayat, 2022) .

## CONCLUSION

Based on the results and discussion that has been described, it can be concluded that there is a significant difference between *pretest* and *posttest* by using auditory, visual and kinesthetic learning styles in improving volleyball top *passing* techniques in junior high school students.

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