DOI: https://doi.org/10.53350/pjmhs22162679

ORIGINAL ARTICLE

The Effect of Functıonal Traınıng and Narrow Area Traınıng Applıed to U14-U15 Category Football Players on Selected Blood Parameters

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ABSTRACT

Aim: The aim of this study is to examine the effects of 8-week functional training and narrow field studies on selected blood parameters of U14-U15 football players.
Method: A total of 22 football players in the U14-U15 category participated in the study. In the study, functional training and narrow space exercises were performed 3 days a week for 8 weeks in the experimental group, and technical training was performed on the control group 3 days a week for 8 weeks. A "Family Informed Consent (Consent) Form" was obtained from the parents of the athletes who wanted to participate in the study voluntarily. The study was prepared in accordance with the principles of the Declaration of Helsinki. Body weights, heights and blood parameters were taken for pre-test and post-test measurements in both groups. Appropriate SPSS statistical program was used in the analysis of the obtained data. The Shapiro-Wilk test was used to determine whether the data showed a normal distribution. Intragroup "Paired t test" to determine whether there is a difference before and after training; The difference between the groups was analyzed using the "Independent-t test". The significance level was evaluated according to the 0.05 significance level.
Result: According to the in-group analysis comparison, while there was a significant difference in all pre- and post-test measurements of the experimental group, there was no difference in the control group. According to the comparison of the between-group analysis of the experimental and control groups, a statistically significant diffrence was found in the lactic acid pre-post test and iron pre test measurements, there was no significant diffrence in other measurements.
Conclusion: As a result, it has been determined that 8-week functional training and narrow field studies applied to U14-U15 football players have effects on some selected blood parameters.
Keywords: Functional training, Narrow area training, Blood parameter, Effect

INTRODUCTİON

Football is a sport branch where activities performed at different intensities in terms of its characteristic feature are applied at irregular intervals for a long time, technical and tactical skills and basic motoric factors specific to football are given great importance (Aslan, 2007). Increasing speed in the game of football has brought to the fore the fast and fast athletes who can decide very quickly in the game, think quickly, play the game fluently (Işıldak, 2020). Physiological requirements are also changing in today's rapidly developing football and training practices. Functional training gives the person more muscle control, more balance, more power increase. Exercising the muscles at different angles and in a variety of ways changes the power distribution in large and small muscle groups, resulting in more efficiency in a shorter time (Francesco & Inesta, 2010). It is stated that functional training should be included in addition to technical training in a sport such as football, where all conditioning features should be at optimum level (Turna and Alp, 2020). In narrow space training, which has been practiced quite frequently recently, it should be aimed to develop together in physiological abilities as well as technical and tactical development in line with a functional purpose. Based on the fact that coaches affect all developmental factors in football training, the fact that they frequently apply narrow field training causes training scientists to focus on research on the sensitivity of these trainings (Aguiar et al., 2012).

Football is a versatile sport discipline. In this discipline, both anaerobic and aerobic systems are used according to their place in the flow of the game. Factors such as the full use of basic motor features (coordination, agility, flexibility, endurance, strength and speed) are effective factors in the formation of performance (Stolen et al., 2005). Although these features are important for performance, it is very important to have ideal levels in blood parameters for success.

In line with the information obtained from the literature, the aim of our study is to examine the effects of 8-week functional training and narrow field studies on selected blood parameters of U14-U15 football players.

MATERİAL AND METHOD

22 football players in the U14-U15 category were included in the study. In this context, the football players were divided into two groups as the experimental group (DG) (n:11) and the control group (KG) (n:11). Experimental group did 90 minutes of functional training and narrow space exercises, 3 days a week, for 8 weeks. The control group, on the other hand, did only technical studies during this eight-week period.

Athletes do not have any health problems. A statement was made to the athletes and parents that the personal information and findings obtained in the research would be kept strictly confidential. A "Family Informed Consent (Consent) Form" was obtained from the parents of the athletes who wanted to participate in the study voluntarily. The study was prepared in accordance with the principles of the Declaration of Helsinki.
Body Weight Measurement: It was weighed with bare feet, while the athletes were wearing only shorts and t-

shirts, using a SECA brand electronic scale with a precision of 0.5 kg.

Height Measurement: Measured with a SECA brand height scale with 0.1 m precision.

Blood Collection from Athletes: Blood collection from football players in DG and KG, before starting the training on the 1st day and immediately after the training at the end of 8 weeks, approximately 10 ml of blood was taken from the arm vein by the nurse in the health institution to determine their basal levels and transferred to biochemistry tubes and B12 was taken in the medical biochemistry laboratory. Data were recorded by measuring Vitamin, Glucose, Creatinine, Lactic acid and Iron levels.

Applied Training Program: Each training unit was implemented by creating warm-up, loading and cooling-down phases in itself. Functional training and narrow field exercises were applied for 8 weeks, 3 days a week for 90-120 minutes. The functional training program was implemented in a way that the maximum heart rate level would be 75% and above. The prepared training program consists of movements that complement the kinetic chain and improve the biomotor skills of the athletes (Burpees, Forward Jump Squat, plank, Side to Side Crash, Bunge Run, Torso Rotation, Split Squat, Lunge, Slide, Board Lunge, Lateral Squat, Cook hip lift, Bride). with alternate march, Cat Cow, Push up, Cross-reaching single) is selected. These movements consist of movements for the muscles and muscle groups that make up the kinetic chain in football sports such as pushing, pulling, rotation, squatting, standing up and jumping. The 2v2 narrow field game was played in 4 sets (3 minutes rest between sets) with a set time of 2 minutes in a 15x27 meter playing field. The 3v3 narrow field game was played in 2 sets (3 minutes rest between sets) with a set time of 3 minutes in a 20x30 meter playing field. The 4v4 narrow field game was played in 4 sets (2 minutes rest between sets) with a set time of 4 minutes in a 24x36 meter playing field. 5v5 narrow field 2 sets (1 minute rest between sets) were played in a 20x28 meter playing field for 30 minutes. 6v6 narrow field 6 sets (1 min rest between sets) set time 30 minutes were played in a 24x32 playing field. 7v7 narrow field 2 sets (1 min rest between sets) set time 30 minutes were played in a 28x36 meter playing field. 8v8 narrow field 2 sets (1 minute rest between sets) were played in a 32x40 meter playing field for 30 minutes.

Analysis of data: SPSS statistical program was used in the analysis of the obtained data. The arithmetic mean (X) and standard deviation (SD) values of all football player groups were taken. The Shapiro-Wilk test was used to determine whether the data showed a normal distribution. As a result of the analysis, it was determined that the data showed a normal distribution. Intragroup “Paired t test” to determine whether there is a difference before and after training; The difference between the groups was analyzed using the "Independent-t test". The significance level was evaluated according to the 0.05 significance level.

RESULTS

According to Table 1; When the demographic information of the football players was examined, the average age of the experimental group was 14.18±.40, their average height was 173±8.48 cm, and their body weight average was 57.36±8.95 kg. The mean age of the control group was 14.72±.46 years, mean height was 177.36±6.46 cm, and mean body weight was 64.72±8.77 kg.

Table 1: Demographic information of football Players

Variables	Groups	N	Minimum	Maximum	Mean±Ss
Age (years)	Experimental group	11	14,00	15,00	14,18±,40
	Control group	11	14,00	15,00	14,72±,46
Height (cm)	Experimental group	11	161,00	186,00	173±8,48
	Control group	11	168,00	185,00	177,36±6,46
Body weight(kg)	Experimental group	11	46,00	70,00	57,36±8,95
	Control group	11	48,00	80,00	64,72±8,77

Table 2: Comparison of Blood Values Measurements of Experimental and Control Groups Within Groups

Variables	Groups	Test	Mean±Ss	t	p
B12 Vitamin	Experimental group	Pre Test	330,81±84,02	3,843	,003*
		Post Test	239,45±73,98		
	Control group	Pre Test	292,09±64,35	,831	,426
		Post Test	270±53,41		
Glucose	Experimental group	Pre Test	93,17±5,22	2,803	,019*
		Post Test	88,97±6,63		
	Control group	Pre Test	90,80±4,44	-,972	,354
		Post Test	93,83±8,82		
Creatinine	Experimental group	Pre Test	,62±,04	-3,771	,004*
		Post Test	,73±,09		
	Control group	Pre Test	,64±,06	-1,542	,154
		Post Test	,69±,09		
Lactic acid	Experimental group	Pre Test	244,00±28,01	2,350	,041*
		Post Test	218,02±18,77		
	Control group	Pre Test	214,02±23,46	-1,138	,281
		Post Test	242,86±76,99		
Iron	Experimental group	Pre Test	104,75±21,60	2,833	,018*
		Post Test	95,94±17,05		
	Control group	Pre Test	79,03±31,55	-,717	,490
		Post Test	90,23±37,04		

According to Table 2, while comparing between within the group about blood values of the experimental group in the pre-test and post-test measurements it was a significant difference (p<0,05); comparing between within the group about blood values of control group in the all pre-test and post-test measurements there was no significant diffrences (p>0.05).

Table 3: Comparison of Blood Values Measurements of Experimental and Control Groups Between Groups

Variables	Groups	Test	Mean ±Ss	t	p
B12 Vitamin	Experimental group	Pre Test	330,81±84,02	1,214	,239
	Control group		292,09±64,35		
	Experimental group	Post Test	239,45±73,98	-1,110	,280
	Control group		270±53,41		
Glucose	Experimental group	Pre Test	93,17±5,22	1,147	,265
	Control group		90,80±4,44		
	Experimental group	Post Test	88,97±6,63	-1,458	,160
	Control group		93,83±8,82		
Creatinine	Experimental group	Pre Test	,62±,04	-,930	,363
	Control group		,64±,06		
	Experimental group	Post Test	,73±,09	,814	,425
	Control group		,69±,09		
Lactic acid	Experimental group	Pre Test	244±28,01	2,721	,013*
	Control group		214,02±23,46		
	Experimental group	Post Test	218,02±18,77	-1,039	,311
	Control group		242,86±76,99		
Iron	Experimental group	Pre Test	104,75±21,60	2,230	,037*
	Control group		79,03±31,55		
	Experimental group	Post Test	95,94±17,05	,465	,647
	Control group		90,23±37,04		

According to Table 3, while comparison analysis of the pre-post-test measurements of the blood values of the experimental and control groups was examined, a statistically significant diffrence was found in the lactic acid pre-post test and iron pre test measurements, there was no significant diffrence in other measurements.

DİSCUSSİON

Considering the results of Table 2, when the intra-group comparison of the blood values of the experimental and control groups was examined, it was determined that there was a significant difference between the pre-test and post-test and a decrease occurred in the B12 vitamin values of the experimental group (p<0.003). Vitamin B12 value of the experimental group, which was measured as 330.81±84.02 in the pre-test, was measured as 239.45±73.98 in the post-test. Here, it can be said that the reason for the decrease in Vitamin B12 is that intense training can have a wearing effect on body hormones. The decrease in this value in the human organism, especially in athletes, may adversely affect the performance of the athlete. Deficiency of Vitamin B12 in the body can cause numbness of the hands and feet, tenderness of the tongue, forgetfulness and delayed production of red blood cells. Considering the pre- and post-test measurements of glucose values, the value measured as 93.17±5.22 in the pre-test in the experimental group was determined as 88.97±6.63 in the post-test. It can be said that the decrease in glucose between the two measurements may be due to the carbohydrate stores that are empty as a result of intense training in the same way. The depletion of carbohydrate stores in our body and the decrease in sugar can cause fatigue in athletes. Considering the pre-test and post-test measurements of creatinine kinase values, the value measured as 0.62±.04 in the pre-test measurement of the experimental group was determined as 0.73±.09 in the post-test. It can be interpreted that the increase obtained between the pre- and post-tests of creatinine, which represents kidney functions, may be due to the loss of fluid and electrolytes for intense training. It has also been proven in many scientific studies that temporary damage can occur in kidney and liver functions as a result of intense training. Considering the pre-test and post-test measurements of lactic acid values, the pre-test lactic acid measurement of the experimental group was measured as 244.00±28.01, but the post-test measurement was determined as 218.02±18.77. The decrease in the lactic acid values detected here can be interpreted as the aerobic threshold levels may increase and their condition may increase due to the regular training done by the experimental group during the study. Finally, when the in-group comparison of the blood values of the experimental and control groups is examined, considering the pre-test and post-test iron values of the experimental group, the pre-test measurement was determined as 104.75±21.60, while the measurement was found to be 95.94±17.05 in the post-test. has been done. The main reason for this decrease in iron values can also be interpreted as the intense training done by the experimental group may cause fatigue in the organisms of the athletes, and accordingly, it may cause a decrease in iron values. This can cause fatigue and loss of resistance in the athlete. In addition, iron deficiency can reduce protein synthesis, which can lead to a decrease in hemoglobin production.

In some scientific studies, different results have been obtained on the effects of exercise on vitamin B12 levels. Herman et al. They proved that after a 3-week swimming training period, the B12 levels of the athletes increased, but this value decreased after 5 days of recovery training (Hermann and etc., 2003). In another study, it was determined that erythrocyte and serum vitamin B12 remained constant as a result of regular training for 4 weeks (Bailey, Dawies and Baker, 2000). In another study of football players, plasma folate concentrations were similar before and after acute high-intensity sprint exercise, but the vitamin B12 concentration after exercise was significantly higher than before exercise (Deminice and etc., 2014). According to the results found in individuals who have been in high-intensity physical activity for at least 5 years, it is reported that they have slightly higher plasma vitamin B12 values than sedentary individuals (Joubert and Manore, 2008). In another study, it was determined that the plasma B12 levels in the 6th month of women who did brisk walking for 20-60 minutes daily did not show any difference with women who did not exercise (Randeva and etc., 2002). It was determined that B12 levels did not change in the results obtained after 4 weeks of strenuous endurance training or acute exercise in trained male triathletes (König and etc., 2003). Endurance training reduces muscle lactate concentration by increasing lactate clearance and decreasing lactate production. The entry and exit of lactate into cells is facilitated by membrane-bound monocarboxylate carrier proteins (MCTs). It has been determined that endurance training increases protein synthesis, especially of the MCT1 isoform in muscle, and this facilitates intracellular lactate in and out events more (Dubouchaud and etc., 2000). Lactate can be formed and released in many tissues. It serves as an energy source for highly oxidative tissues such as the heart and as a gluconeogenic precursor for the liver (Brooks, 1986). In another study measuring the endurance of football players, the maximum oxygen consumption of the players was evaluated with field and laboratory tests, and in this evaluation, a difference was found between the tests performed in the field and the laboratory in terms of maximum heart rate and maximum oxygen consumption (Esposito et al. 2004). Kunduracıoğlu et al., (2007) evaluated the running speeds corresponding to the anaerobic threshold with field and laboratory tests and found a statistical difference in the study they conducted on young team players with an average age of 17.91±0.81 playing in the infrastructure of a professional 35 football team.

It is known that iron participates in the free radical production process with the Fenton reaction and that excess iron accelerates the development of atherosclerosis by increasing oxidative stress in the body (Wood, 2004; Tuominen and etc., 1998). For this reason, it is necessary to approach the result cautiously and not immediately go for iron supplementation. It is known that iron deficiency reduces mental and physical performance, lowers body temperature and causes fatigue, especially in untrained individuals, reducing work efficiency (Brownlie and etc., 2004).

CONCLUSİON

As a result, in this study on the follow-up of the changes in the blood values of the football players, it was determined that the functional training and narrow field studies made cause a decrease in the blood values of the football players. In order not to experience low levels in these values, which protect the hormonal system and immunity in the human organism, the intensity of the training should be consciously adjusted according to the age, nutrition and gender of the athlete. The responsibility in this regard falls on the training scientists.

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