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## Effects of Eight Week Plyometric Training on Shooting and Long Passing Accuracy of under-17 Tesfa Male Soccer Project at Bahir Dar

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**ABSTRACT:** The purpose of the present study was to determine the Effects of Eight Weeks of Plyometric Training on Shooting and Long Passing Accuracy of the under -17 Male Tesfa Soccer Project at Bahir Dar. The study engaged a quantitative research approach and a true experimental research design. The target population of this study was 24 (n = 24) male soccer project trainees in Bahir Dar. Due to the small numbers of study population, all trainees were taken using comprehensive sampling techniques. 24 male soccer trainees were divided in to two equal groups, such as EG (N = 12) and CG (N =12) by means of randomization. Both groups undergo programs. The experiment group (EG) performed additional plyometric training for eight weeks, 3-days per week for a total of 60 minutes. The experimental and control group of the study participated in the selected technical skill before and after the training. Shooting accuracy was measured by using the front set ball shot test, and long pass accuracy using accurately kicking the ball to the team meat test. This data was analyzed through SPSS version 23 software by paired sample t-test and independent sample t- test of with a significant level of 0.05. The analyzed data showed that plyometric training significantly improved shooting and long passing accuracy in the pre-test and post-test performance of EG ( $p < 0.05$ ). But, no significant improvements were found in all selected technical skill variables to the pre-post-test performance of CG ( $P > 0.05$ ). In addition, as it was assessed by the independent t-test, the post-test performance of shooting accuracy and long passing accuracy of EG more significantly improved than post-test CG group tests ( $p < 0.05$ ). Based on this finding, it can be concluded that 8 weeks plyometric training had positive effect on shooting accuracy and long passing accuracy of soccer players. Therefore, it is recommended that soccer players and coaches should include some plyometric exercise in their training sessions for development of the technical skills of players.

**Keywords/Phrases:** Long passing, Plyometric training, shooting accuracy

### INTRODUCTION

#### *Background of the Study*

Soccer is a game played by kicking the ball with the legs, with the aim of scoring a goal into the opponent's goal. For better participation in soccer, all players must have the fundamental skills of soccer and good physical fitness. This is in line with the opinion of Sajoto quoted by Haryoko (20017) saying: "Good physical ability to support soccer playing skills". One of the most important technical skills in soccer is shooting the ball into the opponent's goal and accurately passing to the team meats.

Elite soccer players perform a large number of short-tempered activities, such as jumping, shooting, tackling, short-distance sprints and changing of direction during the match time. Additionally, soccer requires high quality of defense and offensive organization of the team. To

apply this; passing, receiving, dribbling, running with and without the ball, shooting, number of short distance sprinting (Hermassi et al.,2016). According to (kumar R, 2013) Strength, quickness, speed agility, cardio respiratory fitness and repeated sprinting ability, in addition to sport-specific technical and tactical skills are the determining factors for the successiveness of competitive sports like that of soccer, basketball and handball (Buccheit et al., 2010). Explosive power is also a crucial factor in the leg muscles of elite soccer players. This is the essential physical component for skillful soccer players, which enables them to achieve their peak jump height, executing the powerful shoot and kicking the ball to a long distance. Therefore, having good muscle strength from the major muscle groups of the lower body for explosive power required particular resistance training in their normal sessions (Lehnert M, 2009)

Shooting is one of the technical skills of soccer game. As many studies indicate that shooting on goal is the key technique to winning the game. Shooting requires different qualities, such as concentration, coordination, velocity, shooting accuracy, and shooting power of the ball. Among these shooting qualities, shooting accuracy is one of the basic technical skills in soccer game. Correspondingly, Van den Tillaar (2004) explained that shooting accuracy is the most important and is considered a major performance determinant in different team sports. Furthermore, Juhász, et al, (2015) dictated that, to increase the chances of scoring as fast as possible, the ball must go at the highest speed and aim at the target of a player.

On the other hand, passing accuracy is also one of the basic technical skill performance elements of soccer game. Accurately passing the ball to a teammate is very crucial for effectively playing and winning the game of soccer (Emel&Nilufer, 2014). It is assumed that the lack of shooting and long pass skill carried out by the soccer players of Tesfa soccer project players is caused by lack of lower body strength and poor balance. Leg muscle strength is crucial in shooting and passing the ball a long distance. In soccer, a lot of kicks are done, both from short and long distances of the field towards the opponent's goal and to pass the ball to their team's meat, so that the player is able to make hard and strong kicks for a long distance.

Based on the description above, the researchers are interested in conducting research to obtain actual data and information about the Effects of the Eight Week Plyometric Training on Shooting and Long Passing Accuracy of the under -17 Male Tesfa Soccer Project at Bahir Dar.

Plyometric training is neuromuscular training that helps to increase explosive power and the exertion of maximum power of the players in the minimum time. This training causes some changes in the neuromuscular system and improves muscles' strength to respond rapidly and strongly during competitions (Zearei H, 2013). Plyometric can be defined as a rapid stretching of muscle immediately followed by a concentric or shortening action of the same muscle and connective tissue (Juhász, et al, 2015). On the other hand, Plyometric training involves exercises that generate quick, powerful movements involving explosive concentric muscle contraction preceded by an eccentric muscle action (Gamble, 2010). These types of explosive muscular contractions can

be seen in practical instances, such as power shots and long passes in soccer. In addition, a periodized plyometric program can contribute to the improvement in leg strength, muscular power, and increased joint awareness of the players (Miller et al., 2002). Therefore, the purpose of the study was to investigate the Effects of Eight Week Plyometric Training on Shooting and Long Passing Accuracy of the under -17 Male Tesfa Soccer Project at Bahir Dar.

### *Objectives of the Study*

The study has both general and specific objectives.

#### *General Objective*

The main objective of the study was to analyze the Effects of Eight Week Plyometric Training on Shooting and Long Passing Accuracy of the under -17 Male Tesfa Soccer Project at Bahir Dar

#### *Specific Objectives*

In addition to the general objective above, this research will address the following specific objectives.

1. To evaluate the effect of eight week's plyometric training on power shooting accuracy of tesfa soccer trainees.
2. To examine the effect of eight week's plyometric training on long passing accuracy of tesfa soccer trainees.

### *Hypotheses of the Study*

The researcher formulated and attempted to test the following alternative hypotheses.

H1.Eight week's plyometric training has a significant effect on the shooting accuracy of soccer trainees.

H1: Eight week's plyometric training has a significant effect on long passing accuracy of soccer trainees.

### *Significance of the Study*

This research would be a source of information for coaches, professionals and trainers that related to the effect of eight- week's plyometric training on selected technical skill performances of soccer players. This study may also provide new concepts for coaches, teachers, physical education and sport professionals to train their athletes to improve their performance. Moreover, the findings of this

study would be adding knowledge of the coach in the area of plyometric training to soccer players. Furthermore, this study helps as a guideline for coaches, experts, instructors and other professionals to plan their training program. Likewise, this study will help coaches to know the methods of evaluating, assessment and comparison of players' technical skill. Finally, it may motivate other professionals and scholars to take up similar studies in the area of soccer training.

### *Delimitation of the Study*

This study was designed to investigate the effects of eight-week's plyometric training on shooting accuracy and long passing accuracy of tesfa soccer project trainees at Bahir Dar. Some technical skill performance variables were selected from several types of technical skill performance in soccer game. So, to satisfy the purposes of the current study, this study was delimited to prefer dependent variables such as soccer shooting and long pass accuracy; whereas, independent variables were delimited to plyometric training for the leg muscles. In addition to this, the designed training program was limited to 8 weeks, 3 days per week with a 60 minute duration per session. This study was conducted in the intervention season of 2021/2022 G.C.

## METHODOLOGY

### *Study area*

This study was conducted on under- 17 Tesfa soccer project at Bahir Dar city, which is found in the Amhara region, the northern part of Ethiopia, and 564 kilometers away from the capital city of Ethiopia.

### *Study design and approach*

The study was used true experimental research design to evaluate the Effects of Eight Week's Plyometric Training on Shooting and Long Passing Accuracy of the under -17 Tesfa soccer Project at Bahir Dar. In order to conduct the study focusing on the cause and effect phenomena, a quantitative research approach was employed.

### *The target population*

The target population of the study was twenty-four (24) soccer players who were being trained in the under -17 Tesfa soccer project at Bahir Dar city.

### *Sample size and sampling technique*

Because of the smallness of the size and to get reliable information from the participants' compressive sampling method was applied. The sampling size of this study was a total of twenty-four (24) Tesfa soccer project trainees. The sample samples are also equally grouped into experimental and control groups through a random sampling method.

### *Selections of variables*

There are a number of variables that attribute to the performance of soccer playing. However, the researcher had decided to concentrate on the following very crucial skills of soccer game such as, long passing and power shooting performance. This is because these two are the backbone of soccer. In this study, the independent variable was plyometric training and the dependent variables of the study were technical skills of soccer, which are long passing and power shooting.

### *Sources of data*

Primary data were taken from pre-test and post-test measurements of both experimental and control groups in the field at the beginning and at the end of the training program. So, the researcher used primary data sources to get an adequate amount of information regarding the effect of eight-week's plyometric training on power shooting and the long pass accuracy performance of soccer players.

### *Collection of data*

The data was collected through taking pre-test before training and posttest after giving the training. This evaluation took place on the soccer field of Bahir Dar University, which is very attractive and comfortable for the accomplishment of this task.

### *Experimental procedure*

The experimental period of the study was carried out from May 12, 2020 – Jun 30, 2020 at Bahir Dar University soccer playing field. To achieve the purpose of the study (N= 24) twenty four under-17 male soccer players were selected by compressive sampling technique. Their age ranged from 15 to 17 years. The training was given for eight weeks, three times per week for one hour. In this study, the subjects were tested on two ball skills, namely long passing and power shooting, before and after eight weeks' training with 15

min of active recovery in between. The testing was conducted before and after eight weeks of plyometric training, which means no testing was conducted during training.

### *Dependent and independent variables*

It is used to measure the effect on the dependent variable. In this study, in this study, plyometric training was used as an independent variable, whereas shooting and passing accuracy was used as dependent variables of the study.

### *Method of data analysis*

A quantitative method of data analysis was applied to the collected data from the performance test. After administering a field test on selected variables before and immediately after intervention of plyometric training, the researcher recorded this quantitative data in the form of pre-test and post-test results. The collected data was analyzed and interpreted into a meaningful idea using a computer in order to compare soccer skill variables and to observe variations among groups.

The significance level of the study was set at  $p \leq 0.05$ . Measures of central tendency like mean and measures of dispersion like standard deviation were used to summarize and describe the findings and the researcher used t-test (paired sample) for data entry and analysis samples of the statistical software package SPSS version 23 was employed.

### *Ethical issues and code of conduct*

The study was dealt with ethical issues; it protected the privacy of research participants and made guarantees and confidentiality at risk of harm as a result of their participation. Therefore, the study was conducted according to Bahir Dar University rules, policies and codes relating to research ethics.

## RESULT AND DISCUSSION

The statistical (Paired t-test) analysis of football shooting and passing skill test

Comparison of paired sample t-test results of soccer skill variables for experimental group of pre and post-test.							
Variables	Subject	N	Mean	MD	SD	DF	Sig. (2- tailed)
Shooting accuracy	PT	12	21.750		2.832	11	.001
	POT	12	24.833	-3.083	2.480	11	
Passing accuracy	PT	12	18.667		2.902	11	.001
	POT	12	21.417	-2.750	2.353	11	

\*. The mean difference is significant at the 0.05 level

Key: PT=pre-test, POT=post-test, N=number of players, DF= degree of freedom, MD = mean difference, SD= standard deviation

As can be seen in the above, the pre and post test results of soccer skill variables were shown for the experimental group. The mean values of the pre and post test results of shooting accuracy were 21.750 and 24.833 and standard deviation was 2.832 and 2.480 respectively. And also, the table presenting the mean value of the pre and post test results of passing accuracy were 18.667 and 21.417

and standard deviation were 2.902 and 2.535 respectively. Based on the data indicated in the above table, the P- value of shooting accuracy of the experimental group was .001 and for passing accuracy was .001. The result indicated that the EG significantly improved shooting and passing accuracy of soccer skills ( $P < 0.05$ ).

Comparison of paired sample t-test results of soccer skill variables for control group of pre and post-test.							
Variables	Subject	N	Mean	MD	SD	DF	Sig. (2- tailed)
Shooting accuracy	PT	12	21.833		2.622	11	.236
	POT	12	22.333	-.500	2.015	11	
Passing accuracy	PT	12	18.917		2.575	11	.555
	POT	12	19.167	-.250	1.850	11	

\*. The mean difference is significant at the 0.05 level.

Key: EG= experimental group, CG=control group, DF= degree of freedom, MD = mean difference, SD= standard deviation

As we can be seen in the table, the pre and post test results of soccer skill variables were shown for the control group. The mean values of the pre and post test results of shooting accuracy were 21.833 and 22.333 and standard deviation were 2.622 and 2.015 respectively. And also the data in the above table presents, the mean value of the pre and post test results of passing accuracy were 18.917 and

19.167 and standard deviation were 2.575 and 1.850 respectively. Based on the data indicated in the above table, the P- value of shooting accuracy of the control group was .236, for passing accuracy was .555. The result indicated that the CG had no significant improvement observed on shooting and passing of soccer skills ( $P>0.05$ ).

Independent Sample t-test result measured between the experimental and control group of pre-test in soccer skill variables.						
Variables	Subject	N	Mean	SD	DF	Sig. (2- tailed)
Shooting accuracy	EG	12	21.750	2.832	22	.941
	CG	12	21.833	2.623	22	
Passing accuracy	EG	12	18.667	2.902	22	.770
	CG	12	19.00	2.593	22	

\*. *The mean difference is significant at the 0.05 level.*

Key: EG= experimental group, CG=control group, DF= degree of freedom, MD = mean difference, SD= standard deviation

In the above table, displays that the significance differences between the two groups (EG and CG) of pre-test results. The mean and standard deviation value of shooting accuracy pre-test was 21.750; 2.832 and 21.833; 2.623 for the experimental and control groups respectively. In addition, the data as shown in the above table, the mean and standard deviation value of passing accuracy for

experimental and control groups' pre-test were 18.667; 2.902 and 19.000; 2.593 respectively. From the data we can see that in the above table, the P-value of shooting accuracy was .941 and for passing accuracy was .770 these shows that, the two groups (EG and CG) had no significant difference observed in pre-test results for shooting and for passing accuracy of soccer skill ( $P>0.05$ ).

Independent Sample t-test result measured between the experimental and control group of post-test in soccer skill variables.						
Variables	Subject	N	Mean	SD	DF	Sig. (2- tailed)
Shooting accuracy	EG	12	24.833	2.480	22	.013
	CG	12	22.333	2.015	22	
Passing accuracy	EG	12	21.417	2.533	22	.016
	CG	12	19.167	1.850	22	

\*. *The mean difference is significant at the 0.05 level.*

Key: EG= experimental group, CG=control group, DF= degree of freedom, MD = mean difference, SD= standard deviation

The table in the above displays the significant differences between the two groups (EG and CG) of post-test results. The mean and standard deviation value of shooting accuracy post test result were 24.833; 2.480 and 22.333; 2.015 for experimental and control groups respectively. In addition, the data as shown in the above table, the mean and standard deviation value of passing accuracy for the experimental and control groups' post-test were 21.417; 2.533 and 19.167 ; 1.850 respectively. From the data we can see that in the above table, the P- value of shooting accuracy was .013, for passing accuracy was .016. According to the data presented in the table, the post-test result of EG was significantly improved in shooting and passing accuracy of soccer skill than post test result of CG ( $P<0.05$ ).

## CONCLUSIONS

This study shows that eight weeks of plyometric training could be a useful and effective tool for improving the passing and shooting performances of soccer players. Thus, eight weeks of plyometric training is an effective method to enhance the long passing and power shooting performances of soccer players.

## RECOMMENDATIONS

❖ As plyometric training was found to have a positive impact on developing soccer skills, players and coaches are highly recommended to

include the scientific method of plyometric training in their training sessions.

❖ Soccer coaches should give proper attention to plyometric exercise for the improvement of soccer skills.

❖ This research was conducted in an 8 week training program to investigate the effects of plyometric training on selected soccer skills. Therefore, a similar study could be conducted by including other variables that weren't included in this study.

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