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Evaluating some biocinematics variables when performing the blocking wall skill from movement in the volleyball

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Abstract
The importance of the research came in evaluating some Biocinematics variables, delving into the skill parts, diagnosing and addressing gaps in the technique of players 'performance, leading to better performance in the barrier skill than volleyball movement. Therefore, the two researchers decided to evaluate some Biocinematics variables to diagnose the strengths and weaknesses, working to address them and promoting a good performance by establishing numerical and quantitative values to benefit from them by coaches, players and researchers, and to emphasize them during training programs. The research aims to evaluate some Biocinematics variables when performing the blocking wall skill of movement for players of the youth national team in volleyball.
As for the most important results, it was found that there is a difference between the research sample and the national team of applicants in the variable approach speed, time of arrival variable for the maximum height that the player can reach, as well as the shoulder angle, the moment of blocking, and the variable wrist angle. The most important recommendations are to emphasize the timing of the advancement and meeting with the ball and to emphasize training according to the foundations of biomechanics for all stages, especially getting up and hitting the ball.

Keywords: Evaluating, biocinematics and volleyball

Introduction
The clear interest in studying total and partial sports movements in the field of training basic skills in volleyball and from multiple factors, including biomechanics, in order to reach an ideal technique, and thus contribute to the development of the player's skills, including the skill of the barrier, and that the great progress in the levels of global teams is the result of the use of technologies Technology, methods and modern methods of training, analysis and evaluation by researchers, specialists and trainers, delving into the minute details of skills and making use of various sciences, including biomechanics, which is one of the branches of human kinematics within the framework of factors affecting motor performance, And that the movement system in the human body is characterized by mechanical properties and by applying mechanical laws to the biomechanical variables in order to achieve the ideal technique [1], and in our evaluation study of biomechanical variables of skill in order to discover strengths and weaknesses and diagnose them in order to treat and enhance the arrival of "performance." The best, the goal of biomechanics using quantitative biomechanical analysis, and that the development of offensive skills must be confronted by developing defensive skills [2] the purpose of achieving skill balance and came as a result of the use of international teams to technique the skilful performance according to the biomechanical foundations of the barrier skill, as well. On the role of physical, motor and other specifications, and that the Iraqi teams of the excellent degree in general and our national team for youth, in particular, need a lot of information and digital data to benefit and apply during training and thus obtaining good players for the national teams, [3] hence the importance of research in evaluating some Biocinematics variables and delving into the details Skill, diagnosing and treating gaps in the technique of players 'performance to better perform the barrier skill from movement and the centre (2) of volleyball.

Research problem

The game of volleyball is characterized by offensive play because the goal in it is to obtain a point, and the team must acquire all the skills for the need to play it at any moment, and therefore the players must master the skill of the blocking wall well to meet the opposing attack and cover the area of the playing field, and that the process The evaluation and evaluation of the skill level must accompany the training process to determine the level reached by that process in developing the level and that one of the most important methods of skill assessment is the use of Biocinematics evaluation through which performance details can be followed with high accuracy and this is what the evaluation lacks for young players and those who Their performance must be continuously monitored using the available means of techniques and software for kinematic analysis and this is what is rarely used by those in charge of the training process [4]. Therefore, the researchers decided to evaluate some Biocinematics variables to diagnose strengths and weaknesses and work to address them and enhance good performance through setting Numeric and quantitative values to be used by coaches, players and researchers and emphasized during training programs.

Research objectives

- Evaluating some Biocinematics variables when performing the blocking wall skill of movement for the players of the youth national team in volleyball.

Research fields

- The human field: Five players from the Iraqi national youth team.
- Duration: the period (3/28/2021 - 4/8/2021).
- Spatial field: Olympic Hall in Basra.

Table 1: Shows the homogeneity of a sample in the mean, standard deviations, and coefficient of variation for the variables of age, height, and mass

Variables	Units	Mean	SD	Standard error
Age	Year	20.200	0.836	0.041
Length	Centimeter	1.946	1.140	0.585
Mass	Kg	83.00	2.345	0.028

Means of collecting information, tools and devices used in the research

1. Arab and foreign sources and references.
2. The study measurements registration form.
3. Experimentation.
4. Observation.
5. A video camera number (1) type (Sony), with a frequency of (100) pictures per second.
6. (Lenovo) type calculator, count (1).
7. Scale drawing length (1) meter.
8. The volleyball court is legal.
9. Legal MIKASA volleyballs, count (20) balls.
10. The Kenova program, the position in the computer for kinematic analysis.

Pilot study

The researcher conducted a pilot study on (3/30/2021 AD) in the Basra halls complex to identify the work obstacles facing the main experiment procedures and to stand on the level of the performance of the video camera and the clarity of the player's movement during the performance of the skill and the period of the experiment and the performance of the player [5] and 3 Players from Al Bahri Club three attempts to skill a wall to block movement, and the aim of them was to confirm the efficiency of the cameras, the angles of photography, the distance between the camera and the player, the vertical distance and its height from the surface of the ground [6].

Videography

The experiment was filmed by a Japanese-made Sony video camera with a frequency of (100) images/second with a tripod number (2), and the two cameras were used during the pilot and the main experiment with the application of the conditions for light vision and motion clarity (5) (Basman Abdel Wahab - Wahbi Alwan) One of them was placed from the right side and the second camera from the back with the same measurements when performing the player's test of wall skill to block movement from (2) centres and the height of the focus of the lens from the ground was (140) m. As for the horizontal distance between the centres the camera and field of motion of the player (6 m), As in Figure 1.

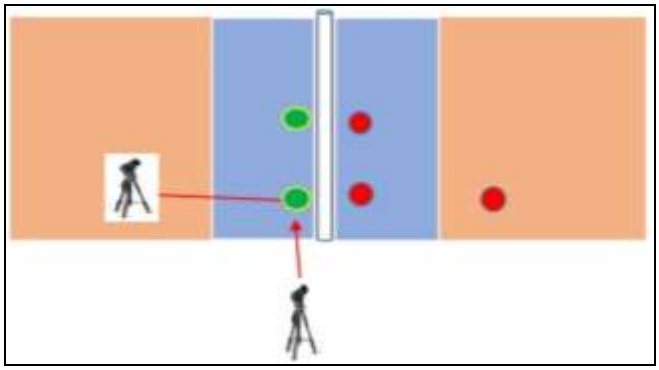

Fig 1: Shows the location of the videotapes

The main experience

The main experiment was conducted on (1/1/2021 AD) in the Olympic Hall in Basra Governorate, on the original research sample of (5) players from the national youth volleyball team, and each player was given three attempts from Center (2) to perform a wall skill Blocking from the movement of the

volleyball, [7] and the performance was that the player gives the ball to the staller who in turn prepares it to the player hitting the hitter from the centre (4). Every player's best attempt for kinematic analysis.

Computer analysis of Biocinematics variables

The analysis was performed by computer according to the following steps: - After filming the three attempts of each player, the clips were stored as files in the calculator folder (my Documents).

- Converted the footage from the video to a file format.
- Transferring files (sections) to the program (Kenova) installed on the calculator, where angles, velocities, and time to be analyzed were measured.

The two researchers selected the research variables that affect the skill [8]:

1. Final step velocity: It is measured from the metatarsal of the trailing foot to the heel of the landing foot.
2. The time to reach the maximum height: It is measured from the moment the foot's contact with the ground is broken to the moment the ball is blocked, and by counting the number of images on the speed of the camera.
3. The height of the hip joint, the moment of blockage: It is the vertical distance between the hip joint and the ground.
4. The angle of the shoulder joint at the moment of blockage: It is the angle between the humerus and the torso.
5. The maximum height of the hands at the moment of blocking: is the vertical distance from the tips of the fingers to the ground.
6. The distance between the two hands: is the horizontal distance from the side of the right palm to the inner side, the moment of blocking to the tip of the left palm from the inner side as well.
7. The angle of the wrist joint at the moment of blocking, which is the angle between the forearm and the finger comb to the palm.

Table 2: Shows the Biocinematics variables when performing the skill of the blocking wall from movement from the centre (2) of the volleyball

S	Biocinematics variables	Mean	SD	Mean (National team)	(t) value	Sig.
1	Speed of the last step	2.77	0.41	3.166	21.14	0.000
2	Reach time for maximum altitude (sec.)	0.72	0.008	0.060	114.14	0.000
3	Hip joint height moment of blocking (cm)	175.04	1.55	177.5	3.87	0.060
4	Shoulder joint angle moment of impingement (Degree)	160.18	2.20	154.57	8.58	0.000
5	Maximum height of the hands, moment of blocking (m)	2.73	0.20	2.76	2.49	0.154
6	The space between the hands	16.38	0.77	16.86	1.38	0.237
7	Wrist joint angle	157.74	1.69	163.38	14.01	0.000

It appears from the table that there is a clear difference between the level of the players, the research sample, and the national team in the variable of approaching velocity, whose mean reached (3.166) m/s. [9] Correctly to perform this skill at a good approach speed, although it does not constitute a large dimension in the values, the sample needs to increase training on lateral movement on the network.

There is also a difference in the variable of the arrival time to the maximum height, which amounted to (0.06), [10] and the reason for this is the slow approach, which helps to increase the speed of rising and reach the maximum height according to Newton's first law and the state principle The kinematic body before the movement is performed, [10] and that slow movement causes slow flight. It was also found that there is a difference in the angle variable of the shoulder joint at the moment of blocking, which among the players of the national team reached (154.57) degree [11], and the process of blocking requires timing to jump and meet the ball, and the reason for this is due to poor skill performance Not paying attention to the correct shape of placing the arms over the net, [12] although the height of the hip in the blocking position was good, the failure to insert the arms appropriately on the net is a skilful mistake that must be dealt with in the correct scientific method for fear of blocking the ball in a way that allows the ball to descend between the player and the net It is one of the most difficult things that the player directs in failure to block [13].

It was also found that there is a difference in the variable of the wrist angle when blocking, which reached among the players of the national team (163.38) a degree. [14] This is due to the basic problem in the position of the arms as not inserting the arms will result in it. The incorrect position of the wrist, [15] as it turned out that the wrist angle was relatively small in the research sample compared to the national team, and this is an attempt to compensate for the failure to place the correct arms on the net, [16, 17] but this is not considered a positive case as this case reduces the height of the blockage point by several centimetres, even if not This variable achieves a significant difference, but the apparent difference for the variable maximum height of the hands at the moment of blocking [18].

Conclusions

1. It was found that there is a clear difference between the level of the players, the research sample, and the national team for applicants and youth in the variable approach speed.
2. The presence of teams in the arrival time variable for the maximum height that the player can reach.
3. It was found that there is a difference in the variable shoulder angle at the moment of blocking.
4. There is a difference in the shoulder angle variable at the moment of blocking.
5. It was found that there is a difference in the variable wrist angle when blocked.

Recommendations

1. Emphasis on the timing of the advancement and meeting with the ball.
2. Emphasis on training according to the biomechanical foundations for all stages, especially getting up and hitting the ball and the rest of the stages with continuous evaluation to know the results of exercises on the skill stages.
3. Benefiting from biomechanical research in obtaining the values and performance level of the players.
4. Conducting a continuous biomechanical analysis of the players and taking advantage of the strengths and

weaknesses.
5. To take advantage of modern technologies in the evaluation and development of the performance of players in volleyball.

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