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Original Article

The correlation between some physiological and motor parameters in elite football players according to playing positions

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Abstract:
Objective of the Study: Due to the different tasks of football players playing in different positions during the competition, their workload and energy needs also change and accordingly the necessity of special training planning arises. In this context, the aim of this study is to examine the correlation between sprint, counter movement jump, agility and endurance parameters of elite football players according to their playing positions.
Method: The research model was determined as a correlational survey model from survey models. A total of 65 volunteer male footballers competing at U14 elite level in Turkish leagues participated in the study. The body weight (kg) values of the participants were measured using an electronic weighing machine (Tanita TBF 401 A, Japan) with an accuracy of ± 100 g, and their height (cm) was measured using a digital height measuring device with an accuracy of 0.01 cm. The counter movement jump parameter of the footballers was measured by Smartjump Vertical Jump Testing, their agility parameter was measured by Pro-Agility test protocol, their sprint parameter was measured by Smart Speed and Fusion Sport photocell, and their endurance parameter was measured by Yo-Yo IR1 tests. SPSS 24 software was used to analyze the data. The Pearson's Correlation Analysis method was applied to determine the correlation between the performance parameters of the football players in terms of the positions. **Findings:** The findings of the study revealed that there was a high positive correlation (r=.784, p=0.037) between the agility parameter and 0-30 m sprint parameter and a high positive correlation (r=.782, p=0.038) between the 20-30 m sprint and 0-30 m sprint parameters of the goalkeepers. While a weak negative correlation (r=-.459, p=0.032) was found between the counter movement jump parameter and sprint parameter in defensive players, a moderate negative correlation was found (r=-.531, p=0.023) between these parameters in midfield players, and a moderate negative correlation was found (r=-.521, p=0.027) between these parameters in forward players. A positive moderate correlation was found between agility and 10-20 m (r=.530, p=0.024) and 0-30 m sprint parameters (r=.510, p=0.030), while a negative moderate correlation was found between 0-10 m sprint and 10-20 m sprint parameters (r=-.523, p=0.026). Moreover, there was a moderate positive correlation between 10-20 m sprint and 0-30 m sprint parameters (r=.533, p=0.023) and between 20-30 m sprint and 0-30 m sprint parameters (r=.580, p=0.012). **Conclusion:** Considering the positions and performance outputs of the football players in the field, it can be asserted that the intensity of the actions performed by the football players in the competition was mainly anaerobic, and success was based on especially the motoric characteristics in which the phosphagen system was active.
Keywords: **Football, Playing Positions, Motoric characteristics, Performance**

Introduction

Modern football is known as a high intensity branch in terms of motoric and physiological parameters as well as technical-tactical skills. However, it can be said that the efforts of footballers during the matches vary according to the characteristics of the positions. Therefore, it is considered to be important to evaluate the physical, physiological and motoric parameters of each footballer separately, especially in lower age groups, both in terms of monitoring the performances of footballers and designing appropriate training programmes in line with the needs of their positions.

It is said that although soccer is dominated by aerobic activity, skills such as jumping, sprinting, shooting or scoring a goal are met by the anaerobic system and that there must be a balance between both systems in terms of performance. For this reason, it is necessary to improve the physical, physiological and motoric characteristics of football players in addition to their technical-tactical skills in order for them to exhibit high performance during matches (Nobari et al., 2021; Eleftherios et al., 2023). In addition to these parameters, the appropriate development of motor skills significantly affects the performance in football as in all sports branches (Gashi at al.,2023).

Monitoring the cardiorespiratory fitness levels of footballers for their endurance capacity is known as an indispensable part of performance evaluations in football (Altmann et al., 2020). In addition, it has been stated that the endurance capacities of football players differ between positions. When the playing positions are

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evaluated, it is seen that midfielders, fullbacks and wing players both cover the longest total distance and run long distances with high intensity in the competition, followed by forwards and midfield defenders (Bush et al., 2015). Among the other parameters, countermovement jump (CMR) is frequently used by sports scientists to assess the lower extremity explosive power of footballers. A study conducted among adolescent footballers reported moderate to high correlations between CMR, linear sprint and change of direction performance (Fernández-Galván et al., 2021). In a football competition, footballers cover 10-12 km and 1-11% of these distances consist of sprints. It has been reported that 96% of these sprints are shorter than 30 m and 49% are shorter than 10 m (Hammami et al., 2018). Although sprints are primarily determined by power and speed, agility is also important for football players. Because football players need to gain superiority over their opponents by using different running techniques such as repetitive sudden change of direction, acceleration and deceleration during competitions (Köklü et al., 2015). Starting speed, acceleration and maximum speed are key elements of football performance. Football players also benefit from the triple extension position when performing the initial speed and acceleration phases; It uses the driving force of the plantar flexors, knee and hip muscles, which can be important in supporting optimal movement patterns (Baron vd., 2020). Agility is characterized by very fast and sudden changes of direction, fast and sudden deceleration and acceleration. In a research, it is stated that a soccer player makes 1200-1400 changes of direction during the competition. Therefore, agility is considered a necessary factor for success in soccer (Theocharis et al., 2023;Sporis et al., 2010). Playing football, especially at the elite level, requires a number of technical and tactical skills as well as physical performance characteristics such as highly developed speed and agility. Many of these physical and performance characteristics show greatest improvement during the growth spurt in adolescence (Rommers vd., 2018). When the researches in the literature were examined, it was seen that there were many studies conducted in elite football players so far. However, it was suggested that more studies examining the relationships between the physiological and motoric parameters of elite football players in lower age groups should be performed (Sariati et al., 2020). In this context, due to the different tasks of football players in different playing positions in the matches, the workload and energy needs of the players also change and the necessity of special training planning arises. This study aimed to investigate body weight, height, body mass index, sprint (0-10 m, 10-20 m, 20-30 m and 0-30 m), countermovement jump (CMR), agility (Pro-Agility) and endurance parameters of elite football players according to their playing positions.

Material & methods

Research Model

The research model was determined as a relational survey model. Relational screening models refers to research models that aim to determine the presence and/or degree of co-variance between two or more variables. Although the relational survey model cannot give a real cause-effect relationship, it enables the prediction of the other variable if the situation in one variable is known (Karasar, 2006).

Research Group

A total of 65 volunteer male footballers competing at U14 elite level in Turkish leagues participated in the study. The football players in the study were informed about the tests and were not included in the evaluation if they had any health problems during the test or if they wanted to leave the study. The approval of the ethics committee of the research was obtained from Istanbul Gelisim University Ethics Committee with the decision **number 2023-09-92.**

Data Collection

Body Weight and Height Measurement

The athletes' heights were measured without shoes using a digital height meter with an accuracy of 0.01 cm. During the height measurement, the athletes stand barefoot with their feet in contact with each other, facing each other with their heads and bodies upright at a right angle (Eken, 2022). During the body weight measurement, the athletes were measured while wearing only their shorts, and the athletes were told to place their feet evenly on the designated area during the measurement. The athletes' body weight measurements were measured with a precision ± 100gr electronic scale (Tanita TBF 401 A, Japan) and the results were recorded in kilograms.

Jump Performance Evaluation

Athletes kept their hands fixed on their waist and kept their bodies in an upright position, and after the squat movement they performed by bending their knees, they were asked to jump up with the highest force they could (Kızılet et al., 2010; Markomovic et al., 2004). Tests were taken 3 times with the Smartjump Vertical Jump Testing device and the best score was recorded. This test was applied in three different ways: right leg, left leg and double leg.

Evaluation of Agility Performance (Pro–Agility Test)

The pro-agility test protocol, also known as the 20-yard shuttle test, was applied. Test fields were determined by placing markers 5 meters to the left and right of the starting line. A photocell gate was placed at the starting line and repeated crossing times were recorded. Uygulama başlamadan katılımcı başlangıç çizgisinde yerini almış ve hazır olduğunda önce sağdaki işaretçiye, sonra da soldaki işaretçiye dokunarak başlangıç çizgisinden geçerek test sonlandırılmıştır (Bayraktar, 2013).

30 Meter Sprint Test

A 30-meter test was applied to the athletes participating in the study to determine their speed. The sprint times of 0- 10 m, 10- 20 m, 20- 30 m and 0- 30 m were measured with Smart Speed Fusion Sport photocell, and after applying 3 times, the best score was recorded.

Yo-Yo Level IR1 Test

The Yo-Yo AT1 test was performed outdoors in an environment similar to the football turf on which the footballers play matches and in their usual football uniforms. The footballers coordinately moved back and forth as the sound levels increased in a 20-metre area (40 m). Then, they performed a 10-second recovery run in a 10-metre (2x5 m) area at the finish line. During this test, the footballers ran 4 times at 10-13 km/h and 7 times at 13.5-14 km/h. Followingly, a speed increase of 0.5 km/h-1 was performed to complete the run at each level (8 runs=760, 1080, 1400, 1720 m, etc.). During the test, all footballers were verbally motivated to give maximum effort. The test was cancelled when the footballers failed to reach the finish line on time twice in accordance with the voice or when they wanted to finish due to their own fatigue, and the running distance was recorded in metres (Krustrup et al., 2003).

Statistical Analysis

The data obtained from this study were transferred and mean and standard deviation values were given. To determine the normality distribution of the data, skewness and kurtosis values were checked by Kolmogorov-Smirnov test. It was determined that the data showed normal distribution and Pearson correlation analysis test was applied.

Results

Table 1. Demographic characteristics of the participants

Positions	Variables	n	Min.	Max.	Mean±Ss
Goalkeeper	Age (years)	7	14,00	14,00	14,00±0,00
	Heigt (cm)	7	166,50	184,50	175,36±6,47
	Weight(kg)	7	52,30	76,20	63,61±8,87
	BMI (kg/m^2)	7	17,47	23,65	20,66±2,37
Defense	Age (years)	22	14,00	14,00	14,00±0,00
	Heigt (cm)	22	160,00	180,00	171,36±6,25
	Weight(kg)	22	46,20	73,70	61,06±7,57
	BMI (kg/m^2)	22	17,99	23,39	20,72±1,54
Midfield	Age (years)	18	14,00	14,00	14,00±0,00
	Heigt (cm)	18	160,00	176,50	168,75±4,70
	Weight(kg)	18	50,50	69,80	59,96±5,87
	BMI (kg/m^2)	18	18,44	22,72	21,01±1,28
Forward	Age (years)	18	14,00	14,00	14,00±0,00
	Heigt (cm)	18	157,00	183,00	172,64±5,55
	Weight(kg)	18	45,90	70,20	60,77±5,59
	BMI (kg/m^2)	18	18,62	23,19	20,36±1,23

When Table 1 was examined, it was seen that the mean age of the footballers was 14,00±0,00 years, the mean height was 175,36±6,47 for goalkeepers, 171,36±6,25 for defence players, 168,75±4,70 for midfield players, 172,64±5,55 for forwards, and the mean body weight (kg) was 63,61±8,87 for goalkeepers, 61,06±7,57 in defence players, 59,96±5,87 in midfield players and 60,77±5,59 in forwards. Furthermore, the mean body mass indexes were 20,66±2,37 in goalkeepers, 20,72±1,54 in defence players, 21,01±1,28 in midfield players and 20,36±1,23 in forwards.

Table 2. Correlation analysis of physiological and motor parameters of goalkeepers

Variables		1	2	3	4	5	6	7
Counter Movement Jump (cm)	**r**	1						
	p							
Agility (sn)	**r**	-0,728	1					
	p	0,063						
0-10 m Sprint (sec)	**r**	-0,561	0,730	1				
	p	0,190	0,062					
10-20 m Sprint (sec)	**r**	0,150	0,150	-0,263	1			
	p	0,749	0,748	0,569				
20-30 m Sprint (sec)	**r**	-0,627	0,536	0,432	0,352	1		
	p	0,132	0,215	0,333	0,439			
0-30 m Sprint (sec)	**r**	-0,522	**,784***	0,750	0,411	**,782***	1	
	p	0,230	**0,037**	0,052	0,360	**0,038**		
Yo-Yo IR1	**r**	0,030	-0,106	0,196	-0,520	0,170	-0,074	1
	p	0,950	0,822	0,673	0,232	0,715	0,875	

When Table 2 was examined, a high positive relationship was detected between the goalkeepers' agility parameter and 0-30 m speed parameters (r=,784, p=0,037). Besides, a high level of positive correlation (r=,782, p=0,038) was detected between the 20-30 m speed and 0-30 m speed parameters.

Table 3. Correlation analysis of physiological and motor parameters of defense players

Variables		1	2	3	4	5	6	7
Counter Movement Jump (cm)	r	1						
	p							
Agility (sn)	r	-0,170	1					
	p	0,450						
0-10 m Sprint (sec)	r	-0,236	0,188	1				
	p	0,291	0,402					
10-20 m Sprint (sec)	r	-0,234	0,071	-0,110	1			
	p	0,295	0,753	0,625				
20-30 m Sprint (sec)	r	-0,418	-0,006	0,374	0,123	1		
	p	0,053	0,977	0,087	0,587			
0-30 m Sprint (sec)	r	**-,459***	0,095	**,570****	**,503***	**,845****	1	
	p	**0,032**	0,674	**0,006**	**0,017**	**0,000**		
Yo-Yo IR1	r	0,012	0,021	-0,270	-0,222	-0,054	-0,262	1
	p	0,959	0,924	0,225	0,322	0,810	0,239	

When Table 3 was examined, a weak negative relationship (r=-,459, p=0,032) was found between the jump and 0-10 m sprint parameters of the defence players, and a moderate positive relationship (r= ,570, p=0,006) between the 0-10 m sprint and 0-30 m sprint parameters, A positive moderate correlation was found between 10-20 m sprint and 0-30 m sprint parameters (r=,503, p= 0,017), while a positive high correlation was found between 20-30 m sprint and 0-30 m sprint parameters (r= ,845, p=0,000).

Table 4. Correlation analysis of physiological and motor parameters of midfield players

Variables		1	2	3	4	5	6	7
Counter Movement Jump (cm)	r	1						
	p							
Agility (sn)	r	0,078	1					
	p	0,757						
0-10 m Sprint (sec)	r	-0,348	-0,123	1				
	p	0,156	0,627					
10-20 m Sprint (sec)	r	-0,225	0,109	-0,185	1			
	p	0,370	0,665	0,463				
20-30 m Sprint (sec)	r	-0,429	0,247	0,044	**,516***	1		
	p	0,075	0,324	0,864	**0,028**			
0-30 m Sprint (sec)	r	**-,531***	0,069	**,610****	**,578***	**,710****	1	
	p	**0,023**	0,787	**0,007**	**0,012**	**0,001**		
Yo-Yo IR1	r	0,027	0,137	0,129	**-,602****	-0,221	-0,292	1
	p	0,916	0,588	0,609	**0,008**	0,379	0,239	

When Table 4 was examined, there was a moderate negative correlation between the counter movement jump and 0-30 m sprint parameters of midfield players (r=-,531, p=0,023), and a moderate positive correlation between 0-10 m sprint and 0-30 m sprint parameters (r=,610, p=0,007). There was a positive relationship between 10-20 m sprint and 20-30 m sprint parameter (r=,516, p=0,028) and between 10-20 m and 0-30 m sprint parameter (r=,578, p=0,012). Furthermore, it was determined that there was a moderate negative correlation between 10-20 m sprint and Yo-Yo IR1 parameter (r=-,602, p=0,008) and a high positive correlation between 20-30 m and 0-30 m sprint parameter (r=,710, p=0,001)

Table 5. Correlation analysis of physiological and motor parameters of forwards

Variables		1	2	3	4	5	6	7
Counter Movement Jump (cm)	r	1						
	p							
Agility (sn)	r	-0,445	1					
	p	0,064						
0-10 m Sprint (sec)	r	-0,014	-0,047	1				
	p	0,955	0,854					
10-20 m Sprint (sec)	r	**-,521***	**,530***	**-,523***	1			
	p	**0,027**	**0,024**	**0,026**				
20-30 m Sprint (sec)	r	0,029	0,149	-0,175	0,148	1		
	p	0,910	0,554	0,486	0,557			
0-30 m Sprint (sec)	r	-0,447	**,510***	0,244	**,533***	**,580***	1	
	p	0,063	**0,030**	0,329	**0,023**	**0,012**		
Yo-Yo IR1	r	0,201	0,017	-0,258	0,079	-0,052	-0,164	1
	p	0,423	0,946	0,301	0,756	0,839	0,515	

When Table 5 was analysed, a negative moderate relationship (r=-,521, p=0,027) was detected between counter movement jump and 10-20 m sprint parameters, a positive moderate relationship (r=,510, p=0,030) was detected between agility and 10-20 m sprint (r=,530, p=0,024) and a positive moderate relationship (r=,510, p=0,030) was detected between agility and 0-30 m sprint parameters. Furthermore, there was a moderate negative correlation between 0-10 m sprint and 10-20 m sprint parameters (r=-,523, p=0,026), a moderate positive correlation between 10-20 m sprint and 0-30 m sprint parameters (r=,533, p=0,023), and a moderate positive correlation between 20-30 m sprint and 0-30 m sprint parameters (r=,580, p=0,012).

Discussion

Considering the requirements of today's football branch, it was thought that preparing training programs according to the individual performance outcomes of football players, especially for the lower age groups, as well as the characteristics of their positions on the field, was important for their performance. In this context, this study was aimed to examine the anthropometric characteristics, speed, countermovement jump, agility and endurance parameters of elite football players according to positions.

In this research, it was concluded that there was a weak level negative relationship between the counter movement jump parameter and the sprint parameter of the defence players (r=-.459, p=0.032), a moderate level negative relationship in midfield player (r=-.531, p=0.023), and a moderate level negative relationship in the forward player (r=-.521, p=0.027).

When the literature was examined, Köklü et al., (2015) investigated the relationship between sprint, agility and counter movement jump performances in their research with young football players. They found that there was a moderate and strong relationship between 30 m and 10 m sprint times. In another study, when Yavuz et al., (2023) examined the relationship between sprint, agility, balance and counter movement jump parameters in football players, they found a significiantly high relationship in negative direction between 30-meter sprint and counter movement jump performances. In another study, Vescovi and McGuigan (2008) stated that there were negative relationships between counter movement jump and different sprint distances of football players. In Özdemir's master's thesis study, Özdemir (2019) found that there was a negative relationship between counter movement jump and sprint performance of young football players. In another study, Myftiu and Dalip (2021) did not find a relationship between the counter movement jump and sprint (0-10 m, 10-30 m) parameters of young football players according to their positions. In another study, when Zileli and Söyler (2021) examined the relationship between counter movement jump and sprint in football players, they found a relationship between the counter movement jump parameter and the 10 m and 30 m sprint parameters of the football players. In the same study, they found that there was a relationship in a moderate level in a positive direction between the 10 m and 30 m sprint parameters of football players. In another study, Zileli and Söyler (2022) examined the relationships between selected performance parameters in amateur football players. According to the results, they did not find a relationship between the counter movement jump parameter and 10-30m sprint parameters of amateur football players. In another study conducted on elite football players, Boone et al., (2021) found that there was a relationship in a moderate level negative direction between counter movement jump and sprint parameters. In their study to evaluate the performance of elite female football players, Stanković et al., (2022) stated that they found a relationship in a moderate level negative direction between the counter movement jump parameter and the sprint parameter of female football players. In another study conducted on young football players, Böge et al., (2023) examined the relationship between the performance tests they applied to football players. According to the results of the research, they found that there was a significant negative correlation between counter movement jump and sprint parameters. It was observed that the results of some studies conducted in the literature support the results of this study.

When studies that did not showed any similarities were examined, Čaušević et al., (2021) on their study with young basketball players, found strong relationship between jumping and 10 m-20 m sprint parameters. The result of this study was not similar to our study. In a study conducted in a different branch, Lucas et al., (2018) found that there was a strong relationship between the jump and sprint parameters of elite male and female handball athletes. Some studies differ from the results of the current research. It was thought that this difference arised from the requirements of the handball and basketball branches (such as many jumps, dunks, rebounds or jump shots).

In this study, there was a high relationship in a positive direction between goalkeepers' agility and 0-30 m sprint parameters (r=.784, p=0.037), and a high relationship in a positive direction between 20-30 m sprint and 0-30 m sprint parameters (r=.782, p=0.038). In addition, it was determined that there was a moderate positive relationship between the forward players' agility and 10–20 m (r=.530, p=0.024) and 0-30 m sprint parameters (r=.510, p=0.030), while 0–10 m there was a moderate level negative relationship between sprint and 10–20 m sprint parameters (r=-.523, p=0.026). Besides, there was a moderate positive relationship between 10–20 m sprint and 0–30 m sprint parameters (r=.533, p =0.023), and a moderate positive relationship between the 20–30 m sprint and 0–30 m sprint parameters (r=.580, p=0.012).

When the studies in the literature were examined, França et al., (2022) examined the sprint and agility performance parameters of male football players in different age groups, and found that there was a moderate positive relationship between the agility and sprint parameters of football players. In the same study, they found

that there was a moderate positive relationship between the 10 m sprint and 35 m sprint parameters of football players. Şahin et al., (2020) found that there was a positive relationship between agility and 20 m sprint and 30 m sprint parameters. Additionally, in the same study, they stated that there was a positive correlation between the 10 m sprint and 20 m sprint parameters of football players. In another study, when Lockie et al., (2018) examined the relationship between linear sprint and direction change sprint of female football players in university, they found that there was a moderate positive relationship between agility and sprint parameters of football players. In a study conducted in a different branch, Zapartidis et al., (2018) examined the relationship between some performance parameters of male young handball players. As a result of the research, they found that there was a high level of relationship between agility and sprint parameters. Additionally, in the same study, they stated that there was a high level of positive correlation between the athletes' 5 m and 10 m and 10 m and 30 m sprint performances. As a result of his research, Asan (2023) found that there was a moderate positive relationship between agility and sprint parameters of football players. In a study conducted in a different branch, Kara et al., (2021) found that there was a moderate positive relationship between 20-meter sprint and agility parameters of female volleyball players. When the results of some studies in the literature were examined, it was seen that there were similar results to this study.

When the studies that differ from this study were examined, Aktaş et al., (2020) did not find a relationship between agility and 10m-20m and 30m sprint parameters as a result of their research with amateur football players. The reason for this difference can be interpreted as the fact that the football players in the research competed at the amateur level. In another study, when Aychiluhim and Deyou (2020) examined the relationship between speed and agility parameters of football players according to their positions, they did not find a relationship between agility and sprint parameters of football players in all positions. It appeared that this study did not overlap with the results of the current study. The possible reason for this difference may be due to the content of the training program. In another study, Arı et al., (2020) examined the relationships between different parameters of female football players. According to the results of the research, they did not find a relationship between agility and 10-20-30 meter sprint parameters. It seems that the result of this research differed from the result of our research. This suggested that the reason for this situation was due to the gender factor.

In this study, it was determined that there was a moderate negative relationship ($r=-.602$, $p=0.008$) between the 10-20 m sprint of midfield players and the Yo-Yo IR1 parameter, while there was not found any relationship between Yo-Yo IR1 and selected parameters in any of the football players in other positions.

Based on this information, when the studies in the literature were examined, Modric et al., (2021) in their study evaluating the running performances of football players according to their positions during the competitions, did not find any relationship between Yo-Yo IR1 and the sprint parameter according to the positions of the football players. As a result of their research with female futsal players, Arı and Tuncel (2020) did not find a relationship between sprint (10m-30 m), agility, counter movement jump and Yo-Yo IR1 parameters. While the result of this research was similar to the result of the current research, it was observed that only midfield players had different results between Yo-Yo IR1 and sprint (10m-20m) parameters.

The reason for this situation was thought to be that the futsal branch involves very high intensity actions in short periods of time and gender differences. However, in his research with football players in different age groups, Korkmaz (2021) did not find a relationship between the speed and VO2max parameter of football players. In another study conducted on female football players, Lockie et al., (2017) did not find a statistically significant relationship between Yo-Yo IR1 and sprinting. In previous studies, Krustrup et al., (2006) and Mujika et al., (2009) did not find a significant relationship between Yo-Yo IR1 and sprint parameters in their studies on male football players. The results of some studies appear to be similar to the results of this study.

When the results of other studies that were not similar to this study were examined, Ingebrigtsen et al., (2014) found that there was a moderate relationship between Yo-Yo IR1 and sprinting in professional male football players. This suggests that the reason why this study was not similar to the current study may be due to the football players being at different levels. In another study, when Da Silva et al. (2010) examined the relationship between aerobic condition and repetitive sprint parameters in elite football players, they found that there was a relationship at a low level between these parameters of the football players. In another study, Şahin and Kahraman (2023) examined the effects of aerobic endurance on performance parameters in amateur football players. As a result of the research, they found that there was a significant relationship between VO2 max and 30 m sprint performances. It appeared that the results of the research were not similar to the results of this study. It was thought that the reason for this situation may be the football players in the research were in the competition period.

Conclusions

In conclusion; Considering the results of the study, it was seen that there was a high positive relationship between goalkeepers' agility and 0-30 meter sprint, and also a high positive relationship between 0-30 meter sprint and 20-30 meter sprint. This situation revealed the fact that in today's football, goalkeepers must not only stand on the goal line but also, when necessary, read the game well and produce solutions before reaching the goal area. In addition, the fact that there was a relationship between defence players and midfield

players between 0-30 meters and other parameters indicates that the phosphogen system, which was a requirement of football, was active, especially short-term exercises were intense, and the repetition quality of these features determines the performance.

While the relationship between shorter distance speed performances in offensive players draws attention, it can be stated that offensive players have diversity in finishing the moves they make or the attacks of their teammates in a football match, and the success level of these moves determines the performance. Based on this information, it can be said that the main intensity of the movements made by football players in a competition was anaerobic, and motoric features in which the phosphogen system was especially active form the basis of success. At the same time, it is important for the careers of football players to continue their football lives at an elite level, as well as their performance in the competition. For this reason, when designing training programs, it is considered important to first take the performance tests of the football players and prepare appropriate training programs according to the data obtained. However, it can be said that the application of many performance tests suitable for the football branch and the evaluation of their analyzes have a special importance in the selection of elite football players in terms of guiding coaches in the selection of elite football players. It was believed that football players' training in which the phosphogen system was active, in addition to their endurance parameters, will contribute to their competitive performance. In addition, it was thought that including football players from different age groups in future studies will be important in terms of both evaluating the performances of football players and contributing to the selection of talents in lower age groups, thus contributing to the literature and sports sciences.

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