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Dr. Ahmed Kareem Lateef
Assistant Professor, College of
Physical Education and Sports
Sciences, Al-Muthanna
University, Samawah, Iraq

A few of strength variables contributing in hand-off and offensive screen skills for youth basketball players

Dr. Ahmed Kareem Lateef

Abstract

Due to the significance of strength variables in hand - off and offensive screen skills, the researcher has done this paper of research, that it is the best way to achieve the ultimate team's goal as well as studying some of strength variables that is relevant to offensive performance effectiveness.

The research problem lies in understanding the relationship between some of power variables and hand - off, offensive screen skills among young basketball players, and how much do some of power variables (which are under study) contribute in players performance.

The research aims to identify the major strength variables that is related to hand - off and offensive screen skills, as well as identifying the relationship between strength variables and the performance of those skills.

One of the main research hypotheses that there is a significant correlation between strength variables and hand - off, offensive screen, that strength variables do contribute significantly at the level of performance of those skills.

The researcher used "Descriptive method" which is a procedure for obtaining facts and data with an interpretation for how are those data correlated with the research problem, and this method actually corresponds with the research specifications by relying on the "survey method" which depends on collecting data and informations about any phenomena or event to identify it and determine its current status, in addition to understanding its strengths and weaknesses.

The research population includes young basketball players belonging to clubs in Babil Governorate (Al-Hilla, Al-Janain, Al-Kifl, Al-Mawhiba, Al-Madhatiya), and Najaf Governorate (Al-Tadhamun, Al-Kufa, Najaf, Al-Shamiya, Naft Al-Wasat), totaling (50) players occupying the five positions that the researcher will study.

The most important conclusions came with that strength variables have a significant relationship with the skills of hand-off and offensive screen for young basketball players, also that these strength variables explain a large proportion of the accuracy of performing the skills of hand-off and offensive screen in basketball.

Keywords: Strength variables, hand-off skills, offensive screen skills

Introduction

Basketball is a structured team sport characterized by speed in performance. The recent changes in the game's rules have posed challenges for coaches in meeting the demands of modern play. This situation forces them to adopt new methods of offense and defense, focusing on certain skills and strength variables in training and playing, given their effectiveness in changing the balance of play, these strategies and skills require strength variables that contribute to the accurate execution of defensive skills and plans.

In basketball, the skills of hand-off and offensive screen are crucial aspects of the game, requiring a high level of strength variables and the correlating between them for optimal and effective performance, by the cognition and the mental visualization of the game situations accurately.

Basketball necessitates more scientific efforts to advance players and achieve optimal performance in games through a scientific approach based on observation and experimentation. It also involves recognizing player performance during games and important factors based on precise observation.

Understanding player performance during matches is crucial to assessing the effectiveness of defensive methods and strategies, which in turn enhances player performance.

Corresponding Author:
Dr. Ahmed Kareem Lateef
Assistant Professor, College of
Physical Education and Sports
Sciences, Al-Muthanna
University, Samawah, Iraq

By understanding performance effectiveness through precise observation and game analysis, we can avoid errors associated with performance in future and identify which strength variables contribute more to the skills of hand-off and offensive screen, thus focusing more on these aspects during training. Given the importance of the skills of hand-off and offensive screen for basketball players, the researcher conducted this study as the best way to achieve the team's goals. The study also examines some strength variables related to the effectiveness of offensive strength variables in basketball.

Research Problem

In this study, the researcher will attempt to answer the following questions:

1. What is the status of some strength variables among young basketball players?
2. What is the status of the performance of offensive skills among young basketball players?
3. What is the relationship between some strength variables and the skills of hand-off and offensive screen among young basketball players?
4. What is the percentage of contribution of some strength variables that are under study to the skills of hand-off and offensive screen among young basketball players?

Research Objectives

The research aims to:

1. Identify the most important strength variables related to the level of the skills of hand-off and offensive screen.
2. Identify the relationship between strength variables and the performance level of the skills of hand-off and offensive screen.
3. Predict the level of the skills of hand-off and offensive screen based on strength variables.

Research Hypotheses

The research hypothesizes:

1. There is a significant correlation between strength variables and the skills of hand-off and offensive screen.
2. Strength variables significantly contribute to the performance of the skills of hand-off and offensive screen.

Research Fields

1. **Human Field:** Players from clubs in Babil Governorate (Al-Hilla Club, Al-Kifl Club, Babil Club, Al-Janain Babil Club), and clubs in Najaf Governorate (Al-Tadhamun, Al-Kufa, Najaf, Al-Shamiya, Naft Al-Wasat).
2. **Time Field:** From 1/2/2023 to 1/5/2023.
3. **Spacial field:** Sports halls in Babil Governorate and Najaf Governorate.

Chapter 3: Research Methodology and Field Procedures: Research Methodology

The researcher used (Descriptive method) "which is a procedure for obtaining facts and data with an interpretation for how are those data correlated with the research problem"(*)^[1] and this method actually corresponds with the research specifications by relying on the (survey method) which depends on collecting data and information about any phenomena or event to identify it and determine its current

¹⁾ Nouri Ibrahim Al-Shawk and Rafie Saleh Fathi Al-Kubaisi, "Guide for Researchers in Writing Research in Physical Education." Baghdad: 2004, p. 55.

status, in addition to understanding its strengths and weaknesses (*)^[2].

Research Population

The current research population includes young basketball players belonging to clubs in Babil Governorate (Al-Hilla, Al-Janain, Al-Kifl, Al-Mawhiba, Al-Madhatiya), and Najaf Governorate (Al-Tadhamun, Al-Kufa, Najaf, Al-Shamiya, Naft Al-Wasat), totaling (50) players occupying the five positions that the researcher will study, as shown in the table (1) below.

Table 1: Distribution of young basketball players by club and governorate

Players numbers	Clubs	Governorate
5	Al-Hilla	Babil
5	Al-Janain	
5	Al-Kifl	
5	Al-Mawhiba	
5	Al-Madhatiya	
5	Al-Tadhamun	Najaf
5	Al-Kufa	
5	Najaf	
5	Al-Shamiya	
5	Naft Al-Wasat	

Research Tools and Means

The nature of the research determines the tools needed to solve the research problem. "These are the means by which the researcher can solve the problem, regardless of what those tools may be: data, samples, devices, etc." The researcher utilized the following tools (*)^[3]:

1. Observation.
2. Foreign and Arabic sources.
3. Video recording.
4. Personal interviews.

Devices and Tools Used in the Research

Rubber band.

- Measuring tape.
- Stopwatch.
- Laptop (FUJITSU).

Field research procedure

Determining Biomechanical Abilities

The most important biomechanical abilities were determined, which are:

- Coordination.
- Motor speed.
- Strength endurance.

Tests Used in the Research

Description of speed-strength tests

Continuous Hopping with Both Feet for 25 meters (*)^[4]

- **Purpose of the test:** To measure the speed-strength of the legs.
- **Tools and equipment:** Open space, stopwatch, measuring tape.

²⁾ Khairuddin Ali Owais, "Guide to Scientific Research." Cairo, Dar Al-Fikr Al-Arabi: 1999, p. 103.

³⁾ (*) Nouri Ibrahim and Rafie Saleh Fathi Al-Kubaisi, previously mentioned source: 1999, p. 69.

⁴⁾ - Abdel Khaleq Mohammed Abdel Khaleq, "B T," Faculty of Physical Education, Mansoura University, unpublished Master's thesis, 2007.

- **Test procedure:** Continuous hopping with both feet together for a distance of 25 meters.
- **Recording:** The shortest time taken by the tester is recorded to the nearest 0.01 second.

2-Front Support (Push-Ups) Continuously for 10 Seconds (*)^[5]

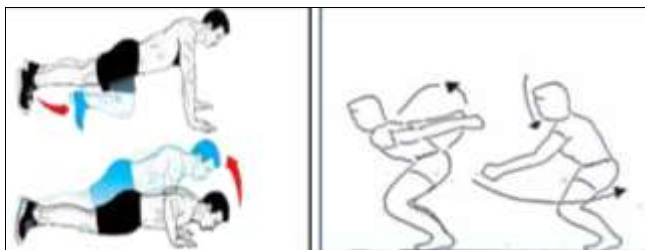
- **Purpose of the test:** To measure the speed-strength of the arm muscles.
- **Tools:** Playing field, electronic stopwatch, whistle for start and end signals.
- **Test description:** From the front support position, perform as many push-ups as possible in 10 seconds.

Test conditions

- The player assumes the front support position on the ground with the body in a straight line. At the start signal, the tester fully extends the arms and continues to repeat the movement as many times as possible without stopping for ten seconds.
- Ensure the chest touches the ground during performing push-ups, and full extension of the arms

Recording

The number of push-up repetitions performed within 10 seconds is recorded.



3- Endurance Strength Test (*)^[6]

Continuous hopping with both feet together to cover the greatest distance in one minute.

Purpose of the test: To measure the endurance strength of the leg muscles together.

Tools and equipment: Football field.

Test procedure: Continuous hopping with both feet together to mark lines drawn on the ground.

Scoring

- Record the greatest distance in meters covered in one minute.
- The distance covered is an indicator of endurance strength.

The Scientific Foundations of the Tests

Continuous hopping with both feet together to cover the greatest distance in one minute:

Purpose of the test: To measure the endurance strength of

the leg muscles together.

Tools and equipment: Football field.

Test procedure: Continuous hopping with both feet together to mark lines drawn on the ground.

Scoring

- Record the greatest distance in meters covered in one minute.
- The distance covered is an indicator of endurance strength.

The Scientific Foundations of the Tests

Firstly - Validity of Test Results

The researcher used the (Loach) method to calculate the validity of the judges by presenting it to experts and specialists. The validity coefficients reached (1.000) for all tests, which are greater than the minimum validity coefficients by the (Loach) method, which should not be less than (0.62). See Table (2).

Table 2: Shows the validity coefficient values for the proposed tests that measure strength variables.

No.	Tests	Measuring unit	Validity coefficient
1.	Speed-strength of the arms	Number	1000
2.	Speed-strength of the legs	Distance/m	1000
3.	Strength endurance	Distance/m	1000

Secondly - Reliability of Test Results

In order to trust and rely on the tests and to know the stability of the measurements, the researcher tried to find the reliability coefficient by determining the correlation between the results of the first and second measurements of the tests that were applied to the population during the aforementioned period. In other words, the "test-retest" method was used. After calculating the Pearson correlation coefficient between the scores of the first and second applications, it was found that all correlations were significant at a degree of freedom (48) and a significance level (0.05), as all calculated (t) values were greater than the tabular value of (2.31) as shown in Table (2), indicating that all tests have a high degree of reliability. This means "the test yields the same results if repeated under the same conditions and circumstances within a period that does not allow for learning and training."

The researcher sought to reapply the tests within a maximum period of (7) days, specifically after (4) days from the first application. Efforts were made to conduct the tests under conditions similar to those of the first application, using the same methods in conducting the tests and recording the results, and maintaining the same order as in previous applications. Table (3) shows the reliability results of the tests.

Table 3: Shows the reliability coefficient values for strength variable tests.

No	Tests	Reliability coefficient	Calculated (T) values	Statistical significance
1	Speed-strength of the arms	0.93	7,166	Significant
2	Speed-strength of the legs	0.81	3,963	Significant
3	Strength endurance	0.87	4,234	Significant

Thirdly - Objectivity

The researcher derived the objectivity coefficient by determining the correlation between the results of two judges

⁵ () Mohammed Sobhi Hassanein, "Evaluation and Measurement in Physical Education," 2nd edition, vol. 2: (Cairo, Dar Al-Fikr Al-Arabi, 1987), p. 268.

⁶ Warren, young(1995) :laboratory strength assessment of athlete,the Int Quail mos, Vol :1, No;4 P;89

(*) [7] who marked the achievement results of the community during the second measurement (retest). This method is widely used by practitioners in the field of measurement in physical education. The objectivity of the test means: "the lack of or absence of differences in the way the test is evaluated for the examinees (players) regardless of the judges. The lower the variation between the judges, the more objective the measurements are" (*) [8]. This implies that the measurements are not influenced by the subjective factors of the judges.

The results of the Pearson simple correlation coefficient between the results of the first and second judges confirmed that all tests have high objectivity, as the calculated values of the second test for the significance of the correlation were greater than the tabular value of (2.31) at a degree of freedom (8) and a significance level (0.05), as shown in Table (4).

Table 4: Shows the objectivity coefficient values for strength variable tests.

No	Tests	Objectivity coefficient	Calculated (T) value	Statistical significance
1	Speed-strength of the arms	0.83	3,394	Significant
2	Speed-strength of the legs	0.96	9,731	Significant
3	Strength endurance	0.91	8,512	Significant

Skill Tests

1- Offensive Blocking

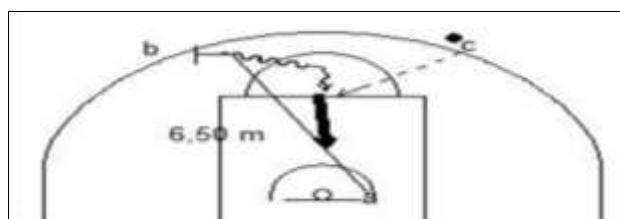
- (Offensive Blocking and Rolling, Ball Reception, and Layup Shooting)
- **Purpose of the test:** Measure the endurance of performing the composite skill (offensive blocking and rolling, ball reception, and layup shooting).
- **Test duration:** 40 seconds
- **Equipment and tools:** Basketball court, 5 basketballs, adhesive tape, 5 markers, whistle, stopwatch.

Performance description

- The player stands at point (a).
- Upon hearing the starting whistle, the player runs to point (b), which is 6.50 meters away, to perform the offensive block and then rolls to receive the ball from point (c).
- The player then performs a layup towards the goal as shown in the figure above.
- The performance is repeated for 40 seconds.

Scoring

- Each successful attempt (ending with a successful shot) scores three points.
- Each unsuccessful attempt (ending with a failed attempt) scores two points.
- -If the time ends before completing the attempt, one point is awarded for the skill that was performed.



⁷ (1) Kamal Abdel Hamid and Mohammed Sobhi Hassanein, "Measurement in Handball," (Cairo, Dar Al-Fikr Al-Arabi, 1980), p. 38.

⁸ (2) Mohammed Sobhi Hassanein (2003), previously mentioned source, p. 366.

Hand-off

2-Test of Endurance Performance of the Hand-off Skill with Offensive Blocking

- **Purpose of the test:** Measure the endurance performance of the hand-off skill with offensive blocking.
- **Test duration:** 40 seconds
- **Equipment and tools:** Basketball court, 2 basketballs, adhesive tape, 5 markers, whistle, stopwatch.

Performance description

- From the three-point line, player (2) performs the V-cut skill with a defender present.
- Player (2) receives the ball from teammate (3) at the three-point line, performs the hand-off skill, and then a hand-off towards the basket.
- The performance continues at the same basket.

Scoring

- If the skill is performed correctly with offensive blocking and creates an easy shooting opportunity (ending with a successful shot), two points are awarded.
- If the skill is performed correctly with offensive blocking and creates an easy shooting opportunity (ending with a failed attempt), one point is awarded.
- If the defender manages to break the block and prevent the attacker from the hand-off, zero points are awarded.
- If the time ends before completing the attempt, one point is awarded for the skill that was performed.

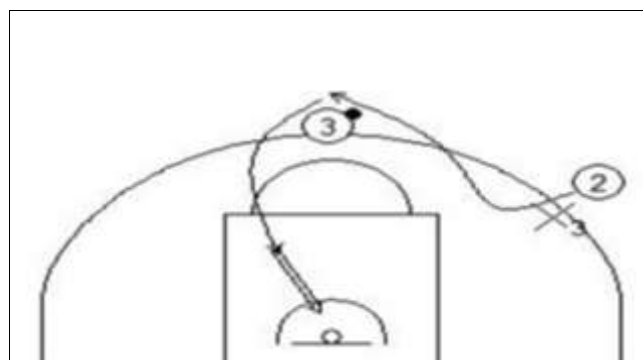


Fig 1: Illustrates the Hand-off Skill Test.

Assistant Team

The researcher enlisted the help of an assistant team (*) consisting of four individuals. The role of the assistant team was to record the matches and document the required results from the matches by entering them into the form designed for the research purpose. The researcher directly supervised the assistant team.

Pilot Study

The researcher conducted a pilot study on the research population to assess the suitability of the tests used in the research. This was done at the Martyr Hamza Nouri Hall in Babil governorate at 4:00 PM. On the second day, the same experiment was conducted for the remaining population in Najaf governorate.

Objectives of the Pilot Study

1. To identify the difficulties that may face the researcher during the application of the tests in the main study.
2. To ensure the integrity and suitability of the tools used.
3. To train the assistants on how to run the tests.
4. To understand how well the research sample

comprehends the proposed exercises.

5. To evaluate the appropriateness of the proposed exercises for the research sample.
6. To apply the first unit of the program to determine the actual performance time and the number of repetitions for each exercise.
7. To ensure the ease of applying the tests while saving time and effort.
8. To determine the number and type of tests that can be conducted in one day by calculating the time required for each test separately.
9. To overcome the problems and difficulties that may face the researcher during measurement and recording.

Statistical Methods

The researcher used the statistical program (SPSS).

Table 6: Shows the correlations of composite skills with strength variables.

No.	Variables	Performance	Error Rate	Significance
1.	Hand-off	0.90	0.02	Significant
2.	Offensive screen, Ball Reception, then Layup shooting	0.92	0.03	Significant

Table (6) shows that the correlation coefficients between the researched variables and some strength variables, as well as

Chapter Four

Results - Presentation and Analysis

Descriptive Statistics

The data were statistically processed to extract the means and standard deviations for specific endurance (strength variables), the skills of hand-off and offensive screen, as well as calculating their standard errors. The results are shown in Table (5).

Table 5: Illustrates the mean and standard deviation of the research variables.

No.	Variables	Mean	Standard Deviation
1.	Speed-strength of the arms	10.200	1.497
2.	Speed-strength of the legs	48.09	2.56
3.	Strength endurance	90	2.12

the skills of hand-off and offensive blocking in basketball, are positive and statistically significant.

Table 7: Shows the value of strength variables contributing to the skills of hand-off and offensive screen and their contribution rates.

Independent Variable	Dependent Variable	Contribution Rate
Strength variables	Hand-off	0.902
	Offensive screen, Ball Reception, then Layup shooting	0.780

Upon examining the above table, we find that strength variables have contributed to the hand-off skill (0.902) as well as to the skill of offensive screen, ball reception, and layup (0.780). This means that strength variables have significantly contributed to both the hand-off and offensive screen skills in basketball.

Chapter Five

Conclusion and Recommendations

Conclusion

Based on the results, the following conclusions can be drawn:

1. Strength variables are significantly related to the hand-off and offensive screen skills among young basketball players.
2. Strength variables in young basketball players explain a large percentage of the accuracy in performing some complex offensive basketball skills.

Recommendations

In light of the research conclusions, the researchers recommend the following:

1. Coaches in the Iraqi Basketball League should focus on complex offensive skills and include specific drills for these skills in their training programs.
2. Emphasis should be placed on developing specific endurance in young basketball players due to its importance in maintaining high levels of technical performance.
3. Conduct similar studies to understand the contribution of other physical and motor attributes to the performance of technical and tactical basketball skills across different age groups.

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