The Percentage of Contribution of Some Biomechanical Indicators to the Level of Skillful Performance of the High Spiking of Volleyball Players

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ABSTRACT

The aim of the research is to identify the value of some biomechanical indicators at the level of skill performance of high crushing hitting among volleyball players and the relationship between them , and the research problem was embodied in the absence of a study of the relationship of some biomechanical indicators to the level of skillful performance of high spiking in order to reach accurate performance artistic achievement that serve the sport and works to develop because it is linked to the conditions biomechanical right associated with the performance of the private , and the researcher adopted the descriptive approach, research sample included a 12 player They were tested on the level of skill of spiking high among volleyball players, center 4, and they were photographed using a type camera (CASIO High - speed (120 r/w) were extracted search variables values of through imaging and the use of a program for the analysis of the motor ((Kinovea8.25 , Was presented and analyzed and discussed results of the data and extract the value of the link variables more in line with the kinetic energy index corner of the trunk and high, were the most important research findings (that the increase in the kinetic energy of the efficiency of the body parts , whether linear or rotary have a positive effect on the speed of the body starting and then achieve the completion of a distance better by keeping the amount of traffic law and highly effective influence on the technical performance of the research sample) , it has recommended the researcher b (the importance of has evolved capacity Explosive and maximal On investment Properties Bio Mechanical To body at the shape the performance Artwork Correct , and use kinematic analysis periodically during the identification of the mechanical changes that occur upon the rise of the players).

Keywords: *biomechanical indicators, level of performance, skill, hit the overwhelming high, volleyball.*

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Introduction

The volleyball a sports skills that rely on technical performance in order to achieve the feat , which requires knowledge of accurate traffic details and causes as well as the Open age of motor performance and overcome the errors , and contribute to serious in some of the problems solution facing the player and coach at the stages of learning and training , analysis motor access key to these details and identify the key variables contributing to the performance is the most important of some indicators mechanical (kinetic energy of the body, the momentary power when performance, and the job done) (**Lahan, 2006**), which is gaining the body better angle and the speed of starting to help him in the phase of the flight to reach for the height of the GS a Moody suitable for beating overwhelming good , and to study these aspects and requirements of the motor must be studied Keywords data correlation between these variables to identify the basic aspects that relate to the level of accuracy of performance skills , hence the importance of the research was to identify the proportion of the contribution of some indicators Biomechanical B level of skill performance of spiking high among volleyball players (**Ahmed, 2012**).

Research Problem: The quality of technical performance is one of the pillars that lead to mathematical achievement, which is related to the correct biomechanical conditions associated with performance , and from this principle the researcher found that studying the relationships and the rates of contribution between the kinematic quantities in the reference stage and the two stages of advancement and flight of body parts is important in the skillful performance of volleyball , and Which determines the level of accuracy of skill performance and its effectiveness in achieving the desired goal of the skill, which is to get the point properly , and in order to know the precise details of the motor performance , the research problem was identified in answering the following questions: What are the values of some of the alpha-mechanical indicators of the high crushing hit of the ball players The plane , and what is the relationship and percentage of the

contribution of some biomechanical indicators to the accuracy of the level of skill performance of the high spiking of volleyball players.

Research Aim: To identify the values of the biochemical indicators of high spiking in volleyball players , to identify the level of accuracy of the skill performance of high spiking among volleyball players , and to identify the relationship between some biochemical indicators with the accuracy of the level of skill performance of high spiking among volleyball players .

*Research Fields***:**

- Human field: Elite Volleyball League players
- Time field: From 20/10/201 8 to 18/0 4/2019.
- Space field: College of Physical Education and Sports Sciences.

Curriculum The research: The researcher used the descriptive approach in the method of relational relationships for its relevance to the nature of the problem and to what ensures the achievement of the research objectives and hypotheses.

T	The name of the club	High speed batting players	Number of exploratory experience personnel	The number of people in the main experiment
	Police Club	5	-	4
	Industry club	5	-	2
	South Gas Club	4	-	3
	Air Force Club	4	-	2
	The Peshmerga Club	4	-	-
	Erbil Club	4	-	1
	Maysan Oil Club	4	2	-
	Habbaniyah Club	3	2	-

Total	33	4	12
		16	
The percentage of the sample's representation of the research ommunity		48%	

Research sample: The search community determines the Iraqi Elite League volleyball season my players (2017 -2 018) , were selected randomly sample totaling (1 2) players from specialists beat the overwhelming high , and Table (1It shows the distribution of the research universities and the sample , and Table No. (2) shows the specifications of the research sample.

T	Total length (m)	Arm length (m)	Trunk length (m)	Leg length (m)	Mass (kg)
	1.92	0.80	0.59	1.04	94
	1.91	0.80	0.60	1.02	85
	1.94	0.78	0.62	1.07	85
	1.98	0.85	0.62	1.08	72
	1.90	0.83	0.64	1.02	83
	1.85	0.74	0.55	1.05	70
	1.92	0.81	0.61	1.04	87
	1.92	0.80	0.60	1.05	90
	1.90	0.79	0.59	1.03	83
	1.89	0. 79	0.59	1.01	81
	1.90	0.80	0.60	1.01	85
	1.93	0.81	0.61	1.04	82

It was processing data sample specifications statistically, and the distribution of adoption is variable values torsion coefficient , for the purpose of the homogeneity of the sample , and the coefficient of variation in order to identify the factor intruder " P whenever the results were 30% and below the indicators of the homogeneity of the sample" (**Wadie, 1999**) , and table No. (3) illustrates this

T	Variables	measuring unit	Arithmetic mean	Mediator	standard deviation	Coefficient of torsion	Coefficient of variation
1	The total length of the body	M	1.91	1.92	0.031	0.169	1.628
2	Arm length	M	0.80	0.80	0.027	-0.416	3.329
3	Trunk length	M	0.60	0.60	0.022	-0.738	3.671
4	The length of the man	M	1.04	1.04	0.022	0.495	2.127

Methods for gathering information:

- Arab and foreign sources.
- The global information network (internet).
- Observation and analysis (software, and applications used in the computer.(

Devices:

- Balance to measure weight (German - made).
- Foot scanner device (Foot Scan) Metric.
- (2) Video cameras with speed.120Image/s), type (Casio) With the holder .

- Laptop (1) type (Dell). Storage units (RAM) Capacity (8) GB Number (1).

Tools:

- Iron tape measure (3) meters, and a tape measure (1) meter long.
- Metal scale drawing with a length of (1) meter.
- Kinematic analysis software (KINOVEA 0.8, 25).
- Forms to dump data.

Search procedures Field:

Determination of the bio-
mechanical indicators of the skill of spiking high:

- Kinetic energy: measured by the formula = 0.5 mass x Nm x (velocity) 2 . (**Talha, 1993**)
- Instantaneous power: The researcher used the value of the acceleration of the body as a sign instead of the earth acceleration. Force = mass x acceleration of the body , where Sarih al- Fadhli states, "Force can be measured when the object's initial velocity is equal to zero, such as the

horizontal jump from the standing position through force = mass x speed/Time , and it is called the instantaneous performance capacity related to the static phase at the maximum flexion of the knee joint in the preparatory section of the movement and the production of the final instantaneous power at the maximum extension in the ankle, knee and hip joint and in the main section , as the ability: (**Lahn, 2006**)

Instantaneous power = Performance time

Work piece : Work is measured by = work piece (the force exerted in thrust x the distance the center of mass travel travels) (**Khaled, 1997**)

Exploratory test: Arose researcher By conducting Experience Exploratory On the playground games of the Ministry of Youth and Sports , on Saturday brief summary 0 9/02/201 9 and a sample of (4) Players , in order to identify each of the following:

- Know the locations, distances, and altitudes at which the camera should be placed.

- Understanding the location of the foot scanner (Foot Scan) .

- Learn about the time each player takes for the test application.

The scientific foundations for testing the accuracy of the level of skill performance of the rapid crushing volleyball area (4)

⊠ **sincerity test: has** been testing on a group of specialists in the field of tests and volleyball for the purpose of obtaining their views on the compatibility of this test with the purpose for which it placed for him and found the researcher said that the proportion of experts and specialists agreement was high, which confirm the sincerity test, reaching The honesty value is (0.789) , which is a high validity factor.

⊠ **Stability test :**have the researchers deliberately to use the method of testing and re - testing ", which summed up the application of the test itself on one set of players from outside the sample twice in two days" (**Tuckman, 1979**) With a timeframe of (7) days, as the tests were applied on (10 and 11/8/2015) corresponding (Monday and Tuesday), and the same tests were re-applied for the

second time on (18 and 19/8/2015) corresponding to (Tuesday and Wednesday), and after they were completed Treating the results statistically by means of the simple correlation coefficient law (Pearson). The reliability value was (0.7 78). This value shows that the test has a high degree of stability.

⊠ **Objective tests :**The researcher said the registration of arbitrators' results for the test and then calculated the simple correlation coefficient (Pearson), (0. 879) is a high correlation which confirms the objective test.

Main test (test procedure): Was conducted experiment on Thursday a brief summary 7/3/201 9 am third and half the evening, the stadium, physical science and sports , on a sample - strong adult (1 2) players , and included all of the following:

*Determination of anthropometric indicators***:** Measurements were collected physical variables, each of the following: (height, arm length, the length of the trunk, the length of the man, the weight).

*Imaging procedures*: The camera was set up at a distance of (3 m) on the line

parallel to the attack line, as well as another camera away from the grid (3 m) on the right or left side, and it is slightly tilted and perpendicular to the path of the crushing strike movement in the diagonal to control on the status of the player during the performance and height (1.35 m) focus imaging lens p n level Surface The land.

Foot Scanner Procedures: Using the foot scanner device in a way that does not hinder the players' performance, after calibrating the device in order to obtain the accuracy of the numerical value of the variables.

Test the technical performance of the accuracy level of performance for skills to hit the high crushing area (4) (**Ahmed, 2012**) :

- **The purpose of the test**: the accuracy of the skill level of high spiking for the area (4).

- **Tools used**: a volleyball court, balls, tapes to determine the precision areas of a triangle whose size is (40) cm for each division, i.e. the length of the side is (120) cm , a measuring device for the ball speed.

- **Performance description**: The tested player performs the high- speed frontal spiking skill from the specified area and to the opposite court at high speed and to the specified accuracy areas.

- **Calculating the degree (degree/second):** by using the law of velocity = m/n), where the speed extracted from the radar device after converting km/h to m/s, and the distance was determined from the network to the beginning of the line of accuracy area and since x = m/N, then n = m/h, and by extracting time, we extract the product of accuracy/time. Figure (1) illustrates this.
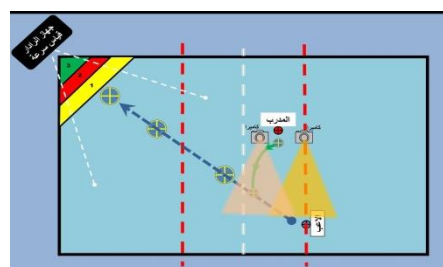
Figure No. (1) It demonstrates the technical performance test method for the accuracy of the skill level of spiking high in volleyball

Mechanical analysis of the research variables :For the purpose of extracting the values of the research variables, the program (**KINOVEA 0.8, 25**).

Statistic Means: Done Use the statistical bag (SPSS) for data processors.

Results

1. **View the results of the media and standard deviations: Table (4) shows the descriptive statistics of the research variables and are as follows:**

Table (4) the descriptive count of the variables shows the research under study

Variables	Mean	Median	Std. Deviation	Std. Error of Mean	Skewness
Kinetic energy	3018.105	2811.214	1049.603	280.518	0.148
Luck capacity	22349.718	22316.793	5430.410	1451.338	-0.143
Vertical power force	1517.796	1560.913	175.016	46.775	-0.292
With the level of accuracy of skill performance	0.165	0.164	0.033	0.009	0.755

It can be seen from Table (2)

The arithmetic mean of the kinetic energy has reached (7129.262), the median has reached (6068.143), and the standard deviation is (2215.410And a standard error of (0.665).

As for the arithmetic mean of the momentary power upon rise, it reached (7.486), and the mediator has reached (7.412), and the standard deviation of (0.857And a standard error of (0.665).

As for the arithmetic mean of the work, the vertical force achieved reached (1.618), And the mediator has reached (1.585), And the standard deviation of (0.284And a standard error of (0.665).

As for the mean of calculating the level of accuracy of skill performance, it reached (14.718), and the mediator has reached (15.196), and the standard deviation of (3.442And a standard error of (0.665).

The values of the coefficient of skewness were limited to (-0.290/1.206) Which is confined between (± 1) and within the distribution curve of natural and this confirms the possibility of Walt Analysis of statistical curve equinoctial.

2. Presentation of the results and discussion of the simple correlation coefficient and the contribution of the research variables to the level of skill performance accuracy of high spiking :

Table (5) it shows the interrelationships between research variables

T	Variables	Correlation	The value of the coefficie	The value of the corrected	The ratio of	Values F Commut	Indication level
1	Kinetic energy	R	Contribution rate	Contribution rate R2-		3.371	0.001
2	Luck capacity	0.468	R2		0.308	1.854	0. 038
3	Vertical power force	0.366	0.219	0.154	0.0322	0.969	0.344

** Significant when error ratio (0.01), * significant when error rate ≤ (0.05)
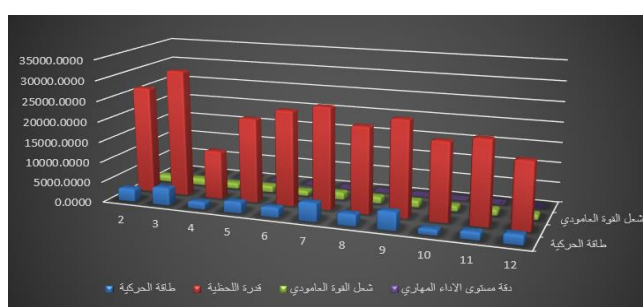
Discussion

It is clear from Table (5) all of the following:

1. The value of the link kinetic energy (0.468), and was the contribution

percentage (.219) , i.e. (21 %) , and either the value of the debugger coefficient of determination percentage contribution amounted to (0.154), and either the standard error rate to estimate the contribution ratio stood at (0.308) , and the value of Variation in the level of accuracy of skill performance (3.371) , While it was valuableSig (0.001) below significance level (0.05), Then the

researcher attributes this statistically significant relationship and the effective contribution percentage to the effectiveness of the level of good skill performance in the sense of the direct correlation with the momentary ability during the instantaneous push of the larger trunk mass and overcoming the Earth's gravity as the largest mass in the body that begins with movement in the athletic skills of jumping

2. The value of the link Alhzih capacity (0.3 66), and was the contribution ratio (0. 134) , ie (13 %) , and either the value of the coefficient of determination debugger contribution ratio stood at (0.062), and either the standard error rate to estimate the contribution ratio stood at (0.0322) , And the value of variance with the level of accuracy of skill performance (1.854) , while the value of Sig (0. 038) under the level of significance (0.05) , Then the researcher attributes the statistically significant relationship that appeared in the percentage of

the contribution to which the trunk mass contributed as the largest mass, which represents a percentage (0.43) of the body weight, which begins to move first towards the horizontal result more than the vertical result in the effectiveness of the long jump, and since the inertia moment Self = mass x (nq) 2, as the researcher lacks that by correlating the moment of inertia of the trunk with (mKg) which has a relationship to the movement of the trunk represented by the full extension to obtain the maximum distance to increase the height distance (mKG) during the performance .

3. The value of the total correlation reached the global strength (0. 273), and the contribution rate was (0.075) i.e. (07 %) . As for the value of the corrected determination coefficient, the contribution percentage was (-0.002), and the standard error rate of the estimation in the contribution rate was (0. 0.857) , and the value of variance in the momentary upgrading capacity (0.0333) , while

the value wasSig (0.344) below significance level) 0.05The researcher attributes this non-statistically significant relationship despite the contribution of a small percentage that has to do with the elevation leg represented by the failure to fully extend the knee joint and the ankle joint to obtain the maximum distance to increase the height distance (m.k.c.) during the performance and the momentary thrust time that is related to the law Work done = Force x Distance

Conclusions

Through what was presented and discussed, the researcher concluded all of the following:

1- Increasing the efficiency of the kinetic energy of the body parts, whether linear or rotational, has a positive effect on the speed of the body's launch, and then achieving a better achievement distance through the law of preserving the amount of movement and has a high effect on the technical performance of the research sample

2- Emphasis on the development of perception and development of motor body parts.

Recommendations

1- Importance has evolved capacity Explosive and maximal On investment Properties Bio Mechanical To body at the shape the performance Artwork Right.

2- Using kinematic analysis periodically during the course to identify the mechanical changes that occur when the players rise).

3- Conducting similar studies by including a number of indicators not studied

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