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EFFECT OF THE BALL ON QUICKNESS AND ACCELERATION PERFORMANCE IN YOUNG SOCCER PLAYERS

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Abstract

The aim of the research. The purposes of this study was to examine the effect of ball on quickness and acceleration performance in young soccer players.

Methods of research. A total of 16 soccer players were examined. These soccer players were playing in first leagues of Turkey. The mean (SD) age was 18,19±0,75 years, height was 1,82±6,63 m, and weight was 73,5±6,07 kg for the 16 soccer players. While the tests were conducted, the same weather conditions were taken into consideration. This was followed by the administration of 5-m quickness, 5-m quickness with ball, 10-m acceleration, and acceleration with ball tests. Each test was applied twice, with a 3-minute interval, and the best result was recorded. There was a 5-minute rest session between the two tests. Soccer balls, cone, photocell, and tape measure for distance were used. The methodology employed during the tests is summarized in the following paragraphs.

Main results. A significant relationship no existed between quickness and quickness wit ball ($P>0.05$). On the other hand, a significant relationship existed between acceleration and acceleration wit ball ($P<0.05$). A unit increase in acceleration with ball lead to a change in the rate of 51% in acceleration performance.

In conclusion; our study showed that quickness is very important for soccer game. All soccer players need to moves quickly with ball and without ball. Also, to minimize change of speed, coaches should improve acceleration wit ball in training. Their training should involve in multiple planes at varied speeds.

Key words: Football, quickness, change of speed, young.

Introduction

Soccer is one of the most widely played sports in the world and is a sport characterized by short sprints, rapid acceleration or deceleration, turning, jumping, kicking, and tackling (Arnason et al. 2004; Bangsbo and Michalsik 2002; Harris and Reilly 1998; Wisloff et al. 1998). Elite soccer is a complex sport, and performance depends on a number of factors, such as physical fitness, psychological factors, player technique, and team tactics (Rösch et al. 2000). Linear actions such as acceleration and top end speed can be affected by changing the mechanics of the arms or legs (Brown and Vescovi 2003). The mechanisms behind the link between agility, acceleration and quickness for starting performance are probably multifactorial (Ørtenblad et al. 2000; Ross and Leveritt 2001). Acceleration is the rate of change in velocity that allows a player to reach maximum velocity in a minimum amount of time (Little and Williams 2005). Accelerating from a stationary position or a moving start requires high force generation capacity to overcome the body's inertia. Delecluse (1997) found maximal speed and acceleration to be specific qualities in sprint athletes. Acceleration is defined as the rate of change in velocity and is often measured by assessing sprint performance over short distances, such as 5 or 10 yards (Murphy et al. 2003). Quickness is the ability to

read and react to a situation (Moreno 1995). Quickness is considered both a multidirectional skill that combines explosiveness, reactivity, and acceleration and agility while incorporating flexibility, strength, and neuromuscular coordination by allowing the athlete to move at a higher rate of speed (Brown and et al. 2000). The importance of that kind of muscle action can be seen when deceleration or acceleration actions are performed during a game (Jovanovic et al. 2011). Furthermore, elite players are mostly characterized by reaction ability in the distances ranging from 5 to 10 m (Sporis et al. 1953). We can find no published literature on quickness and acceleration which is effected by the ball. Acceleration and quickness are important components of sport performance. Therefore, the purposes of this study were to examine effect of the ball on quickness and acceleration performance in soccer players.

Material and methods

A total of 16 soccer players were examined. These soccer players were playing in first leagues of Turkey. The mean (SD) age was 18,19±0,75 years, height was 1,82±6,63 m, and weight was 73,5±6,07 kg for the 16 soccer players. Before conducting the experiment, all subjects were informed of the risks of the study and gave informed consent. The study was

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approved by an ethics board and met the conditions of the Helsinki Declaration. All of the soccer players included the study had the same physical fitness because they attended the preparatory period, which had lasted 6 weeks. The tests were applied the second week of december in the contest season, and the aims of all tests were explained to the players before the tests were conducted. The tests were started with a 20-minute warm-up session. While the tests were conducted, the same weather conditions were taken into consideration. This was followed by the administration of 5-m quickness, 5-m quickness with ball, 10-m acceleration, and acceleration with ball tests. Each test was applied twice, with a 3-minute interval, and the best result was recorded. There was a 5-minute rest session between the two tests. Soccer balls, cone, photocell, and tape measure for distance were used.

The methodology employed during the tests is summarized in the following paragraphs.

Quickness and acceleration without ball tests

Photocells were placed at the start, 5 m (quickness) and 10 m (acceleration) in order to collect sprint times over the 2 distances. The starting position was standardized for all subjects. Soccer players started in a 2-point crouched position with the left toe approximately 30 cm back from the starting line and the right toe approximately in line with the heel of the left foot. Soccer players wore rubber-soled track shoes. Therefore, Quicness was evaluated for 5-m. Acceleration was evaluated using a 10-m test. Test was applied twice, with a 3-minute interval, and the best result was recorded for statistical analysis.

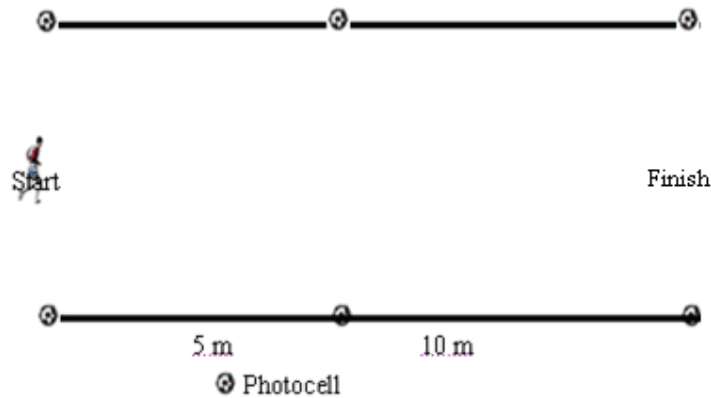


Figure 1. quickness test for 5 m, acceleration test for 10 m without ball

Quickness and acceleration with ball tests

Photocells were placed at the start, 5 m (quickness with ball) and 10 m (acceleration with ball) in order to collect sprint times over the 2 distances. The starting position was standardized for all soccer players. Soccer players started in a 2-point crouched position with the left toe approximately 30 cm back from the starting

line and the right toe approximately in line with the heel of the left foot and with ball. Soccer players wore rubber-soled track shoes. Therefore, Quicness with ball was evaluated for 5-m. Acceleration with ball was evaluated using a 10-m test. Test was applied twice, with a 3-minute interval, and the best result was recorded for statistical analysis.

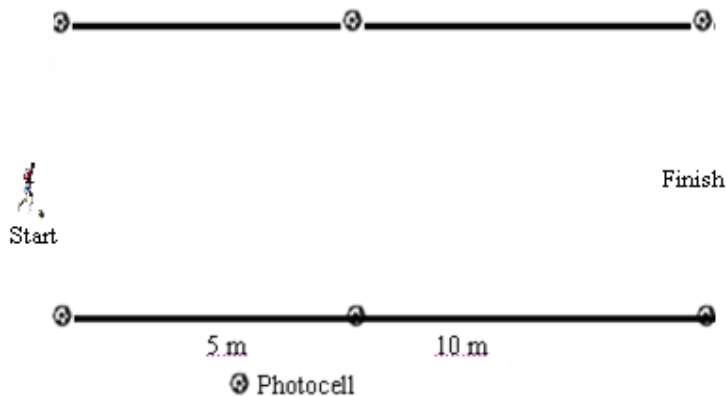


Figure 2. quickness test for 5 m, acceleration test for 10 m with ball

Statistical Analysis

SPSS 16.0 statistical program was used for evaluation and calculation of the data. The data was summarized and evaluated by the means and standard deviations. To explain relationship between

measurements, Pearson Correlation analysis was used according to the results of the test of normality, and linear regression analysis was used to predictive power of explanation on quickness and acceleration of ball. The significance level was taken as 0.05.

Results

Table 1. Data summary for soccer players.

Variables	Mean (sec)	Std. deviation
Age (y1)	18,19	0,75
High (m)	1,82	6,63
Weight (kg)	73,5	6,07

The mean (SD) age was 18,19±0,75 years, high was 1,82±6,63 m, and weight was 73,5±6,07 kg for the 16 soccer players.

Table 2. Data summary for soccer players in performance.

Variables	Mean (sec)	Std. Deviation
Quickness	1,04	0,11
Quickness with ball	1,08	0,07
Acceleration	1,69	0,11
Acceleration with ball	1,93	0,13

The mean (SD) quickness was 1,04±0,11 seconds, quickness with ball was 1,08±0,07 seconds, acceleration was 1,69±0,11 seconds, and acceleration with ball was 1,93±0,13 seconds for the 16 soccer players.

Table 3. Analysis of regression between quickness, acceleration and ball

Dependent variables	Variables	B	Standart hata	Beta	T	P
Quickness	Ball	0,407	0,408	0,257	0,995	0,336
		R = 0,257	R ² = 0,066	F = 0,991	P = 0,336	
Acceleration		0,513	0,185	0,594	2,764	0,015
		R = 0,594	R ² = 0,353	F = 7,640	P = 0,015	

As shown Table 1, the model is not found to be meaningful in the regression results of ball for quickness (P>0,05). A significant relationship no existed between quickness and quickness wit ball (P>0,05). On the other hand, the model is found to be meaningful in the regression results of ball for acceleration (P<0,05). A significant relationship existed between acceleration and acceleration wit ball (P<0,05). A unit increase in acceleration with ball lead to a change in the rate of 51% in acceleration performance.

Discussion

The mean (SD) quickness was 1,04±0,11 seconds, quickness with ball was 1,08±0,07 seconds, acceleration was 1,69±0,11 seconds, and acceleration with ball was 1,93±0,13 seconds for the 16 soccer players. A significant relationship no existed between

quickness and quickness wit ball (P>0,05). On the other hand, a significant relationship existed between acceleration and acceleration wit ball (P<0,05). A unit increase in acceleration with ball lead to a change in the rate of 51% in acceleration performance. Taskin et al. (2010) reported that did not find any statistical differences for 5-m quickness of the first output when evaluated collectively, and without the ball of soccer players (p>0,05). On the other hand, there was a statistical difference for 15-m acceleration phase when evaluated collectively, and without the ball of soccer players (p<0,05). This cross comparison collect the 15-meter acceleration phase duration times higher than without the ball was passed. Faster completion of acceleration for 10-m (3.72%) and quickness for 5-m (2.11%) indicates that the 8-week intervention was successful as regards performance enhancement when it comes to quickness and acceleration (Jovanovic et al.



2011). The facts presented are in relation with that study and the results that show the improvement in tests that estimate quickness for 5-m and acceleration for 10-m of elite soccer players (Jovanovic et al. 2011). Little and Williams (2005) found that acceleration for 10 m is $1,83 \pm 0,08$ s for professional soccer players. The performances on the 10-m test for acceleration, the flying 20-m test for maximum speed, and the zigzag test for agility were all correlated at high levels of statistical significance ($p < 0.0005$) (Little and Williams 2005). Research has demonstrated significant positive relationship between strength and acceleration and movement velocity (Hoff and Alamasbakk 1995).

Conclusion

Our study showed that quickness is very important for soccer game. All soccer players need to move quickly with ball and without ball. Also, to minimize change of speed, coaches should improve acceleration with ball in training. Their training should involve in multiple planes at varied speeds.

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