

The Comparison of Acceleration and Sprint Features of Soccer Players According to Their Positions

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ABSTRACT

The purpose of this study was to investigate the relationship between acceleration and 30 m sprint features of soccer players according to their positions. 50 football players mean aged 17,9 were voluntarily participated in to this study. The participants' heights and weights were 174,8 cm, 67,9 kg respectively. Two tests were applied to the subjects to investigate acceleration (10 m) and sprint (30 m) capabilities of players by using Newtes2000 Sprint Timing System. As conclusions of this study; It was found that defence and forward players have the best acceleration scores. Forward players have also the best 30 m sprint scores. The goalkeepers were found as the slowest players in both tests. However all these differences were not statistically significant. There were no meaningful differences between acceleration and sprint scores of players according to their positions. Based on these findings; the similarity of sprint and acceleration abilities in the players of different positions is thought to be because of the same training backgrounds.

Keywords: *Soccer, Sprint, Acceleration, Player Position*

INTRODUCTION

Soccer is a multifaceted sport that requires well developed physical fitness to be successfully played.¹ Strength, power, and their derivatives (acceleration, sprinting, and jumping) all make important contributions to the performance potential of soccer players.² High-speed actions are known to impact soccer performance and can be categorized into actions requiring maximal speed, acceleration, or agility.³ Speed and acceleration are important qualities in field sports.⁴ Acceleration is a significant feature of game-deciding situations in the various codes of soccer. However, little is known about the acceleration characteristics of soccer players, the effects of acceleration training, or the effectiveness of different training modalities.⁵

Sprint speed is an essential component of being successful in the sport of soccer. Sprinting requires the ability to quickly accelerate.⁶ Speed is an important factor affecting the performance in football and it is defined as persons moving himself from one location to other with maximum speed, performing the movements with a speed as large as possible and the ability to move the body or one of its parts in a quick manner.⁷ Although speed ability is an innate characteristic, it is improved by long term, deliberate trainings. From the general definitions of speed, the necessity of

partial abilities such as speed of sensing, speed of anticipation, speed of decision making, speed of reaction, speed of motion with and without the ball, and speed of action arise.⁸⁻⁹

While it is expected from a wing player to have advanced movement speed with and without the ball, it is primarily expected from a midfielder to have good decision making speed. The speed of the soccer players is a quiet sophisticated ability.¹⁰ In the study carried out, the movement times of the players are measured. Reaction and sensing times are not taken into account. Therefore, the motor characteristics of players are being evaluated rather than sensing abilities.

Therefore, the aim of this study was to comparison acceleration and sprint features of soccer players according to their positions.

MATERIAL AND METHOD

A total of 50 soccer players, goalkeepers, defenders, midfielders and forwards were examined. Players were playing in two different team in amateur football league. The tests were applied in the match season. The aims of all tests were explained to the players before the tests were conducted. The tests were started after a 20-minute warm-up session.

The 10m and 30m times of the soccer players are determined by taking the best of three repetitions which have sufficient resting periods in between. Newtest 2000 electronic timing gates are used as the measurement tool. 10 m and 30 m sprints are carried out as being the acceleration time and the sprint time, respectively. The subjects made their start on foot from one meter distance to the photocell.

The descriptive data, mean and standard deviations of the athletes were found, the multiple comparison between the positions were carried out by Kruskal Wallis H method. SPSS 19 software was used for statistical evaluation and the significance level was determined as 0.05.

FINDINGS

Table 1. Descriptive data of the soccer players.

	Position				Total
	Goalkeeper	Defence	Midfielder	Striker	
N	5	18	17	10	50
Age	17.6	18.1	17.9	18.0	17.9
Sport Years	5.0	6.5	5.5	6.1	5.9
Height(cm)	182.9	177.6	171.9	170.9	174.8
Weight(kg)	75.2	69.2	65.1	67.1	67.9

Table 1 gives the defining data belonging to the soccer players. 5 goalkeepers, 18 defenders, 17 midfielders and 10 strikers participated in the study making a total of 50 soccer players. The average age of the players was 17,9 year, average sports age was 5,9 year and average height and weight were 174,8 cm and 67,9 kg.

Table 2. 10 m and 30m scores of the players with respect to their positions.

		N	Mean	Median	Std. Dev.	Min.	Max.
10m	G. Keeper	5	1.89	1.89	0.15	1.73	2.10
	Back	18	1.75	1.76	0.14	1.58	2.06
	Midfielder	17	1.80	1.77	0.23	1.54	2.36
	Striker	10	1.77	1.70	0.20	1.55	2.02
	Total	50	1.79	1.77	0.18	1.54	2.36
30m	G. Keeper	5	4.38	4.37	0.19	4.11	4.64
	Back	18	4.23	4.22	0.19	4.01	4.58
	Midfielder	17	4.22	4.12	0.21	3.94	4.58
	Striker	10	4.15	4.12	0.20	3.90	4.59
	Total	50	4.23	4.19	0.20	3.90	4.64

In table 2, the mean and median scores of the players are seen. While the mean 10 m acceleration score of all the sportsmen was 1.79 s; 30 m sprint score was 4.23 seconds.

Table 3. The comparison of 10 m and 30 m sprint scores between the Players positions.

	Ki-Squared	df	p
10 m	2.264	3	0.520
30 m	4.228	3	0.238

Table gives the comparison of the sprint times between the positions. The sprint times between the positions were not found to be statistically different in both distances ($p>0.05$).

DISCUSSION AND RESULT

As result of this study, no significant relationship was found between acceleration and sprint features of soccer players according to their positions.

The study investigated the 10 meter and 30 meter sprint features of 50 soccer players consisting of 5 keepers, 18 defenders, 17 midfielders and 10 strikers, with respect to their positions. The sprint times of the players with respect to their positions are given in Table 2. It is seen that the strikers are faster in both distances. The goalkeepers were found as the slowest group in both distances as well. But the difference between the groups was not meaningful with a level of 0.05.

This study shows that there is no difference between the positions in acceleration and 30 m sprint scores of young footballers. The studies in the literature give similar results. In many studies, the sprint characteristics of the keepers were found to be slow and that of the soccer players were found to be the fastest. But there are few studies having statistical difference. For instance, Karavelioğlu compared 30 m scores of 77 sportsmen from the top six teams in the amateur league and obtained the result that the keepers are slower than all the other positions.¹¹ The stoppers were the slowest group in 60 m sprint in the study performed with 13 keepers, 22 stoppers, 24 side players, 35 midfielders and 41 offense players. Offense players were found to be faster than the keepers and the stoppers.¹²

In a study, while there were no differences in 5 m acceleration of soccer players with respect to their positions, the forward players outclassed the keepers in a statistically meaningful manner.⁸ Many studies, though, have arrived the result that the sprint characteristic does not create difference between the positions, as it is the case in this study.

A study could not find meaningful differences in 10 and 30 m sprint of soccer players playing in Turkish Super League values with respect to their positions.⁹ Cerrah et. al. have found the 10 m times for the keepers, defenders,

midfielders and forward players to be 1.72 ± 0.11 , 1.69 ± 0.07 , 1.72 ± 0.08 , 1.67 ± 0.09 , respectively; and 30 m times to be 4.31 ± 0.22 , 4.17 ± 0.19 , 4.25 ± 0.17 and 4.15 ± 0.20 , in the same order.¹³ As seen, the forward players are the fastest ones in both of the distances similar to the situation in this study. But this difference is again not statistically meaningful.

In another study the 10 meter sprint values were found to be defense 1.71 ± 0.1 , midfield 1.6 ± 0.3 and forward 1.7 ± 0.1 and the 30 meter sprint values were found to be defense 4.2 ± 0.2 , midfield 4.2 ± 0.1 and forward 4.2 ± 0.1 .¹⁴ No difference could be found between the positions. In the study performed by Taşkın in which the 30m sprint values did not differ between the positions, the defense players had the best time with 4.21 s.¹⁵ Güner et. al., could not find any difference also in terms of running velocities between the midfielders and the forwards.¹⁶

The present findings suggest that specific testing procedures for acceleration and maximum speed should be utilized in soccer players. In the respect of these findings and the finding of this study, the positional difference in velocity times can be change with the sample group. It seems future studies needed for a better comparison with measuring the agility as well as velocity times. It was thought that the indifference between positions may be the players from all positions have the same training experiences for years.

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