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Merih Öztürk[1]

Bülent Turna[2*]

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[1]Ph.D., Akdeniz University Faculty of Sport Sciences Antalya, Turkey,
[2]Assistant Professor, Akdeniz University Faculty of Sport Sciences, Antalya, Turkey

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The effect of 6-week balance training on soccer-specific technical skills in soccer players

Merih Öztürk[1], Bülent Turna[2*]
[1]Ph.D., Akdeniz University Faculty of Sport Sciences Antalya, Turkey,
[2]Assistant Professor, Akdeniz University Faculty of Sport Sciences, Antalya, Turkey
*Corresponding author, Bülent Turna
Email: bulent_turna@hotmail.com

ABSTRACT
Due to the nature of football, players perform a series of unstable movements during the game. In this context, balance skill is important for football players. The aim of the study is to examine the effects of balance training on football specific technical skills. 22 male amateur football players competing in the 1st amateur league participated by filling a "Informed Volunteer Form". Participants were randomly divided into Balance Training Group (BTG) and Classic Football Training Group (CFTG). Before the training session, physical characteristics such as age, height, body weight, as well as Flamingo balance, Star balance, Yeagley (Bounce), Mor-Christian football general ability (drilling, shooting and short-distance passing) and long distance passing tests were applied. While the 6-week classical football training protocol was applied to the CFTG group, additional balance training was performed to the BTG group. The total training loads of both training groups were equal. The analysis of the data was evaluated according to the significance level of $p<0.05$ in the SPSS 20 statistical program. The pre-test and post-test values of the BTG and CFTG groups were recorded, and the "Paired Samples and Independent Samples Test" was applied to the data with normal distribution, and the "Wilcoxon and Mann Whitney Test" for unnormal distribution. As a result, it was hypothesized that the balance training methods would improve the technical skills of football players in the dominant and non-dominant legs. As a result of this study, it was seen that the balance training methods applied in the research improved the technical skills of the football players in the dominant and non-dominant legs, and there was a statistically significant differences $p<0,05$). As a result of the findings we obtained in our study, the balance training method we used; It was seen that the research group developed both balance skills and technical skills in the dominant and non-dominant legs, and this development was a statistically significant improvement.

Keywords: Balance training, football, technical skills in football.

INTRODUCTION

Sportive competition is becoming more intense daily, and medicine, health sciences, and technological developments have been expanding their work and affecting athlete performance more and more in this competition (Bayazit & Turna, 2022). Success is determined by small details, especially in high-level competitions, where championships are determined in seconds. In branches such as soccer, where the result is not determined until the referee blows the final whistle, and the score can change until the last moment, balance is one of the important details that affect player performance. A quality through ball pass, a long and accurate pass to quickly change the direction of the attack, or an accurate shot at changing the score is among the critical movements to change the score, and balance is an essential factor in making these movements. Soccer, one of the most popular games in the world, is in constant change and development. The training methods used by coaches should be reorganized within the framework of changing and developing scientific-technological advances, and player development should continue. Otherwise, it becomes more and more challenging to achieve success for teams that are far away from scientific and technological developments. In soccer, there are many movements, such as pushing-pulling, shoulder-to-shoulder tackling, and head-balling. It is crucial to maintain and sustain balance during and after these movements. An attacking player with good balance skills must maintain his balance quickly to make reasonable control against the pushes and pulls made by the opposing defender to control the ball thrown at him. This control can ensure that the ball stays in the team and is also very important for the team to move forward. Static and dynamic balance training will contribute positively

to the technical skills of the football game, which has a complex structure, as well as improve the balance skills of football players. There are scientific studies on the advantages of balance skill development for different sports branches, which are increasing daily. A good balance minimizes the risk of injury (Taşkın C, 2015). Balance plays a vital role in the player's movements in soccer and is also a performance indicator. The body-center gravity constantly changes related to different positions in the game. Therefore, adaptation to variable positions and unexpected situations must be fast (Evangelos B., 2012).

This study is the first to examine the effect of balance training on soccer-specific technical skills in non-dominant legs, which is missing in the literature. In light of this information, the present study aimed to investigate the effect of balance training on soccer-specific technical skills in non-dominant legs.

MATERIALS AND METHOD

Participants

The study included 22 male soccer players playing in 1st amateur league who participated by filling out the "Informed Voluntary Consent Form". The participants were randomly divided into two groups Balance Training Group (BTG) and Classical Football Training Group (CFTG). The research group was trained at least two and three days a week, and BTG participated in soccer training after applying for the balance training program before training, while CFTG only did soccer training.

Measurements

Height Measurement

Height was measured using the SECA (Germany) height scale in an upright position with a precision of 0.1 m (Bayazit & Turna, 2022).

Body Weight Measurement

Body weights were measured using the SECA (Germany) electronic weighing scale with an accuracy of 0.5 kg (Bayazit & Turna, 2022).

BMI Calculation

Body Mass Index Measurement: Weight (kg)/ Height (M) 2 formula was used (Turna et al., 2021).

Static Balance Measurement

In the present study, the static balance skills of soccer players were measured with a flamingo balance apparatus made of wood with a height of 3 cm, a width of 4 cm, and a length of 50 cm. For one minute, the balance was maintained with one foot on the balance beam, and the other was held with one hand simultaneously. The time was stopped when the soccer player contacted the ground with any body part during the balance or when they let go of the foot they were holding. The stopped time was resumed as soon as the soccer player regained his balance on the balance beam. When the time ended, each contact with the ground within 1 min was recorded as the total score (Deforche et al., 2003).

Dynamic Balance Measurement

In the present study, dynamic balance skill measurements of soccer players were performed with the star balance test. In the test, with eight different directions, soccer players were allowed to try the test for a while. The soccer players were asked to extend their feet in 8 directions by placing their feet in the center of the star with the middle of the soles of their feet. There was no time limit for foot extension during the measurements, but the soccer players were asked to finish the test within 3 minutes. Each extension was recorded in cm (Bressel et al., 2007). The test was performed for both dominant and non-dominant feet.

Yeagley Ball Bounce Test

The aim is to evaluate initial soccer ability. The athlete tries to bounce the ball as many times as possible within 30 seconds without dropping the ball with the "Go" command. However, the contacts made with the foot, knee, and head of the foot with which the ball will bounce during the bounce are counted, the contacts made with the other foot and knee are not counted. No penalty shall be given for the ball falling to the ground during the bounce, but any bounces made if the ball goes out of the designated half-area shall not be added to the score. One point is deducted for each use of the hand or arm to control the ball. In ball bouncing, the number of valid bounces within a period of 30 seconds is considered the athlete's score. The best of the two attempts is the final score (Strand BN., 1993; Yeagley, 1972).

Long Distance Pass Test

This test assesses the ability to throw a ball at a target from a long distance. The player tries to hit the ball 36 meters away into a circle with a radius of 2 meters in a 10x10-meter field. The player makes the first attempt. A total of five attempts are measured in the test. The player gets 3 points if the ball hits the circle and 1 point if it hits the 10x10 area. If he/she fails to hit the ball, he/she does not get any points (Balsom P., 1994).

Mor-Christian Short Pass test

In the passing test, two 45-cm-high funnels are placed 91 cm apart to form a goal, and a 1.20-m-long rope is placed behind this goal as the goal line. Two funnels are placed at a distance of 13.5 meters to the right and left of the castle at 45-degree angles, and a cone is placed 90 degrees opposite. Four kicks are made from the three cones to the goal (12 right-foot passes and 12 left-foot passes in total). The athlete can start from any foot while

passing and makes four right and four left foot kicks from the cones. The athlete is allowed to practice before the test. Successful kicks are evaluated as 1 point. Also, balls hitting the cones of the goal are considered successful. Result score It is the sum of 12 pass kicks (Strand and Wilson 1993).

Mor-Christian Dribbling test

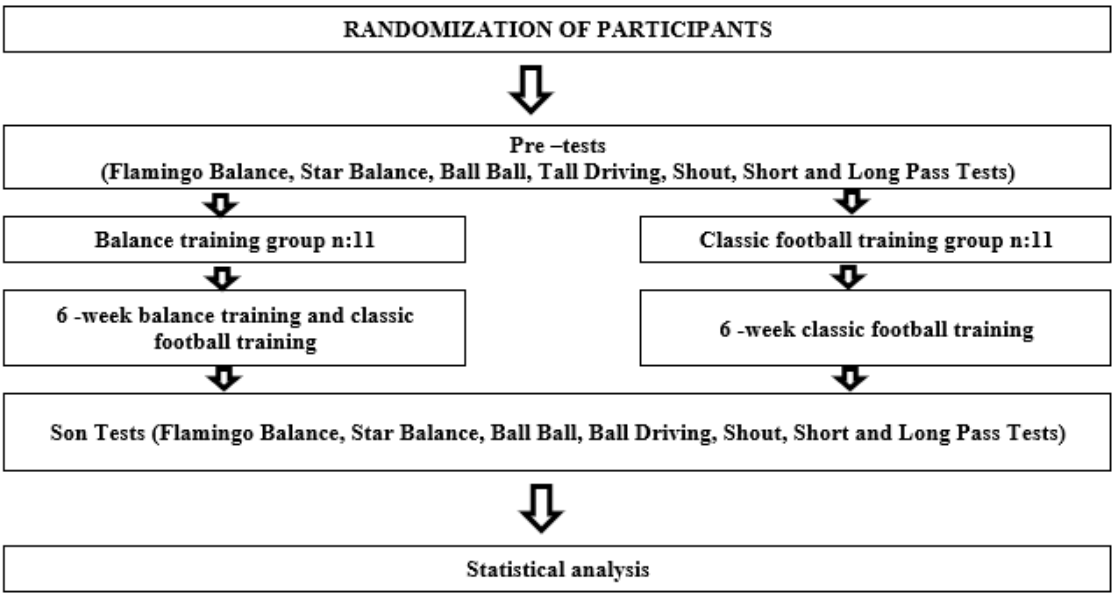
The dribbling test starts with a start command to the soccer player waiting with the ball at the starting line. The player dribbles the ball at the highest speed he/she can between the circular funnels and returns to the starting line. The time is stopped as soon as he/she crosses the line. The player performs the test in both directions. The time the soccer player completes the test is recorded as the test score (Strand BN., 1993)

Mor-Christian Shot Test

Shooting is done by kicking a ball from behind the touchline toward the player's goal. Any foot can be used, and the ball is placed anywhere behind the kicking line. Each of the four hoop targets is hit four times, for a total of 16 times. Ten points are awarded for each hit, and four points are awarded for each shot that goes to a different target. No points are awarded for shots that do not hit a hoop. The total points obtained are recorded as the test score (Strand BN., 1993).

Research Procedure

Anthropometric measurements and pretests of the soccer-specific technical skills of the participants were performed. Before each exercise, a soccer-specific classical warm-up protocol was applied. Then, after performing the exercises in the BTG balance training program, classical football training continued. At least a 48-hour rest was given between each session. Verbal encouragement was given to the athletes during the exercises.



Football-Specific Warm-up Protocol (FWP)

The classical warm-up procedure to be applied in the study included 5 minutes of jogging with 40-50% of the maximum heart rate followed by five lower extremity static stretching exercises. The movements were performed for two sets, each for 15 seconds. Athletes were allowed to play with the ball for a while before each balance training program. Then, the balance training program was applied.

Balance Training

Balance training programs should include movements on fixed and moving surfaces. Balance movements should be based on movements performed on one leg and with eyes open. Since visual information is not provided, movements with closed eyes can be more challenging. When planning balance training, movements should be created using a progressive method from simple to complex and from easy to difficult. When making long-term planning for performance improvement, the movements to be performed on the fixed ground should include single-leg and double-leg stances. In the next stage, single and double leg movements on moving surfaces (such as bosu, balance pad, foam pads, balance board, and wobble board) should be started. In the next stage, jumping, squatting, some branch-specific movements, and resistance exercises on moving surfaces should be included in the planning (Hrysomallis, 2011).

Table 1: Traning Program

Week	Training Day and Time	Balance Training	

1.week	T 15.00/15.30 F 15.00/15.30	The legs are extended in 4 directions by making a single leg glider stance on the stable ground. The ball thrown from the air is returned with an in-foot pass.	3x1dk
		Standing on one leg on the stable ground, the ball is dribbled left and right.	3x1dk
		Standing with one foot on the fixed floor and instructing the 5 different color targets hanging in front of it, an in-foot kick is made.	3x1dk
		The ball is kicked by bending and standing straight while standing on the stable ground with both feet in balance.	3x1dk
2.week	T 15.00/15.30 F 15.00/15.30	The legs are extended in 4 directions by making a single leg glider stance on the stable ground. The ball thrown from the air is returned with an in-foot pass.	3x1dk
		Keeping one foot on the balance pad, the ball is driven to the right and left..	3x1dk
		Two feet are balanced on a stable floor. Heading the incoming ball by bending down and standing straight.	3x1dk
		Standing on one foot on the balance pad and instructing 5 different color targets hanging in front of it, an in-foot kick is made.	3x1dk
3. week	T 15.00/15.30 F 15.00/15.30	On the Bosu, the foot is extended in 4 directions with one foot. The ball thrown from the air is returned with an in-foot pass.	3x1,1dk
		Stand on the balance pad with one foot. Rotates the ball around with the other foot.	3x1,1dk
		Two feet are balanced on the bosu. Heading the incoming ball by bending down and standing straight.	3x1,1dk
		The ball thrown from the air on each turn is returned with a top kick.	3x1,1dk
4. week	T 15.00/15.30 F 15.00/15.30	Stand on the Bosu with one foot. The other foot is extended in 4 directions. One person makes small touches while another person throws the ball. The thrown ball is returned with a top kick.	3x1,1dk
		The resistance band is attached at the waist. Skipping is done between the plates on the right and left of the Bosu ball. The ball thrown at each contact with the Bosu ball is returned with an in-foot pass.	3x1,1dk
		One right and one left foot are pressed on the balance pad and the ball thrown is returned with a top-up kick at each step.	3x1,1dk
		One foot is standing on the Bosu and an in-foot strike is made on the 5 different color targets hanging in front of him.	3x1,1dk
5. week	T 15.00/15.30 F 15.00/15.30	With the resistance band tied at the waist, the bosu balls that stand side by side are first stepped on with the right foot and hit with the left foot and come back, and the same movement is done with the left foot by going over the other ball.	3x1,2dk
		On the Bosu ball, a kick is made to the thrown ball by pressing left and right.	3x1,2dk
		One foot is standing on the Bosu and an in-foot strike is made on the 5 different color targets hanging in front of him.	3x1,2dk
		4 of them are lined up side by side as a stability pad and a bosu ball. Each balance beam is walked on by stepping on one foot. At the same time, balls thrown from the opposite side are returned with an inside pass.	3x1,2dk
6. week	T 15.00/15.30 F 15.00/15.30	The ball is bounced on the bosu.	3x1,3dk
		4 of them are lined up side by side as a stability pad and a bosu ball. Each balance beam is walked on by stepping on one foot. At the same time, balls thrown from the opposite side are returned with an inside pass.	3x1,3dk
		One foot is standing on the Bosu and an in-foot strike is made on the 5 different color targets hanging in front of him.	3x1,3dk
		Two feet are placed on the bosu and the ball thrown is returned with a control pass.	3x1,3dk

M: Monday, T: Tuesday, W: Wednesday, T: Thursday, F: Friday

RESULTS

Table 2: Defining Characteristics of Football Players

Grup		N	Minimum	Maximum	Mean±SD
	Age (year)		17	33	22.63±4.86
BTG	**Height (cm)**	11	165	192	176.63±6.54
	Body Weight (kg)		60	92	74.54±10.55
	BKI (kg/m²)		22.04	24.96	23.5±2.43
	Age (year)		18	32	23.90±5.06
CFTG	**Height (cm)**	11	172	183	177.81±3.06
	Body Weight (kg)		60	88	74.81±8.62
	BKI (kg/m²)		20.28	26.28	23.28±2.21

BTG: Balance training group, CFTG: Classic football training group.

Table 3: Flamingo Balance Test

(RIGHT)	Pre-Test (NE) (AO±SS)	Post-Test (NE) (AO±SS)	Difference %	t/z=, P=
BTG	7.90±2.66	5.18±2.48	52.50	2.94, 0.00*
t/z=, P=	-0.27, 0.78	-2.69, 0.01*		
CFTG	8.18±1.99	7.81±2.08	4.73	-1.41, 0.15

BTG: Balance training group, CFTG: Classic football training group, NE: Number of errors, *(P<0.05).

Table 4: Right Foot Star Balance Test

AL	Pre-Test (CM) (AO±SS)	Post-Test (CM)(AO±SS)	Difference %	t/z=, P=
BTG	79.90±8.31	86.9±8.31	08.05	-4.50, 0.00*
t/z=, P=	0.50, 0.61	-0.16, 0.87		
CFTG	78.27±6.66	80.45±7.54	02.70	1.21, 0.25
Anterior				
BTG	83.81±7.09	92.81±5.21	09.69	5.22, 0.00*
t/z=, P=	-0.51, 0.61	2.11, 0.04*		
CFTG	85.27±6.03	88.00±5.49	03.10	1.62, 0.13
AM				
BTG	86.54±6.25	97.45±5.95	11.19	4.50, 0.01*
t/z=, P=	-2.15, 0.04*	1.42, 0.17		
CFTG	92.36±6.40	94.36±4.08	02.11	1.98, 0.76
Medial				
BTG	89.90±1.03	106.27±9.20	15.40	5.22, 0.00*
t/z=, P=	-1.87, 0.07	2.11, 0.04*		
CFTG	97.54±8.69	99.72±4.56	02.18	1.03, 0.32
PM				
BTG	97.54±1.45	111.18±6.17	12.26	3.80, 0.00*
t/z=, P=	-1.26, 0.22	1.96, 0.06		
CFTG	103.72±7.22	106.00±6.19	02.15	1.31, 0.21
Posterior				
BTG	98.00±1.36	111.09±7.50	11.78	4.34, 0.00*
t/z=, P=	-0.83, 0.41	1.82, 0.08		
CFTG	101.81±6,61	106.00±5.44	03.95	2.31, 0.04*
PL				
BTG	95.54±1.36	105.18±1.01	09.16	3.22, 0.00*
t/z=, P=	-0.41, 0.68	1.15, 0.26		
CFTG	97.63±10.05	100.63±8.20	02.98	1.65, 0.12
Lateral				
BTG	83.45±1.11	94.90±7.71	12.06	5.28, 0.00*
t/z=, P=	-0.52, 0.60	2.12, 0.04*		
CFTG	85.63±8.16	87.45±8.72	02.08	0.79, 0.44

BTG: Balance training group, CFTG: Classic football training group, AL: Anterolateral, AM: Anteromedial, PM: Posteromedial, PL: Posterolateral, CM: Santi Metre,* (P<0.05).

Table 5. Left Foot Star Balance Test

AM	Pre-Test (CM) (AO±SS)	Post-Test (CM) (AO±SS)	Difference %	t/z=, P=
BTG	93.54±9.92	100.63±7.55	07.04	3.82, 0.00*
t/z=, P=	-0.16, 0.87	2.02, 0.05*		
CFTG	94.09±5.28	95.36±4.20	01.33	1.16, 0.27
Anterior				
BTG	87.00±7.16	95.27±5.25	08.68	4.95, 0.00*
t/z=, P=	-3,08, 0.00*	2.70, 0.01*		
CFTG	88.45±4.25	89.90±3.93	01.61	1.76, 0.10
AL				
BTG	80.90±6.64	87.27±5.53	07.29	3.87, 0.00*
t/z=, P=	-0.71, 0.48	0.31, 0.75		
CFTG	82.63±4.43	86.54±5.39	04.51	3.01, 0.01*

Lateral				
BTG	85.18±1.31	96.90±9.73	12.09	4,18, 0.00*
t/z=, P=	-1.02, 0.31	1.62, 0.12		
CFTG	89.54±5.02	91.09±6.80	01.70	1,02, 0.32
PL				
BTG	95.09±1.33	109.27±9.46	12.97	-4.42, 0.00*
t/z=, P=	-0.79, 0.43	2.31, 0.03*		
CFTG	98.72±7.05	100.63±7.94	01.89	-1.57, 0.14
Posterior				
BTG	101.45±1.33	114.72±6.37	11.56	4.89, 0.00*
t/z=, P=	-0.75, 0.46	4.59, 0.00*		
CFTG	104.72±5.65	100.63±7.94	-04.06	2.12, 0.59
PM				
BTG	102.54±1.31	115.09±7.50	10.90	-2.93, 0.00*
t/z=, P=	0.003*	-2.63, 0.89		
CFTG	106.18±6.12	106.36±5.16	0.16	0.17, 0.86
Medial				
BTG	94.54±9.67	106.81±7.73	11.48	5.59, 0.00*
t/z=, P=	-1.33, 0.19	2.47, 0.02*		
CFTG	99.09±5.76	100.00±4.87	0.91	0.79, 0.44

BTG: Balance training group, CFTG: Classic football training group, AL: Anterolateral, AM: Anteromedial, PM: Posteromedial, PL: Posterolateral, CM: Santi Metre, *(P<0.05).

Table 6. Short Pass Test

Right	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	7.63±2.06	9.90±2.07	22.92	-6.33, 0.00*
t/z=, P=	0.52, 0.60	2.79, 0.01*		
CFTG	7.18±1.99	7.72±1.55	06.99	-1.03, 0.32
Left	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	5.36±1.56	8.27±1.79	35.18	-4.11, 0.00*
t/z=, P=	-1.49, 0.15	1.56, 0.13		
CFTG	6.81±2.82	6.90±2.25	01.30	-0.11, 0.91

BTG: Balance training group, CFTG: Classic football training group, *(P<0.05).

Table 7. Long Pass Test

Right	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	3.72±2.10	5.81±1.72	35.97	-2.8,0.01*
t/z=, P=	0.73, 0.47	4.61, 0.00*		
CFTG	3.09±1.97	2.45±1.69	-26.12	1.75, 0.11
Left	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	1.45±1.57	4.00±2.60	63.75	-2.7, 0.00*
t/z=, P=	-0.20, 0.83	-2.49, 0.01*		
CFTG	1.45±1.43	1.45±1.21	0	0.00, 1.00

BTG: Balance training group, CFTG: Classic football training group, *(P<0.05).

Table 8. Ball Sequence Test

Right	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	43.00±8.60	49.45±8.21	13.04	-4.98, 0.00*
t/z=, P=	1.41, 0.17	3.12, 0,00*		
CFTG	37.90±8.33	39.09±7.30	03,04	-0.72, 0.48
Left	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	28.18±9.83	33.27±9.49	15.29	-4.59, 0.00*
t/z=, P=	0.57, 0.57	2.08, 0.05*		
CFTG	26.09±6.90	24.90±9.33	-4.77	1.03, 0.32

BTG: Balance training group, CFTG: Classic football training group, *(P<0.05).

Table 9. Ball Driving Test

Right	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	16.24±2.28	14.36±2.07	13.09	-2.93,0.00*
t/z=, P=	0.71, 0.00*	-2.20, 0.02*		
CFTG	16.46±1.64	15.86±1.45	3.78	-1.95, 0.05*
Left	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	15.95±2.24	14.11±1.91	13.04	-2.93,0.00*
t/z=, P=	-0.75, 0.45	-2.65, 0.00*		
CFTG	16.56±1.47	15.99±1.28	03.24	2.46, 0.03*

BTG: Balance training group, CFTG: Classic football training group, *(P<0.05).

Table 10. Shot Test

Right	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	33.09±1.78	53.63±1.17	38.29	-4.11, 0.00*
t/z=, P=	0.62, 0.53	4.28, 0.00*		
CFTG	28.54±1.61	30.72±1.32	07.09	-0.64, 0.53
Left	**Pre-Test (AO±SS)**	**Post-Test (AO±SS)**	**Difference %**	**t/z=, P=**
BTG	22.00±7.26	38.54±2.26	42.91	-3.04, 0.01*
t/z=, P=	-1.15, 0.26	0.91, 0.37		
CFTG	29.63±2.06	28.18±2.13	-05.14	-0.15, 0.87

BTG: Balance training group, CFTG: Classic football training group, *(P<0.05).

Data Analysis

The normality distribution of the data was determined by the Shapiro-Wilk test. Independent Samples t-test was adopted to compare the normally distributed data with each other, and Paired t-Test was used to compare the data within groups. Wilcoxon and Mann Whitney Test were used for the data that did not show normal distribution. Data analysis was evaluated according to a p<0.05 significance level in SPSS 23 statistical program.

RESULT AND DISCUSSION

The present study investigated the effect of balance training on technical skills in soccer. A significant difference was found in the effect of balance training on technical skills. As a result of the literature review, there are many studies testing technical skills in soccer. However, there are few studies investigating the effects of balance training on technical skills in soccer and investigating the non-dominant foot.

The results obtained as a result of the 6-week balance training applied in the present study are as follows; There was a statistically significant (p<0.05) difference between the results of the flamingo balance test BTG and CFTG post-test results, BTG pre-and post-test results. With these results, it was determined that balance training improved the static balance skills of soccer players. However, there were no statistically significant (p<0.05) differences between the BTG and CFTG pretest results and between the CFTG pretest and post-test results. In one study on 39 male soccer players, a 12-week balance training was planned, and it was reported that the balance skills of the soccer players improved, and postural oscillations decreased as a result of the tests (Gioftsidou et al., 2006). According to the results of the star balance test, which was applied in the present study and measures dynamic balance skills, the results for the right foot are as follows; There was a statistically significant (p<0.05) difference between the BTG pre and post-test results in the Anterior, Anteromedial, Medial, Posteromedial, Posterior, Posterolateral and Lateral directions. There was also a statistically significant (p<0.05) difference between the results of the BTG and CFTG post-test in the Anterior, Medial, and Lateral directions. Also, a statistically significant (p<0.05) difference was found between the results of the BTG and CFTG pretest in the Anteromedial direction, the results of the BTG and CFTG post-test in the Medial direction, the results of the CFTG pre- and post-test in the Posterior direction, and the results of the BTG and CFTG post-test in the Lateral direction. According to the left foot results of the Star balance test, a statistically significant (p<0.05) difference was found between the BTG pre-and post-test results in the Anteromedial, Anterior, Anterolateral, Lateral, Posterior, Posteromedial, and Medial directions. Also, a statistically significant (p<0.05) difference was found between the results of BTG and CFTG post-test in the Anteromedial, Anterior, Posterolateral, Posterior, and Medial directions. However, a statistically significant (p<0.05) difference was found between the pre-and post-test results of CFTG in the anterolateral direction.

Güler (2018) used the Zig-Zag Dribbling Test (Little & Williams, 2005) test protocol in their study entitled "Effects of 8-week balance training on soccer-specific technical skills and biomechanical analysis in soccer players." The researcher found a statistically significant difference in dribbling as a result of balance training (p<0.05). In a similar study, it was reported that, albeit not statistically, the dribbling skills better improved in

the training group compared to the control group in the dribbling test performed as a result of 8-week dynamic balance exercises (Evangelos B., 2012).

Akyüz (2017) investigated the effect of balance training combined with dribbling, ball counting, and shooting techniques on the balance levels of football players and found a statistically significant difference in the experimental group's ball-bouncing skills ($p<0.05$). Only dominant leg measurements were made in the study (C., 2017). Sarıyiğit (2020) according to the results obtained in the free ball bouncing measurements, has reported the experimental group pretest values as 24.84±8.74, post-test values as 27.68±6.63, the control group pretest values as 17.73±7.83, and the post-test values as 18.82±7.37. As a result of the statistical analysis, a significant ($p<0.05$) increase was found in the ball bounce measurement values between the pretest and post-test measurements of the experimental group (Sarıyiğit, 2020).

In the present study, the mean values for the short pass skill test values were 7.83±2.06 in the BTG pretest and 9.90±2.07 in the post-test. Accordingly, a statistically significant difference was found between the BTG pretest and post-test values ($p<0.05$). The mean values were 7.18±1.99 in the pretest and 7.72±1.55 in the post-test. Accordingly, there were no statistically significant differences between the pretest and post-test values ($p>0.05$). According to the data we obtained in the present study, a statistically significant difference ($p<0.05$) was found between the short pass test right foot BTG and CFTG post-test results, BTG pre-and post-test results. In a similar vein, a statistically significant ($p<0.05$) difference was found between the short-pass test left foot BTG pre-and post-test results.

As a result of the balance training applied in the present study, there was a statistically significant difference between the pretest and post-test values in both dominant and non-dominant legs in all skills in terms of the BTG values. In light of these results, it was determined that the balance training applied in the present study made great contributions to the technical skills of amateur soccer players in both dominant and non-dominant legs. When making training plans, it is recommended that balance training should be included in the plans for a minimum of two days a week, and the soccer ball, which is the basic component of soccer, should be included in the movements. Balance training that improves and protects balance can be included in the annual soccer training plans. It is recommended that the effect of balance training on technical skills should be examined in athletes at different league levels and with more participants.

CONCLUSION

Balance training makes great contributions to the technical skills of amateur soccer players in both the dominant and non-dominant leg. As a result of the literature review, there are not many studies investigating the effects of balance training on technical skills in soccer. In the studies that were previously conducted, more attention has been paid to dominant leg development. The present study has parallel aspects with previous studies in terms of the results obtained. However, the developments in the non-dominant leg were also investigated, and no studies were found to support the present study in this manner. Therefore, the present study will contribute to the literature regarding technical skill development in the non-dominant leg and will lead to new studies.

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