Sprint Training Versus Hollow Sprint : Which Method is Better on Base Running Speed

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Abstract

This study aims at knowing the effect of sprint training and hollow sprint exercises on running speed of base running and knowing which method is better between sprint training and hollow sprint on base running speed for male students of softball extracurricular class X at SMK Bhina Karya Karanganyar. An experimental study proposed with the subjects of 32 male students of softball extracurricular. The data analysis technique used the difference test (t-test) by doing a reliability test, normality test, and homogeneity test. Based on the results, it found there was the effect of sprint training and hollow sprint exercises on running speed of base running in subject with increased training sprint = 2.07s and increase in hollow sprint = 0.53s; sprint training is better than hollow sprints for running base speed with an increase = 14.3%> while increase in hollow sprint = 3,67%. Thereupon (1) there was the influence of sprint training and hollow sprint on running speed of base running in male students of softball extracurricular class X at SMK Bhina Karya Karanganyar; (2) sprint training is better than hollow sprints for running speed of base-running for male students of softball extracurricular class X at SMK Bhina Karya Karanganyar.

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INTRODUCTION

Softball is one of the sports that entered into the physical education curriculum, but because this game requires mastery of the technique and the game time is quite long, then the game is entered into extracurricular activities. By the existence of extracurricular softball in individual schools, the teacher of sports subject must be able to master the material, basic techniques, and rules of the game, so as not to experience difficulties in carrying out these extracurricular activities.

SMK Bhina Karya Karanganyar is a school with one of the excellence found in softball. This sports softball game is held at the North square of Karanganyar every Tuesday and Thursday in the afternoon. North Square is a training ground for softball games because of the adequate facilities and infrastructure. Since 2003, SMK Bhina Karya Karanganyar 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. However, the achievements of this school in various championships at the regional and national levels are also still low, each year while participating in the national championship representing Central Java, SMK Bhina Karya Karanganyar was ranked 3rd in 2004, and the following year in a row ranked 4th from 2005- 2008.

Furthermore, judging by the achievements that have been achieved by this school, the performance chart is always decreasing whether it is the result of a training method that is not following the training program or the interest of students following the extracurricular activities? From several matches, several factors cause the lack of success in the softball training process, namely the limited resources used, lack of seriousness in training (athletes internal factors) and the factors of the exercise program itself (coach factor). Even though it is crucial for physical education teachers, trainers, practitioners, and recreational leaders to provide a safe environment for participants to make the softball experience enjoyable (Nachtigal et al., 2017). Moreover, the reality that was happening, the trainer is faced with limited time and inadequate training tools that are not standard and under the number of players to be trained, while the amount of material to be prepared to students in order to minimize risk and maximize learning outcomes. According to Nachtigal et al., 2017 that physical educators must also consider age-appropriate equipment, skills,

and rules to reduce the chances of injury, as well as to allow participants to enjoy playing softball.

Furthermore, there are some basic mastery techniques in Softball games, such as bouncing a ball, throwing a ball, catching a ball, batting a ball, base running, and sliding. Among these basic techniques which are no less important is base running. The art of base-running is and will continue to be, an integral and essential part of the game of softball. At the same time, it is often taken for granted (Harrow, 2018). Arguably, the single most crucial factor in being an excellent base runner is the ability to "think" while running the bases often at full speed. Running speed is a tremendous advantage, but only if it is controlled (Harrow, 2018) while running speed between bases in male students of SMK Bhina Karya Karanganyar is mostly not maximal to achieve achievement especially the X class of SMK Bhina Karya Karanganyar which follows the extracurricular of softball. It approved during the exercise, in the practice of games between teams, as well as when playing with other clubs.

The running speed condition of students in this school has not yet reached the target if they run to base one to the next base. As a result, a lot of "ticks" occur or the ball gets to the base faster than the runner. In running practice between bases also shows that the speed in the running still reduces the speed a lot before touching the base, which is in the base I, while according to Marquardt et al., 2018 speed is a crucial aspect in softball, and can be the difference between winning and losing. Not only that, it also approved by (Magrini, Dawes, Spaniol, & Roberts, 2018) speed is one of the essential characteristics for success in softball. Thus it becomes an important thing to be addressed in this school because many movements that students did are not correct when running a technique between bases when running from home base to the next base or later, they often do not use the arm as a balance when running towards the next base. If analyzed from a run between bases (soft running), softball requires movement starting from the legs, legs, hips, and arms as a balance.

Since those conditions happen, this study tried two types of training methods that applied in the speed training process, namely sprint training and hollow sprint training. Sprint training is an exercise carried out with full intensity or speed interspersed with rest periods at each training session and is completed in a short time and done repeatedly to the maximum on a flat and resilient surface such as grass, mattresses or soil. Meanwhile, Hollow sprint training is a running

exercise in which in one series there are fast running, jogging/walking and then running fast until the specified distance. In the implementation, it is different from sprint running because training with the hollow sprint method is used longer than the sprint training.

Correspondingly, both forms of training have a good influence in increasing running speed so that it will affect the running speed between bases. On the other hand, running speed between bases is not only influenced by the form of training is applied. As a result, to find out which form of exercise is better affected between sprint training and hollow sprint training on running speed between bases, it is necessary to study and examine more deeply both theoretically and practically through experimental research. Therefore, there are three problems identified in this study. First was inter-base running speed for male students of softball extracurricular class X needs to be improved. The second was the existence of causative factors in achieving achievement in male students of softball extracurricular class X. Then the third was the application of efficient and effective training methods in increasing the running speed between bases for male students of softball extracurricular class X at SMK Bhina Karya Karanganyar.

METHODS

This study designed as the experimental study where the basis of this design is an experimental activity that begins by giving treatment to the subject which ends with a test to determine the effect of the treatment given. An experimental study is a study carried out intentionally by researchers by giving treatment / specific treatment to the subject of study in order to generate an event/condition that will be studied how the consequences (Jaedun, 2011). Furthermore, for many accurate experimental designs, pretest-posttest designs are the preferred method to compare participant groups and measure the degree of change occurring as a result of treatments or interventions (Shuttleworth, 2013). Therefore, before and after the treatments were given to the students, they had pretest and posttest.
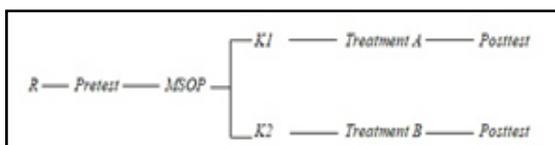

Figure 1. Design of Study

Where:

R	= Random
Pretest	= Initial test of running speed between bases
MSOP	= Matched Subject Ordinal Pairing
K 1	= Group 1
K 2	= Group 1
Treatment A	= Sprint training
Treatment B	= Hollow sprint
Posttest	= Final test of running speed between bases

The division of the experimental group is based on the base running speed in the initial test. After the results of the initial test are ranked, then subjects who have similar abilities are placed in groups 1 (K1) and group 2 (K2). Thus the two groups before being treated were the same group. If in the end there is a difference, this is caused by the effect of the treatment given. The division of groups in this study using pairing ordinal. Ordinal pairing is the separation of samples based on ordinal criteria (Sutrisno, 2015). The group division technique is as follows **Figure 2**:
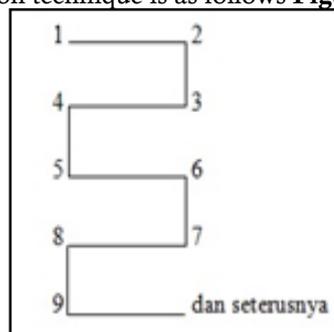

Figure 2. The technique of Groups Division with Ordinal Pairing

Moreover, the population in this study was male students of softball extracurricular class X SMK Bhina Karya Karanganyar which amounted to 32 students. Meanwhile, the technique of data analysis analyzed the reliability test, normality test, homogeneity test, and different test.

RESULTS AND DISCUSSION

A. Initial Test of Group 1 and Group 2

Before being given a different treatment, the groups formed in this study tested the differences first to determine the differences in the two groups, as long as they are given treatment from the same condition or not. Here is the **Table 1**:

Table 1. Results of the different test of groups 1 and 2 Before Given Treatment

Group	Test	Mean	T_{count}	T_{table}	Result
1	Before	14,44	0,81	2.131	Not different
2	(initial)	14,37			

The results of the initial test that there was no significant difference between group 1 and group 2, because the value of the different test between the initial test group 1 and the initial test group 2 was 0.81, while the table value was 2.131. Consequently, group 1 and group 2, departs from the state of balance before being given a different treatment.

B. Final Test of Group 1 and Group 2

After departing from a balanced state before being given a different treatment, then given a different treatment, the two groups were given the final test to find out the difference, then the final test results of the two groups are presented in the following **Table 2**:

Table 2. Results of the different test of group one and two after a given treatment

Group	Test	Mean	T_{count}	T_{table}	Result
1	After	12,38	5,92	2.131	Different
2	(Final)	13,84			

Based on the result, there was a significant difference between group 1 and group 2; this is because the value of the difference test between the final test group 1 and the final test group 2 is 5.92, while the table value is 2.131.

C. Initial and Final Tes of Group 1

In each group, the value of the difference between the results of the initial test and the final test is calculated; this aims to determine the success of the treatment in each group. The results of calculations in group 1 are presented in the following **Table 3**:

Table 3. Differential Test Results for Initial Tests and Final Tests of Group 1

Group	Test	Mean	T_{count}	T_{table}	Result
1	Initial	14,44	11,39	2,131	Diferent
	Final	12,38			

It can see in group 1 between the mean of the initial test and the mean of the final analysis, the value of the difference is 11.39 whereas t table is 2,131, so this indicates there are significant differences. Thus giving treatment to group 1 was successful.

D. Initial and Final Tes of Group 2

In each group the value of the difference is calculated between the results of the initial test and the final test, it aims to determine the success of treatment in each group. The results of calculations in group 2 presents in the following **Table 4**:

Tabel 4. Differential Test Results for Initial Tests and Final Tests of Group 1

Group	Test	Mean	T_{count}	T_{table}	Result
2	Initial	14,37	5,08	2,131	Different
	Final	13,84			

In group 2 between the mean of the initial test and the mean of the final test, the difference value is 5.08, even though t-table is 2.131, so this indicates there are significant differences. The magnitude of the value of the difference test which is greater occurs in group 1. Thus giving treatment to group 2 is successful.

E. Comparison of Percentage Improvement

Knowing the magnitude of the percentage increase in group 1 and group 2; an increase in each group was calculated. Here is the **Table 5**:

Table 5. Results of an Increase Percentage Calculation

Groups	Mean (Initial)	Mean (Final)	increasing	Percentage	Result
1	14,44	12,38	2,07	14,3%	Diferent
2	14,37	13,84	0,53	3,67%	

Judging from the results of the calculation, group 1 has a higher percentage increase compared to group 2.

From the data obtained before being given treatment, after being analyzed it obtained the value of t between the initial test of group 1 and 2= 0.81, while t table = 2.131, it means there is no significant difference. Thus group I and group II before being treated in a balanced state. Furthermore, between group I and group II depart from the same starting point, which means that after being given treatment there is a difference, it occurs because of differences in the treatment given.

The value of t between the initial test and the final test in group I = 11.39. While t table = 2,131. It means that the null hypothesis is rejected. Thus it can be concluded that there is a significant difference between the results of the

initial test and the final test in group I. The value of t between the initial test and the final test in group II = 5.08, while t table = 2,131. It means that the null hypothesis is rejected; thus it can be concluded that there is a significant difference between the results of the initial test and the final test in group II. As a result, the hypothesis which stated there is the effect of sprint training and hollow sprint exercises on the speed of running between bases in male students of the extracurricular softball class X of SMK Bhina Karya Karanganyar can be accepted.

Group I treated with sprint training had an increase in the percentage value of 14.3%. Whereas in group II which was given a hollow sprint treatment had an increase in percentage value of 3.67%, so the hypothesis stated sprint training runs are better than hollow sprints for running speed between bases in male students extracurricular softball class X SMK Bhina Karya Karanganyar can be accepted.

Provided that, during sprint training players are required to carry out the method within the specified time and distance. Increased training will be carried out with a continuous load according to the existing training program. In order to master a technique, the player is given repetitive training tasks in one section, so that repetition of the movement is more done because the mastery of running techniques dramatically affects the results to be achieved. As mention in Syafaruddin, 2011, increased running speed in students who have high leg muscle power with repetition sprint training methods is better than those who have low leg muscle power with the hollow sprint training method. Besides that, speed training using the pickup/acceleration sprints method is more significant than the hollow sprints method based (Ardiana, 2015). It approves that the result of this study are not the only ones that prove regarding increasing running speed the hollow sprint has not shown a significant effect.

CONCLUSION

Based on the results of research that has been done, there are some conclusions that can be obtained. Firstly, there was a difference in the effect of sprint training and hollow sprint exercises on running speed between bases in male students of softball extracurricular class X SMK Bhina Karya Karanganyar, with an increase in sprint training = 2.07s and an increase in hollow sprint = 0.53s. Secondly, sprint training is better than the hollow sprint for running speed between bases in male students of softball extracurricular class X SMK Bhina Karya Karanganyar, with an increase in sprint training = 14.3%> increase in hollow sprint = 3.67%.

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