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Differential Learning as an Important Factor in Training of Football Technical Skills

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Abstract

The aim of this study was to examine the effect of differential learning activities on young football players' skills. Athletes who had played active football for at least 2 years in the youth teams participating in competitions in Amateur Leagues in Istanbul, Turkey took part in the study, as the Experimental Group (EG; n=26, age=12.03±0.44) and Control Group (CG, n=26, age=12.05±0.46). In the study, differential learning exercises integrated into their training programme for a period of 8 weeks, 3 days per week, were applied to the players in the EG immediately following warm-up, while the players in the CG continued with their traditional training programmes. The Illinois Test with Ball (ILL), Creative Speed Test (CST), Ball-Dribbling Test (DT), Ball-Juggling Test (JT) and Passing Test (PT) were carried out with all players participating in the study as a pretest prior to commencement of the programme and as a posttest following the implementation of the programme, and the gathered data were analyzed statistically. The findings obtained revealed that in the within-group pretest and posttest, players in the EG showed a statistically significant improvement in all parameters ($p<0.05$), while players in the CG showed a statistically significant improvement in ILL, CST, JT and PT ($p<0.05$). When the differences in development of the groups were compared, a statistically significant difference in the ILL, CST and DT parameters was determined in favor of the players in the EG ($p<0.05$). Consequently, although regularly-performed classic football training develops skills, it is seen that differential learning exercises integrated into training programmes are more effective for dribbling skills. It is considered that differential learning exercises, in which the non-dominant leg is frequently used, can make it easier for players to apply the necessary skills by allowing them to give more effective responses to the tricky positions encountered in football, and that these exercises can support the development of players' performances.

Keywords: football, differential learning, adolescent, agility, skill

1. Introduction

Football nowadays is a game in which many characteristics of participants, such as strength, speed, agility, balance, stability, flexibility and well-conditioned endurance are gathered together, and in which a great deal of effort is spent in the numerous movements they are exposed to (Bloomfield et al., 2007, Helgerud et al., 2001). This makes football players' condition status a complex process. In football, one of the aims is to reduce these numerous unknown variables to a minimum, yet nowadays, it has been found that the transfer effect of acceleration, speed and agility on other biomotor characteristics is small and that they are each independent variables (Little & Williams, 2005). When football players perform sudden turns and movements rapidly, the quicker and speedier they are, the faster they will be able to get away from their opponent and so they will be able to perform their movements freely. Their skill in dribbling past their opponent will develop, and at the same time, an increase in their mobility will be seen and their creativity will come to the fore.

Creative behavior is a higher-level disposition in team sports, and many studies have confirmed that creativity can be taught (Memmert, 2015). Even more importantly, a creativity developmental framework is recommended as a suitable reference model that provides general guidelines for increasing creative behavior at early ages (Santos et al., 2016). Creativity allows players, under the guidance of their sporting environment, to display movement and attunement "outside the box", to express skills in solving a specific game problem in a feasible, yet unexpected and original way by starting with a single movement or flowing in a collective action, and to display behaviors that will spearhead their teams' success (Santos et al., 2016).

From this viewpoint, traditional learning models have been investigated recently, due to their principle of implementing the same exercises that are followed by all students with the aim of creating a methodical set of exercises for achieving learning objectives (Davids et al., 2005). The basis of these modelling types is formed by the interpretation of traditional pedagogical principles in which all students progress with "from easy to difficult" or "from simple to complex" exercises. In principle, this reasoning assumes a linear understanding of causality as the basic causality for a linear pedagogy, that is, it assumes that the same causes will lead to the same effects. The first hypothesis related to a target movement that needs to be learnt can be defined with a general time-independent model hypothesis that meets the objective criteria for optimum performance. Independently of the objectivity problem, these performance models are typically derived from studies conducted on the best athletes in the world, and it is not clear whether or not they can be applied to the performances of sub-elite individuals or athletes who are at the development stage in elite sport (Schöllhorn et al., 2012).

In some studies, found in the literature, the effectiveness of different interventions in teaching single sports techniques was compared, and it was revealed that the training was at least as effective as with traditional training methods, and indeed, that a differential learning approach resulted in better acquisition of skills and better learning rates in participants (Schöllhorn et al., 2009; Wagner & Müller, 2008; Bauer 2007; Beckmann & Schöllhorn, 2006).

The differential learning approach is basically characterized as utilizing fluctuations that occur in the skills repetition process without repeating the movement and without adjustment (Schöllhorn et al., 2009). This is a non-linear approach for students carrying out all complex movements with continually changing perturbations. In the differential learning approach, fluctuations in a student's sub-system are exploited during the learning process, since they have the potential to destabilize the whole system. This destabilization process can pave the way for an instability that has the advantage of necessitating less energy for obtaining a new state of stable organization. By increasing these observed fluctuations, the system is also faced with the potential limits of possible performance solutions (Schöllhorn et al., 2012).

Traditional teaching and training of football techniques is mainly dominated by programme-focused exercise sets having analytic-synthetic structural principles (Schöllhorn, 2000). The latest studies have investigated these forms of teaching, in which basically, the same exercise is repeated many times. At the basis of differential learning lies the brain and learning. In the learning process that advances from simple movements to difficult movements, the rapid operation of functions of the brain such as memory, attention and perception, and their contribution to the movements performed, is targeted. According to Erdil, with differential learning, as seen from the fluctuations in the position performed, by the triggering of all the variations and setbacks, a person can, with self-organized behavior, find the best result for him/herself (Erdil, 2016).

It is important for athletes both to develop their skills and to give rapid responses by using their creativity during competitions with methods that are a little different and more enjoyable than their usual training methods. In this context, in differential learning, variation of training must be in direct proportion to a regular training approach and continuity (Schöllhorn, 2010). The aim of the present study is to examine the effect of the differential learning activities carried out on football players' dribbling, ball-juggling and passing skills.

2. Method

2.1 Work Group

The study was made up of 52 young football players (Experimental Group (EG; n=26) and Control Group (CG, n=26)) aged 11-13 with a sporting history of at least 2 years who played football in the youth teams of the Amateur Football teams in Istanbul, Turkey. All young football players participating in the study had a football player's licence provided by the Turkish Football Federation and had been given pre-season medical examinations.

2.2 Data Collection Tool and Processing Method

The players in the EG were included in a differential learning training programme lasting 8 weeks, 3 days per week, in approximately 40-minute sessions during the first 4 weeks and approximately 50-minute sessions during the following 4 weeks (total 24 sessions), after which, the participants continued with their football training programmes. Before each training session, a standard 15-minute warm-up based on free running and ball possession games was carried out. During the training programme, the Differential Learning Training Programme (Appendix 1) was implemented on the athletes in the EG, and afterwards, the participants continued with their technique activities. The athletes in the control group, however, continued with their traditional training programmes. During the trainings, in order to ensure that ball changes were as quick as possible, a number of balls were placed around the training area. Trainer intervention was kept to a minimum, and for this reason, feedback was not permitted during the game. In the training programme, rather than movement repetitions, the aim was to accept the learning of the variability of movements as a principle, not to make adjustments during the skill-acquisition process, and to carry out the trainings by adding random perturbations to the

movement arrangement without repeating the movement (Schöllhorn, 2000; Schöllhorn et al., 2009). During the pretests and posttests, the Illinois test battery, Creative Speed Test (CST) track, ball-dribbling, passing and ball-juggling tests were applied to all 52 athletes taking part in the study at the same time of day by the same team at the same place, in order to reduce the possible effect of Circadian rhythm to a minimum.

Illinois Agility Test: The Illinois test track (Fig. 1) used to measure agility measured 5 m in width and 10 m in length and was set up on a synthetic football pitch, with three cones placed in a straight line at 3.3-m intervals in the middle section. The test was completed by 40 meters of straight running with 1800 turns every 10 m, and 20 meters of slalom running between the cones. After the test track was set up, the chronometer system was used. Prior to the test, after the participants had been familiarized with the track and the important explanations had been made, they were asked to conduct two trials by dribbling slowly. The subjects were asked to set off from a specified place 50 cm before the starting line. The course completion time was noted in seconds. Each player performed the test with the ball twice and their best times were taken. In the measurements taken with the ball, when control of the ball was lost, the test was stopped and repeated. After each test, the players were given a 180-second rest period (Hazır et al., 2010).

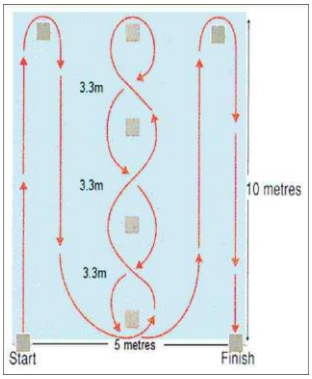

Figure 1. Illinois Test Track

Creative Speed Test: The Creative Speed Test (CST) was used to evaluate the sprinting and coordination skills of the participants in the study while dribbling the ball (Fig. 2). The test was begun with the volunteer, on the penalty spot and facing the goal, receiving a pass from his friend and returning it to him. As soon as the player had returned the ball, he turned around the other way and sprinted towards the ball placed between the cones located at the centre point of the penalty area arc. The player took the ball placed there and quickly dribbled the ball first between the cones placed at the point where the arc joins the penalty area line on the right, and then, without slowing down, between the cones located at the point where the other end of the arc joins the penalty area line on the opposite side, and continued dribbling towards the centre of the arc. The player then turned away from the cones placed at the centre point of the arc towards the goal and continued dribbling towards the place where he started. When the player returned to the starting point, the test ended when he scored a goal in either of the two-meter goals located at each end of the goal line. If the final shot did not result in a goal, the subject was required to take the test again after resting for 5 minutes. The subjects each completed two tests resulting in a goal and their best times were recorded. In the CST, a Smartspeed single photocell was used on the penalty spot for start and finish, and two footballs and 12 cones were made available (Bangsbo & Mohr, 2011).

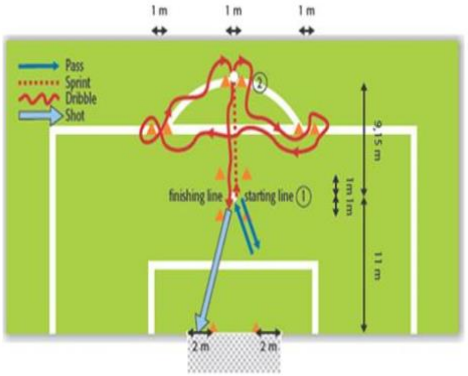

Figure 2. Creative Speed Test Course

Ball-Dribbling Test: This was applied in order to measure the children's dribbling skills. A 5-meter straight line was designated with two cones and the 5 m were measured from the outer edges of the cones (Fig. 3). The children waited at the first cone, ready to start, and when the command was given to them, they began to dribble the ball with their dominant foot. When they reached the second cone, they turned with the outside of their dominant foot and returned to the first cone in the form of a figure of eight. On reaching the first cone, they this time turned with the inside of their dominant foot. Using a single foot, the children continued to dribble the ball around the cones for 20 seconds, and for each figure of eight completed they earned 4 points (1 point for each 2.5 m). Each subject was given the right to two attempts, and their best score was recorded in seconds (Bradford & Strand, 1993).

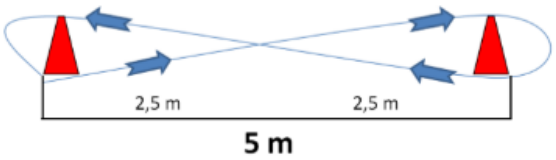

Figure 3. Ball-Dribbling Test

Ball-Juggling Test: This was implemented in order to measure the children's ball-juggling skills. A 5x5-m area was designated with lines (Fig. 4). Choice of starting position and starting style was left to the children. The children began juggling the ball from the ground or by releasing it from their hand. The children tried to keep the ball up as many times as possible with the dominant foot touching the ball once and the ground once, without letting the ball fall to the ground. The ball made contact with the dominant foot only. If adjustment was made with any part of the body except for the dominant foot, it did not count as a score, but the test was continued. While the ball was in the air, the sole of the player's dominant foot had to make contact with the ground. If the child crossed the border of the designated area, the test was stopped (Bradford & Strand 1993).

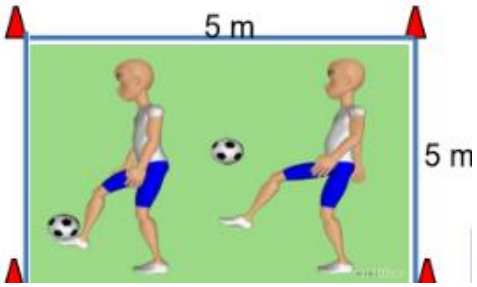

Figure 4. Ball-Juggling Test

Passing Test: This test was performed to measure the children's passing skills. Two cones or slalom poles were placed at a width of 1 m apart (Fig. 5). A crossbar was formed at a height of 50 cm with the aid of a cord or pole placed between the tops of the cones or the slalom poles. The passing points were designated at a distance of 15 m from the goal line between the cones, at an angle of 60 degrees in the left and right directions (each 30 degrees from the middle line). A third passing line was created at right angles to the goal line, again at a distance of 15 m. The children passed the ball 4 times (twice with the right foot and twice with the left foot) from each passing point into the goal 4 times. Thus, a total of 12 passes were made and one point was scored for each pass that went into the goal (Sualp, 2018).

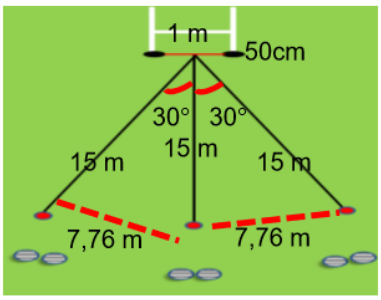

Figure 5. Passing Test

2.3 Statistical Analysis

The SPSS 22 software package was used for the statistical analysis. To determine whether or not the data showed normal distribution, the Shapiro-Wilks test was performed and by determining that the data did not show normal distribution, a nonparametric test was used. To determine differences within groups, the Wilcoxon test was applied, while the Mann-Whitney U test was used for determining differences between groups, and $p<0.05$ was accepted as the significance level.

3. Results

Table 1. Demographic Characteristics of Players in Experimental and Control Groups

		Experimental Group (n=26)				Control Group (n=26)			
		Min	Max	Mean	Sd	Min	Max	Mean	Sd
DEMOGRAPHIC	Age	11	13	12.03	0.44	11	13	12.15	0.46
	Height	137.3	162.2	149.21	6.89	136.8	167	150.99	8.46
	Weight (kg)	31.7	58.9	41.93	7.83	29.5	58.1	42.94	8.57
	BMI	15.7	24.2	18.88	2.34	15.1	23.5	19.08	2.71

Table 2. Pre- and Post-test Scores for Players in Experimental and Control Groups

	Experimental Group (n=26)				Control Group (n=26)			
	Min	Max	Mean	Sd	Min	Max	Mean	Sd
Illinois Pre-test	20.45	25.77	23.13	1.32	21.17	26.39	23.52	1.43
Illinois Post-test	19.75	23.43	21.24	0.91	20.20	25.77	22.63	1.35
Illinois Improvement (%)	0.64	18.32	8.93	5.15	-3.82	16.17	4.00	4.18
CST Pre-test	19.23	23.73	21.37	1.15	18.64	23.55	21.21	1.03
CST Post-test	17.10	22.97	19.10	1.27	17.71	23.43	20.29	1.56
CST Improvement (%)	2.20	22.46	12.05	5.59	-9.23	17.26	4.87	5.78
Passing Pre-test	1.00	7.00	3.88	1.80	1.00	7.00	3.85	1.83
Passing Post-test	2.00	8.00	5.73	1.59	2.00	8.00	4.88	1.48
Passing Improvement (%)	0.00	200.00	69.18	61.13	-33.33	300.00	50.82	72.61
Ball-Juggling Pre-test	4.00	69.00	21.04	15.79	2.00	68.00	20.65	14.71
Ball-Juggling Post-test	4.00	78.00	26.96	16.60	2.00	80.00	23.38	14.97
Ball-Juggling Improvement (%)	-29.17	175.00	39.61	43.19	-50.00	125.00	26.66	41.54
Ball-Dribbling Pre-test	8.00	15.00	11.88	1.63	7.00	15.00	12.12	1.68
Ball-Dribbling Post-test	10.00	16.00	12.96	1.37	8.00	15.00	12.38	1.47
Ball-Dribbling Improvement (%)	0.00	25.00	9.75	7.24	-14.29	16.67	2.95	9.13

CST: Creative Speed Test

Table 3. Within-Group Comparison of Pre- and Post-test Scores of Players in Experimental and Control Groups

	Experimental Group		Control Group	
	z	p	z	p
Illinois Pre-test – Post-test	-4.46	0.000*	-3.96	0.000*
CST Pre-test – Post-test	-4.46	0.000*	-3.57	0.000*
Passing Pre-test – Post-test	-4.34	0.000*	-2.86	0.004*
Ball-Juggling Pre-test – Post-test test	-3.68	0.000*	-2.42	0.016*
Ball-Dribbling Pre-test – Post-test	-4.18	0.000*	-1.17	0.242

$p<0.05$*; CST: Creative Speed Test

While statistically significant differences were observed between pretest and posttest scores of players in the Experimental Group for Illinois Test, CST, passing, ball-juggling and ball-dribbling ($p<0.05$), the pretest and posttest scores of players in the Control Groups showed statistically significant differences ($p<0.05$) for Illinois Test ($p=0.000$), CST ($p=0.000$), passing ($p=0.004$) and ball-juggling ($p=0.016$), whereas no statistically significant difference was found for ball-dribbling ($p=0.242$).

When Improvement rates of the Experimental and Control Groups were compared, a statistically significant difference ($p<0.05$) was found in favor of the Experimental Group for Illinois Test ($p=0.001$), CST ($p=0.000$) and ball-dribbling ($p=0.044$), while in the passing ($p=0.163$) and ball-juggling ($p=0.260$) tests, no statistically significant difference ($p<0.05$) was determined.

Table 4. Between-Group Comparison of Pre-test – Post-test Improvement Rates

	Group	Mean.	Sd	Min	Max	Effect size	U	P
Illinois (%)	Experimental (n=26)	8.93	5.15	0.64	18.32	1.05	-3.40	0.001*
	Control (n=26)	4.00	4.18	-3.82	16.17			
CST (%)	Experimental (n=26)	12.05	5.59	2.20	22.46	1.26	-3.92	0.000*
	Control (n=26)	4.87	5.78	-9.23	17.26			
Passing (%)	Experimental (n=26)	69.18	61.13	0.00	200.00	0.27	-1.40	0.163
	Control (n=26)	50.82	72.61	-33.33	300.00			
Ball-Juggling (%)	Experimental (n=26)	39.61	43.19	-29.17	175.00	0.30	-1.13	0.260
	Control (n=26)	26.66	41.54	-50.00	125.00			
Ball-Dribbling (%)	Experimental (n=26)	9.75	7.24	0.00	25.00	0.82	-2.02	0.044*
	Control (n=26)	2.95	9.13	-14.29	16.67			

$p<0.05$*; CST: Creative Speed Test

4. Discussion

Differential learning, which is developed in the perspective of dynamic systems, has generally been applied in the context of motor learning (Frank et al., 2008; Schöllhorn et al., 2006; Schöllhorn et al., 2009), and has emerged as a promising approach for developing creative behavior under difficult conditions within games (Memmert, 2015; Santos et al., 2017).

This approach is characterized by increasing the number of movement fluctuations during the skill acquisition process without repeating the movement or making adjustments (Schöllhorn et al., 2012). Therefore, the main idea is to increase variety by using the movement variable in order to highlight the limits for implementing new movement solutions (Schöllhorn et al., 2006). The role of the random variable in allowing players to acquire new and functional movement patterns may be necessary for bringing out their creativity. Within the scope of differential learning, to encourage players towards continual new adaptations (such as striking the ball with the arms raised; Schöllhorn et al., 2006), instead of preventing movement errors (since players generally avoid making mistakes out of fear of making them), they are allowed to confront them. For this reason, considering the impossibility of carrying out two identical movements during a match, the use of traditional learning methods, characterized by endless repetitions of an ideal movement and conducted by correcting errors, needs to be reviewed (Schöllhorn et al., 2009).

With the differential learning approach presented in this study, in the within-group evaluation of the trainings carried out with the aim of enabling young athletes to acquire functional and transferable movement skills, preventing them from avoiding the errors they made and from behaving timidly, and allowing them to confront their mistakes and be open to new skills, it was seen that statistically significant improvements were achieved in all parameters between the pretest and posttest of players in the EG ($p<0.05$), while when the improvement differences between the groups were evaluated, statistically significant differences were observed ($p<0.05$) in favour of the EG for the Illinois Test ($p=0.001$), CST ($p=0.000$) and ball-dribbling test ($p=0.044$).

However, for players in the Control Group who studied with the traditional method, statistically significant developments ($p<0.05$) were revealed between pretest and posttest in the Illinois Test ($p=0.000$), CST ($p=0.000$), passing test ($p=0.004$) and ball-juggling test ($p=0.016$), while no statistically significant difference was found for the ball-dribbling test ($p=0.242$).

Similar to the results obtained in the current study, in the study made by Santos et al. (2018), it was confirmed that following differential learning, U13 and U15 players displayed higher activity regarding their tendency to perform versatile movements. In addition, they stressed that the players also increased their ability to discover unsuccessful yet non-standard movements and that these results were seen to correspond with those of various studies arguing that differential learning techniques are more beneficial (Frank et al., 2008; Henz & Schöllhorn, 2016; Schöllhorn et al., 2006; Schöllhorn et al., 2012; Wagner & Muller, 2008), since players discovered various new movement configurations.

In the literature, it is suggested that the age of 13 is the trainability limit for learning new movement behaviors in sport (Stafford, 2005). The preferred age group in the present study is more open to learning, in conformity with the literature. In the study conducted by Santos et al. (2018), it was stated that a differential learning programme was considered more beneficial for an U13 team, since this age group showed higher development rates in creative components than the U15 team. Generally, players at earlier stages of learning naturally display more exploratory search behaviors. These findings correspond with those in the existing literature which support the idea of a probable decline in creative thinking together with age (Kim, 2011; Santos et al., 2016).

In the present study, as a result of the differential learning trainings, players in the experimental group showed significant improvement both within the group and in comparison, with the players who received traditional training, especially in scores related to ball dribbling. The positive results obtained in previous studies reporting that a

differential learning approach leads to flexible movement solutions, especially in ball-dribbling, Illinois and creative speed test batteries, support the findings of this study (Santos et al., 2017). The young football players were unsuccessful in the non-standard drills at the start of the training programme implemented in this study, but in time they increased their skills in exploring these drills and both enjoyed themselves and became successful. It is seen that these results appear to correspond with the results of various studies arguing that differential learning is more beneficial (Frank et al., 2008; Henz & Schöllhorn, 2016; Schöllhorn et al., 2006; Schöllhorn et al., 2012; Wagner & Muller, 2008), since the players discovered various new movement configurations.

In a study in which the training drills implemented in the current study were carried out in a similar way, Schöllhorn et al. (2009), in a goal-shooting test, trained one group of football players without movement repetitions according to the differential learning approach, and another group with repetitions. The differential learning group performed their shots by running keeping their knees and hips tight and their ankles loose, and turning their arms in a circle or swinging them. While the players took part in different and arbitrary combinations with their bodies, heads and arms besides their fixed legs when striking the ball, the repetitive training group followed complete formulae based on a movement prototype and specific repetitions. After the 4-week intervention and the same number of shots for each group, the differential learning group showed a significantly higher rate of improvement compared to the repeating group with regard to shooting accuracy.

In another study, Reuss, (2013) applied reaction speed and concentration tests to 16 young football players in the 12-age group. While differential learning training was given to 8 football players in fifteen 30-minute sessions over a period of 6 weeks, the other 8 football players continued with their classic training programmes. At the end of the study, it was reported that the players who were given differential learning training increased their power of concentration and their focus by twice as much as the control group, and that their reaction speed increased by 50% more than that of the control group. It was possible for the differential learning group to reduce their error level by 50%, but the control group were able to reduce their error rate by only 41% (Reuss, 2013).

Differential learning is a learning concept that helps participants to find individual performance models for the given complex motor skills. With this aim, training is given in the context of noisy exercise sessions that include very varied differences among the exercises. In the present study, the athletes were asked to speak out loud and to do their drills in this way during the differential learning programme. In previous studies in the literature, it was revealed that with differential learning, improvement in performance was greater than with traditional learning, and that as a result of differential learning, improvement in performance was realized even in periods later than the training period (Frank et al., 2008).

In a study of the effects of differential learning on athletes' error and stress levels, Wienecke & Nolden (2010) implemented a total of 12 different one-hour differential learning trainings over a 3-month period on 14 competitive golfers aged 12-17, and the players' error rates and stress levels on competition days were investigated. It was indicated that in the group that did differential learning exercises, the level of making mistakes decreased in relation to the control group, and that the values were 51.75% and 23.75%, respectively.

In conclusion, even though traditional football training, when done regularly, develops skills, it is seen that differential learning exercises integrated into training programmes are more effective for the passing, ball-juggling and especially ball-dribbling skills that are the basic technical requirements of football. The aim of differential learning is for the participant to form or develop skills in finding successful behavior patterns under continually changing internal and environmental conditions. It is considered that as a result of the various perturbations applied within the scope of differential learning, exercises in which the non-dominant leg is frequently used, players can give more effective responses to the complex positions encountered in football and make it easier for them to perform the necessary skills, and that these exercises can support the development of athletes' performances.

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Training Program

Weeks 1-4

- Dribbling (ball-dribbling with sole-top-inside-outside of foot) with balls of different weights and sizes (tennis, handball, volleyball balls)
- Passing (passing ball with sole-top-inside-outside of foot) with balls of different weights and sizes (tennis, handball, volleyball balls)
- Ball-juggling (juggling with dominant leg-non-dominant leg-knee) with balls of different weights and sizes (tennis, handball, volleyball balls)
- Dribbling with hands behind back, while clapping, with one arm raised, with both arms raised (with size 5-4-3 footballs)
- Passing with hands behind back, while clapping, with one arm raised, with both arms raised (with size 5-4-3 footballs)
- Ball-juggling with hands behind back, while clapping, with one arm raised, with both arms raised (with size 5-4-3 footballs)

Weeks 5-8

- Dribbling with dominant eye closed, looking downwards, looking upwards, looking right, looking left (with size 5-4-3 footballs)
- Passing with dominant eye closed, looking downwards, looking upwards, looking right, looking left (with size 5-4-3 footballs)
- Ball-juggling with dominant eye closed, looking downwards, looking upwards, looking right, looking left (with size 5-4-3 footballs)
- Mixed dribbling in a narrow area (with dominant leg-non-dominant leg-exchanging tennis balls in hands while dribbling)
- With the feet at shoulder width openly tied to each other, dribbling with very small steps, dribbling with ball on knees, dribbling while sitting
- While dribbling with one leg, keeping the other leg back (leg change), dribbling while raising one knee in front (leg change), dribbling with one leg in front (leg change), dribbling while jumping
- Exchanging passes while keeping up a balloon-tennis ball with the hands (change in surfaces; on artificial-grass surface between cones, on dirt surface, on a slope)
- Dribbling while keeping up a balloon-tennis ball with the hands (change in surfaces; on artificial-grass surface between cones, on dirt surface, on a slope)

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