The Effect Of Problem-Solving Learning Methods On The Accuracy Of Underhand Passes In Girls' Volleyball At SMP N 2 Hamparan Perak Deli Serdang

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Abstract. The influence of problem-solving learning methods on the accuracy of underhand passing in women's volleyball is the driving force of this research. SMPN 1 Pulau Merbau, Teluk Ketapang Village, Pulau Merbau District. Students have not shown their greatest potential in Underhand Passing, therefore errors often occur in that part of the test. This research is a Quasi-Experimental research, with the title "The Influence of Problem Solving Learning Style Learning Techniques on the Accuracy of Underhand Passing in Women's Volleyball." SMPN 2 Hamparan Perak Deli Serdang In 2025, the population in this study were all 102 Female Volleyball Players of SMPN 2 Hamparan Perak Deli Serdang. The sample taken was 15 female students. The instrument for arm muscle explosive power used the Underhand Passing test along with the Underhand Passing accuracy test. After that, the data was processed statistically, for the normality test with the Liliefors test at a significance level of 0.05. The hypothesis proposed is the Influence of the Problem Solving Learning Style Learning Method on the Accuracy of Underhand Passing in Girls' Volleyball at SMPN 2 Hamparan Perak Deli Serdang. Based on the processed data, it can be concluded that there is an Influence of the Problem Solving Learning Style Learning Method on the Accuracy of Underhand Passing in Girls' Volleyball at SMPN 2 Hamparan Perak Deli Serdang, where the initial test with an average of 41.87 in the pre-test increased by 3.6 to 45.47 in the post-test with the results (t count 12.345> t table 1.72)

Keyword : Problem Solving Learning Method, Accuracy of Volleyball Underhand Passing

1 Introduction

Because education plays a very important role in life, these two concepts are closely interrelated and cannot be considered separately. Educational progress is a crucial factor in determining not only the development of a society, but also the development of a nation as a whole. Educators are the most central component in every educational process, and it is physically impossible for an educational process to take place without the presence of students. Education is an effort made by adults in interactions with children through the process of change experienced by children in the construction of learning or teaching. These changes include changes in thinking, feelings, and skills. Education is an interaction between adults and children. Taqiyuddin, (2008: 45) (2008: 45) To help students develop and improve knowledge (cognitive), skills (psychomotor), attitudes (affective), and physical fitness, which in the learning process prioritizes physical activity and fostering a healthy lifestyle, according to the Ministry of National Education (2003: 3). The purpose of physical education is to help students develop and improve knowledge (cognitive), skills (psychomotor), and attitudes (affective). " From the description above, it can be concluded that the goal of physical education, sports, and health is to develop and improve various abilities related to movement and sports, as well as knowledge and attitudes (social formation). In addition, the goal of physical education, sports, and health education can help improve the physical fitness of players and encourage them to live a healthier lifestyle. Players are expected to learn effectively if they have a healthy body and a good level of physical fitness, and this will ensure that the results of the Underhand Pass obtained are also satisfactory. In the teaching and learning process, instructors must have a strategy so that students can learn in an effective and efficient way, which can ultimately achieve the desired results. Mastering the presentation models and techniques, which are more often referred to as learning models and learning methods, is one of the steps that must be taken to have such a plan. In essence, the way or method of teaching or presentation techniques used by teachers to convey information or massage verbally to players are different from the way they do to strengthen players in mastering knowledge, skills, and attitudes. [The strategy used to motivate players to be able to apply their knowledge to solve problems faced or to answer a question will be different from the method used The goal is for players to think and express their own thoughts when faced with various situations.

The use of problem-solving learning models and approaches is common in educational settings, where students are expected to provide answers or solve problems. The development of scientific attitudes in players can be facilitated widely by using a problem-based learning approach, which is effective as an educational methodology. Gamers will gain the ability to solve problems in a manner consistent with protocols used in scientific work through this method.

In the world of education in general and the educational process in particular, it is very important to pay attention to the use of appropriate methods in teaching. This is because the success of teaching depends greatly on the appropriateness of the use of teaching methods that are appropriate to the topic being taught so that teaching objectives can be achieved properly. In the context of the teaching and learning process, techniques can be considered as tools or ways to convey lesson content to students, with the ultimate goal being the achievement of a certain objective. "A method is a way that in its function is a tool to achieve goals," said Surachmat in his book Basics and Techniques of Interaction in Teaching and Learning. He stated that this definition can be found in the book. Furthermore, in the book Advanced Methods, Sudirjo wrote that "Teaching techniques are the methods used by teachers in presenting lesson materials by considering the entire learning scenario to achieve goals." From the two definitions

above, it is clear that methods are the means used by teachers in the teaching and learning process. More specifically, it is clear that each teacher will use certain methods to convey lesson material to their students. In the case of teaching mathematics, the use of teaching methods must be directed by the goals to be achieved without ignoring the player element. Teachers must use methods relevant to the conditions and situations of the classroom during teaching. To achieve these educational goals, there must be strong collaboration between the educational components: teachers and educators, players and students, and the environment in which educators work. Students are the objects of education mentioned above, where students are expected to have healthy bodies so they can become Indonesians with the potential for progress in the future. Players who have high or good success must also have good motor skills so that the results they achieve are in accordance with expectations. Furthermore, the results achieved are influenced by various circumstances, which can be generally classified as internal or external influences. Internal factors that influence the results of a player's underhand pass include things like the player's arm muscle strength, hand-eye coordination, and so on. On the other hand, external factors that influence the accuracy of a player's underhand pass include things like the school environment, residential environment, curriculum, programs, facilities and infrastructure, and teachers. The teaching method used to improve underhand pass performance is one internal component that has a significant impact on the reliability of underhand pass results. According to the findings of several studies, a person's motor skills have a good correlation with their overall level of academic achievement. In other words, a person's underhand passing ability directly correlates with the quality of their results in the underhand passing category. Conversely, a person's underhand passing accuracy decreases proportionally to the extent to which they are unable to perform underhand passes. Based on these findings regarding underhand passing, it can be argued that research and instruction for players can be conducted to ensure they develop good underhand passing skills and achieve good results in their games, particularly in the Girls' Volleyball Club of SMPN 1 Pulau Merbau. Consequently, the author felt the need to conduct research based on the title "The Effect of the Problem-Solving Learning Method on the Accuracy of Underhand Passing in Girls' Volleyball at SMPN 1 Pulau Merbau."

Previous research results related to this research variable need to be presented to strengthen the theoretical foundation proposed in this study and simultaneously sharpen the framework and hypothesis formulation. Furthermore, this will help refine the framework. Previous research can serve as a guide and reference for researchers, allowing them to conduct research on new variables using the same strategy. This finding was found by several researchers who reached similar conclusions and found various similarities. The following is a list of some findings from previous research that relate to the factors considered in this study:

Muhammad Syaiful Ramadhan (2020), who will defend his thesis entitled Thesis The Influence of Teaching Methods and Educator Self-Confidence on Students' Ability to Succeed in Lower Level Courses (Experimental Study: Problem-Solving Style and Guided Discovery Style). This study aims to determine 1) whether there is a difference in the learning outcomes of lower passing between problem-solving teaching styles and guided discovery teaching styles; 2) whether there is an interaction between educator self-confidence and learning outcomes of lower passing; and 3) whether there is a difference in the learning outcomes of lower passing between problem-solving teaching styles and guided discovery teaching styles. Volleyball which has a high level of self-confidence and uses a form of learning known as guided discovery is superior to the more traditional approach of problem solving. This study requires data collection related to self-confidence, the application of instructional methods as treatment strategies (problem-solving style and guided discovery style). The window of opportunity for

the application of instructional approach treatments (problem-solving style and guided discovery style). An experiment with a 2 x 2 level design is a form of this study. To test the research hypothesis, a technique known as two-way analysis of variance (ANOVA) was used. The following is an explanation of how the hypothesis testing is carried out: 1) Based on the results of the variance analysis in the appendix list, it is determined that Fh > Ft at the level = 0.05. This results in 5.35 > 4.04, which indicates that there is a difference in the learning outcomes of underhand passing in volleyball games between the problem-solving teaching style and the guided discovery teaching style. 2) Based on the results of the variance analysis that can be seen in the appendix, it is obtained that Fh is greater than Ft at a significance level = 0.05, namely 21.86 greater than 4.06. Thus, there is a relationship between the teaching method and the level of student confidence in the learning outcomes of shooting in soccer games. 3) After that, a Tukey test was conducted on groups A2B2 and A1B2, where Qh = 33.17 and Qt = 2.92, and based on these findings, the guided discovery teaching style is superior compared to the problem-solving teaching style towards the accuracy of learning underhand passing in Volleyball material in the low-confidence player group. 4) After that, it was continued with the Tukey test on groups A1B1 and A2B1 where Qh = 97.93 and Qt = 2.92, and based on these findings, the problem solving teaching style was superior compared to the guided discovery teaching style on shooting learning outcomes in Volleyball material in the high self-confidence player group.

1) Ganjar Cahya Ramadhan (2020) Presented with the title "Thesis: The Effectiveness of Command Teaching Style with Problem Solving on Parallel Tactical Patterns in Volleyball," this thesis investigates the effectiveness of the command teaching style. Errors made in the process of developing attacking techniques in volleyball, both during matches and during practice, became the driving force for this research. This research was conducted with the aim of finding out whether players can acquire attacking methods in volleyball if given two different teaching styles, namely command and problem solving. Experiments using a pre-experimental design were conducted in this study, and the results were analyzed using a comparison of the entire group. The testing method is the approach taken. The Game Performance Assessment Instrument is the tool used in this study (GPAI). The results of using the command teaching style are (C = 33.58), and then the results of using the problem-solving teaching style are (S = 29.33). The results of the 0.05 level and the results achieved t count = 0.280, t table 1.795, or t count is smaller than t table. Based on the research results, it can be concluded that the problem-solving teaching style is more effective than the independent command teaching style in teaching volleyball attack strategies as part of extracurricular activities at SMPN 1 Pulau Merbau.

2) The problem-solving teaching style consists of inputting information, reasoning, selecting, and responding. The problem must be designed so that there is more than one answer. If so, this style transforms into a guided discovery style. The problems are structured from easy to difficult.

3) According to Arikunto (2006: 73), a hypothesis can be defined as a temporary answer to a research problem, until proven through collected evidence. A player will be able to master good volleyball techniques with the help of regular interval training. Continuous training will train players to perfect their ability to pass the ball accurately to the target and will train players to pass the ball consistently. The following hypothesis was developed for this investigation based on the information presented above: At SMPN 1 Pulau Merbau, there is a relationship between the Problem-Solving Learning Method and the Accuracy of Underhand Passes in Women's Volleyball.

1) Ho. There is an Influence of the Problem-Solving Learning Method on the Results of Underhand Passing in Girls' Volleyball at SMPN 1 Pulau Merbau.
2) Ha. There is an Influence of the Problem-Solving Learning Method on the Results of Underhand Passing in Girls' Volleyball at SMPN 1 Pulau Merbau.

2 Method

This type of research is known as a quasi-experiment, and the purpose of this study is to determine the effect of the Problem Solving Learning Style Learning Method on the accuracy of the underhand pass of female volleyball players at SMPN 1 Pulau Merbau. The design used in this study is the One Group Pretest and Posttest Design. In this community, observations made before the experiment are called pre-tests, and observations made after the experiment are called post-tests. According to Arikunto (2006:130), all that is the topic of research is a population. If someone wants to investigate everything related to the field of research, then the type of research they conduct is known as population research. This type of research or study is also known as census studies and population studies. Participants in this study were all female athletes who are members of the SMPN 1 Pulau Merbau Women's Volleyball Club. According to Arikunto (2006:131), a sample is a portion of the population being studied or is a representative of the group. Therefore, sampling from the population was carried out randomly without considering the strata in the population, while the number of samples for this study was 15 women. The sampling technique used in this study was total sampling, and the sample was homogeneous because the research subjects were only men.

1) Underhand Passing

Data collection by the researcher was facilitated and the quality of the collected data improved by using research instruments, namely tools or facilities used by researchers in data collection to facilitate their work and improve the quality of the collected data, meaning they were more accurate, complete, and systematic, making them easier to process. Suharsimi Arikunto (2006:160) stated that the instrument used in this study was the underhand passing test, adapted from Yunus's Brumback Forearm Pass Wall - Volley Test (1992:201). The following is an explanation of how the test will be administered: The purpose of this test is to determine whether a person is able to volley a ball against a wall using an underhand pass. The tools and equipment required are a smooth, flat wall with a 2.54 m target with an unlimited square height, a target square 2.43 m from the floor, a stopwatch, an observation sheet, writing utensils, a volleyball, a tape measure, and a whistle. Implementation instructions: before the test is carried out, the test subject will be given an explanation on how to carry out this test. The implementation is as follows: the test subject is positioned so that they face the wall while holding a volleyball. After receiving the "okay" signal from the officer, the ball is then bounced to the target wall. The ball is then bounced as many times as possible using an underhand pass within the specified time of one minute. Score: the player gets three attempts, and the score of each attempt is determined by the number of valid bounces according to the rules and enters the target area if the ball hits the line and is considered in (legal). The final score is determined by taking the average of the two best attempts. Score: the player gets three attempts. Score: the player gets the average of the two best attempts. It is claimed by Borenvik (1969) in Ricard, (1980: 102), that the dependence reaches a maximum of 0.896. Objectivity: although no one reports the objectivity coefficient, it is assumed to be high due to the characteristics of the activity being evaluated. Validity: Cox (1977) in Ricard (1980: 102) indicates a validity coefficient of 0.80 with worse passing skills in game situations. The data prerequisite test was

carried out using a normality test. The normality test in this study was Liliefors. In the calculation obtained Lhitung Ttabel then it is stated that the data is normally distributed. And vice versa, if Lhitung Ltabel then it is stated. The statistical hypothesis tested in this study using

$$t = \frac{Md}{\sqrt{\frac{\sum x^2 d}{N(N-1)}}}$$

the t-test test formula. According to Arikunto (2010: 125) sebagai berikut :

$$t = \frac{Md}{\sqrt{\frac{\sum x^2 d}{N(N-1)}}}$$

Description :

t = t coefficient

Md = Mean of the deviation (d) between the post-test and pre-test

xd = Difference between the deviation and the mean deviation

N = Number of subjects

df = Or db is N-1

The way to interpret this statistical test is done by making a decision with the provision that if t count ≥ t table then the null hypothesis (H0) is rejected, which indicates that there is a significant influence of Problem Solving Teaching Style training on the accuracy of volleyball underhand passing and if t count ≥ t table then the null hypothesis (H0) is accepted which indicates that there is no significant influence of Problem Solving Teaching Style training on the accuracy of volleyball underhand passing.

3   Result

This will be reported in CHAPTER IV regarding the findings of the research that has been conducted at SMPN 2 Hamparan Perak Deli Serdang. In accordance with the experimental research design conducted for 16 meetings, the number of samples was 15 people consisting of one group of 15 sample practice techniques, with the sample consisting of 15 female students who were taught using the Problem Solving Style Teaching Method. The purpose of this research is to examine the distribution characteristics of the variable "The Effect of the Problem-Solving Teaching Method on the Accuracy of Volleyball Underhand Passes" (an Experimental Study of Volleyball Students at SMP N 1 Pulau Merbau), as the dependent variable. Data were collected through pre-tests and post-tests. The following table provides the mean, standard deviation, median, mode, frequency distribution, and histogram for each variable.

1. Pre-test Results of Volleyball Underhand Pass Accuracy Level Using the Problem-Solving Teaching Method for Students at SMPN 2 Hamparan Perak Deli Serdang

Based on the accuracy of volleyball underhand passes using the Problem-Solving Teaching Method, with a sample size of 15 (n=15), the maximum score was 47, the minimum score was 36, the average (mean) was 41.8, and the standard deviation was 3.89.

Based on the calculations presented in the table 17 above, it can be seen that of the 15 samples used for the initial test of the Circuit Method, there were 3 people who were positive. 0 people (0.00%) were in the interval class > 47.70 categorized as very good, 7 people (46.67%) were in the interval class 43.81-47.69 categorized as good, 2 people (13.33%) were in the interval class 39.92-43.80 categorized as sufficient, 5 people (33.33%) were in the interval class 36.03-39.91 categorized as less, and 1 person (6.67) was in the interval class 36.02 categorized as very less
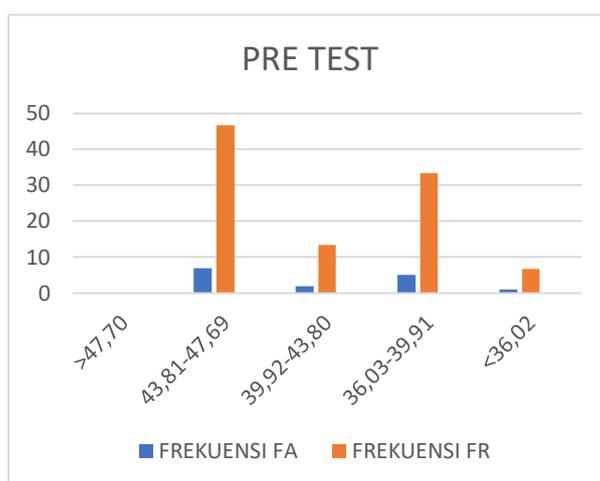

Figure 1. Pre-test Histogram of the Level of Accuracy of Volleyball Underhand Passing Teaching Method of Problem-Solving Style of Students of SMPN 2 Hamparan Perak Deli Serdang

1. Post-test Results of the Level of Accuracy of Volleyball Underhand Passes Using the Problem-Solving Teaching Method for Students at SMPN 2 Hamparan Perak Deli Serdang

Based on the findings of the Level of Accuracy of Volleyball Underhand Passes Using the Problem-Solving Teaching Method for a sample of 15 students (n=15), the maximum score was 50, the minimum score was 39, the average score was 45.47, and the standard deviation was 3.74. Meanwhile, in the post-test, 0 students (0.00%) were in the >51.08 range, which is categorized as excellent; 6 students (40.00%) were in the 47.34-51.07 range, which is categorized as good; 4 students (26.67%) were in the 43.60-47.33 range, which is categorized as adequate; and 4 students (26.67%) were in the 39.86-43.33 range, which is categorized as poor. less, and 1 person (6.67%) is in the interval class 59 which is categorized as less, and 1 person (6.67%) is in the interval class It is very clear, based on the frequency distribution of the data results displayed, that the Problem Solving Style Teaching Method has the potential to increase the Accuracy of Volleyball Underhand Passing of Students at SMPN 2 Hamparan Perak Deli Serdang. This is proven by the existence of a group whose final test scores have increased compared to the results of the first test.
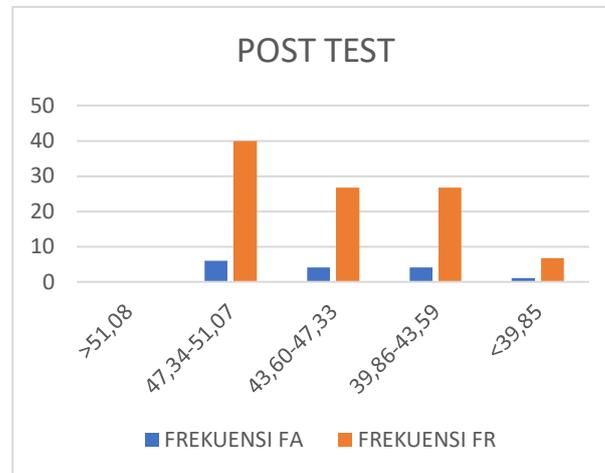
Figure 2. Post-test Histogram of the Level of Accuracy of Volleyball Underhand Passing Using the Problem-Solving Style Teaching Method of Students of SMPN 2 Hamparan Perak Deli Serdang

A. Testing Analysis Requirements

1. Data Normality Test

A normal distribution check for data must be performed before any attempt is made to test the hypothesis. A sample normality test is conducted to validate the hypothesis that the sampling distribution of the sample estimate error approximates or follows the normal distribution of the population under study. Using statistics for hypothesis testing requires the use of normal sampling conditions, which is the primary reason why this condition is considered important.

The data from this investigation were subjected to the Liliefors Test to determine whether the data follow a normal distribution. The significance level used as the basis for rejecting or accepting the decision regarding whether a data distribution is normal is set at 0.05. Based on the previously mentioned hypothesis, the criterion used to reject the null hypothesis is as follows: if the calculated L value is greater than the table L value, it indicates that the population is not normally distributed. Conversely, the alternative hypothesis, known as the null hypothesis, is validated when the calculated L value is less than the table L value. This indicates that the population follows a normal distribution.

Based on the results of the normality test conducted on data from the experimental group of two males, it can be concluded that the null hypothesis is accepted, meaning that the population is normally distributed. Consequently, we can conclude that the data obtained from each variable follows a normal distribution.

Based on Table 19 above, a summary of the results of the normality test analysis for the Problem-Solving Teaching Method group at a significance level of 0.05 was obtained in the initial test with a calculated L of $0.1471 <$ Ltable 0.220, and in the final test with a calculated L of $0.0943 <$ Ltable 0.220. Thus, it can be concluded that the data for each variable above is normally distributed.

2. Homogeneity of Variance Test

The F-test is used to determine whether the sample is homogeneous. This criterion examines the comparison of variances of the dependent variable Y, namely Underpassing Accuracy, for

each specific group of independent variables. Based on the results of the data analysis, homogeneity of variance was tested using the F-test, which showed that the calculated F was less than the F-table. This indicates that the two variances are proportional to each other. Based on the data obtained in Table 20 above, using degrees of freedom (n1-1), (n2-1), and a significance level of 0.05 in the F distribution table, the Ftable is (2.18). Given that the calculated Ftable (0.92) is smaller than the Ftable (2.18), it can be concluded that the two variances are homogeneous.

A. Hypothesis Testing
Analysis was conducted on the data on the Problem-Solving Teaching Method and the Improvement of Volleyball Underhand Passing Accuracy of Students at SMPN 2 Hamparan Perak Deli Serdang using the Problem-Solving Teaching Method. A significance level of 0.05 was chosen for the t-test, which is the statistical test used. The findings of this study can be summarized as follows, as is clear:

1. Hypothesis. The Effect of the Problem-Solving Teaching Method on Volleyball Underhand Passing Accuracy (Experimental Study of Volleyball on Students at SMP N 1 Pulau Merbau

The initial hypothesis proposed in this study will be subjected to statistical analysis to determine whether it should be rejected or accepted as a working hypothesis. In this statistical analysis process, the calculated t value obtained will be compared with the t table value contained in the percentile value table for the t distribution. This comparison will be carried out to determine whether there is a significant difference between the two. If the findings obtained from the calculated t value are greater than or equal to the value contained in the t table, then the given statistical hypothesis will be accepted. And this indicates that the alternative hypothesis, namely the Problem Solving Style Teaching Method on the Accuracy of Volleyball Underhand Passing (Experimental Research on Volleyball in Students of SMPN 2 Hamparan Perak Deli Serdang, is more likely to be true. Conversely, if the calculated t value is lower than the t table value, then the proposed statistical hypothesis cannot be supported, and/or the Circuit Method does not have a significant effect on increasing the Accuracy of Volleyball Underhand Passing of Students of SMPN 2 Hamparan Perak Deli Serdang, or the proposed statistical hypothesis cannot be supported.

The difference test is the average value of the initial test minus the average value of the final test for the group taught using the Problem Solving Style Teaching Method. The t-test methodology is used to determine whether there is an increase or not. Findings from the initial examination data obtained an average value of 21.60 as the average value. The overall findings from the examination showed a value of 26.87 for the mean or average. The results of the hypothesis test of the Problem Solving Style Teaching Method and the relationship between the two methods can be seen in table 21 below at a significance level = 0.05: Increasing the Accuracy of Volleyball Underhand Passing of Students of SMPN 2 Hamparan Perak Deli Serdang in Samples with Average Difference Test

1. Hypothesis. The Effect of Problem-Solving Teaching Method on the Accuracy of Volleyball Underhand Passing (Experimental Study of Volleyball on Students of SMP N 1 Pulau Merbau

The initial hypothesis proposed in this study will be subjected to statistical analysis to determine whether it should be rejected or accepted as a working hypothesis. In this statistical analysis process, the calculated t value obtained will be compared with the t table value contained in the percentile value table for the t distribution. This comparison will be carried out to determine

whether there is a significant difference between the two. If the findings obtained from the calculated t value are greater than or equal to the value contained in the t table, then the given statistical hypothesis will be accepted. And this indicates that the alternative hypothesis, namely the Problem Solving Style Teaching Method on the Accuracy of Volleyball Underhand Passing (Experimental Research on Volleyball in Students of SMPN 2 Hamparan Perak Deli Serdang, is more likely to be true. Conversely, if the calculated t value is lower than the t table value, then the proposed statistical hypothesis cannot be supported, and/or the Circuit Method does not have a significant effect on increasing the Accuracy of Volleyball Underhand Passing of Students of SMPN 2 Hamparan Perak Deli Serdang, or the proposed statistical hypothesis cannot be supported.

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4 Discussion

The appropriate training approach was given to students of SMP N 1 Pulau Merbau in an effort to improve the accuracy of volleyball underhand passing as part of a volleyball experimental study on these students. In this case, the Problem Solving Style Teaching Method is the recommended teaching style to be used. Through the use of this training method it will be known whether there is a difference in improving the accuracy of volleyball underhand passing (Volleyball Experimental Research on Students of SMP N 1 Pulau Merbau). After the research is completed and the findings of the study are interpreted, it is very important to investigate the research methodology as well as relevant theoretical research. Information obtained through the use of scientific methods and built on certain ideas methodically and carried out in accordance with the necessary processes or procedures so that the results of this study can be recognized as true. After that, it is necessary to discuss the results of the research findings presented in the form of images to facilitate the process of drawing conclusions from the study. After testing the data using a statistical technique known as the t-test at a significance level = 0.05, it was determined that the three hypotheses proposed for this study can be tested and approved. The hypothesis tested in this study is, first of all: The Circuit Method has a significant influence on increasing the accuracy of volleyball underhand passing, in accordance with the volleyball experimental research conducted on students of SMPN 1 Pulau Merbau, accepted..

5 Conclussion

The results of the first hypothesis test of the Problem Solving Style Teaching Method group were carried out statistical calculations according to the formula used (t-test) obtained t count 12.345 and t table 1.72 which means t count > t table which means Ho is rejected and Ha is accepted. The table also contains a summary of the results of the second hypothesis test of the Problem Solving Style Teaching Method group. The result is that the Circuit Method has a

significant influence on increasing the accuracy of volleyball underhand serves at SMPN 2 Hamparan Perak Deli Serdang.

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