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Differences in the Effect of Learning Methods Massed Practice Throwing and Distributed Practice on Learning Outcomes Skills for the Accuracy of Top Softball

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Abstract

Problems in accuracy top throws are often carried out by students in softball games so the need for alternative methods to improve them are the method massed practice and distributed practice. This study aims to find out: (1) effect of learning methods massed practice and distributed practice on the accuracy in conducting top throws on male students of extracurricular softball class X at Bhina Karya Karanganyar Vocational School 2014/2015 Academic Year, and (2) the influence between the method of practicing massed practice and distributed practice on the accuracy in carrying out throws on male students. This research is an experimental research using pre-test-post-test design with technique pairing ordinal. The sample groups of this study were 30 male students of extracurricular softball class X. Data analysis used different tests: (1) before being given treat; (2) after being treat; and (3) differences in percentage increase between groups. The results of the study are (1) the effect of learning massed practice and distributed practice on the ability of the accuracy of throws on balls of softball, with the results of $_{count}$ = 4.740 > t_{table} = 2.145; and (2) the learning method massed practice has a better effect than the exercise of distributed practice on the ability to accurately throw balls of softball, with an increase massed practice = 29,054%> distributed practice = 14,085%. The conclusions of the study are (1) there are differences in the influence of learning massed practice and distributed practice on the ability of the accuracy of the throws on balls softball; and (2) learning method massed practice has a better effect than exercises including distributed practice on the ability to accurately throw balls of softball.
Keywords: Distributed practice, Accuracy of top throwing, Massed practice, Softball.

INTRODUCTION

Sports is a physical activity that is pleasant and healthy for the body (Wellard, 2013). Sport has become a necessity for all people. Today people spend more time and money doing sports that are popular. Currently, there are many types of sports, one of which is softball (Malcom, 2003). In Indonesia, Softball is considered an expensive and less popular sport. This assumption is reasonable because this sport requires large capital to be able to play it. The equipment that must be possessed by the player is a bat, glove, ball, cacther body, batter helmet, etc. Having equipment is one of the important things, but making this sport more popular is more important. Therefore, it is very important to do socialization with the aim of promoting this sport (Lemyre, Trudel, & Durand-Bush, 2007).

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In games softball, the technique is an element that every player must have. Therefore, to be able to gain achievements in the game, each player must be able to master and apply various basic techniques in the game softball. According to Garman and Gromacki (2018), these techniques include throwing a ball (throwing), catching a ball (catching), hitting (batting), sliding (sliding), running between bases (base-running) and bouncing the ball (pitching). From the various techniques above, throwing a ball is one of the basic techniques that are often used especially for top throws. The aspect that must be considered in the accuracy of throwing upwards is how the player must be able to throw accurately and quickly in the direction to be addressed.

Throwing is one technique that is very important in softball when it is in a defensive position (Flyger, Button, & Rishiraj, 2006). The correct throwing technique is to throw with one of the strongest hands and throw with the target of the player's head. Players in good condition often make mistakes in throwing balls, especially in a state of fatigue, potentially making mistakes in throwing balls. This condition is often experienced by players in male students of extracurricular softball class X at Bhina Karya Karanganyar Vocational School 2014/2015 Academic Year.

Based on the results of observations, the need for mastery of the top throw is very important, so it is necessary to have a good mastery for the basic throwing technique for each player. For beginner players, the top throw technique is a technique that must be first learned and mastered because basic techniques are easy to learn. If doing the wrong throw can be blocked with the body by a ball catcher (Saraya, Sugiyanto, & Doewes, 2018).

The essence of softball is to get as many points as possible from each player of the attacking team (visiting-team / VT) who manage to return to home base safely and through the right path, either on his own stroke or because of someone else's punch (Miranti, Soegiyanto, & Rahayu, 2019). Every player who returns to the home base is declared to get a score one point. In addition to the good techniques in the 9-member game, good cooperation and communication are needed in strategizing. Therefore, it is necessary to throw above as stated above which is an important element in this game. Because of the importance of accuracy in throwing balls in softball, the accuracy of throwing balls must be improved through learning techniques.

Coaching that is done in school from an early age is very supportive because school age or early age is an age in the period of physical and spiritual development that requires stimulation in the form of motion, so early age is the right time to get coaching (Lareau, 2011). The initial stages in conducting coaching are emphasized in mastering basic techniques because in the game it is very necessary to develop basic game techniques in order to win a game or match. In connection with this matter, every branch of sports, especially softball, must optimize all coaching efforts so that the training process can have an impact to achieve optimizing achievements.

Based on the curriculum in the latest syllabus, Softball is found in high school/ elementary school level learning. At the Bhina Karya Karanganyar Vocational School, the basic techniques theories contained in the guidebook were taught and accompanied by basic engineering

practices in the field. Karanganyar Vocational School Bhina Karya is one of the schools that has softball tools or facilities.

Based on observations in the mastery field, in class X of Bhina Karya Vocational School Karanganyar 2014/2015 Academic Year it is known that mastery of the accuracy of the top throw in male students is still in the less category. This is seen where the players in throwing upwards are not on target. Throwing sometimes has problems with the speed of the ball, is not right on target, the ball the result of the throw is not the target, too hard and even deviates from the expected, so that the throw is difficult to reach by the recipient of the ball. To make it easier for other players to catch the ball by throwing it at the head.

Judging from the technique, the less precise throwing technique is still often used by players, the position when going to throw a foot position, body movements, and continuous movements are still not right (Davis et al., 2009). This is one of the factors causing a lack of accuracy when throwing balls. With the problems that arise, the accuracy of the throwing of balls on male students of the extracurricular softball class X of Bhina Karya Vocational School Karanganyar 2014/2015 Academic Year must be improved.

In class X extracurricular activities, there are two male softball teams, 30 in total, so the teacher/trainer must provide an increasing training program because the increased training program is very influential on the achievement of an athlete's performance. Achievements in various championships at the regional and national levels are also still low, every year when participating in the national championship representing Central Java, Bhina Karya Vocational School Karanganyar was ranked 3rd in 2004, and the following year respectively ranked 4th from 2005-2008.

Bhina Karya Karanganyar Vocational School is a school with one of the advantages of softball, with facilities and infrastructures that are adequate, the sport of softball is held at Karanganyar Square every Tuesday and Thursday in the afternoon. Since 2003, the Bhina Karya Karanganyar Vocational School has been looking for students who are talented in this sport because there are so many championship events between high school / vocational schools throughout Central Java and even at the National level.

Judging from the achievements that have been gained, the achievement chart is always decreasing whether it is the result of training that is not in accordance with the training program or the interest of students participating in the extracurricular activities. From several matches, there are several factors that cause the lack of success in the training process, namely the limited resources used, lack of seriousness in training (athlete's internal factors) and the factors of the training program itself (coach factor). The fact that this is happening now, the coach is faced with limited time and inadequate tools that are not in accordance with the number of players to be trained, besides that players will be given a lot of training material.

Regarding the problems that arise, the efforts to improve the skill of throwing upwards are by using the method of massed practice and distributed practice. What is meant by massed practice according to Sugiyanto (1996) is that, "massed practice is to practice activities that are studied continuously without rest periods or very short periods of rest". Exercises with this method are

repetitive movements during training time, without being interrupted by rest or interspersed with breaks in a short time. As for those who practice using a method distributed practice in the exercise that is applied with a break between repetitions carried out is always interspersed with breaks. Rest periods are given not too often and do not wait until fatigue. Improvements to the technique are done so that the movement becomes easy and correct., mastering techniques in throwing will be better.

To be able to know and answer the problem, it needs to be studied and examined more deeply both theoretically and practically through pre-experimental research. In theory, each method that has been put forward has a different level of effectiveness and advantages and disadvantages.

METHOD

Research Method

The research method used is the experimental method, the basis for using this method is an experimental activity that begins with giving train to the subject which ends with a test to determine the effect of the training given. Sugiyanto (1996) states, "The purpose of experimental research is to examine whether there is a causal relationship by giving train to the experimental group whose results are compared with the results of the control group that is not given training or given a different training".

Design in the "Pre-test-Post-test Design study". The research design drawings are as follows:

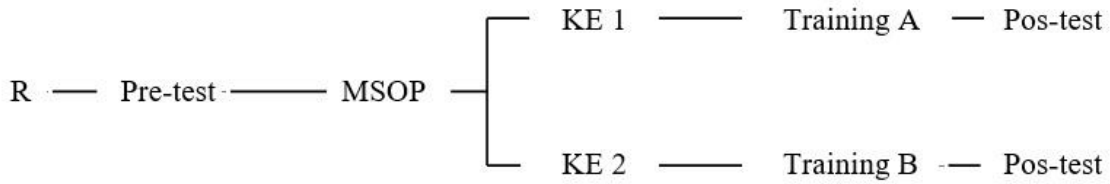

Figure 1. Pre-test and Post-test Design study

Remarks: R= Random; Pre-test= Pre-test of the accuracy of the throw; MSOP= Matched Subject Ordinal; ***Pairing:*** KE1= Group 1; KE2 = Group 2; Treatment A= Method massed practice; Treatment B= Method distributed; Practice post-test= Post-test of the accuracy of the throw

Research groups

The sample group of the research consists of extracurricular softball in class X of SMK Bhina Karya Karanganyar 2014/2015 Academic Year which amounted to 30 male students. 15-18 years old (*M*= 16,5), body height 160-170 cm (*M*= 165), body weight 50-65 kg (*M*= 60). The sample group was divided into two groups by means of pairing ordinal. Group 1 of 15 people

received training for massed practice. Group 2 as many as 15 people received training practice distribution.

Data Collection Tools

In this study there are: (1) two independent variables, namely: (a) Exercises with the Massed Practice Method; and b) Practice with the Method of Distribution Practice; and (2) one dependent variable in this study is the accuracy of the top Softball Throw. Tests for collecting data used the overhand throw for accuracy test instructions (Mustofa & Agustiyanto, 2017). The procedure for taking a measurement test is to throw the ball past the target given as many as 10 throws and 2 attempts.

Collection of Data

The experimental group was divided based on the accuracy of the ball throw at the pre-test. After the results of the pre-test are ranked, participants who have equivalent abilities are placed in groups 1 (KE1) and group 2 (KE2). Both groups were given the same training. If in the end there is a difference, this is caused by the effect of the training given. Division of groups in this study by means of pairing ordinal. The group division technique in ordinal pairing according to Hadi (1995: 485) as follows:

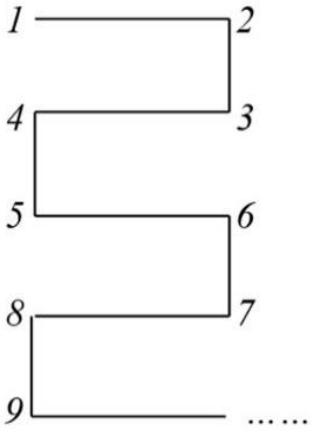

Figure 2. Ordinal Pairing (Hadi, 1995).

Analysis of Data

The data analysis technique uses a different test with the t-test calculation. Different tests were carried out, namely: (1) test the difference before being given training; and (2) the difference test after being given training, includes: (a) Test of Difference in pre-tests and tests in Group 1; (b) Difference Test pre-test and post-test in Group II; Difference Test Results of tests between Group I and Group II. After conducting a different test, an analysis of the difference in percentage increase between group 1 and group 2 was carried out.

FINDINGS

Test-Differences Before Giving Training

Before giving training, the groups formed in the study were tested for differences in order to determine the differences in the two groups, as long as they were given training starting from the same situation or not. The results of the difference between KE1 and KE2 before being granted are as follows:

Table 1. Summary of results difference test beginning in the KE1 and KE2

Group	N	M	M_d	t	$t_{Table\ 5\%}$
KE1	15	9867	0040	1,103	2,145
KE2	15	9462			

The results of the t-test analysis, it was concluded that the value of t obtained was 1,103, while df = n -1 = 15 -1 = 14 and a significance level of 5%, the number of rejection limits for the null hypothesis in t-table was 2,145. It turns out that it is smaller than the null hypothesis rejection rate. Thus the null hypothesis is accepted, which means that there is no significant difference between the results of the pre-test of the ability of the accuracy of the throw of the ball in group 1 and group 2. So that after being training there is a difference, furthermore the difference is really due to differences in training effects which is given.

Test Results Difference Pre-test and Post-test in KE1

From the results of the post-test in each group a different test was carried out, the results of which were as follows:

Table 2. Summary of difference test results of pre-test and post-test in KE1

Test	N	M	M_d	t_{count}	$t_{table\ 5\%}$
Beginning	15	9,867	2,867	11,209	2,145
Final	15	12,733			

The result of the t-test is obtained by the value of t-count which is equal to 11,209, and is greater than the value of the t table of 5%, which is 2,145. Thus it was concluded that there were significant differences between the results of the pre-test and the results of the post-test in group I. Thus after receiving the treatment of massed practice, there is an increase in the ability to throw balls KE1 (group I) convincingly.

Test Results Difference Pre-test and Post-test in KE2

Table 3. Summary of test results difference pre-test and post-test on KE2

Test	N	M	M_d	t	$t_{Table\ 5\%}$

Early	15	9467	1333	7135	2145
Final	15	10,800			

The result of the t-test is t-count of 7.135, the t-count value is greater than the t-table value of 5%, which is 2.145. Thus it was concluded that there were significant differences between the results of the initial test and the final test results at KE 1 (group I). After getting distributed learning training increases the ability of the top throw at KE 2 (group II).

Test Results Difference Test Final between KE1 and KE2

Table 4. Summary of test results difference test final between KE1 and KE2

Group	N	M	M_d	t	t Table 5%
KE1	15	12 733	1,933	4,740	2,145
KE2	15	10,800			

From t test done may be obtained t value of 4.740, which turns out that the value is greater than the t table value of 5%, which is 2.145. Thus the null hypothesis is rejected, which means that after being given treatment there is a significant difference between the results of the post-test on KI and K II.

The difference in Percentage Improvement

To find out which groups have a better percentage of improvement, a calculation of the difference in percentage increase for each group is calculated. The value of the difference in increasing the ability of the accuracy of the top throw in percent on KI and K II are as follows:

Table 5. Summary of calculation results value difference increased ability of the accuracy of throws of balls softball in percentages on KE1 and KE2.

Group	N	Pre-test Mean Post-test	Mean	M_d	Percentage of Increase in
KE1	15	9,867	12,733	2,867	29,054%
KE2	15	9,467	10,800	1,333	14,085%

From the above results, it can be seen that K 1 has an increase in the ability of the accuracy of the top throw of 29,054%. While K 2 has the ability to the accuracy of the upper throw of 36.147%. It can be concluded that K 1 percentage increase in accuracy capability throws over greater than K 2.

DISCUSSION AND CONCLUSION

The difference in the effects of exercise on the ball's throw of ball using massed practice and distributed practice of the accuracy of the throw on the softball

Skills or the ability to throw on the very technique important in ball games softball (Mudjihartono, Wahyudianto, & Gumilar, 2019). Every player must be able to do and master

this throwing technique well. To be able to do the top throw quickly and precisely, every player must do the exercises systematically, regularly and continuously with the right principles of training. The training method that can be used to improve the ability of these throws is to use the method massed practice and distributed practice using the method Throwing massed practice exercises are exercises that are carried out repeatedly and continuously, without breaks or very short periods of rest (Seabrook, Brown, & Solity, 2005). Exercises with the method distributed practice are exercises that are carried out repeatedly, where intervals are interspersed with sufficient time.

Based on the characteristics of the training method, it distributed practice shows that the skill of the accuracy of the top throw with method distributed practice has advantages such as mastery of movement techniques will be better, improvements to basic technique errors can be done earlier, will avoid excessive fatigue, appearance of the condition will always stable because of adequate rest. Weaknesses in the skill of the accuracy of the top throw with the method distributed practice include frequent breaks resulting in reduced mastery of the technique. This is because the pattern of movement that has been formed will decrease again in rest. This method is the only priority for improving mastery of the technique, while the physical condition is neglected, students will get bored or bored because of frequent breaks (Mustofa & Agustiyanto, 2017). While the skill of the accuracy of the top throw with the method massed practice has advantages such as: mastering the movement pattern of skills the accuracy of the top throw will be more quickly achieved or and can improve skills while increasing physical endurance. The disadvantages include: mastery of the technique of the skill the accuracy of the top throw is difficult to master in fatigued conditions, the appearance of students is not stable due to fatigued conditions, control and improvement of punch techniques are difficult because there is no rest time (Oliver et al., 2018).

Based on the characteristics, strengths and weaknesses of the learning method distributed practice and massed practice it is clear that both forms of training are striking differences. These differences will certainly have an effect on increasing the skill ability of the accuracy of throws on balls softball. Based on the study of theory and results of the analysis of extracurricular student data softball at class X SMK Bhina Karya Karanganyar 2014/2015 academic year, it can be concluded that the learning method of distributed practice and massed practice has different influences on the skill ability of the accuracy of throwing balls softball.

A method that has better influence between the massed practice method and the method distributed practice on the ability to throw on balls softball.

Learning methods are Massed practice generally used to improve a movement technique due to short periods of rest (Ab Razak et al., 2018) because in the player will remember the movements that were previously carried out and will be carried out for the next movement to correct the movement (Mustofa & Agustiyanto, 2017). While the method of learning distributed practice, in the implementation of the movement interspersed with a relatively long rest period, then the previous movement's memory has been lost, so that it cannot obtain a backup to improve the next movement (Seabrook, Brown, & Solity, 2005).

For extracurricular students in softball class X Bhina Karya Karanganyar Vocational School 2014/2015 academic year, the use of learning methods massed practice will be more efficient because the movement pattern of skill in the accuracy of the top throw will be more quickly achieved and while the method of learning is distributed practice for extracurricular students softball at class X SMK Bhina Karya Karanganyar 2014/2015 school year will be less efficient because frequent breaks result in reduced mastery of techniques and students will get bored or bored because of frequent breaks. From the description above, it can be concluded that there is a better influence between the learning method massed practice and method learning distributed practice on the skills of the accuracy of the throws on balls softball.

Based on the results of the research that has been done, conclusions can be obtained as follows: (1) There is a difference in the effect of learning massed practice and distributed practice on the ability of the accuracy of throws on balls softball on extracurricular softball X-grade Smk Bhina Karya Karanganyar, with $t_{\text{-count}} = 4.740 > t_{\text{-table}} = 2.145$; and (2) The learning method massed practice is better than the practice of distributed practice on the ability of the accuracy of the throwing of balls softball on extracurricular softball class X Smk Bhina Karya Karanganyar, with an increase in massed practice = 29,054%> distributed practice = 14,085%.

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