

# The Exercise Method and Eye-Foot Coordination in Soccer Playing Skills of 14-15 Years Old Players

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**Abstract**—this study discusses the method of exercise and eye-foot coordination to optimize the achievement of soccer sport by improving the skills of playing football. It is based on the age group 14-15 years. The purpose is to determine the influence differences: between circuit playing method and circuit training method in soccer playing skills of players aged 14-15 years, between high eye-foot coordination and low eye-foot coordination in soccer playing skills of players aged 14-15 years; and (3) between the interaction among training methods (play sequences and series of exercises) and eye-foot coordination (high and low) in soccer playing skill of players aged 14-15 years. The research method is experimental with 2 x 2 factorial design. The population size include 20 football athletes aged 14-15 years, taken randomly from population of 37 athletes. The instrument for measuring eye-foot coordination is soccer wall volley, while that for measuring the skills of playing football is a test of soccer playing skills from the development of the David Lee proficiency test. Data analysis technique used is two-way ANOVA at significance level of 5%. **Results.** (1) There is a significant difference between circuit playing method and circuit training method in soccer playing skills, proved from the value of  $p = 0.001 < 0.05$ . The circuit playing method is better than the circuit training method. (2) There is a significant difference of influence between high and low eye-foot coordination of soccer playing skills, as evidenced by the value of  $p = 0.000 < 0.05$ . Students with high eye-foot coordination skills were better than those with low eye-foot coordination. (3) There is a significant interaction between the exercise method (a series of playing and a series of exercising) and eye-foot (high and low) coordination of soccer playing skills, as evidenced by the value of  $p = 0.000 < 0.05$ . The application of circuit playing methods and circuit training methods have significant influence differences of soccer playing skills. This suggests that in the practice of soccer skills, the application of the circuit play method is more appropriate in improving the skills of playing football. The circuit playing method and circuit training method have proven to have a significant influence in facilitating the skills of playing football.

**Keywords**— *Circuit Playing Method, Circuit Training Method, Eye-foot Coordination, Soccer Playing Skills*

## I. INTRODUCTION

Generally, soccer have a high level of basic engineering skills. The coaching of early soccer sports can be maximized if the achievement of an of the practice must be tiered and sustainable. From an early age, each player must be able to master the football game technique. Furthermore, every technical activity that is taught must be followed by a consistent and continuous training program. This will ensure the technique can be mastered and turned into a skill, that is, the ability to display a game technique that can be used in overcoming every situation and conditions that occur in every game [1]. The maturation of playing skills must be in accordance with the age level to help the player get to the topmost performance, especially in soccer sport coaching. This can be seen with the school soccer (SSB) which trains its players according to age group. The training materials are given in accordance with the concepts and goals that have been structured by the school soccer (SSB) based on the age group. The ability of the trainer is very important to achieve positive results. The knowledge and skills of a trainer must be up to the details of the sport he has trained, the knowledge including techniques, tactics, training systems, exercise strategies, psychology and other things. The level of athlete achievement depends only on the high level of knowledge and skills of the trainer [2].

Soccer School (SSB) South Bengkulu is one of the soccer institutions in Indonesia. It has certified trainers along with adequate facilities and infrastructure. From the results of observations by the author at the time when Soccer School (SSB) South Bengkulu aged 14-15 years were competing, the players are discipline in performing tasks based on their positions and are able to cooperate with each other as well. However, the processing of the ball is still of concern. There are still many who have not been accurate on target. The passing technique is still not directed and moves very slowly. Even shooting is still not directed and the accuracy is low. In addition to the ball control, dribbling is still stiff with the movements not flexible. Over the past years, SSB Persiman has been doing intensive training. The payers have been very

skilled at the ball with various playing skills, such as control, dribbling, passing and shooting.

Learning the skills of playing soccer is important in order to develop the basic skills required. This way, they can face any situations that may arise during the real matches. Soccer skills such as shooting, passing and ball control are very important in the development of soccer players [3]. Soccer playing skills is the foundation for an athlete to play soccer. With their 'control' the players will be able to master the ball completely, with 'dribbling' the players are flexible to pass the opponent, with 'Passing' the players are capable of kicking the ball appropriately to a friend of the team, and with 'shooting' the players can put the ball right into the goal point.

The low skill of a player is probably caused by internal and external factors. Internal factors is physical ability. This relates to eye-foot coordination that influences the performance of the player, both in skills training and in the match. Coordination is the ability of the performer to integrate types of body movement into specific patterns [4]. Moreover, it may also be caused by other internal factors such as cognitive, conative, and social. The result in football depends on psychomotor factors (psychological factors, psychological factors (cognitive, conative, social), incentive structure, teaching and training methods, variety of external factors (playground, referees, equipment, public etc.), and error factors. Of all these factors, the most important ones are those of psychomotor abilities of the players because the successful resolution of the situation in a football match is mainly performed by motoric activities. During the game, better chances are on the side of players who have these factors in the optimal ratio [5].

Soccer is a dynamic sport that requires good coordination. The low level of eye-foot coordination of the athletes can influence the outcome of the exercise, and so it requires regular, earnest, and continuous practice in order to improve the playing skills of a soccer player. In other words, having good eye-foot coordination is a requirement in recording the maximum performance for the players in terms of soccer playing practice. Eye-foot coordination is the most important thing in football [6]. Agility and coordination is also important. Agent and coordination are the combination of strength, endurance, speed and flexibility and have direct effects on players' skills and performance on the field [7]. The physical differences of the player in high and low eye-foot coordination will be a very important consideration in determining the method of exercise to fit the characters of each player, so it will achieve the optimal training results in accordance with the potential possessed by the players. External factors come from outside of the players themselves,

such as theoretical skills of trainers, exercise programs, training methods, facilities and infrastructure used.

The method of exercise is a form of training done to learn playing soccer. In accordance with the requirements in supporting sports achievements, the ability to move and appropriate techniques will be developed through a variety of appropriate training methods. With the practical methods, it can be arranged into various forms of exercise methods to improve the skills of playing soccer, such as the circuit playing method, circuit training method.

The circuit playing method is a form of training technique done through complex activities that can reflect the occurrence of a battle or game between two teams so that there is a winner and loser. The ability of the player is guided more, in order to do proper engineering weights.

The circuit training method is a method of training performed on elements of play for technical exercises either separately or in combination, in which there is no opponent in the series of exercises. The implementation of this training method is based on the desired goal and the technique that can be done repeatedly with the same situation. In other words, the weight of the exercise can be arranged in such way based on a organization structured.

Based on the previous description, with the training process given to the athletes, there are two methods of training performed, the circuit playing and training method. The researcher is interested in conducting the study on "the exercise method and eye-foot coordination in soccer playing skills of players aged 14-15 years". It is expected that this research will be one of the platforms from which reference can be made in formulating policies for improvement of soccer performance.

## II. RESEARCH METHOD

### A. Research Design

This study uses a qualitative approach with an experimental method. The purpose of experimental methods is to obtain the results that have been tested so that the cause and effect relationship between groups with one another will answer the research question. The experiments in this study used groups for treatment aimed at seeing the effect of the application of the training methods (circuit playing and training) and the level of coordination of athletes (high and low) to the improvement of soccer playing skills.

The design used by the study is an experimental one with 2 x 2 factorial design. A 2 x 2 factorial design refers to one experiment involving two factors. Each factor consists of two levels, using initial and final tests (pretest and posttest).

**TABLE I. THE STRUCTURE OF FACTORIAL DESIGN**

Eye-foot Coordination (B)	Training Method (A)	
	Circuit Playing Method (A1)	Circuit Training Method (A2)
High (B1)	A1. B1	A2. B1
Low (B2)	A1. B2	A2. B2

A1B1: A group of students trained by using the circuit playing method with the high eye-foot coordination

A2B1: A group of students trained by using the circuit training method with the high eye-foot coordination

A1B2: A group of students trained by using the circuit playing method with the low eye-foot coordination

A2B2: A group of students trained by using the circuit training method with the low eye-foot coordination

The results of the experimental by using factorial 2 x 2 descriptions in this study will obtain information on the contribution of each independent variable to the treatment outcomes and interactions among the variables involved. In addition, the use of experimental research with factorial design will provide information on the interaction between independent variables that affect the dependent variable.

### B. Population and Sample

The population in this study is soccer school aged 14-15 years amounted to 37 players. The total population is 37 players in an eye-foot coordination test by using a soccer wall volley test. After the eye-foot coordination data were collected, further analysis is performed to identify the group of players with high- and low eye-foot coordination by using the overall test score of the foot-to-foot coordination owned by the player by ranking

Based on the ranking, then determined 27% of the upper group and 27% of the lower group of the test results. Thus, the grouping of samples were taken from the players who have high eye-foot coordination as much as 27% and players who have low eye-foot coordination of 27% of the data that has been ranked. How to make the classification of the rank rank from the highest to the lowest, is taken 27% of the order of the top rank is called the high group, 27% order of the lower rank is called the low group [8]. Based on this, this research obtained 10 players who have high eye-foot coordination and 10 players who have low eye-foot coordination. Then from each data it is divided into two groups by ordinal pairing and obtained that each 5 players

who have high eye-foot coordination are treated by the circuit playing method and circuit training methods, the same is also done for groups of players who have low eye-foot coordination.

### C. Time of Research

This study was conducted for 18 meetings, with 1 initial test, 1 final test, and 16 treatments. It was conducted 3 times a week, i.e Tuesday, Wednesday, and Friday for 6 weeks. Today's trainers generally agree to run an exercise program three times each week, in order to avoid chronic fatigue [2].

### D. Instruments and Data Collection Techniques

The instrument for measuring the of the eye-foot coordination was Soccer wall volley test [9]. The test used to measure the skills of playing football, was using development test of "David Lee" [10].

### E. Data Analysis Technique

To test the hypothesis is done by using ANAVA two-way and if there is proven interaction it will be tested continuously with Turkey test, by using software program SPSS version 20.0 for windows with significance level of 5% or 0,05.

## III. RESULTS

**TABLE II. DESCRIPTIVE STATISTICS PRETEST AND POSTTEST SKILL OF PLAYING FOOTBALL.**

Metode	Coordination Eye-Foot	Statistics	Pretest	Posttest
Circuit Playing Method	High (A1B1)	Total	212,85	204,02
		Average	42,5700	40,8040
		SD	,86856	,56959
	Low (A1B2)	Total	216,95	214,31
		Average	43,3900	42,8620
		SD	,22170	,39890
Circuit Training Method	High (A2B1)	Total	213,60	213,35
		Average	42,7200	42,6700
		SD	,83084	,37202
	Low (A2B2)	Total	217,07	212,89
		Average	43,4140	42,5780
		SD	,18636	,46981

### A. Normality Test

Based on statistical analysis of normality test that has been done by using Kolmogorov Smirnov Z test, on all pretest and posttest data obtained from normality test data value  $p > 0,05$ , a normal distributed data.

TABLE III. NORMALITY TEST

Data	P	Information
Pretest A1B1	0,943	Normal
Posttest A1B1	0,787	Normal
Pretest A2B1	0,903	Normal
Posttest A2B1	0,942	Normal
Pretest A1B2	0,934	Normal
Posttest A1B2	0,699	Normal
Pretest A2B2	0,703	Normal
Posttest A2B2	0,960	Normal

**B. Homogeneity Test**

Based on statistical analysis of homogeneity test that has been done by using Levene Test test pretest-posttest the obtained value is significance  $p \geq 0,05$ . This means that the data group has a homogeneous variant. Thus the population has the same variety.

TABLE IV. HOMOGENEITY TEST

Group	Levene Statistic	Information
Pretest	0,102	Homogeneous
Posttest	0,201	Homogeneous

**C. Test Results**

Hypothesis test was conducted based on the data analysis and interpretation of ANAVA two-way analysis (ANAVA two-way).

TABLE VI ANAVA TEST

Source	Type III Sum of Squares	F	Sig.
Training Method	3.128	14.850	0.001
Coordination	4.831	22.934	0.000
Training Method* Coordination	5.778	27.428	0.000

From ANAVA test results, it can be seen that the significance of p value is 0.001. Because the significance value of p is equal to  $0.001 < 0.05$  and significance value F is 14.850, it means that Ho is rejected. Thus there is a significant difference in the effect of circuit playing methods and circuit training methods on football playing skills. Based on the results of the analysis, the higher-order circuit method (good) with an average posture value of 41.833 seconds compared with the circuit training method with an average posture value of 42.624 seconds.

From the ANAVA test results, it can be seen that the p significance value is 0.000. Since the significance value of p

is  $0,000 < 0.05$  and the significance value of F is 22.934, it means that Ho is rejected. Based on this result, it means that there are significant differences in the influence of high and low eye-foot coordination on improving the skills of playing football. From the analysis of the results, students with higher eye-foot coordination ability (good) have an average posttest of 41.737 seconds compared to students with low eye-foot coordination with an average posttest score of 42.72 seconds.

From the ANAVA test results, it can be seen that the significance of p value is 0.000. Since the significance value of p is  $0.000 < 0.05$  and the significance value of F is 27,428, the Ho is rejected. Based on this, it means that the hypothesis that there is a significant interaction between the training method (the circuit of play and the circuit of exercises) and the eye-foot coordination (high and low) of the football skills of players aged 14-15 years, has been proven.

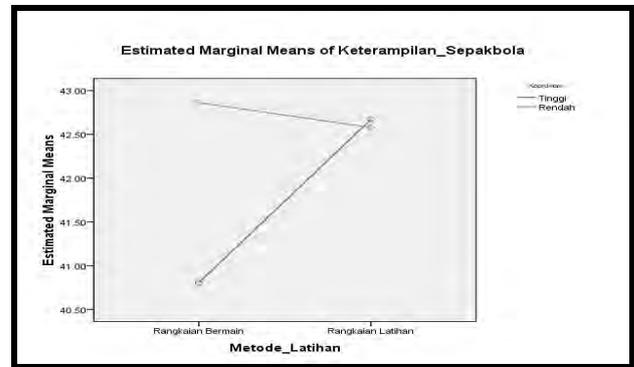


Fig 1. Interaction Results between Exercise Method (Play and Exercise Circuit) and Eye-foot Coordination (High and Low)

**IV. DISCUSSION**

**A. The differences between the effect of circuit playing methods and circuit training methods on soccer playing skills**

The circuit playing method is better than the circuit training method in improving the skills of playing football. Game sequences in sports teaches the sequence of a series of games, to reduce the complexity of the game. with the game approach, it will make the team excited with football, develop players' creativity, improve decision-making ability, and improve their physical ability [11]. with this approach, the player will be motivated, so that the concentration of players will be realized, and will generate pleasure, challenge, creativity, and problem solving that will be faced by players both in practice and competition. Based on the results of the analysis, the higher-order circuit method (good) has an average posture value of 41.833 seconds compared with the circuit training method with an average posture value of 42.624 seconds.

*B. The differences between the effect of eye-foot coordination high and low on the skills of playing football*

Players with high eye-foot coordination skills are better than those with low eye-foot coordination skills when it comes to improving their soccer playing skills. The skills of playing football are influenced by the coordination of eye and foot movement. Foot-eye coordination is getting your feet to move to the right spot at the right time. A lack of coordination can make it seem like you are very unlucky. Bad things happen to clumsy people [12]. Based on the results of the analysis, it found that students with higher eye-foot coordination ability (good) have an average posttest of 41.737 seconds compared with students with low eye-foot coordination with an average posttest score of 42.72 seconds.

*C. The interaction between exercise methods (series of playing and exercises) and eye-foot (high and low) coordination of soccer playing skills*

The results show that the circuit playing method is the most effective strategy for students who have high eye-foot coordination while exercise method of circuit training is more effectively used for athletes with low eye-foot coordination ability. From the ANAVA test results, it can be seen that the significance of p value is 0.000. Since the significance value of p is  $0.000 < 0.05$  and the significance value of F is 27,428, it means that  $H_0$  is rejected. Based on this, it means that the hypothesis that there is a significant interaction between the training method (the circuit of play and the circuit of exercises) and the eye-foot coordination (high and low) of the football skills of players aged 14-15 years has been proven

#### V. CONCLUSION AND SUGGESTION

The application of circuit playing methods and circuit training methods have significant influence differences on soccer playing skills. This suggests that in showing playing soccer skills, the application of the circuit play method is more appropriate. The circuit playing method and

circuit training method has proven to have a significant influence in improving the skills of playing football. This is an empirical study that can be used by researchers in the field of soccer coaching to improve the way of training and improving the skills of playing football. The results of this study can be used as a guide to determine and choose the method of exercise to improve the skills of playing football

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