RESEARCH OF SPEED CAPABILITIES WHEN CHANGING DIRECTION OF FUTSAL PLAYERS IN BULGARIA

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Abstract: Futsal improves the technical and tactical skills of players due to the need for quick decisions in small spaces. Practicing futsal can be used as a method for training young football players, as it develops their creativity and quick reaction, which are fully applicable and clearly expressed in football. The aim of our study is to test the speed capabilities of futsal players when changing direction. A total of 12 field players who practice futsal were studied. From the results obtained, we found that changing the direction of futsal players affects their better performance in running straight sections of different distances. The results of the study suggest a more thorough and detailed study of speed and its specificities in futsal.
Keywords: futsal, speed, change of direction

1. INTRODUCTION

The dynamics of the futsal game require players to demonstrate the ability to resist strain and overcome fatigue by repeating maximal sprints for as long as possible. This suggests that players need to develop many components of the game to perform at their best, namely repetitive sprinting, lower limb strength, agility. Research shows that many aspects are needed to perform at a professional level, including experience in repetitive sprinting ability, analytical aptitude, shooting and passing skills, agility and coordination. (Naser et al., 2017.)

The combination of different specific exercises includes strength, speed and agility, which are crucial for achieving a high score in futsal. In conclusion, the study highlights the specific futsal exercises as effective in reducing body fat of players, increasing aerobic capacity and overall physical performance of players. This training approach develops the speed of players' actions, which is the main activity of futsal. (Hussam S. Al-M. 2024.)

Another showed that the pre-season preparation for futsal leads to various changes in the body of players in terms of the speed of their actions. Thus, coaches are motivated to assess the sprint speed of futsal players at the beginning of the pre-season. This information can be adjusted and control the training loads of players by increasing or decreasing the volume of the load in the preparation period. (Nakamura et. al, 2015.)

Presented conclusions of these studies shows that the preparation in futsal is very important part of the development in the players and that is huge challenges in the coaches.

Another study provides a comprehensive overview of the anthropometric and performance profiles of elite youth futsal players, highlighting both the general characteristics and specific differences among playing positions. Pivots and goalkeepers showed a greater height and body mass, while wingers performed better in speed and change-of-direction tests. Additionally, lower Change of direction deficit values were associated with a greater efficiency in directional changes, emphasizing the relevance of the acceleration and deceleration capacity in game situations. (Oscar et al., 2025.)

In the results of the study on the ability to change position in elite female soccer players, it is noted that the linear speed of the players does not appear to be statistically significant. In view of this, the factors that influence the change of direction and their relationship with linear speed must be taken into account. (Javorac et al., 2023)

In sports such as soccer, rugby, American football, field hockey and others that are practiced on grass, the manifestation of linear speed and speed in changing direction are the main actions of the players. For example, Bloomfield et al., 2007 noted that soccer players perform an average of over 700 changes of direction during a game. To a large extent, these actions and movements of the players require good preparation and efforts from the players are related to the manifestation of physical qualities, one of which is agility.

Agility is a multifaceted skill (Metikos et al., 2003; Young and Farrow, 2006), but some experts define it as the movement of the whole body with a change in speed or direction in response to some stimulus that the body has received. There is no doubt that the cognitive component of agility is very important (Gabbett et al., 2008; Sheppard et al., 2006). The mechanism for the execution of any movement associated with agility includes the ability to accelerate and stop quickly, in addition to changing direction (Young and Farrow, 2006).

In addition to the priority areas in futsal such as agility and endurance, there is another physical quality that is an indispensable part of achieving higher results, namely speed.

Speed is the second most important quality that futsal players need, after endurance and more precisely special endurance, which can be defined as highly effective specific working capacity within a specific motor activity. All or almost all sprints in futsal are under 7 seconds and are performed at 90-95% of the maximum.

2. MATERIALS AND METHODS

The aim of the research is to determine the state of the speed capabilities of male futsal players for changing direction. The objectives: 1. Study of literary sources; 2. Collecting data on the speed of the competitors; 3. Analyzing and summarizing the results. Participants of the research were 12 futsal players aged 20 to 35 years. Research methodology: Tests were used to reveal the speed capabilities of male futsal players, namely 5 m sprint/10 m sprint/20 sprint, 505 Test, T-Test. Table 1 shows the specific parameters of the test battery.

3. RESULTS

Table 1. Test battery

Sign	Test	Unit of measure	Direction of increase	Measuring scale	Accuracy of measurement
Speed	5m sprint	Seconds	-	Proportional	0,01 sec.
Speed	10m sprint	Seconds	-	Proportional	0,01 sec.
Speed	20m sprint	Seconds	-	Proportional	0,01 sec.
Speed	505 Test	Seconds	-	Proportional	0,01 sec.
Speed	T-Test	Seconds	-	Proportional	0,01 sec.

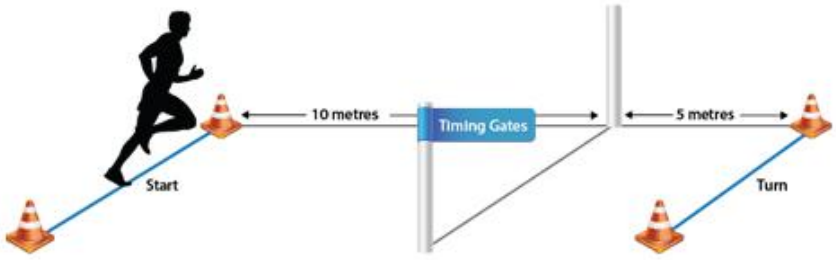
Source: Authors research

Description of the test battery:

Tests 5m/10m and 20m sprint were used to determine the speed of the subjects. Aim - a straight line to finish at the highest possible speed. Photocells are used to record the data. It starts without a signal from a high start from a place. The speed and running time are measured without including the speed of reaction when giving a signal. The leg from which the start is made should not be placed on the starting line, so that the timing does not start before the start. The movement of the hands before the start should be taken into account - also as a possible reason for premature start of the timing. Each player makes two attempts, from which the better achievement is taken.

Test 505 – also aims to determine the speed of the competitors, but by including a change in direction of movement. The competitor stands at the start, and the timer stands at 10 meters. On command, the player sprints to the 15 m mark, turns on his right foot and sprints back through the 10-meter marker. The stopwatch starts when the player passes the 10-meter mark and stops when the player passes the same mark on the way back. Each player makes two attempts on the left and right foot during the turn, with the average score for each being taken.

Figure.1

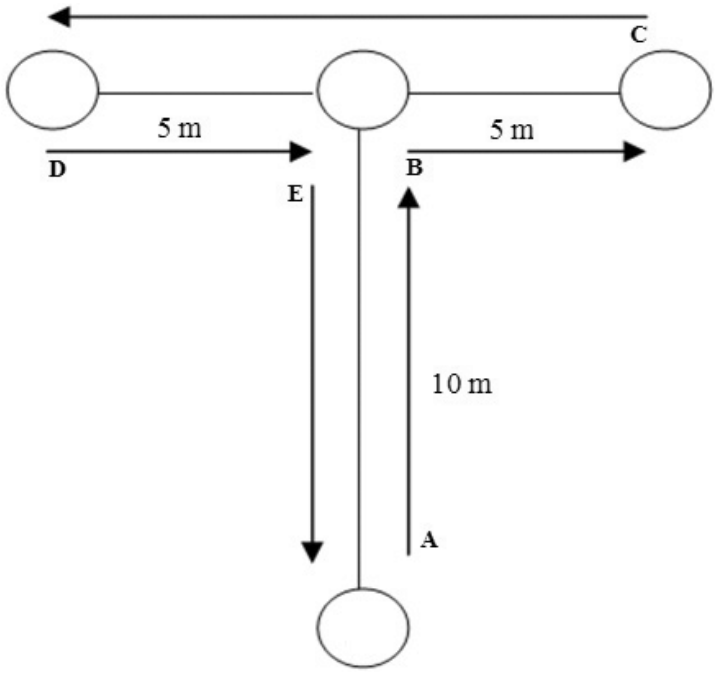


Source: Authors research

T-Test - The purpose of this test is to monitor the development of the speed abilities of the competitors when changing the direction of movement. The test is carried out in the following way: 3 cones are placed on the track at a distance of 5 m from each other, and the fourth cone is placed at a distance of 10 m from the middle one, so that the

letter "T" is obtained. The tested person starts from point "A" after a signal, runs to point "B" and touches the cone, moves with a lateral run and touches point "C", again with a lateral run moves to point "D" and touches the cone, returns to point "B" with a lateral run, from there with a backward run returns to the starting cone "A" where the time is recorded. The test is carried out twice, recording the best achievement.

Figure.2



Source: Authors research

Table 2. Variational analysis of the 5m sprint test

5m sprint - futsal	N	R	Min	Max	Mean	S	V	As	Ex
	12	0,35	0,85	1,2	1,023	0,10	10,02	0,184	-0,328

Source: Authors research

Table 2 presents the results of futsal players in the 5m sprint test. 12 players were tested, with the minimum value being 0.85 sec. and the maximum being 1.2 sec. The average value is as follows: 1.023 sec. The distribution of the values is normal.

Table 3. Variational analysis of the 10m sprint test

10m sprint - futsal	N	R	Min	Max	Mean	S	V	As	Ex
	12	0,34	1,5	1,84	1,648	0,09	5,47	0,403	0,812

Source: Authors research

Table 3 presents the results of futsal players in the 10m sprint test. 12 players were tested, with the minimum value being 1.5 sec. and the maximum being 1.84 sec. The average value is as follows: 1.648 sec. The distribution of the values is normal.

Table 4. Variational analysis of the 20m sprint test

20m sprint - futsal	N	R	Min	Max	Mean	S	V	As	Ex
	12	0,26	2,75	3,01	2,872	0,08	2,82	0,292	-0,38

Source: Authors research

Table 4 presents the results of futsal players in the 20m sprint test. 12 players were tested, with the minimum value being 2.75 sec. and the maximum being 3.01 sec. The average value is as follows: 2.87 sec. The distribution of the values is normal.

Table 5. Variational analysis of the 505 Test

505 Test - futsal	Left foot	N	R	Min	Max	Mean	S	V	As	Ex
		12	0,33	2,26	2,59	2,426	0,11	4,40	-0,126	-1,273
505 Test - futsal	**Right foot**	**N**	**R**	**Min**	**Max**	**Mean**	**S**	**V**	**As**	**Ex**
		12	0,32	2,28	2,6	2,402	0,09	3,86	0,932	0,558

Source: Authors research

Table 5 presents the results of futsal players in 505 Tests. 12 players were studied, with the minimum value for the left foot being 2.26 sec. and for the right foot – 2.28 sec. The maximum value for the left foot is 2.59 sec. and for the right foot is 2.6 sec. The average value is as follows for the left foot 2.42 sec., for the right foot – 2.4 sec. The distribution of the values is normal.

Table 6. Variational analysis of the T-Test

T-Test - futsal	N	R	Min	Max	Mean	S	V	As	Ex
	12	0,72	9,32	10,04	9,583	0,23	2,40	0,708	-0,511

Source: Authors research

Table 6 presents the results of futsal players in the T-Test. 12 players were studied, the minimum value being 9.32 sec. and the maximum 10.04 sec. The average value is as follows: 9.58 sec. The distribution of the values is normal.

4. DISCUSSION

The above tests are of essential importance for futsal, as these actions of the players are clearly expressed in the game itself, namely movements at maximum speed in a small space, changing direction in view of the changing game situation. Statistical methods from the processed data give us an idea of the players' condition and their speed capabilities. Only field players were selected in the study; it did not include goalkeepers, because the specifics of the goalkeeping position would be the subject of another study.

5. CONCLUSION

The results of the study confirm the opinion that speed in sports, in particular futsal, is a basic component that must be developed in order to achieve higher results. The manifestation of better speed capabilities by the competitors predetermines success in matches. The change of direction of the futsal competitors affects their better performance compared to running straight sections of different distances. The results of the study suggest a more thorough and detailed study of speed and its specificities in futsal. Based on the data obtained, it would be possible and useful to prepare a regulatory framework including this particular test battery and to use it in the future as the main direction in the preparation of futsal players.

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