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A comparative study of some biomechanical variables for constant and moving scoring skills and their relationship with speed and accuracy of football scoring

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Abstract

The aim of the research is to identify the level of scoring accuracy performance of stability and the movement of the research sample. The level of the sample in the scoring drive better than the level of the sample in the scoring of the movement and the percentage of scoring animation on the drive (24%) of the level of accuracy and speed. The dynamic trajectory of scoring varies greatly from movement, especially at the height of The M.K.G., considering that the other variables are an obvious result of the time and speed of the previous one. The sample was similar to the resolution level and the variable affecting the equation was time. Attention to biomechanical variables when implementing the scoring skill of all kinds by coaches and players. The need to take advantage of the modern devices specialized in calculating biomechanical variables and providing unavailable ones. There is a need to take advantage of the modern equipment and the competent non-bio mechanical variables account available. The formation of a committee specialized in the analysis of the Iraqi Federation to analyze the performance of the skills according to the scientific bases of the players of the national teams. It is recommended to perform similar researches about the complex skills required by modern football based on accuracy and speed of performance.

Keywords: *biomechanical variables, constant scoring, moving scoring, skills, speed, accuracy, football.*

Introduction

Through the researchers follow the previous studies and keep up with the game of football and ask him for many coaches, teachers and football experts noted that there is a weakness in the players during the performance of the games in the implementation of some basic skills, especially scoring, where when the overlap of a basic skill with the other affects the speed of performance of the implementation of that skill and its accuracy and the concentration of that complex skill. What are the biomechanical variables that affect the speed and accuracy of the scoring skill of stability and movement? Is there a weakness in speed and accuracy in the performance of scoring skills of stability and movement (vehicle) football? (**Mufti, 1985**) The aim of the research is to identify the level of scoring accuracy performance of stability and the movement of the research sample. Identify some of the biomechanical variables that

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affect the performance of scoring accuracy from stability and movement of the research sample and Comparison of biomechanical variables during scoring of stability and movement in the sample. Also, it is important to identify the extent of the relationship between biomechanical variables and the accuracy of scoring in the sample **(Jhon ,1984)**

Literature review

The increasing importance that football receives in both developed and developing countries, make the specialists and experience and the staff in the game think of ways to help raise the skilled performance of players, including basic skills, especially scoring, where the skill of scoring is the end of the movement of attacks and after them can score a goal and the difference of goals can be the result of either winning or losing and goals make viewers enjoy watching matches and scoring can be by all players and without exception and in different places and movement or movement or according to the excitements External facing the executing player for scoring skill **(Ali, 1997)**. Modern football requires the player to move without a ball ((speed, starting, power and jump) and movements with the ball receipt of the ball and rolling and scoring center and accurate and many complex skills overlapping while playing while the sport developed and became speaking in the language of numbers and saw a remarkable prosperity using the various sports sciences where it came to help and develop this game and from those sciences biomechanics sports **(Alfred, 1980)**. Through which it is possible to determine the dynamic duty that should be performed and idealistic in the performance of different skills by understanding the paths of movement and studying them analytically and knowing the most appropriate conditions and how to produce them optimally and form dynamic models in order to compare this performance **(Jhon ,1984)**. The sports movement performed on a sound and codified scientific basis is the first requirement for access and progress in achieving accurate and rapid athletic performance in skills ((fixed, moving, solo and vehicle), and after the performance of the movement without increase, by performing unwanted movements, which gives the smoothness of movement and reduce the errors that exist during performance and take the best values and apply them in the field to the different skills of the game to benefit from them in achieving performance with appropriate performance in terms of speed and accuracy **(Nash, 1995)**. The importance of research is to identify biomechanical variables that affect the accuracy and speed of scoring of fixed and moving types. As well as the impact on which individual exercises are placed for each player, especially the attackers, as well as the use of the science of kinetic analysis in training units and analysis matches to identify the strengths and weaknesses of the players **(Gobbonu, 1979)**.

Methodology

*Research Approach***:** Researchers identified certain problem necessitated by the use of the descriptive approach, since this approach is the best scientific curricula which gives a real description of the situation studied.

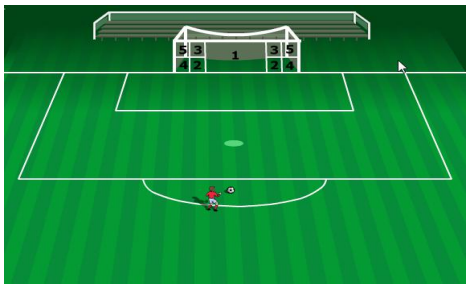
*Research Sample***:** The research community was chosen in the deliberate way that the players of the student sports football club for their commitment to the training units and the fact that their players are at a high level in the performance of the skills and one of the teams competing in the Premier League and also the fact that their players represent the national teams since the age groups and until now, and the number of the sample (6) players and the sample was chosen in a random way and the community of origin was composed (21) players where the sample community represented (28.57%) from the community of origin.

Devices and tools: Camera number (2) Sony type with a speed of 120 images/sec. Holder camera number (2) [stand] scale draw. Stop watch measurement bar. Balls number (5) chargers number (10) ropes with different lengths and stake fastening ropes. Kinovia Program for Kinetic Analysis

Identification of biomechanical variables: - The sources and a lot of scientific research were reviewed and after discussion with some professors specialized in biomechanics for the purpose of identifying the biomechanical variables that researchers use in solving the problem and achieving the objectives of research.

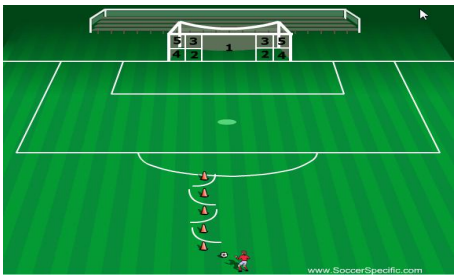
Search Tests

Test scoring unchanged
Toward the goalkeeper apportionment



Shape (1) Illustration of the scoring of the test of consistency goalkeeper apportionment

Test Roll the ball between the Pillars
& scoring toward goalkeeper apportionment



Shape (2) Illustration of scoring test sit safely cradled the goalkeeper apportionment

Source: (Imad, 1999)

***The exploratory experience*:** the aim of the experiment as follows: to identify the obstacles and mistakes that accompanies the search measures. Check the validity of the devices and tools used within the stadium. Then; observe uncertainty in how to distribute the staff assistant in the main experiment. Training on how to use a camera installed in places. Emphasis is on the application of the required tests with good condition.

Video cameras: Using the Kinovia program of biomechanical analysis, the researcher used a video camera with a speed of up to 120 images/sec. from two angles, one vertical on motion and the other horizontal for the purpose of analyzing and fragmenting skill, knowing variables, biomechanical skill, angles, and evaluating technical performance in each attempt to try the required test to know the degree of scoring.

Kinematical variables: Step time before hitting the ball/time based the moment the ball is hit. The angle of the body's inclination the moment the ball is hit/ the height of the center of the body's weight (M.T.C.). we watch the speed of kick-off of the ball/angle of kick-off ball, the angle of the man's anchor/angular velocity of the striking man and the angular velocity of the thigh.

The main experience: Install the requirements established researcher tests and install the cameras filming locations with assistant staff, and conduct the first test of each sample, and then the performance of the test, the test was delayed for half an hour due to heavy and light showers of rain and continued testing at (1:40min/PM)

Results

1. **The results of the statistical treatment and analysis of research variables**

Table (1) statistical treatment of the static variant score 3-1

T	variables	unit of measurement	totals.	Q	P
1	**Accuracy and speed**	D/U Tha	Fixed	4.868	As well thus becoming $ 1.666
			Unfixed	3.730	1.411
2	**Accuracy**	degree	Fixed	5.091 FAQ	1.353

			Unfixed	3.389	1,243
3	**Time**	Seconds	Fixed	.889	.119
			Unfixed	.969	.067
4	**time of a step**	Seconds	Fixed	.744	.047
			Unfixed	397.8200 or	.056
5	**time based on**	Seconds	Fixed	.235	.038
			Unfixed	.226	.024
6	**angle of the body**	degree	Fixed	5.167	1.790
			Unfixed	4.282	4.113
7	**ث.up (C)**	Cm	Fixed	0.334	.065
			Unfixed	1.005	.077
8	**Q launch the ball**	M/sec	Fixed	14.230	1.158
			Unfixed	12.262	1.637
9	**G Launch the Ball**	degree	Fixed	14.722	2.244
			Unfixed	13.833	10.528
10	**G A Man Focal Point**	degree	Fixed	77.500	2 percent; Exports, 4.331
			Unfixed	77.611	8.154
11	**S. Z.Z. v. The Striking Man**	D/U Tha	Fixed	353.561	69.637
			Unfixed	329.203	46.275
12	**S. Z.Z. v. The Basilica**	D/U Tha	Fixed	183.723	24.421
			Unfixed	150.444	46.357

2. Compared with the research firm variables between the scoring variant analysis

Table (2) statistical treatment of research between static variables scoring variant

T	variables	Q- p	Ot - p	value of (T)	proportion of the significance	Significance
1	**Accuracy and speed**	1.138	.515	2.211	.034	Significant
2	**Accuracy**	.833	.433	With 1.924	.063	Random
3	**Time**	- .081	.032	-2.496	.018	Significant
4	**time of step**	- .056	.017	-3.245	.003	Significant
5	**time of support**	.009	.011	.890	.380	Random
6	**angle of body**	.889	1.057	.841	.406	Random
7	**Height (M.T.G)**	.055	.024	2.320	.027	Significant
8	**S. launch the ball**	1.968	.473	4.165	-3,000	Significant
9	**T. Launch the Ball**	.889	Hitting 1.152	.772	.446	Random
10	**Time of foot centre**	- .111	Then LE	- .047	.962	Random

			2.344			
11	**Time & speed of foot Striking**	24.358	19.707	1.236	.225	Random
12	**Time & speed of thigh**	33.279	12.350	2.695	.011	Significant

In the variable accuracy and speed we note that the preference was for constant and when we follow the variables accuracy and time which are the components of this equation we find that the moral difference in favor of the constant in terms of time and there were no differences of accuracy, note that the difference observed is very close to the moral in relation to accuracy, and therefore we attribute that the players were the most important differences were the time status or speed, and when observing the table (1) we note that the accuracy and speed of the moving were the ratio (76%) For the constant, which is the best, then through it we see that the amount of loss in accuracy and speed between fixed and moving is (24%), and the better of the coaches to reduce these differences the less means that the players become better skilled in terms of speed of movement and scoring. And in the variable step time, which came with the result intuitive with the mentioned it is in favor of the constant, and means that the player reduces his speed starting from the step time is the first indicator of his low accuracy from the constant. In the variable height of the center of gravity of the body we note that the player reduces this height which is an auxiliary factor to reduce the speed of movement, so the inclusion of the body and reducing the equity of its countries during the base stage reduces the value of the peripheral speed of the body, considering that the ball will be hit by the foot, which is one of the final limbs of the body that is greatly affected by the halves of the diagonals and the ocean speed. In the variable speed of starting we see that the difference is very large and as specialists know what this difference means especially for cases of movement of goalkeepers and who are affected a lot by the speed of the ball, in fact this variable is an obvious result of what was extracted from the equation of accuracy and speed. As for the angular speed of the thigh, which is faster than the moving, it is another result commensurate with what is mentioned, one of the requirements of the speed of kicking foot is that all parts of the man are consistent and operate at successive speeds if we want high speed with the strike leg, it must be a high thigh speed commensurate with the requirements of the strike.

3. A correlation accuracy and speed the search skill Static variables scoring variant analysis

Table (3) Link between accuracy and speed the search variant variables static score 3-1

T	**variables**	**scoring drive link**			**scoring for animation link**		
1	**Accuracy and speed**	link	**value of the significance**	**Significance**	**link**	**value of the significance**	**Significance**
2	**Accuracy**	0.375	0.000	Significant	0.483	0.000	Significant
3	**Time**	-0.487	0.020	Significant	-0.664	0.001	Significant
4	**time of step**	-0.259	0.150	Random	0.193	0.241	Random
5	**time support**	-0.440	0.034	Significant	-0.068	0.394	Random
6	**angle of the body**	0.049	0.354	Random	-0.226	0.183	Random

7	**Height (M.T.G)**	-0.030	0.334	Random	0.218	0.428	Random
8	**speed of ball launch**	0.354	0.049	Random	-0.130	, 303 in.	Random
9	**Time of ball Launch**	-0.104	0.341	Random	0.156	0.404	Random
10	**Time of foot support**	-0.196	0.077	Random	0.307	0.091	Random
11	**Speed & time of Striking foot**	0.425	Merely 0.039	Signicant	0.023	0.487	Random
12	**Speed & time of thigh**	0.088	0.412	Random	-0.421	0.033	Signicant

4. Discussion of research variables' results

Through the presentation and analysis of the tables (1,2,3) the results of the tests after conducting the appropriate statistical processes showed the emergence of moral differences of the biomechanical variables (accuracy, speed, time, step time, height of the body's center of gravity, the speed of the ball kicking, and the angular velocity of the thigh). Between scoring of the fixed and moving types, the researcher attributes the reason for this to the fact that the training scoring for different situations was irregular and does not depend on scientific but depends on the subjective experience of the trainer and that most of the sample research does not care when implementing the scoring to the correct motor paths and do not consider the biomechanical variables Secondary, they also depend on muscle strength and lack of use of exercises for planning exercises although the sample research category applicants have become basic skills working automatically despite the presence of motor errors of the tracks and this costs the player and the team twice the accuracy and speed during scoring. To study the special curve of the motor path of the mathematical movement in order to improve the mathematical technique in order to correct it and develop, it according to the accuracy of the requirements of the movement **(Ali, 1997)** That the observed links in the constant are more than moving links and may be an enhanced indicator of what was previously explained that the sample in the constant is better than the moving. In the variables of accuracy and time, which proved the same relationship, but the difference was at the level of correlation, the correlation of time and animation is greater than the correlation of time in constant and it means that the sample needs a greater speed in order to affect the level of accuracy and speed, which we have previously diagnosed for the weakness of the sample at this stage. The time of reliance showed a moral relationship in the constant, the sample needs to reduce this time in order to result in a faster movement to hit the ball in order to increase the rates of accuracy and speed, and did not show this time the importance of the sample in the animation, and showed the relationship of the angular speed of the striking man a direct relationship, considering that the increase décor will lead to the transfer of this speed to the ball, and the angular velocity of the thigh was matched with accuracy and speed, and this variable came as a result of what was carried out by the sample during the moment of hitting the ball, which we consider to be a lack of performance in the end of the game. In order to increase the speed of the ball but in fact the sample if carried out in this increasing form the sample will lose accuracy, but what we recommend is the work of training to increase the accuracy of the players in order to suit this variable extruded with accuracy and speed, which we consider the purpose of research in finding weaknesses that must be corrected by the specialists. The analysis process of obtaining figures for information in order to produce and produce and then logically or statistically to summarize them in specific and interpretable digital results converted from its deaf

quantitative version to other meanings **(Moor, 1979)**. The goal of events and sports to integrate faster, higher and stronger attempt means by using mechanical capacity as much as possible in different directions to overcome external conditions **(Jhon, 1984)** Both accuracy and strength are required in the correction and the player must balance the ratio of each in the shooting according to the position in which he is present **(Mufti, 1985) (Alfred, 1980)**.

Conclusions

1. The level of the sample in the scoring drive better than the level of the sample in the scoring of the movement and the percentage of scoring animation on the drive (24%) of the level of accuracy and speed.
2. The dynamic trajectory of scoring varies greatly from movement, especially at the height of The M.K.G., considering that the other variables are an obvious result of the time and speed of the previous one.
3. The sample was similar to the resolution level and the variable affecting the equation was time.
4. Attention to biomechanical variables when implementing the scoring skill of all kinds by coaches and players.
5. The need to take advantage of the modern devices specialized in calculating biomechanical variables and providing unavailable ones.
6. The need to take advantage of the modern equipment and the competent non-bio mechanical variables account available.
7. The formation of a committee specialized in the analysis of the Iraqi Federation to analyze the performance of the skills according to the scientific bases of the players of the national teams
8. Research similar to the complex skills required by modern football based on accuracy and speed of performance.

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