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Designing An Electronic System To Measure Response Speed And Scoring Accuracy For Futsal Players

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Abstract

The aim of the research was to design an electronic system to measure response speed and scoring accuracy for futsal players, and given the importance of these two capabilities for futsal players, the researchers were keen to find an accurate way to measure them on a scientific and objective basis. Reasons. Steps and foundations: The researchers hypothesized the ability of this system to measure response speed and scoring accuracy among futsal players. The search in a simple random way (lots) included (50) players for the purpose of construction and (40) for the purpose of rationing, and the necessary devices and tools for designing the system were equipped, and through consulting experts in multiple disciplines. Through several steps in which some parts were modified and corrected, the researchers came up with the design of the electronic system. The response speed and scoring accuracy of futsal players were sometimes determined, and the researchers concluded that the measuring instrument was able to measure these two values in all groups of futsal players.

Introduction

Futsal is one of the games that has a certain peculiarity represented in the speed of the game's rhythm and the variety of movement modes that the player performs, and this is a natural result of the small area of the playing field and the need for rapid movement through the players who occupy this space in the right way, as well as the need for these players to possess special abilities that enable them to Taking the right decisions and applying them correctly during matches, the speed of response in its three phases is of great importance to them. Futsal players. This game needs high performance in terms of quality, accuracy, smoothness, correct timing, speed, and no lag. And in order for the player to perform according to these qualities, he must have a good speed of response so that he can deliver the ball to his teammate as quickly as possible. And if we take into account that the primary goal of this game for the player is to score in the opponent's goal, then this is a good indication of the interest in the skill of scoring players, since all the abilities with which the player unites has been accomplished. One goal is to score the most goals. Given the importance of objective measurement methods for players, the researchers were keen to design an electronic system to measure response speed and scoring accuracy for futsal players due to the importance of accurate measurement of these two abilities and their positive impact in building advanced training. Programs that help develop the level of players in general and thus provide distinctive levels during matches, in addition to providing coaches with information about the nature of these two abilities to focus on during the training process.

Purpose of the research

1. Designing an electronic system to measure response speed and scoring accuracy for futsal players.
2. Recognizing the speed of response and the accuracy of scoring among futsal players.

Research procedures

Research Population and Sample

"Sample selection is an important step, as researchers usually define the original population according to the problem or phenomenon they want to study, and it is defined as a model that represents another aspect of the units of the original population" (1) The research community, represented by the advanced futsal players in the middle Euphrates clubs, was identified, and their number was (90) players, and a simple random sample (the lottery) was selected with (50) players for construction and (40) players. for each one of them. Legislation.

Study design

"It is the method of revealing the truth in science through a variety of general rules, to control the work of the mind and to determine its operations as a result of information" (2) The researchers used the descriptive method in the survey method because it is related to the nature of the research problem.

Studio variants

The (response speed - recording accuracy) were studied as the main variables for this study.

Tests used

Testing the speed of the motor response and the accuracy of recording among futsal players

For the purpose of designing the electronic system to measure the speed of the motor response and the accuracy of recording among futsal players, the researchers reviewed a set of sources and references in addition to some standards prepared for this purpose. Through this, the parts of the system were assembled under the supervision of specialists, and they were tested more than once, and errors and defects in some parts were addressed to become ready for application (3)

Trial experience

The exploratory experiment was conducted on 13/6/2020 on a sample of (9) nine players to find out the problems and obstacles that may occur in the future.

Main experience

It was a major experiment (based experiment) on a sample of (50) players for a period from 20/7/2020 to 21/8/2020, and after collecting the forms, the data was unloaded for statistical analysis.

Determine the validity of the test

The validity of the electronic system to measure response speed and registration accuracy for futsal players was confirmed by presenting it to experts, specialists and technicians. And re-testing with this system on a number of players and extracting the stability coefficient between the two tests, which amounted to (0.84), which is a good indicator of stability. With regard to objectivity, it was confirmed by the arbitrators during the application of the test, as their scores were recorded at the same time and the value of the correlation coefficient was extracted, which amounted to 0, 98, which means that the system has a high score. Objectivity.

The discriminatory ability of the test

Indication level	t calculated	lower group		senior group		Variables	NO
		±p	s	±p	s		
0,004	14,23	0.072	3,96	0.017	2,81	Responsiveness	1
0.0003	18,52	0.027	7.33	0.033	13.66	Scoring accuracy	2

The ability of the test to distinguish between individuals in the sample was confirmed by dividing the scores into two groups, upper and lower, and 50% discount, with (25) players per group, using the t-test for independence between the two groups. two groups.

The sample members with the highest and lowest levels as shown in Table No. (1)

Table (1) showing the discriminatory power of the test

Rationalization of the test

A final rationing system was set on a rationing sample on 10/5/2020 to 10/29/2020 on a sample of 40 players in the rationing process according to the conditions and previously the same instructions. .

The average distribution of the classification sample

To ensure the moderation in the distribution of the degrees of the rationing sample, and to know how close or far these degrees are from the distribution of moderation, the researchers calculated some statistical indicators, such as calculating the deviation coefficient as a property of the equilibrium curve of the distribution, since the test is a normal distribution if the values of Pearson's deviation coefficient range from 1 Table No. (2) Shows the statistical indicators for the classification sample.

Table (2) showing the statistical indicators of the estimate sample

Term	standard error	Skewness	mode	Mediator	Arithmetic mean	variable	NS
4	0.39	0.06	4	2.4	2.01seconds	Responsiveness	1
7	0.47	0.08	10	9	8.6degrees	Scoring accuracy	2

Presentation, analysis and discussion of the results

To evaluate the results of the research sample individuals, it was necessary to interpret the primary results they obtained, and the primary result alone does not give an evaluation or interpretation of the test results unless they are converted into standardized scores that can be analyzed and interpreted, "because it is suitable to a large extent to determine the levels and standards of individuals in any Test and demonstrate its importance in our understanding of the initial score obtained by individuals, because these scores acquire a clear meaning when they are attributed to the levels of the group conducted by the test (4)(1)

Tables (3 and 4) show the initial scores and the corresponding standard scores. As for tables (5) and (6), they show the standard levels of the research sample members.

Table (3) (shows the initial scores and the corresponding standard scores for the response speed variable

Modified Standard	Repetition	Raw	NS	Standard	Repetition	Raw	NS

Score		grade		score		grade	
26.36	1	2.9	20	45.78	1	1.00	1
25.59	1	3.00	21	44.13	1	1.1	2
24.27	1	3.1	22	43.56	1	1.2	3
23.38	1	3.2	23	42.33	1	1.3	4
.2223	1	3.3	24	41.78	1	1.4	5
21.49	1	3.4	25	40.89	1	1.5	6
20.37	1	3.5	26	39.45	1	1.6	7
19.27	1	3.6	27	38.23	2	1.7	8
				37.98	1	1.8	9
				36.37	1	1.9	10
				35.49	1	2.00	11
				34.24	2	2.1	12
				33.45	2	2.2	13
				32.67	1	2.3	14
				31.18	3	2.4	15
				30.49	3	2.5	16
				29.38	3	2.6	17
				28.48	3	2.7	18
				27.34	3	2.8	19
0.063	standard deviation				2.7	Arithmetic mean	

Table (4)It shows the raw scores and the corresponding standard scores for the scoring accuracy variable

Modified Standard Score	Repetition	Raw grade	NS	Standard score	Repetition	Raw grade	NS
36.48	1	8.32	20	55.042	2	12.22	1
35.49	1	8	21	54.44	2	12.20	2
34.32	2	7.46	22	53.48	1	12.18	3
33.28	1	7.12	23	52.83	1	12.16	4
32.49	1	6.34	24	51.59	2	12.14	5
31.73	2	6.01	25	50.92	1	11.31	6
				49.56	1	11.19	7
				48.75	2	11.12	8
				47.93	1	11.3	9
				46.36	1	10.44	10
				45.82	1	10.41	11
				44.43	2	10.38	12
				43.45	1	10.30	13
				42.56	1	10.11	14
				41.39	2	9.50	15
				40.69	3	9.45	16
				39.49	2	9.41	17
				38.48	3	9.13	18
				37.59	3	9	19
0.04	standard deviation				8.9	Arithmetic mean	

Table (5)It shows the standard levels, categories and frequency of the research sample in the response speed test.

Repetition	Categories	levels	NS
4	45.78 – 40.49	excellent	1
7	40.48 – 35.19	very good	2
11	35.18 – 29.89	Good	3
16	29.88 – 24.58	middle	4

2	24.57 – 19.27	weak	5

Table (6)It shows the standard levels, categories and frequency of the research sample in the scoring accuracy test.

Repetition	Categories	levels	NS
3	55.042 – 50.963	excellent	1
9	50.962-46.155	very good	2
10	46.154 -41.347	Good	3
15th	41.346 -36.539	middle	4
3	36,538 -31.73	weak	5

Tables (3) and (4) show that the arithmetic mean of the arithmetic value of futsal players with the response speed variable was (2.7) with a standard deviation of (0.063), while the recording accuracy variable was (8.6) with the response speed variable. Standard deviation (0.04). Note the standard result that corresponds to the initial result (2.7), and we find that it is equal to (26.36) and is within the (intermediate) level, and this means that futsal players need to develop the speed of their response in order to reach better levels by focusing in training programs on developing This ability, and the task of futsal players that it is one of the activities that are characterized by rapid movement and constantly changing playing modes during matches, as well as the constant change in the place where the player is. Standing and placing the ball, which requires a high response speed of the players. As for the recording accuracy variable, which is the standard degree that corresponds to the primary degree (8.6), we find that it is equal to (36.48), which falls within the level (weak). Scoring the goals are in the opponent's goal and because of the small playing area, the player must have accurate scoring, especially from close distances (10) meters. Because the players of the opposing team are concentrated in the area close to the goal, which requires surprising the opposing team by scoring on the goal from close distances.

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