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The relationship of some biokinetic abilities to the accuracy of shooting from jumping basketball for secondary school students

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ABSTRACT

The importance of the research lies in the fact that the skill of correction is one of the most important basic skills in the game of basketball, which plays a decisive role in the victory and loss of teams because of its great importance in the games and this skill needs special physical abilities in order to reach the required level.

Through our study, we see that correction needs physical and motor abilities, or the so-called term biomotor capabilities, " **capabilities with a biological background and appear in the motor performance, so its name contained the bio section as well as the Abilities motor section , which are important abilities for successful motor performance and the prevailing ability of them is required by the performance of the game or effectiveness.**(1)

Bio : means the bioprefix, i.e. biological importance.

Motor : Motor means movement

Abilities : It means capabilities

The problem of the research is that some coaches rely on the training of physical and motor abilities, some of which are general and have nothing to do with the accuracy of the performance of the skill of correction, i.e. their training must be towards the motor performance of the skill and according to the requirements and conditions of the game and this omission led to not giving these abilities sufficient time and attention during training.

The objectives of the research were determined to identify the level of some biomotor abilities and the skill of correction of jumping in basketball among secondary school players, as well as to identify the type of relationship between some biomotor abilities and the skill of correction of jumping in basketball.

The researcher also followed the descriptive approach in the style of correlation relations as the nature of the problem posed is determined by the approach used by the researcher.

The research community included secondary school students, Babylon Governorate Center, and the sample was (12) players from the Babylon breeding team, and they were selected in a deliberate way for the academic season (2024-2025).

In order to determine the research variables that basketball players need and the most important physical tests for them, the researcher has the following.

1 **- Definition of research:**

1-1 Introduction to the research and its importance:

The world has recently witnessed a remarkable development in all fields and various sciences, including the science of learning and sports training, which gives priority to coaches and those in charge of the educational process to pay attention to the players according to scientific principles and formulas that lead them to achieve the best achievements with the least effort.

And because the game of basketball includes offensive and defensive skills, which vary in their needs to the types of physical and motor abilities special and appropriate for these skills and on top of these skills skill correction, which has a major role in resolving basketball matches and the importance of research lies in the fact that the skill of correction is one of the most important basic skills in the game of basketball, which plays a decisive role in the victory and loss of teams because of its great importance in the games and this skill needs special physical abilities In order to reach the required level.

And correction through our study needs physical and motor abilities or the so-called term biomotor capabilities and these abilities: -

Explosive ability, which is one of the most important physical abilities, which may be the common denominator of many of the skills carried out by the player, as its importance increases in offensive skills being decisive in scoring points, especially in basketball, as well as motor speed, which has importance in the nature of performance and how it occurs, without the kinetic speed that must be characterized by the player, he cannot enjoy the accuracy of the performance of shooting by jumping in basketball, Also, the required kinetic speed must be available with kinetic flexibility, without kinetic flexibility, there is no good motor speed through which the performance of correction and the required accuracy, especially shooting by jumping with basketball, and at the end of these physical and motor abilities required above must be available as much as motor compatibility, the totality of the previous steps must be completed and completed by consensus in terms of control, quality of performance and accuracy in the skill of shooting by jumping with basketball, In light of the foregoing, the importance of the research is reflected in the statement of the extent of the relationship of physical abilities (explosive ability - kinetic speed) and motor abilities (compatibility - kinetic flexibility) accurately shooting jumping basketball. For the purpose of identifying the relationship of some biokinetic abilities

accurately performance of the skill of correction of jumping the researcher to conduct his study.

1-1 Search problem:

The offensive skills in the game of basketball need to physical and motor abilities in particular and these abilities must be employed to serve the nature of the performance skill in basketball, especially the skill of correction, and because the researcher is interested in the field of the game has noticed that some coaches rely on the training of physical and motor abilities, some of which are general has nothing to do with the accuracy of the performance of the skill of correction, ie their training must be towards the motor performance of the skill and according to the requirements and conditions of the game and this omission led to not giving these Capacity sufficient time and attention during training.

Accordingly, the researcher decided to study this topic for the purpose of showing the relationship between some biomotor capabilities and the performance of the shooting skill in the game of basketball

1-2 Research Objectives:

1 - Identify the level of some biomotor abilities and the skill of shooting from jumping in basketball among secondary school players.

2- Identify the type of relationship between some biomotor abilities and the skill of shooting from jumping in basketball

1-2 Research hypotheses:

There is a significant correlation between some biomotor abilities and the accuracy of the skill of shooting from jumping in basketball.

1-2 Research Areas:

1.5.1 **The human field** :

High school basketball players in Hilla Center (2024 - 2025)

1.5.2 **Temporal domain** :

Period from 31/1/2025 and until 1/4/2025 .

1.5.3 **Spatial area** :

The closed sports hall of the Directorate of Education of Babylon.

3- Research methodology and field procedures:

3-1 Research Methodology:

The nature of the problem at hand determines the methodology, so the researcher used

Descriptive approach in the style of correlational relationships

3.2Research Community::

The research community included secondary school students, Babylon Governorate Center, and the sample was (12) players from the Babylon breeding team, and they were selected in a deliberate way for the academic season (2023-2024)

3-3 Methods, devices and tools used in research:

3.3.1 Research methods:

_auditions

_ Sources and references

_ Observation

3.3.2 Devices and tools:

- Basketball court
- Basketball (5)
- Stopwatch Number(2)
- Computer Type (DELL)
- Whistle
- Chalk
-

3.4 Field Research Procedures:

3.4.1 Identification of research variables:

Specify search variables:

In order to determine the research variables that basketball players need and the most important physical tests for them, the researcher has the following: -

1- Conducting a questionnaire* () especially to poll the opinions of experts and specialists 0** in determining the types of biomotor abilities needed by young basketball players, and after collecting the questionnaire forms, and reviewing what was stated therein and according to the results, four types of special physical abilities needed by basketball players were identified, which obtained an agreement rate of more than (80%) as shown in Table (3).

Table 3

Shows the percentage of agreement of experts and specialists in determining the types of biomotor abilities of basketball players

Agreement Ratio	Disagreers	Approvers	Number of experts	Biomotor capabilities	t

* See Appendix (2) p. 10

** See Appendix (4), p. 114

Zero%	10	zero	10	Maximum strength of the arms	1
Zero%	10	zero		Maximum strength of the legs	2
50%	5	5		Explosive power of the arms	3
100%	zero	10		The explosive power of the legs	4
60%	zero	60		Motor coordination between the eyes and arms	5
100%	zero	10		Motor compatibility between the eyes and legs	6
80%	2	8		Kinetic speed	7
90%	1	9		Motor flexibility	8

3.4.2 Identification of tests

In order to determine the tests, the researcher surveyed the most important sources and references related to the subject of the research.

- Vertical jump test of stability [(1)].

Purpose of the test: Measurement of the explosive power of the muscles of the legs.

Tools and possibilities: leather strap wrapped over the player's center area, tape measure, a piece of metal with a hole through which the tape measure passes, a belt-attached lug through which the tape measure passes, adhesive tape.

Performance Description : In the center of a circle drawn with a diameter of (50) cm is installed a small piece of metal through which the tape measure passes and the piece of metal must be between the feet of the laborator who wears a belt as much as the circumference of his waist, and connects the tip of the tape measure to the lug installed in the leather belt, and the tape extends to the piece of metal which is completely tight, and the laboratory stands and legs along it without flexion in the knees. After the reading is determined in centimeters at the middle of the metal piece. The athlete is asked to jump with both feet together to Top , arms can be weighted.

[(1)] **Raysan Khuraibit Majeed: Encyclopedia of measurements and tests in physical education, part 1, University of Basra, Higher Education Press, 1989, p 43.**

The tape measure moves upwards and then there will be a new reading at the middle of the coin, and the difference between the two readings is due to the explosive power of the athlete.

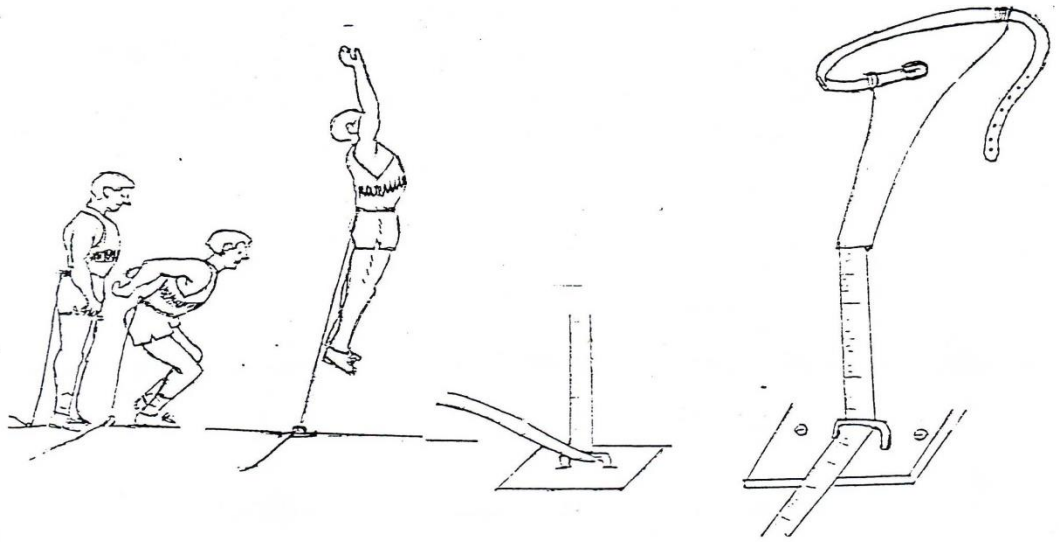
(Note that the result of the jump that ends outside the drawn circle is not counted)

Test Management

Registered: Calls on names and records the results.

Arbitrator: Calculates grades and notes the call.

Calculation of grades : The score obtained by the laboratory is the number of centimeters between the first reading while standing and the second reading after it jumps.



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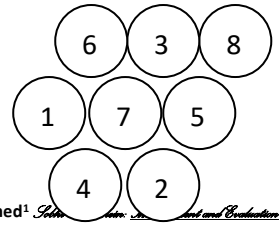
Performance Description: The tester stands inside circle (1) when hearing the start signal, jumps with the feet together to circle (2), then to circle (3), then circle (4) until circle (8).

Registration: Records the time it takes for the laboratory to travel through the eight circuits.



Mohamed[1] *Selim [illegible] and Evaluation in Physical Education and Sports, 1st Edition, Cairo, Dar Al-Fikr Al-Arabi, 1995, p 616*

Represents compatibility test

3- Motor Flexibility Test [1]:

Purpose of the test: Measurement of motor flexibility (flexion, extension and rotation of the spine).

Tools: Stopwatch, wall.

Performance specifications : Draws a sign (x) on two points:

1- On the ground between the feet of the laboratory.
2- On the wall behind the back of the laboratory (in the middle).

When hearing the start signal, the tester bends the trunk forward down to touch the ground with the fingertips at the sign (x) between the feet, then extends the trunk high with a turn to the left to touch the sign (x) behind the back of the laboratory with the fingertips, and repeats the same work on the right side as well.

Registration: The laboratory records the number of touches achieved on the two marks within (30 seconds).

4- Kinetic speed [2]: **(Nelson's test of translational motor responses)**

Purpose of the test: to measure the ability to respond and move quickly and accurately according to the stimulus test. This test has been developed to resemble motor patterns in a number of sports.

Necessary tools: flat space area free of obstacles length of 20 m and width of 2 m, clock, tape measure

Performance description : The tester stands on one end of the midline and the midline is between the feet of the laboratory so that he bends his body forward slightly, and the arbitrator grabs a stopwatch with one of his hands and raises it to the top and then quickly moves his arm either left or right and at the same time turns on the watch, and the tester responds to the hand signal carried out by the tester and the tester tries to run at full speed towards the specified signal to reach the side line, which is 6.40 miles from the centerline When the laboratory cuts the line of the correct side, the tester or arbitrator stops the clock, and in the event that the laboratory runs in the wrong direction, the arbitrator continues to operate the clock until the laboratory changes the correct direction and the laboratory reaches the correct side line, and the laboratory is given 4 ideal between each attempt and another 20 seconds by two attempts on each side.

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(1) **Ali Salloum al-Hakim: the previous source, p. 176.**

- Ali Salloum al-Hakim: (Ibid.) 2004, p. 182.[2]

Degree calculation : The time for each attempt is calculated to the nearest 1/10 s and the degree of the laboratory is the average of the four attempts

5 - **As for the test of accuracy of correction jumping, the researcher has chosen a codified test was applied to a sample similar to the research sample in terms of age and category in a previous study** [3],

Test aiming by jumping from the left of the free throw line and then moving around to the center and right [4]:

• **Purpose of the test**: Measurement of the accuracy of aiming by jumping.

• **Necessary tools**: - Basketball court, tape measure, 2 basketball, basketball goal, chalk.

• **Procedures** : - Drawing three points in the form of small circles with a diameter of 15 cm as signs indicating the three areas through which the test is performed as follows:

The third mark is to the right of the free throw line and 30 cm away.

• **Performance description** : - The player takes a standing position in the specified place outside the free throw area on the left side with the ball, the player performs scoring by jumping with one hand towards the basket.

The player has 15 throws performed in three sets, where each group has five throws

The first group is left of the free throw line.

The second group is in the middle of the free throw line.

The third group is to the right of the free throw line.

• Calculation of grades: - calculated for the player (2) degrees when the ball enters the goal.

The player is calculated one degree for each throw in which the ball touches the ring and does not enter a score is not calculated for each ball that does not touch the ring at all.

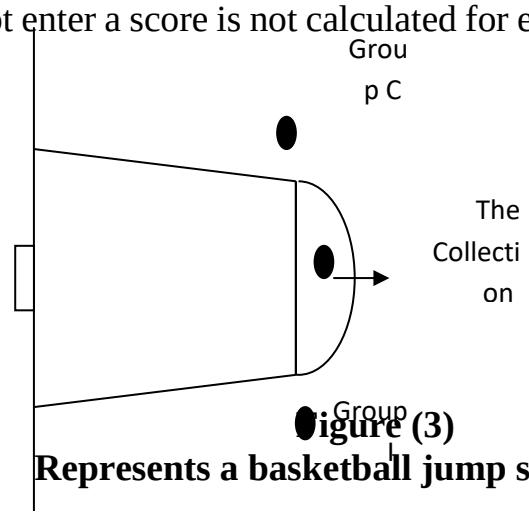

Figure (3)
Represents a basketball jump shooting test

[3] - Faris Sami Yousef Shaba: Building and rationing a test battery to measure some complex offensive skills in basketball for juniors, PhD thesis, University of Baghdad, College of Physical Education, 2006.

[4] **Ali Salloum Al-Hakim: Tests , Measurement and Statistics in the Mathematical Field: Al-Qadisiyah University, Al-Taif Printing, 2004, p. 186.**

3.4.3 Scientific foundations of tests:

To identify the scientific foundations of the tests used, the researcher applied them to a sample consisting of (8) players randomly selected from the same research community and (stability and objectivity) were extracted as shown in Table (6).

First: Honesty: -

The sincerity of the test is the extent to which the test measures the skill expected to be measured and that the evaluation of an expert or several experts for certain tests supports the sincerity of the test, and to ensure the sincerity of the tests the researcher adopted the sincerity of the content (content), in determining the sincerity of the tests by presenting the tests proposed to be used in the research to a group of experts and specialists* and agreed that these tests measure the characteristic or skill that was developed to measure As for the test of the accuracy of correction by jumping from the three-point area, the researcher has adopted the sincerity of the test To ensure the validity of the test as shown in Table (6)

Second / stability

The stability of the test means "giving it the same results and that this test was given more than once to the same testers and under the same conditions[5"], so the researcher used the method (test and retest) by applying the test to the same individuals twice under the same conditions on 2/2/2024 and the tests were repeated **on 12/2/2024 and finding the rank correlation coefficient (**Spearman) as it was found that the degree of stability of the tests was high, as shown in Table (7).

Third: Objectivity:

Although the coefficient of objectivity is closely related to the coefficient of stability, as "the high coefficient of stability is offset by a rise in the coefficient of objectivity" [(6)] that is, when the scores in stability are high achieved objectivity, the tests were conducted under the supervision of impartial arbitrators, taking into account the confirmation of the conditions themselves and the method of conducting the tests and were treated statistically, as the rank correlation coefficient (Spearman) was calculated between the results of the arbitrators**, and the results indicated the objectivity of the tests to a high degree as shown in Table (6).

Table (6)

Shows the coefficients of stability and objectivity of the tests used

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- Qais Naji and Bastawisi Ahmed: Ibid., p. 113.[5]

- Nizar al-Talib and Mahmoud al-Samarrai : previous source, p. 134.[6]

* - Prof. Dr. Nasr Hussein Abdel Amir: Basketball training, University of Babylon, Faculty of Physical Education.

* - Eng. Najah Abdul Hassan Awfi kinetic learning, basketball, doctoral student, Isfahan University, Faculty of Physical Education.

Indication Type	Objectivity		constancy		Unit of measurement	auditions	t
	Significance level	t	Significance level	t			
Moral	-	*1	0,034	*0,87	Degree/minute	Jump Correction Test	1
Moral	0,018	*0,91	0,029	*0,89	m/kg	Vertical Jump Ability Test (Workpiece)	2
Moral	0,015	*0,93	0,044	*0,89	°/s	Numbered Circuits Test	3
Moral	0,021	*0,87	0,034	*0,85	Number of times	From the front support position bend and extend the arms for (10s)	4
Moral	0,020	*0,88	0,047	*0,89	Number of times	Mobility Test (30s)	5
Sample size = 8 Significance level = 0,05							

1-4-5 Exploratory experiment The first exploratory experiment for aptitude tests (physical and skill): The exploratory experiment was conducted on a sample of (3) players from the same research community who were selected in the main random way 2/2/2025 at exactly four o'clock in the afternoon on the closed hall of the Directorate of Education of Babylon and its purpose was .

1. Recognize and control the performance of tests and the way they are executed.
2. Determine the research need for the necessary devices and tools used in the tests.
3. Recognize the time required to take tests.
4. Know the level of difficulty of the tests for the research sample.
5. Avoid errors and obstacles that may face the researcher when implementing the main experiment.

The first exploratory experiment was repeated on the same individuals and under the same conditions on 10/2/2024, through which physical and skill tests were repeated, and the aim was to extract the scientific transactions of the tests, represented in (stability and objectivity).

2.4.5 Main experience:

The researcher conducted the main experiment on 15/2/2024 on the hall of the Directorate of Education, on the sample (Babylon basketball team for juniors), and

the tests were applied to them, and then the researcher extracted the results and processed them statistically.

3.6 Statistical means:

For the purpose of achieving research procedures and reaching results, the researcher used the following statistical methods.

- Correlation coefficient (Pearson)
- Arithmetic mean (Q-)
- Standard deviation (p)

4- Presentation, analysis and discussion of research results:

This section includes the presentation of the results of this research, analysis and discussion, so the researcher presented them in the form of tables in order to clarify the image to the reader for the purpose of understanding

4-1 Presentation of the results of the level of some physical and motor abilities of the research sample.

In order to know and install the strengths and weaknesses of the research sample in each of the indicators studied, it is necessary to shed light on the nature and level of achievement when the research sample in each of the variables researched, and this is not done for the researcher unless he recognizes the average achievement of each of the physical and motor abilities surveyed, as well as knowing the amount of deviation and dispersion of its establishment from its arithmetic media, as well as knowing the real levels of the sample in each of the indicators concerned with the research.

The vocabulary of these indicators are different in standard units, which makes it difficult to make comparisons among them, it is necessary for the researcher to be compared to the achievement in each of the vocabulary of each indicator (physical and motor abilities and the skill of shooting jumping in basketball) with a scale that does not depend on the unit of measurement to see the amount of homogeneity in the completion of the research sample, and in this regard mentions (Abdul Aziz structure: "The standard deviation, despite its accuracy and frequent use, but it does not benefit us in the case of comparing the dispersion of two statistical groups, because In order to be able to compare, we must take advantage of the advantageous units using abstract and non-discriminatory numbers, and we get such numbers by

dividing two numbers of one distinct type and the same units (arithmetic mean, standard deviation).[7]

4.1.1 Presentation of the results of some physical and motor abilities and analysis and discussion of the research sample.

Table (1)

Shows the statistical parameters (arithmetic mean, standard deviation) of the physical and motor abilities of the research sample

Standard deviation (p)	Arithmetic mean (Q-)	genre	(Variables Surveyed) Physical and motor abilities	nun
0,20	2,63	physical	Explosive power of the legs	1
1,98	1,88	physical	Kinetic speed	2
2,00	4,61	Move	Motor compatibility	3
1,04	41	Move	Mobility flexibility	4

Table (1) shows the final results of the amount of homogeneity of physical and motor abilities that the research sample underwent, through the table mentioned above we note that the establishment of the arithmetic mean achieved from the physical and motor abilities of each individual of the sample as well as the amount of dispersion from these media, and to know which of these variables is more homogeneous than others in the research sample we note that the characteristic of physical ability (motor speed) is the most homogeneous of other physical and motor abilities where the values of the arithmetic mean and standard deviation (1.88 – 1.98) It is a small difference between the two values relative to the rest of the differences between the other values achieved by the research sample for other physical and motor abilities.

4.1.2 Presentation of the results of the accuracy of the performance of shooting jumping basketball and analysis and discussion of the research sample.

Through the following table, the results that have been presented and analyzed for the accuracy of correction on the research sample can be shown.

Table (2)

7- Abdul Aziz Heikal (1974) Principles of statistical methods. Beirut: Dar Al-Nahda Al-Arabiya, 1974, pp. 271-279

Shows the statistical parameters (arithmetic mean, standard deviation) for the level of accuracy of the performance of shooting by jumping basketball for a sample search

Standard deviation (p)	Arithmetic mean (Q-)	Variables surveyed	t
1,9	18	Accuracy of shooting performance from jumping basketball	

The above table shows (Table 2) that the value of the arithmetic mean achieved for the skill of correction from jumping basketball for the research sample, where the value of the arithmetic mean (X-) for the accuracy of the performance of correction from jumping basketball (18), and the value of the standard deviation (p) for the accuracy of the performance of correction from jumping basketball (1.9).

4-2 Presentation of the results of the relationship between some physical and motor abilities and their relationship to the accuracy of the performance of correction of jumping basketball and analysis and discussion of the research sample.

Table (3)

Shows a correlation between some physical and motor abilities accurately performance of shooting from jumping basketball to the research sample.

Significance of the link	Link Lab Value (t)	kind	Variables surveyed	t
Moral	0,82	physical	Explosive power	1
Moral	0,87	physical	Kinetic speed	2
Moral	0,88	Move	Motor compatibility	3
Moral	0,92	Move	Motor flexibility	4

Through the above table (Table 3) shows the values of the correlation coefficient for physical and motor abilities at the value of (T) tabular of (0.576) and at the level of significance (0.05) and the degree of freedom (10) we note through the results that emerged that there is a positive relationship of statistical significance between the explosive ability and the accuracy of the performance of the skill of correction of jumping basketball and the researcher attributes the reason for this relationship for a comparison of the value of (t), which amounted to (0.82) with the

value of (T) tabular and amounting to (0.576) where the significance of the link (significant).

As well as for the kinetic speed when compared with the accuracy of the performance of shooting jumping basketball has emerged a direct relationship when comparing the value of (t), which amounted to (0.87) with the value of (T) tabular and the amount of (0.576) where the significance of the link was also significant. This is with regard to the relationship of some physical abilities (explosive ability - kinetic speed) with the accuracy of the performance of shooting from jumping with basketball.

As for motor abilities (motor compatibility - motor flexibility) it was found through Table (3). When comparing the kinetic compatibility with the accuracy of the correction performance of jumping basketball, a direct relationship emerged when comparing the value of (t), which amounted to (0.88) with the value of (T) tabular and of (0.576), where the significance of the link (significant)

As well as for motor flexibility, when compared with the accuracy of the shooting performance of jumping basketball, a direct relationship also emerged when comparing the value of (t), which amounted to (0.92) with the value of (T) tabular and (0.576), where the significance of the correlation (significant) was also .. Through the foregoing, the researcher attributes that these four abilities, which are physical capabilities (explosive ability - kinetic speed) and motor abilities (motor compatibility - motor flexibility) have a direct correlation with the accuracy of the performance of correction from jumping basketball as the skill of correction from jumping basketball needs both explosive ability and kinetic speed because of their great impact in helping the player jump and move quickly and easily implementation, as well as giving freedom and complete control when taking the position of correction and preparation for the process Correction.

As for compatibility and flexibility, their relationship with the accuracy of the correction performance of jumping basketball is important and help in completing the correction process to the fullest and in the correct and proper manner, compatibility and flexibility are both important factors that must be available when the basketball player as well as for the explosive ability and kinetic speed, these four correlation relationships are important and effective and contribute to the correction process and accuracy because of its great and effective impact on the success of this process to the fullest with the required result.

5- **Conclusions and recommendations** :

5.1 Conclusions:

_ The players of the Babylon basketball team have good physical and motor abilities.
_ The players of the University of Babylon basketball have a fairly good jumping shooting accuracy.
_ The emergence of a good correlation between the explosive ability of the two men and the speed of movement as physical abilities and accuracy of shooting jumping basketball.
_ The emergence of a very good correlation between compatibility and flexibility as motor abilities and accuracy of shooting jumping basketball.

5.2 Recommendations:

_ Basketball coaches and players should pay serious attention to the development of biokinetic abilities related to the performance and accuracy of shooting jumping basketball.
_ Attention to intensive exercises to improve the accuracy of the performance of shooting jumping basketball.
_ It is possible to study other physical and motor abilities that can affect the accuracy and performance of shooting jumping basketball.

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