




Investigation on the Games Experience Learning Training: Does It Affect the Passing, Dribbling, Receiving, Aerobic Endurance and Discipline of Young Football Players?

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Abstract. The objective of this research is to see how game experience learning training affects passing, dribbling, receiving skills, aerobic endurance, and discipline of the young football players. This research employed experiment method. Samples were 55 players, with a mean age of 12.09 years old. The treatment was given to football players at football schools. For 12 weeks, the samples received treatment in the form of a game experience learning training model delivered three times per week. The Realmadrid Foundation Social Sport School Yogyakarta Skill Test assessed passing, dribbling, and receiving abilities. Passing ability test was done with both feet, right and left, and dribbling skill test was done by dribbling through zig-zag obstacles. Receiving the ball was measured by directing the ball received in a predetermined direction. Multistage test was used to assess aerobic endurance, and the coaches used "football character observation sheet" to assess discipline. Before and after treatment, measurements were taken. The wilcoxon and independent t-test technique was used to analyze the data with the SPSS 22 tool. The findings revealed that game experience learning- based training had significant effect on the dribbling skills, aerobic endurance, and disciplined attitudes of young football players, but no effect for passing and receiving skills. National and international football federations should adopt the training model that focuses on improving of technical skills, physical abilities, and attitudes, particularly when training young football players. Future research is expected to refine an effective game approach to improve passing and receiving skills.

Keywords: aerobic endurance, discipline, training, games, and football

1 Introduction

Training to improve the appearance of athletes is a systematic, planned, programmed, and measurable process based on training principles. Athlete preparation is required in order for training to be performed optimally. Training aims to improve and perfect skills, physical abilities, and psychological abilities by subjecting them to increased loads in order to achieve peak performance. This has consequences, it is useful for reducing the risk of disease, maintaining a healthy body, and increasing the ability of athletes [1], and poor quality training is the cause of athletes failing to achieve their goals [2]. Football is a complex sport, in which multi-dimensional skills, such as physiological characteristics, and technical, tactical and psychological skills, are needed [3,4]. Physical ability is very important for young football players, according to the findings of Wong and Wong's research indicating that young Asian players have a lower jump height and shorter height than European and African players. Young Asian football players performed poorly in isokinetic quadriceps and hamstring strength (particularly at high speeds), VO₂Max, 1RM strength test, sprint starts, and 20- to 30-meter sprints [5].

Improving the quality of skills is an ongoing activity on fostering and developing football-related skills from children to youth. Technical skills such as passing, dribbling and shooting are considered as important prerequisites for success in soccer [6]. Several studies assessing sport-specific technical skills using a multidimensional approach found that technical skills predict player performance in a variety of sports, such as dribbling skills in field hockey [7], technical swimming and ball handling skills in water polo sports [8], and dribbling, passing, shooting and ball control techniques skill in soccer [9], and dribbling slalom skills in handball [10]. The majority of previous research has focused on determining the effect of an exercise treatment on one or a maximum of two variables. Nokham and Kitisri conducted a study to see how SSE (square-stepping exercise) affected balance [11]. Gabbet et al, conducted a study to compare the effects of drill and game-based training models on skill development and decision making [12]. Baron et al, conducted fundamental motor skill training experiments to improve football players' basic motor skills. His research findings indicate an increase in acceleration and speed [13].

According to McEwan, teamwork is important for athletes to have the characteristics of team or team sports such as football. The coaches frequently and consistently emphasize the importance of the players working together, contributing to one another, and sharing the same feelings in order to display the achievements or performance of a good sports team. Attitudes to maintain and be orderly towards eating regulations have been carried out by research which shows the importance of discipline. Young sports coaches must pay attention to the development of the players' behavior, attitude, and character as well as their skills and physical abilities when working with young athletes. Character is a hot issue that is frequently the study of several research results in the field of sports training, but researchers have found no research that aims to determine the effect of a treatment or training on the variables of technical skills, physical abilities, and attitudes in youth football player. Research into changing behavior in sport interactions has previously been conducted, but it is still limited to educational sports activities, with very few studies in achievement sports coaching settings having dependent variables on athlete behavior or character.

The aim of this study was to examine the effect of game experience learning exercises on passing, dribbling, receiving, aerobic endurance and discipline attitudes towards soccer players aged 11-12 years. Game experience learning training model is a training model that employs games and experience learning theory, with the training process consisting of stages such as experience in the form of playing, reflection, conceptual understanding, and implementation. The daily practice concept, which lasts 90 minutes, is divided into three sessions: play I, play II, and play III. Table 1 shows the phases of the game experience learning training model. The following are the contents or material of the game experience learning training model in full play stage I: (1) fish vs nets, (2) live fences, (3) we can do it together, (4) time bomb, (5) two-two football, (6) triple frog jump, (7) goals, goals, goals, (8) red cards, (9) horse football, ten one-footed headers (11) game of fair play, (12) shooting criminals, (13) one island, one king, (14) guarding prisoners, (15) guarding one-on-one cannot be changed, (16) chain ball, (17) police vs criminals, and (18) guarding captives.

Games for core training material or play II, specifically: (1) 3 vs 1 (three against one), (2) 4 vs 2 (four against two), (3) 4vs2 becomes 3vs2 continue with the final settlement, (4) 3 vs 3 + 2 neutral players, (5) 4 vs 4 + 4 neutral players, (6) 4vs2 becomes 6vs4, (7) 3 vs 3 + 4 neutral players, (8) 3 vs 3 + 4 neutral players, (8) 3 vs 3 + 4 neutral players, (9) 3 vs 3, (break through the cave), (10) pass through obstacles or 3 vs 1 (+2), (11) control the ball for shooting space, (12) detonate a bomb in the villain's nest (1 vs 1), (13) break through the opponent's defensive area, (14) split the opponent's fortress (5 vs 5), (15) dribbling (skip the mine) 5 vs 3, (16) throwing heading, heading for goals, (17) 4 vs 4 + 2 neutral players, (18) heading secure area from danger. The core exercise design or play III is a 20-minute game of 7v7. The training model developed by the researcher and to be tested by the researcher differs significantly from the exercise models previously studied. Game-based learning exercises were created with the goal of ensuring that players who participate in the training process not only experience an increase in the quality of technical and physical skills, but also experience progressive and comprehensive improvement in the components of technical skills, physical abilities, and changes in attitude and behavior. Predictable skills, such as passing, dribbling, and receiving, can be influenced and the results improved. Aerobic endurance is one of the physical abilities that is expected to be affected and improved, and the training model is expected to influence changes in disciplinary attitudes toward young football players.

Table 1. Principle and Procedure of Games Experience Learning Training Model

Activity	Material of training	Strategy	Duration
Warm up	Warming up	Activity controlled	5-10 minutes
Core Training 1	Game for development for one character (designed by the researcher).	<i>Experience learning</i> (Playing, reflection, finding, application)	15-25 minutes
	Game/ playing activity is always relevant with one of the skills		

Core Training 2	Game for the technical skills development (selected, analyzed, or designed by the researcher)	<i>Experience learning</i> (Playing, reflection, finding, application)	15-25 minutes
Core Training 3	Playing 7 vs 7 based on the federation regulation	Playing controlled, controlled with transfer with minimum one game regulation	20 minutes
Cooling Down	Cooling Down Activity	Activity controlled	5-10 minutes

2 Material & methods

This was experimental research. Researchers train the trainers who would perform the treatment's implementation on the game experience learning training model. Trainers were given training so that they were able to do the implementation of game experience learning model exercises with understanding, knowledge, and competence. Training model implementation was done in accordance with standards and planning of game experience learning training models, particularly in terms of training methods and strategies. The samples were trained using the game experience learning model on players who practiced and were enrolled in football schools in Sleman Regency, Province of Yogyakarta Special Region (DIY), Indonesia. For 12 weeks, the treatment in the form of an exercise model was performed three times per week. Two coaches supervised the training group of 15 to 30 players. The total number of research samples was willing to participate in the treatment with an attendance rate of 85% and to take the initial and final tests was 55 football players aged 11-12 (12.09+ 0.70). The sample in the study had permission from the players' parents to participate in this research, and the research implementation had permission from the Yogyakarta State University's research ethics commission based on number letter T/3/UN.34.9/KP.06.07/2020. Body mass and height were measured using a Filizola® brand scale and a stadiometer with an accuracy of 0.1 kg and 0.1 cm, respectively.

Before and after treatment, the skill, physical, and attitude components were measured. The RealMadrid Foundation-Skill Test assesses passing, dribbling, and receiving abilities. The RealMadrid Foundation-Skill Test developed by RealMadrid Foundation Social Sport School Yogyakarta has a reliability of 0.92 and a validity of 0.87. The passing ability test consists of passing the ball 5 times using the right and left foot at a set target, while the dribbling skills test consists of dribbling the ball over obstacles in the fastest time possible. A multistage test is used to assess cardiopulmonary endurance (Léger et al., 1988). The "Football Character Observation Sheet" measures the character of player discipline in football interactions and has a validity of 0.75 and a reliability of 0.65 (Sulistiyono et al., 2021). Football Character Observation Sheet develop by researcher. A research team collected data for this study by forming a committee to carry out the process of measuring technical, physical, and disciplinary character skills tests. The wilcoxon and independent t-test was used to analyze the data with the SPSS 22 program, and the significance level was set at 5%. Independent t-test was used if the data is normally distributed.

3 Results and Discussion

To determine the anthropometric characteristics of the sample, height (cm), weight (kg), and Body Mass Index were measured. Body weight analysis can reveal a wealth of information about a person's physical condition (Fauzi et al., 2017). The characteristics of the sample's height (cm), weight (kg), and body mass index are shown in table 2.

Table 2. Profile of height, weight, and body mass index of the young football players

Category	Age 11 (n = 29)	Age 12 (n = 26)
Height (m)	1.44	1.50
Weight (kg)	40.22	41.81
Body Mass Index	19.14	18.52

Table 3. Descriptive data before and after measurement of passing, dribbling, receiving, aerobic endurance and discipline skills

	N	Mean	Std. Deviation
Pre test passing	55	5.84	1.70
Pos test passing	55	6.09	1.78
Pre test dribbling	55	25.58	2.83
Pos test dribbling	55	27.40	3.83
Pre test receiving	55	10.31	2.46
Pos test receiving	55	10.91	1.97
Pre test endurance	55	30.51	5.19
Pos test endurance	55	34.34	7.08
Pre test discipline	55	23.27	1.65
Pos test discipline	55	27.17	1.11

Table 4. Results of data analysis with wilcoxon test

	Z	Asymp. Sig. (2-tailed)
Pos testpassing – pre test passing	-.887b	0.375
Pos test dribling – pre test dribling	-3.113b	0.002
Pos test receiving – pre test receiving	-1.435b	0.151
Pos test discipline – pre test discipline	-6.326b	0.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Table 5. Results of data analysis with independent t-test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2- tailed)	Mean Differen ce	Std. Error Differ ence
Pretest enduran ce	Equal variance s assumed	4.131	0.04 5	-3.233	108	0.002	- 3.82982	1.184 49
	Equal variance s not assumed			-3.233	99.0 3	0.002	- 3.82982	1.184 49

Asymp. Sig. (2-tailed) result the wilcoxon test value for passing ability = 0.375. dribbling ability = 0.002. receiving ability = 0.151. discipline = 0.000 (Table 4 and 5). Sig. Value (2-tailed) for dribbling ability = 0.002. and discipline attitude = 0.000. indicating a difference between before and after treatment. but no difference between before and after treatment for passing and receiving ability where Asymp. Sig. (2-tailed) the wilcoxon test value for passing ability = 0.375 > 0.05 and receiving ability = 1.151 > 0.05. A different test on aerobic endurance ability was carried out using an independent t-test and the results were Sig. (2-tailed) component of aerobic endurance = 0.002 (Table 5). it can be stated there is significant difference in aerobic endurance before and after treatment. According to data analysis. the games experience learning training model. which was implemented on football players aged 11-12 years for 12 weeks. has a significant effect on dribbling. aerobic endurance. and discipline attitude but has no effect on passing and receiving skills abilities.

A model is a method or process for making an object or type more advanced. better. perfect. or useful (Nasution & Suharjana, 2015). Models can be defined as: (1) a type or design, (2) an understandable description or analogy, (3) a system of assumptions. data used to systematically describe an object or event, (4) a style a simplified version of a working system, a simplified translation of reality, (5) a description of a possible or imaginary system, and (6) a simplified presentation to explain and demonstrate its true nature (Nasution & Suharjana, 2015). A model can be defined as a miniature object designed to aid in the process of visualizing objects that cannot be observed in order to understand them systematically. Game experience learning model exercises are designed in the form of enjoyable play activities for players. The rules of the game are simple and easy to understand quickly, players or children are not interested in game activities with complicated rules that take a long time to understand. If the player wins or the difficulty level gradually increases. the

game will attract an increasing number of children. The stages of the game-based experience learning training model in the first and second core training phases contain game material with implementation using the experience learning theory. The third core exercise includes 7-on-7 competitive play using football federation rules for children aged 12 years. The game experience learning-based training model is designed with the concept that during the experience phase, players are given the task of practicing playing a game (created by the researcher), at the appropriate time. The trainer guides the players to reflect, the players are able to accept knowledge, affective, psychomotor concepts, and the players have room to apply to the third core exercise.

The purpose of this study is to see how game experience learning affects passing, dribbling, receiving skills, aerobic endurance, and discipline. According to Table 3 the game experience learning training model improves passing, dribbling, receiving technical skill, aerobic endurance, and discipline attitudes, but the game experience learning training only influence dribbling technical skill, aerobic endurance, and discipline attitudes. The results showed that the researchers' game experience learning training model was able to improve three technical skills, as well as the discipline characters and aerobic endurance abilities. The game approach at stages I, II, and III can help to create a pleasant practice environment. Young football players do not want to move, which indirectly increases training intensity to be in the aerobic training zone. The technical skills of passing, receiving the ball are not affected by the game experience learning training model.

The research began with preliminary tests on passing, dribbling, receiving skills, aerobic endurance, and discipline. Treatment with game experience learning model exercises for 12 weeks, 3x practice/week, followed by a final test. This study has advantages over previous training models. To the best of the researcher's knowledge, this is the first study to attempt to determine the effect of a training session on three variables of skill, physique, and attitude of football players in a training setting in order to achieve success. Trainers, who are the primary actors in the implementation or treatment of research, have received training in trainer philosophy and the implementation of game experience learning training models. The game experience learning training model is implemented through a playing approach, where the playing model is a model that naturally creates a pleasant environment in training. Method playing can improve high-level skills in football players [20]. From some expert opinions, concluding that the games is a related playing situation with certain rules and goals (Manihuruk et al., 2022). The performance of a successful football athlete is to do exercises with the method play that the coach does (Bozkurt, 2018). The pleasant atmosphere and feeling in training for young players is a force that keeps the players from becoming bored, tired, and unmotivated. As skills, physical training, and moral messages of goodness are implemented in a competitive playing environment. The 55-player sample size for experimental research in sports training is sufficient to answer the problems or hypotheses proposed by researchers.

Research findings using the game experience learning model have effects on dribbling skills but not on passing and receiving skills. The findings using the game experience learning model affect on dribbling abilities technical skills. According to the findings of this research, small side games should be used to develop both physical capacity and technical skills in young football players (Radziminski, 2013). The findings of Gabbet et al. demonstrate the value of game-based training in improving

team sport athletes' skills and physical fitness (Gabbett et al., 2009). The number of players involved in the game experience learning training model is always related to the game situation. The number of players who control the ball or defend varies according to the objective of training; when the goal of training is skill development, the number of players is regulated more than the number of players defending. Setting the number of players in play-based training is consistent with the findings of Vilar et al.'s research, which show that manipulation reduces the chances of maintaining ball possession during practice when the number of attackers and defenders is the same in practice with the small side games (SSG) approach, causing more shooting and passing skills to occur, when the number of defenders is less than the number of attackers (Vilar et al., 2014). The findings of small-sided game research appear to be an effective way to improve the accuracy or skill of young female volleyball players (Pekas et al., 2019).

The findings of the study with the game experience learning model have an effect on aerobic endurance, which can be interpreted as the game experience learning model exercise fulfilling the principles of exercise to increase athletes' aerobic endurance capacity. The results of this study showed all groups managed to improve their physical fitness and skills in the post test. However, the 3x3 and 4x4 SSG have better improvement compared to traditional training in physical fitness while no significant differences were found in skills tests (Pop et al., 2022). Researchers' playing rules are capable of maintaining and meeting intensity requirements. According to Aguiar's research, the intensity of training required in small-sided games depends on many factors, including the size of the field, the number of players, the rules of the game, and the coach's encouragement (Aguiar et al., 2012). The number of players involved in the 18 games for phase I training session and the 18 games for phase II training session varied, for example, 3 vs 3, 5 vs 5, or 11 vs 11. The playing area has been examined to ensure that it is loose enough to accommodate the goal training set. A comparison of area sizes for 4 vs 4 minutes of play reveals significant differences in heart rate response and technical skill gains. These findings imply that changes in size affect heart rate or the majority of the technical requirements observed in game-based training (Kelly & Drust, 2009). This was backed up by Goto and King, who stated that small side games can replicate high intensity demands when playing 11 vs 11, and that the 11 vs 11 playing approach with a normal area has a higher intensity than training with a metabolic power approach (Goto & King, 2019).

Research findings stating that the game experience learning training model influences the attitude of young football players, are consistent with several research findings from previous studies. Oddner's explains character formation at various stages, addressing the understanding of how character is developed in sports. Problems, the importance of cultural considerations, Economics, and the conditions for character formation through sports in Sweden (Oddner, 2010). Several studies have found evidence that attitudes, behavior, and values learned in sports can be transferred to everyday life. Sport can provide a relationship to develop individual character, which is classified into four types: moral character, civil character, intellectual character, and performance character. Moral character education can concentrate on three components: moral reasoning, moral concern circles, and moral identity (Bredemeier & Shields, 2019).

According to several research findings, attitudes and behaviors in training interactions or sports competition activities can be applied in social life. The study's

findings indicate that game experience learning model exercises influence the attitude and disciplinary character of young football players. The study's findings are consistent with McEwan and Beauchamp's research, which found that athletes in team sports have a more respectful attitude than athletes in individual sports (McEwan & Beauchamp, 2014). Bates' research found that virtual sports-based PYD (Positive Youth Development) activities facilitated positive emotional responses in 53 adolescents and their families who participated in PYD (Positive Youth Development) programs. During the COVID-19 pandemic, there was positive interaction with peers, involvement with family, and use of environmental resources. Virtual sports-based PYD activities, according to researchers, can facilitate the transfer of life skills and can serve as a substitute for decreased opportunities for sports and social interaction during the COVID-19 pandemic (Bates et al., 2021). Coaches and sports experts associate moral values with sports activities through sportsmanship, which develops in stages in the sports coaching environment, namely: personal attitude (level 1), respect for authority and rules (level 2), self-care (level 3), caring for opposing players and opponents (level 4), and helping opponents and opponents through self-sacrifice (level 5) (Vila et al., 2016).

The game experience learning training model used as a treatment in this study was shown to improve dribbling, aerobic endurance, and discipline skills. Training mechanism with playing stages I, II, and III, where players are guided by the coach to find solutions to any problems that arise during play as a means of improving skills, aerobic endurance, and attitude. The coach guides the reflection phase by asking questions to the players in order to invite them to think, feel, understand, and find solutions to technical and behavioral problems that arise during the game. Understanding efforts to improve skills and discipline is critical because playing performance is one of the reasons for the quality of thinking, understanding, and technical skills decisions that must be made in a very short period of time. Aerobic endurance ability is indirectly increased by movement in play, which allows for training intensity to be maintained in the aerobic training zone. Francis et al. proposed a virtual reality (VR) moral paradigm that aims to investigate individuals' actions in moral scenarios that elicit emotion, focus, and action. Compared to virtual task assessment and control, Francis et al. discovered that virtual moral dilemmas increased significantly. According to the study's findings, moral action can be viewed as an independent construction of moral judgments using the VR method. Virtual reality offers a fresh perspective on investigating and evaluating moral behavior (Francis et al., 2016).

Athlete or player performance is closely related to training design. The findings of a study that used the game experience learning training model to administer treatment had no effect on passing and receiving skills. The researchers' designed and implemented design had no effect on passing and receiving skills, presumably due to feedback provided by trainers when the training process was not optimal. The game experience learning model allows coaches to focus less on feedback on motion errors made by individual players that are not carried out or are forgotten. These findings are consistent with the findings of O'Connor et al., who discovered that the exercise plans prepared could not provide certainty about the outcomes. The training goals and targets may not have been met because the coach spent more than 3 minutes communicating with the players before explaining and introducing an activity, regardless of when the activity was scheduled in that session (O'Connor et al., 2018). It is possible that the

quality of the feedback provided by the trainer is not optimal, causing the receiving skills to remain stagnant, as evidenced by research findings stating that feedback given during small side games practice does not affect response if small side games is played with high intensity, but this feedback affects performance in the game. Football coaches are encouraged to provide smooth feedback during small side games in order to maintain a better game performance (Brandes & Elvers, 2017).

By design, the training rules use a game approach causing all the players involved to think about how to make decisions according to the problems at hand (González-Rodenas et al., 2015). The number of players involved, game goals and areas in the game affect player involvement (Jones & Drust, 2007), the frequency of using technical skills in game situations. The results of the study show that game experience learning exercises have no effect on passing and acceptance skills, according to Aguiar's opinion where effective play design improves tactical abilities which are closely related to decision making at the right time to solve problems in various game situations (Aguiar et al., 2012), but not relevant to the expectations of passing and acceptance skills that must be mastered by players aged 11-12 years. The game rules designed by the researchers do not regulate the use of the right or left foot in playing situations, contrary to the assessment used to evaluate passing skills which involve the use of the right foot and left foot.

The treatment was carried out by setting up several football schools with different training support conditions, and the trainers' ability to implement game experience learning model exercises, which greatly affect training results. The game-based game experience learning training model (Play I, II, III) differs from the conventional training model (Drill model), the weaknesses of the playing model include the inability to determine how frequently a player repeats movement skills. The quality and quantity of repeating movements as a result of trainer feedback, which is critical to improving mastery of movement skills in a sport, have not been measured systematically. The number of minutes a coach spends providing reflection or feedback is not standardized, nor is the number of times reflection can be done during a game, there are no clear instructions in each designed playing session. The character of discipline requires the coach's ability to create the right moment of reflection so that the players are able to accept the meaning of disciplinary values that are implemented at every moment or problem in playing football. This study's weakness is that there is no clear measure or agreement on the number of times the reflection phase is carried out in each practice session. The next limitation is the lack of a control group to determine the difference in effectiveness between the model used by conventional trainers.

This research aims at determining whether the game experience learning training model effect passing, dribbling, receiving technical skill, aerobic endurance, and disciplined attitudes in young football players. Several parameters were established for the sample and the trainer in charge of administering the treatment. The results demonstrated that games experience learning-based exercises were able to influence the variables of dribbling skills, physical abilities, and attitudes, specifically dribbling skill, aerobic endurance, and discipline. Researchers believe that achievement-oriented training environments for football players aged 11 to 12 years can be used to develop discipline. So far, achievement-oriented sports training for football players aged 11 to 12 years has only focused on skill performance, however the paradigm can be shifted so that skill performance, which is the goal of coaching, can coexist with attitude

development. Sports attitudes and noble values can be transferred and implemented in everyday life. Because these skills are related to player welfare, coaches must encourage the development of various life skills in young athletes (Mossman & Cronin, 2019).

4 Conclusion

Training that aims to maximize performance in young players. but should focus not only on skills and physical abilities. also on attitude changes. The attitude a football player's become character will be useful and applied in social life. Game experience learning exercises are a practice model that employs experience learning theory, in which learning or training is divided into four stages: experience in the form of playing, reflection, conceptual understanding, and implementation. Based on the findings of this study. it is possible to conclude that the game experience learning training model has an effect on young football players' dribbling technical skill, aerobic endurance ability, and discipline attitude, but has no effect on passing, and receiving skills. The researcher suggests other future studies to find an effective game-based training model to improve quality attitude components and other characteristics games that can be developed fundamental skills (passing and receiving) through football training activities for young players. The Indonesian Football Federation and coaches are expected to be able to implement policy changes in the process and implementation of football training for young players. with a greater emphasis on attitude, behavior, and character variables.

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