ORIGINAL SCIENTIFIC ARTICLE

EFFECT OF 10 WEEKS GAME EXPERIENCE LEARNING (GEL) BASED TRAINING ON TEAMWORK, RESPECT ATTITUDE, SKILL AND PHYSICAL ABILITY IN YOUNG FOOTBALL PLAYERS

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Abstract

This study aims to examine the effectiveness of the games experience learning-based training against teamwork, respect attitude, skills, and physical ability of young footballers.

Materials and methods. Participants consisted of young male football players who had participated in matches at the district, provincial and national levels. The number of participants involved amounted to 46 divided into control and intervention groups of 23 parties each. Footballers aged 10-12 years old have a height of 140.98 ± 7.23 cm, an average body weight of 34.33 ± 8.64 kg. Instruments in this study consist of instruments to measure teamwork and respect attitude in the form of expert validated observation rubrics, passing, and dribbling skill tests, 30-meter sprints, vertical jumps, and multistage fitness tests to measure physical ability of speed, leg power, and aerobic endurance.

Results. Descriptive data showed mean values and standard deviations of control and intervention groups there were differences, the intervention group had a mean value and better deviation standards, while the hypothesis test using the Mann-Whitney test obtained a teamwork attitude score of $0.039 < 0.05$; respect attitude of $0.009 < 0.05$; passing skills of $0.039 < 0.05$; dribbling skills of $0.000 < 0.05$; speed ability of $0.004 < 0.05$; leg power of $0.002 < 0.05$; Endurance of $0.020 < 0.05$. That from the significance value of the control and intervention group ($p < 0.05$) it can be concluded that the variables of teamwork, respect attitude, passing, dribbling, speed, power, and endurance on the posttest value are not the same and the average value of all variables descriptively the intervention group has a higher average value.

Conclusions. There is a significant influence statistical analysis on teamwork, respect attitude, skill techniques, and physical ability for young football players thus training with the game experience learning model can be one solution to improve the performance of youth football.

Keywords: training, games experience learning, youth football player.

Introduction

Training aims to improve skills and competence (Schroepf & Lames, 2017; Balyi & Way, 2014; Khudolii et al., 2019). Besides, it enhance personal development and a high degree of health (Kavussanu & Spray, 2006; Harwood, 2008; Gilbert et al., 2001; Henry, 2013). Training is not only meant to improve physical aspects but also has specific objectives which include, providing positive personal development, character, and social life interactions skills for young athlete.

Moreover, in football, young athletes are technically trained with regards to the feeling and level of individual intelligence (Hyballa & te Poel, 2015).

The pattern of movement in football is carried out with low, moderate, and maximal intensity. Professional footballers can run 9-13 kilometers during a game, but the frequent mileage is with low intensity and most importantly a period of running with maximal intensity (Bangsbo, 2014). Motion analysis with modern technology has shown that professional footballers run at 28% more high intensity (2.43 vs 1.90 kilometers) and 58% more sprints with distances (650 vs 410 meters) than amateur footballers (Bangsbo, 2014; Mohr et al., 2003).

This ability is a determining factor for maximum achievement. Furthermore, it was also stated that the ball receiving ability is at a running scores of 64% (Rampinini et al., 2007), hence, ball possession training during high-intensity sessions have a positive impact on footballers performance. Also, technical training using low to high-intensity sessions have a positive impact on players' selfconfidence. The training intensity is modified based on the size of the field, numbers of player, motivation from the coach, and special rules (Bangsbo, 2008). Furthermore, modern football needs to be designed with specific training methods which suits players' needs including technical, tactical, and physical aspects. For example, center-backs cover less total distance and run with moderate intensity compared to other positions. Conversely, midfielders are expected to demonstrate high-intensity performance and short recovery (Mohr et al., 2003; Bradley et al., 2009). Therefore, variations in frequency and training intensity are important in maximizing athlete performances. In this sport, the aspects studied are very complex and not only improves individual quality but also enhance teamwork.

Sports activities are regarded as positive activities because it involves participation, competition, communication, it is also believed to develop an attitude of respect and cooperation (Goncalves et al., 2010; Khudolii et al., 2020). Teamwork is an absolute requirement to win matches because football is a sport of collectivity. A team consists of two or many individuals that contributes to one another to achieve a common goal, which is to win a match (Malone & Lorimer, 2020). Furthermore, teamwork refers to an interactive and interdependent behavior among a team (McEwan et al., 2017). For example, a midfielder passes the ball to a teammate with more developed football strategy hence, there is tendency of scoring goals against the opponents (McEwan et al., 2017). The effectiveness of teamwork is believed to be a factor in the realization of a goal (Feigean et al., 2018). It is also reported that footballers need to work together, innovative and develop scientifically to be more advanced and to compete with other teams (Wang, 2020). One of the most important points in football is the technical aspect (Wang, 2020).

Performance sports, especially football, is inseparable from good technique. This is an important requirement to win the ball, strategize in outwitting opponents, receiving and passing the ball as well as scoring goals (Rello & Widiyanto, 2019). Therefore, basic techniques needs to be studied and mastered perfectly as this determines whether a team wins or loses (Doewes et al., 2020). Furthermore, dribbling and passing are important basic components because when a player arranges an attack, the defender is expected to pass the ball according to the goal, hence, the attacker needs to pass the opponent with perfect dribbling (Doewes et al., 2020). A side good basic techniques, the physical features also plays an important role in winning.

Football is about scoring in the opponent's goal in order to win matches (Romeas et al., 2016). In the attack and defense line, the physical aspect is very much required, without it, football players fail to display maximum performance. Moreover, physicality is one of the most important aspects of performance sports hence, when an athlete has a good physique, such individual automatically becomes more effective and efficient in both defensive and attacking duties (Dewangga, 2020). Meanwhile, Wang (2020) stated that football as a collective sport often involves confrontation which leads to physical

contact hence, when physical aspects are not programmed from an early age as a foundation, young players often experience injuries. This is line with McKinney's et al. (2019) which stated that an athlete is an individual, with excellent physical condition to win in certain sports. Physical aspects are properly programmed when peak performance is achieved. The integral components in football include speed, endurance, and power. These three aspects greatly influence the success of an individual and a team physically. However, to develop these aspects, especially in soccer, it is necessary to carry out special trainings capable of improving athletes' development.

The major problem for adolescent, especially in football is performance development. Previous studies have applied special training methods to improve physical and tactical aspects. As with the small-sided game method, this technique is popular among footballers from amateurs to professionals. Besides, this method is considered suitable because it improves physical abilities, technical skills, and tactics (Fradua et al., 2013; Hill-Haas et al., 2011; Reilly, 2005). However, based on observations, the small-sided game method lacks focus in the aspect of skills, for example, young players without basic techniques knowledge, have difficulties with passing and dribbling, hence, its application is more suitable for athletes with good technique. Furthermore, Ben Khalifa et al. (2021) in a study titled effects of verbal interactions on skills among students, examined the effectiveness of students' verbal interaction on skill, performance, and game development in football learning. However, the study focused more on physical education and rather than cognitive development. In addition, most previous studies only examined two dependent variables, which are technique and physical ability, only few studies applied three or more dependent variables. Therefore, to deal with the gaps and lack of research, this study applies a game experience learning-based training method developed by the author and aimed at improving teamwork, respect attitude, skills, and physical abilities in young soccer players.

Materials and methods

Study participants

This study was conducted using an experimental method with two groups, namely control and intervention. The participants were 46 male football players aged 10-12 years with an average height and body weight of 140.98 ± 7.23 cm and 34.33 ± 8.64 kg respectively. In addition, participants were given a preliminary test before treatment. Afterwards, the pretest results were ranked from the highest to the lowest order. The players were divided into two groups using match subject ordinal pairing pattern, therefore, both groups were balanced in various aspects. Moreover, group A, regarded as control used the conventional training model while group B applied the games experience training method.

This training model resulted from a developmental study, validated by experts using the Aiken technique with a score of 4.46 (very good). Participants were trained by two head coaches and two assistants with 23 young football athletes in each group. The respondents received treatment in form of training with a frequency of 3 times per week for 10 weeks and were selected to participate in district, provincial, and national football competitions. The training was carried out for 90 minutes for each session.

Table 1. Games experience learning-based training procedure

Training Stages		Training Material	Strategy
Warming up		Warm-up activity	Guided activity
Core Training 1	Games to develop character values (compiled by the author)	Experience-based learning activities (playing, reflecting, discovering, and implementing)	
Core Training 2	Games to develop specific technical skills (analyzed, selected, and designed by the author)	Experiential learning activities (playing, reflecting on, discovering, and applying)	
Core Training 3	7 on 7 football matches based on the federation rules of play	Play is guided by at least one transfer of game rules	
Cooling Down	Cooling Down activity	Guided activity	

Study organization

The participants reported for treatments 3 times per week while the minimum player attendance was 80% in 10 weeks. Teamwork and respect attitude were measured using expert validated rubric observational, meanwhile, special instruments were used for passing and dribbling tests, and the 30-meter sprint, vertical jump, and multistage fitness tests were used to measure the physical ability including speed, power, and endurance. The procedure for the game experience learning-based training is presented table 1.

The experimental group was given 10 weeks a training intervention with the content of the exercise consisting of games for the development of respect and teamwork behavior in the 1st core exercise, games for the development of technical skills in the 2nd core exercise, and the 3rd core exercise as a time to apply the results of the reflection phase by doing 7vs7 football activities with standard rules of play. The games used to treat the experimental groups can be read in table 2, while the control groups are given the treatment of conventional exercise models.

Table 2. Games based on experience learning for the 1st and 2nd core exercises

No	Game for 1st core training	Game for 2nd core training
1	Fishing Ball	3 vs 1
2	Passing Down Through the Fortress	4 vs 2
3	Together we can	3 vs 2, and Finishing
4	Time Bomb	3 Vs 3 + 2 Neutral Player
5	Pair Two Two	4 vs 4 + 4 Neutral Player
6	Team Frog Jump	4 vs 2 Becomes 6 vs 4
7	Goal, Goal, Goal	3 vs 3 + 4 Neutral Player
8	Red Card	4 vs 2 + 1 Player
9	Horse Soccer	3 vs 3, (Goa Break)
10	Precious Feet	Passing Obstacles or 3 vs 1 (+2)
11	Fair Play Games	Ball Control Create Shooting Space
12	Shooting Prisoner	Placing Bombs in Villains' Nests (1 vs 1)
13	Happy and Sad	Break through the Opponent's Defense Area
14	Go Back So Door Dribble Ball	Splitting the Opponent's Fortress (5 vs 5)
15	Holding 1 on 1	Dribbling 3 vs 2
16	Chain Ball	Create Space for Shooting
17	Police Vs Prisoner	4 vs 4 In Restricted Area
18	Treasure Guard	3vs3, in the box, 3vs 3 out of the box

Statistical analysis

Data processing was conducted using SPSS 25. The first step involve comparing descriptive data with the size of the entire population and the distribution of variables thereafter, the mean and standard deviation (SD) were determined. Furthermore, the Mann Whitney analysis was applied to determine the effect of 10 weeks GEL training on teamwork, respect attitude, skill, and physical ability in the experimental group. The basis of decision-making referenced in the Mann-Whitney test: 1) if the value of significance or asymp. sig (2-tailed) < 0.05 then hypotheses are accepted; 2) if the value of significance or asymp.sig (2-tailed) > 0.05 then the hypothesis is rejected. The following is the descriptive result covering several aspects of teamwork, respect attitude, skill, and physical ability.

Results

The mean difference in the post-test result between the control and experimental group was based on the significance of the SPSS output($p < 0.05$). Based on the output in the Mann-Whitney test it is known that the value of team work is $0.039 < 0.05$; respect attitude of $0.009 < 0.05$; passing of $0.039 < 0.05$; dribbling of $0.000 < 0.05$; speed of $0.004 < 0.05$; power of $0.002 < 0.05$; endurance of $0.020 < 0.05$. Therefore, as the basis of the decision-making of the Mann-Whitney test can be concluded that the hypothesis is accepted. So it can be said

Table 3. Descriptive Result of Pre and Post Test on Attitude, Skill, and Physical Ability

Group	Attitude, Skill, and Physical Ability	Pre-Test		Post-Test	
		Mean	SD	Mean	SD
Control	Teamwork	29.57	1.50	31.17	1.74
	Respect Attitude	31.43	2.01	32.74	2.09
	Passing	6.13	1.09	7.43	0.84
	Dribbling	26.54	2.28	25.25	1.76
	Speed	5.86	0.38	5.47	0.33
	Power	29.7	4.46	32.17	4.31
	Endurance	30.05	5.48	33.03	6.10
Experiments	Teamwork	29.87	1.42	32.35	0.99
	Respect Attitude	32.96	1.10	34.30	1.06
	Passing	6.43	1.16	8.21	0.73
	Dribbling	25.18	2.02	22.80	1.15
	Speed	5.49	0.36	5.06	0.45
	Power	33.30	4.45	37.17	4.67
	Endurance	33.33	4.35	37.45	3.97

Table 4. Post-test control and experiment results using Man Whitney test

Group	Attitude, Skill, and Physical Ability	Mean	Significance
Control	Team Work	31.17	0.039
Experiments		32.35	
Control	Respect Attitude	32.74	0.009
Experiments		34.30	
Control	Passing	07.43	0.039
Experiments		08.21	
Control	Dribbling	25.25	0.000
Experiments		22.80	
Control	Speed	05.47	0.004
Experiments		05.06	
Control	Power	32.17	0.002
Experiments		37.17	
Control	Endurance	33.03	0.020
Experiments		37.45	

that there are significant differences in the value of control groups and experiments. Because there is a significant difference, the formulation of research problems is answered, namely the influence of 10-week Game Experience Learning (GEL) based training on teamwork, respect attitude, skill, and physical ability in young football players (table 3, 4).

Discussion

The theory of experiential learning was initiated by Kolb (Lehane, 2020). The experiential learning model is a learning model that emphasizes students' actions to improve knowledge, skills, effectiveness, and creative thinking through hands-on experience (Wilson & Beard, 2013; Reynolds & Vince, 2007; Arsoy & Ozad, 2005). This model was used in the learning of students in the classroom, then the author adopted the theory and developed it into a games experience learning (GEL) applied to young football school students.

Games experience learning (GEL) is a learning and training model that applies the theory of experiential learning, namely learning contains four stages, namely experience in the form of games, reflection, understanding concepts, and implementation. In the games experience learning (GEL) method developed there are two core exercises, both core exercises have the same goal. Phase (1) games, is a tangible form of training media based on Games experience learning (GEL). Games are part of the experience that should be done on every young footballer. Through games, the coach must be precise in deciding the time to do reflection. Phase (2) reflection conveys the moral knowing and moral feeling of a football player. Reflections are done with the direction of the coach, and athletes are given questions by the coach through casual discussions such as questioning «attitudes, what behaviors support success. Why can a player succeed in doing so?». The reflection is very important to develop young footballers during training. (3) the player can find, understand and deduce the concept that the coach expects. The concept of moral behavior of a positive character is expected to be practiced in phase (4) which is the implementation phase.

This study was aimed at investigating the effect of game experience learning (GEL) on teamwork, respect attitude, skill, and physical ability. The findings show that GEL has a significant effect on teamwork and respect attitude. Meanwhile, this technique is a major breakthrough in dealing with the gaps in performance sports development, especially adolescent football players. This is because, studies that examined the physical aspects of the technique were conducted on one specific variable.

The simultaneous combination of several variables is seemingly the right procedure to increase team complexity in football athletes (Eugster, 2012; Liu et al., 2015). This study was in line with previous studies which stated that teamwork is reciprocally working with two or more team members to achieve a goal (Collins & Durand-Bush, 2019; Gaffney, 2015). Therefore, football provides players, the tendency to change individual play into teamwork. Furthermore, game experience learning is a method that empirically adds to the learning experience hence, improving the characters of players on a team. The results provide a good picture of GEL on teamwork as a means to always work together in achieving desired goals. This was in line with Meiners and Wisdom (2020) which stated that experience-based learning, usually encourage professional skills such as collaboration between one individual and another. However teamwork is not enough to create a good game in football, players are expected to also show respect in the game.

Respectful Attitude is required from every adolescent because it determines how individual respect one another (Utari et al., 2019). Also, it provides an overview for learning through playing experience, where every experience affects the individual's behavior. Therefore, one thing that shapes respectful attitude is the experiential learning process in a social environment when interacting with one another (Akbar & Hastjarjo, 2019). Meanwhile, participating in football activities helps young players (12 years) improve communication skills, teamwork, respect for each other, and socialize (Yavuz, 2019). In addition, sports activities not only improve individual physical and mental state but also promote mutual respect (Goksel et al., 2017).

Furthermore, mutual respect in football is an important factor in the development of young players characters (Haugen et al., 2013). In line with this concept, GEL is an important method for developing player characters. Moreover, teamwork and respect is a psychological attribute that must be fostered in improving soccer for young athletes, however, these aspects are not sufficient when the technical and physical abilities are inadequate.

Games experience learning (GEL) based exercises developed by the author is capable of improving skills and physical abilities to achieve peak performance. Besides, skills such as dribbling and passing are fundamental technical components, compulsorily learned from a young age (Doewes et al., 2020). A football player with good dribbling skills is capable of controlling the ball's pace and maneuver through an opponent without losing ball control (Vaidya, 2020). Furthermore, good passing needs to be also considered in football. When players fail to have good passing and dribbling techniques, achieving the desired goals becomes impossible (Vaidya, 2020). The football game also requires good physical abilities. This is one of the most important attribute in achieving maximum performance. An athlete is required to have a qualified physical condition in order to perfectly achieve desired goals (Van Kooten, 2016; McKinney et al., 2019; Dewangga, 2020).

Football is a sports activity in which athletes perform high and low intensity movements (Lilić et al., 2020). Based

on the observations, coaching young athletes to develop physical aspects especially speed, power, and endurance requires a structured and programmed approach. It also needs to be in line with the long term athlete development theory which state that the main physical aspects that are developed for athletes aged between 12 to 13 years include strength, speed, agility, endurance, power, and special skills in the sports being pursued (Lloyd & Oliver, 2012). Therefore, experience-based learning contributes greatly to football coaching, especially in the achievements of complex aspects.

The descriptive results for the control group, pre and post test data, using conventional methods were as follows: teamwork with pre-test mean (29.57), standard deviation (1.50) meanwhile, post-test mean was (31.17), and standard deviation (1.74). For respect attitude, the pretest mean was (31.43), standard deviation (2.01), post-test mean (32.74), and standard deviation (2.09). Furthermore, the pre-test results for passing indicated a mean of (6.13), standard deviation (1.09), post-test mean (7.43), and standard deviation (0.84). Dribbling showed a pre-test mean of (26.54), standard deviation (2.28), post-test (25.25), and standard deviation (1.76). Regarding physical abilities, the pre-test mean for speed was (5.86), standard deviation (0.38), post-test (5.47), standard deviation (0.33). Also, power indicated a pre-test mean of (29.7), standard deviation (4.46), post-test mean (32.17) and standard deviation (4.31). Endurance showed a pre-test mean of (30.05), standard deviation (5.48), post-test mean (33.03) and standard deviation (6.10).

The descriptive results for the pre and post test data of the intervention group using the game experience learning (GEL) based training method were as follows: teamwork with a pre-test mean of (29.87), standard deviation (1.42), post-test (32.35), and standard deviation (0.99). Respect attitude indicated a pre-test of (32.96), standard deviation (1.10), post-test (34.30), and standard deviation (1.06). In addition, passing showed a pre-test mean of (6.43), standard deviation (1.16), post-test mean (8.21), with standard deviation (0.73), while dribbling indicated a pre-test mean of (25.18), standard deviation (2.02), post-test mean (22.80), and standard deviation (1.15). Regarding physical abilities, speed showed a pre-test mean of (5.49), standard deviation (0.36), post-test mean (5.06), standard deviation (0.45) while power indicated a pre-test mean of (33.30), standard deviation (4.45), post-test mean (37.17), and standard deviation (4.67). Moreover, for endurance, the pre-test mean was (33.33), standard deviation (4.35), post-test mean (37.45), and standard deviation (3.97). Therefore, based on these results, the intervention group with GEL based treatment training obtained a better average score compared to the control group.

The Mann-Whitney data analysis was conducted to test whether the post-test control and intervention group have a difference in the mean. Based on the SPSS output, there was a significant difference between the two groups in terms of teamwork (0.039), respect attitude (0.009), passing (0.039), dribbling (0.000), speed (0.004), power (0.002), and endurance (0.020). The significance level between both groups were <0.05. Therefore, the measured post-test variables for both control and experimental group were not the same. Also, the difference in the mean value for all variables showed that the intervention group has a higher mean value. Thus the effects of 10 weeks of games experience learning (GEL) based exercises for the intervention group had a better improvement compared to the control group.

Conclusion

Based on the results, the intervention group with games experience learning (GEL) based treatment on teamwork, respect attitude, skill and physical ability have significant differences and show better improvement compared to the control. Therefore, this study provides scientific contribution and reference for further studies.

Conflicting Interests

The authors declared no potential conflicts of interest.

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ВПЛИВ 10-ТИЖНЕВОГО НАВЧАННЯ ІГРОВОГО ДОСВІДУ НА КОМАНДНУ РОБОТУ, ШАНОБЛИВЕ СТАВЛЕННЯ, НАВИЧКИ ТА ФІЗИЧНІ ЗДІБНОСТІ У ЮНИХ ФУТБОЛІСТІВ

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 6 с., 4 табл., 46 джерел.

Мета дослідження вивчити ефективність впливу ігрового досвіду, що базується на навчанні, на командну роботу, поважне ставлення, навички та фізичні здібності молодих футболістів.

Матеріали і методи. Учасники склалися з молодих футболістів чоловічої статі, які брали участь у матчах на районному, провінційному та національному рівнях. Кількість залучених учасників склала 46, розділених на групи контролю та втручання по 23 учасники кожна. Футболісти віком 10-12 років мають зріст $140,98 \pm 7,23$ см, середню масу тіла $34,33 \pm 8,64$ кг. У дослідженні використані: перевірені експертом рубрики спостереження для вимірювання колективної роботи та поваги, тести навичок проходження та дриблінгу, спринту на 30 метрів, стрибків у вертикальному положенні та багатоступеневих тестів для вимірювання фізичних здібностей, швидкості та сили ніг, аеробної витривалості.

Результати. Описові дані показали що середні значення та стандартні відхилення контрольної та втручальної груп, мали відмінності, група втручання мала середні значення та кращі стандартні відхилення, тоді як тест гіпотези з використанням тесту Манна-Уїтні отримав оцінку відношення до командної роботи $0,039 < 0,05$; ставлення до поваги $0,009 < 0,05$; прохідні навички $0,039 < 0,05$; навички дриблінгу $0,000 < 0,05$; швидкісні здібності $0,004 < 0,05$; сила ніг $0,002 < 0,05$; витривалість $0,020 < 0,05$. На основі аналізу даних можна зробити висновок, про достовірну динаміку змінних командної роботи, поважного ставлення, проходження, дриблінгу, швидкості, потужності та витривалості ($p < 0,05$). Група втручання має більш високі середні значення всіх змінних.

Висновки. Статистичний аналіз виявив суттєвий вплив на командну роботу, поважне ставлення, формування навичок та фізичні здібності молодих футболістів, тому тренування за моделлю навчання ігрового досвіду може бути одним із рішень для покращення результатів юнацького футболу.

Ключові слова: тренування, навчання ігровому досвіду, юний футболіст.

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