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Some bio-kinematic variables and their relationship to the level of achievement in elevation snatch for Iraq's heroes for applicants

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Abstract

Sport has become a great address for the advancement and progress of nations, and it is the civilizational key with which other peoples communicate. And the practice of sport has become the field in which many specialized scientists compete to develop their research and rise to a global level befitting the level of their countries. And that the advanced mathematical achievement and the advanced technical performance of the four quadrants did not happen as a result of coincidence or a stroke of luck but rather as a result of hard work, good numbers, and the optimal investment of the various natural sciences related to the proper application of scientific principles and foundations based on biomechanics. The importance of the research comes through identifying the relationship of some bio-kinematic variables and their relationship to the level of achievement in the snatch lift for the Iraqi champions for the applicants. The horizontal line affects the trajectory of the weight movement. The researcher used the descriptive method in the style of correlational relations to fit the research problem, where the research sample consisted of (5) lifters deliberately chosen by the researcher from the Iraqi heroes for applicants weighing (85) kg for the year 2022. The researcher also used a video camera, as it was placed at a distance of (5:50) m from the right side of the quadrant, the height of the imaging lens was (1.50) m from the level of the lifting drum, and the speed of the video camera was (25) images/sec. The variables of deviations of the research sample were extracted from the trajectory of the movement of the weight for the stages of the snatch lift. After the completion of the imaging process, the use of appropriate statistical treatments to reach the results, after which the results were presented, analyzed and discussed. The researcher reached the most important conclusion that adopting numerical values in calculating distances and deviations is more appropriate among the individuals of one sample. The results showed significant correlations in the amount of movement during the three stages of the research sample. As for the recommendations, the most important of them is emphasizing the presentation of recorded films for world championships to increase understanding of the performance method (technique), the necessity of training on the line of technical performance during the performance of the snatch by emphasizing the follow-up of error correction during the daily training units.

Keywords: Bio kinematics, snatch lift, level of achievement

Introduction

Sport has become a great address for the advancement and progress of nations, and it is the civilizational key with which other peoples communicate. And the practice of sport has become the field in which many specialized scientists compete to develop their research and rise to a global level befitting the level of their countries. The primary goal of practising any sporting activity is to develop the individual in all physical and psychological aspects and to develop his emotional and social characteristics (Shehadeh, Weightlifting, 2013) ^[9]. Most researchers tended towards finding solutions to the subtleties of problems through the tremendous development that took place in the last decade of the last century and the first years of this century, and that the advanced mathematical achievement and the advanced technical performance of the lifters did not happen as a result of a coincidence or a stroke of luck, but rather as a result of hard work, good numbers and the optimal investment of science. And (Wajih Mahjoub) points out that movement analysis through experimentation works and leads us to reach accurate and correct results in detecting what accompanies the change in movement in order to reach results related to achievement, where movement is based on the

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description Analyzing all the factors (physical, mechanical, anatomical) that achieve motor performance in a way that guarantees their use in solving problems related to performance and correcting it by balancing these analytical facts with certain criteria that make it easier for coaches to choose the appropriate exercises for their athletes to perform the correct motor performance and create special training conditions to achieve that goal.

Research problem

The study of the mechanical foundations is one of the factors that help in developing the training process and the level of athletic achievement, which did not get its share of study and research when compared to the achieved research that is concerned with the study of the mechanical foundations, as the requirements for achieving and applying the mechanical conditions need modern devices and technologies that help the coach in formulating His thoughts towards the training process seriously.

The resulting weakness in the amount of movement of the angle of the variables and their lack of access to the angles that achieve the level of achievement for the quadrilaterals is a problem in this field in the sense of the appearance of the horizontal wheel that affects the path of the movement of the weight, as Wajih Mahjoub defines it as an imaginary line that draws the skill from its beginning to its end by way of Marked points on the body, in addition to the centre of gravity of the body and the tool (Mahjoub, 1998)^[6].

Search Aims

1. Identifying the relationship of some kinematic variables with the level of achievement in the snatch
2. To identify the differences between some kinematic variables of the kinetic trajectory of weight and its relationship to the level of achievement.

Search Hypotheses

1. There is a correlation between some kinematic variables and the level of achievement in the snatch
2. There are differences between some kinematic variables of the motor trajectory of weight and its relationship to the level of achievement.

Research areas

1. **The human field:** Iraqi champions for the applicants from Badra and Al-Kut Club for weightlifting with a weight of 85 kg
2. **Time range:** 2/5/2022 to 8/5/2022
3. **Spatial field:** Al-Kout Club and Badra Club halls for weightlifting

Symbols and terms used in the search

Deviations: cm 0 D deviation The weight of the imaginary line of gravity, measured in centimetres

D1: The widest deviation of the weight between the imaginary line of gravity towards the quadrant for the first time.

D2: The widest deviation of the weight between the imaginary line of gravity and the farthest point reached by the weight

horizontally away from the quadrant.

D3: The deviation of the highest height reached by the weight from the imaginary line of gravity.

D4: show the deviation of the weight between the imaginary line of gravity and the farthest point reached by the weight

Horizontally towards the quadrant the second time.

D5: The widest deviation between the imaginary Earth's gravity line and the final fixation point To rise underweight in a squatting position.

D6: Hook bow width.

Materials and Methods

Research methodology and field procedures

The term curriculum refers to " methods". and actions Or the entries that are used in the research to collect data and access through their results, interpretations, explanations or predictions related to the subject of the research .(Al-Enezi, 1999) ^[2]. The researcher used the descriptive approach in the manner of correlation studies, as it is the most appropriate way to solve the research problem, and the research sample is representative of the original community in a true and true representation, as "it is the part that represents the original community." Or the model on which the researcher conducts the entirety and focus of his work. (Mahjoub, Principles of Scientific Research and Methodology, 2001) ^[7].

The research sample was intentionally chosen from some of Iraq's weightlifting champions who got advanced positions with a weight of (85) kg and were distributed (3) quads from Badra Club and (2) quad from Kut Club.

Computer analysis

The video clips were transferred from the camera to the computer and stored, and the analysis was done using the program (Dart Fish Editon mpt34m 5.5 pro) installed on the calculator, and this program is specialized for analyzing sports movements, and the extension of the video clips was converted from (mts) to MPEGVCD) Because the (dartfish) program does not work with the extension of the camera operator, more than one attempt has been analyzed to identify the kinematic variables.

Exploratory experience

The researcher conducted the exploratory experiment on a sample of weightlifters from the Al-Amarah Club on the day corresponding to 4/28/2022 in the hall of the Majidiyah Youth Center. For weightlifting, the aim of this experiment is :
Know the validity of the tools and devices used in the research.

Getting acquainted with the assistant team on the method of measurement and recording the results.

Where to place the camera and know the distance and height of the quadrant.

The main experiment

The researcher conducted the main experiment for the best three attempts of completing the quad on the day of 5/20/22, at four o'clock in the afternoon, in the Badra Club hall for weightlifting 0 (3) quads. The experiment was also conducted the next day, 5/3/2022, in the Kut Club hall, Weightlifting (2) quads from Al-Kut Club.

Study variables

1. the amount of movement
2. Angular velocity of two legs
3. Weight deviation (D1, D2, D3, D4, D5, D6)
4. ankle angle
5. knee angle
6. hip angle

Statistical means

1. Arithmetic mean
2. standard deviation
3. coefficient of difference
4. Mediator
5. torsion modulus
6. T-Test

Results and Discussion:

Presentation, analysis and discussion of results

Table 1: It shows the values of the arithmetic mean, standard deviations, and coefficient of variation for the momentum

Variants	Arithmetic mean	Standard deviation	Coefficient of difference	Mediator	Skewness
The first draw	21.35	3.26	15.26	21.60	1.127-
	10.74	1.54	14.33	9.92	-0.95
Knee movement	13.13	2.26	17.21	14.40	47.-

As it was found that the values of the quantity of movement of the research sample began in the first pull stage with a higher value than the stage of the movement of the knees, as overcoming the inertia of the weight requires mobilizing large muscle forces that exceed the value of the external resistance (heaviness), and it was proven that the body does not move except If the amount of force is sufficient to overcome its inertia as well as other external resistances and that the force that leads to moving the weight is between (103 - 130%) of the weight of the quadrant + the weight of the weight (Shehadeh, 2013) ^[9] But it is supposed to continue The amount of movement in the phase is the movement of the knees with the same amount through Newton’s second law that the body will move with a certain amount of movement, but the physiological structure of the body prevents this because the knees of the quad are perpendicular to the bar during the first pull phase, and since the knee joint is the only joint in the human body that moves backwards, therefore The amount of movement decreases from the first draw stage, but the amount of movement started to increase in the second draw stage, and this is what we saw in the research sample.

Table 2: It represents the arithmetic mean, standard deviations, and standard error of the research sample for the angular velocity of two men

Variants	Arithmetic mean	standard deviation	standard error	Mediator
The first draw	221.10	43.33	19.37	234.00
	43.36	27.01	12.08	36
Knee movement	80.25	42.18	18.86	64.54

It was found that the value of the angular velocity of two men in the research sample had its highest value in the stage of the first pull-through stage of grabbing the weight. To take advantage of the angle of kinetic energy, then the angular

velocity of the two men increased in the second pull stage, and this is what we saw in the research sample as a result of the law of angular frequency .(Aziz & Shifa Majeed Jassim, 2021) ^[5] produced in stages. (Al-Obaidi, 2001) ^[4]

Table 3: It shows the arithmetic mean, deviations, and standard error of the research sample

Variants		The middle	Deviation	Standard error
The first draw	ankle angle	86,000	3,391	1,516
	knee angle	131.60	8.67	3.88
	hip angle	87.40	6.72	2.66
Knee movement	ankle angle	85.40	5.02	2.24
	knee angle	138.00	6.04	2.70
	hip angle	108,600	7.09	3,017
	ankle angle	88.10	0.74	0.33
	knee angle	143.00	2.23	1.55
	hip angle	112.10	1.51	0.67

The study of the variables is considered one of the main things to know the extent of their impact on the level of success of the attempt of the quadriplegic as well as the extent of their impact on the achievement, through which the extent of the deviation of the weight from the centre of gravity of the quadriplegic is determined. There are no ideal angles here, as they differ from one quadrant to another. Another according to his physical specifications. unless The angles are

determined by a specific range through the maximum bending of the angles and the maximum extension, the research sample, although they are from one category, the researcher found that there is a slight difference between one quadrant and another concerning the angles, and it did not affect the level of achievement because the angles are within the specified range.

Table 4: Shows the mean, deviation, and calculated probability score in the error percentage

Deviation symbol	attempts	- s for the differences	+p for the differences-	(T)test	Likelihood score (error percentage)
D1	The first	-58.0	0.95	- 502.1	0.191
	The second	0.7	2,251	0.822	0.433
	Third	1.29	2.79	1,210	0.279
D2	The first	1,050	3,346	0.761	0.472
	The second	-582.1	5,011	-777.0	0.333
	Third	-666. 0	5.70	-261.1	0.282

D3	The first	-223.1	2,711	-121.1	0.261
	The second	3,231	10.05	0.851	0.371
	Third	0.4558	11.66	1,200	0.261
D4	The first	-385.0	1,458	-646.1	0.453
	The second	0.033	3.84	0.022	0.879
	Third	0.631	3,221	0.453	0.487
D5	The first	-485.0	2,458	-545.1	0.376
	The second	0.030	3.84	0.022	0.876
	Third	0.653	3,221	0.432	0.453
D6	The first	0.032	4,543	0.011	0.875
	The second	0.83	3.99	0.475	0.523
	Third	0.767	3,675	0.483	0.458

From Table No. (4), which shows that there are no significant differences in the deviation of weight between the three attempts for the best achievement during The performance of the snatch lift for the members of the research sample and that there are no significant differences in the variable deviations for all the research sample since the quadriceps are among the heroes of Iraq for the applicants and periods, and this is what makes the quadriceps gain stability in movement. This stage is characterized by great progress in performance as it can control the performance and compatibility, harmony and fluidity in performance, as he can perform motor skills automatically. (Al-Lami, 2006) [3] Bastawisi asserts that the dynamic dimension is represented by the stability of the dynamic rhythm of movement as one of the distinguishing characteristics, and the dynamic dimension of movement means the optimal distribution of the force exerted on the parts of the movement. Thus, the beauty of the movement rhythm depends on the dynamic dimension of movement, and it is considered a means to reach the stability and stability of movement. This means the mechanism of movement. (Ahmed, 1996) [1].

Although the deviation impedes the speed of the vertical movement of the weight towards the top, from the beginning of the deviation to At the end of the deviation, the weight is parallel to the direction of gravity. The physiological structure of the body makes the quadrant try to approach or Remove the weight to get rid of Reducing the length of the deviation to lengthen the force arm at the expense of the resistance arm and fit with the joints of the body.

Conclusion and Recommendations

Conclusion

1. The adoption of numerical values in calculating distances and deviations is more appropriate between individuals of one sample.
2. The results showed significant correlations in the amount of movement during the three stages of the research sample.
3. The values of the correlation coefficient for the achievement of the snatch and the bio-kinematic variables indicate their importance in weightlifting.
4. The emphasis is on reducing deviations in the various stages of lifting to obtain the appropriate heights and not to deviate from the imaginary line of gravity.

Recommendations

1. Adopting imaging and analysis of the motor path of the weight and evaluating the technical motor performance of the quadrant during training and official competitions.
2. The need for trainers to be informed of the results of research and studies because they will give positive results when developing training programs to develop the

level of achievement.

3. Emphasis on showing films recorded for world championships to increase understanding of performance style (technique)
4. A necessity in the training regimen for technical proficiency during the performance of the snatch is to focus on the following units after making mistakes in the daily training regimen.

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