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Program in Enhancing Explosive Power and Improving Jump Shooting Performance Among Basketball Players

Saad Mahmoud Farman*
Babylon Education Directorate, Babil, Iraq

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ABSTRACT **Original Research Article**

This research aimed to identify the effect of a training program on enhancing explosive power and improving jump shooting performance among basketball players. The researcher adopted an experimental approach using a single-group pre-test/post-test design, as it was suitable for the nature and objectives of the research. The research sample consisted of (20) basketball players from the Babylon Sports Club, aged between (18–20) years, selected purposively.

The researcher used the standing vertical jump test to measure the explosive power of the legs, and the jump shooting test to measure the level of skill performance. A training program was implemented for (10) weeks, with (3) training sessions per week, which included a set of exercises aimed at developing explosive power and improving jump shooting performance.

The results showed statistically significant differences between the pre-test and post-test in the variables of explosive power and jump shooting, favoring the post-test, indicating the effectiveness of the training program in developing these two variables. The results also showed a positive correlation between explosive power and jump shooting performance among the research participants.

The researcher concluded that the training program used effectively contributed to enhancing explosive power and improving jump shooting performance among basketball players, and recommended the need to focus on developing explosive power within training programs due to its positive impact on improving players' skill performance.

Keywords: Explosive Power, Jump Shooting, Training Program, Basketball.

**Corresponding author: Saad Mahmoud Farman*
Babylon Education Directorate, Babil, Iraq.

Introduction

Basketball is a team sport that has witnessed significant development in various aspects of performance in recent years, and now requires advanced levels of physical and technical preparation to meet the demands of modern competition. A player's success in fulfilling their offensive and defensive duties depends on possessing a range of physical abilities that enable them to execute basic skills efficiently and accurately throughout the game (Allawi, 1994).

Among these abilities, explosive power stands out as a crucial physical attribute that contributes to improving a player's motor performance. It is important since the player has to apply sufficient force in a limited period of time, a characteristic required by several situations occurring in various games, particularly situations where the player needs to make quick jumps and leap and react to different changes happening on the field. The mentioned physical property is associated with the player's capacity for skillful performance in sports where there is a combination of speed and power (Abdel-Maqsoud, 1997).

The jump shot is probably the most common skill in basketball as one of the key strategies to get offensive dominance in the game and score as many points as possible.

In order to perform it successfully, a player should have an adequate muscular strength, coordination, and balance and a good jumping capacity allowing him/her to shoot the ball from high up and not be blocked by his opponents. Accordingly, explosive power is another characteristic affecting this skill's performance and efficiency (Fawzi, 2014).

Nowadays, the development of various abilities in athletes is one of the main goals of training programs, which are created in accordance with the needs of particular sports and the required performance level. The scientific approach to organizing training sessions positively affects the physical and technical capacity of athletes and improves their athletic performance (Allawi, 1994).

Considering the importance of explosive power in basketball and its impact on the performance of particular skills, there is a need to introduce special training programs that would help to enhance this physical ability and increase the players' ability to perform the jump shot more efficiently. The purpose of this research is to conduct a study aimed at revealing the impact of a special training program on the players' explosive power and jump shooting performance in basketball.

Research Problem

Explosive power of a basketball player is an important physical attribute that significantly influences the development of many basic skills including jump shot shooting. The extent to which the player has developed this attribute will influence the height reached in the jump as well as their shooting proficiency during a match.

However, despite the great value of explosive power, there have been instances where players lack in this area. This results in poor shooting accuracy. In addition, some training programs emphasize more the technical skills of a player than the physical attributes that enable them.

Hence, the research problem lies in identifying the effectiveness of a training program in enhancing explosive power and improving jump shooting performance among basketball players.

The main research question is defined as follows:

Does the proposed training program contribute to enhancing explosive power and improving jump shooting performance among basketball players?

Research Objectives

The research aims to:

1. Identify the impact of the training program on enhancing explosive power in basketball players.
2. Identify the impact of the training program on improving jump shooting performance among basketball players.
3. Identify the relationship between developing explosive power and improving jump shooting performance in basketball players.

Research Hypotheses

1. There are statistically significant differences between the pre-test and post-test results in explosive power among basketball players, in favor of the post-test.
2. There are statistically significant differences between the pre-test and post-test results in jump shooting performance among basketball players, in favor of the post-test.
3. There is a significant correlation between explosive power and jump shooting performance among basketball players.

Significance of the Research

The importance of this research stems from the significance of explosive power as a fundamental physical ability that contributes to improving the skill performance of basketball players, particularly the jump shot, which is a crucial offensive skill in the game.

The importance of this research also lies in providing a training program that can help coaches and players develop explosive power and improve their jump shooting performance, thus contributing to raising the level of technical performance and achieving better results in sports competitions.

Research Areas

Human domain: Players of Babylon Sports Club participating in basketball activities and regularly attending training sessions.

Time Domain: The period is from 1/10/2025 to 15/12/2025.

Spatial Domain: Babylon Sports Club.

Theoretical Framework and Previous Studies

Sports Training

Athletic training is a fundamental pillar upon which the development of athletic performance in various sports depends. Reaching high levels of performance is not achieved haphazardly, but rather through a structured training process based on sound planning and the selection of exercises appropriate to the nature of the sport. Through regular training, the physical and technical abilities needed by the athlete to achieve optimal performance in athletic competitions can be developed (Hammad, 2001).

The training process requires a thorough understanding of the players' abilities and needs, as the success of the training program depends on how well the training loads are tailored to the player's level and training objectives. Furthermore, gradually increasing the intensity and volume of the load

helps achieve the necessary adaptation and avoids the negative effects resulting from disorganized training or inappropriate loads.

In basketball, athletic training is of particular importance due to the fast-paced and ever-changing nature of the game. Players need a good level of physical fitness in addition to mastering basic skills; therefore, modern training programs aim to link physical and technical preparation to ensure improved performance and achieve the highest levels of efficiency on the court (Abdul Khaliq, 2005).

Explosive Power

Explosive power is a crucial physical ability for basketball players, enabling them to generate significant force in a short amount of time. This ability is particularly evident in situations requiring rapid jumps, leaps, or sudden bursts of speed on the court; therefore, a deficiency in explosive power can significantly impact a player's physical and technical performance (Abdel-Maqsoud, 1997).

Explosive power is increasingly important in basketball because it is involved in several fundamental skills such as jump shots, rebounding, blocking, and rapid movement between playing positions. Therefore, developing this ability is not only a physical goal but also directly linked to improving a player's technical performance during a game (Fawzi, 2014).

Jump Shooting Skill in Basketball

The jump shot is considered one of the crucial offensive techniques in basketball since it allows players to score points during the game. Its significance is connected to the fact that by jumping, a person gains an opportunity to perform the shot from a higher position, thus reducing the probability of it being blocked. In addition, this technique has turned into one of the most often-used basketball techniques due to the fact that speed and accuracy are critical when executing a jump shot (Fawzi, 2014).

Executing a successful jump shot requires a person to possess great coordination and balance along with high accuracy in performing the movement. Besides, the performance of this basketball technique requires one to be able to control body movements before and after landing. However, besides skills, success in jump shooting depends on such factors as a player's physical condition and capacity for working under varying circumstances. Training plays an essential role in acquiring skills in basketball (Hammad, 2001).

The Relationship between Explosive Power and Jump Shooting in Basketball

Explosive power is very much associated with the performance of skill in the game of basketball, as this is among the physical capacities needed for a player to perform skills involving speed and power at the same time. The effect of such capacity becomes apparent especially in skills which involve jumps and leaps, wherein a good measure of explosive power can make a player achieve great vertical height in a short period of time (Abdel-Maqsoud, 1997).

Jump shooting is a skill directly affected by explosive power. A player needs to jump appropriately to maintain performance quality and launch the ball from a high position, allowing them to outpace defenders. A good level of explosive power contributes to more efficient execution of the skill and gives the player a better chance of making accurate and effective shots during a game. Therefore, modern training programs emphasize developing explosive power as a crucial requirement for improving skill performance in basketball (Bompa & Buzzichelli, 2019).

Importance of Explosive Power in Basketball

Explosive power is a fundamental physical attribute upon which basketball players rely to perform many offensive and defensive skills. Its importance is evident in situations requiring rapid jumps, vertical leaps, and sudden movements on the court, making it essential for effective performance during a game (Abu Al-Ala Ahmed Abdel Fattah, 2003).

Explosive power contributes to improving a player's ability to execute jumping skills, such as rebounding, jump shooting, and blocking. It also helps increase the efficiency of motor performance and reduces the time required to execute various skills, giving the player an advantage in competitive situations on the field (Salama, 1994).

Therefore, modern training programs are keen to develop explosive power within the stages of special physical preparation, given its direct role in raising the level of skill performance and improving the ability to respond to the changing demands of the game during the match (Abu Al-Ala Ahmed Abdel Fattah, 1998).

Previous Studies

First Study

Faleh (2019) conducted a study titled "Explosive Power of the Legs and Arms and Their Relationship to Biomechanical Variables (Mechanical Power, Vertical Work, and Horizontal Work) of Advanced Basketball Players." The study aimed to identify the nature of the relationship between explosive power of the legs and arms and certain biomechanical variables in advanced basketball players. The researcher used a descriptive approach, and the results showed significant correlations between explosive power of the legs and mechanical power and vertical work, as well as a correlation between explosive power of the arms and horizontal work. The study confirmed that developing explosive power contributes to improving the motor and skill performance of basketball players.

Second Study

Hijab et al. (2022) have undertaken research entitled "The Application of Integrated Training Exercises for Improving Explosive Power and Speed Strength in Young Players of

Basketball under 17 years of Age." This research has been undertaken with the purpose of determining the impact of integrated training exercises on the development of physical abilities in basketball players. In the experiment performed, the positive results regarding explosive power and speed strength were achieved through the application of integrated training exercises.

Third Study

Naama (2026) carried out research entitled "Effect of Multi-Resistance Exercises on Leg Explosive Power and Shooting Accuracy in 3x3 Female Basketball Players." The objective of this study was to determine the effect of using multi-resistance exercises on improving leg explosive power and shooting accuracy among female basketball players. This was an experimental type of study whose results indicated that there is a notable improvement in leg explosive power and shooting accuracy when the exercises are used. This proves the efficiency of such exercises in developing leg explosive power and shooting accuracy.

Discussion of Previous Studies

Previous studies have highlighted the importance of explosive power as a key physical ability influencing the skill performance of basketball players. They have also confirmed the effectiveness of training programs and specific exercises in developing this ability and improving performance variables on the court. Faleh's study (2019) focused on the relationship between explosive power and certain biomechanical variables, while Hijab et al.'s study (2022) examined the impact of training programs on developing explosive power and speed-strength. Naama's study (2026) explored the effect of specific exercises on developing explosive power and improving shooting accuracy.

The current study is similar to previous studies in its focus on explosive power and its relationship to performance in basketball. However, it differs by examining the effect of a training program on enhancing explosive power and improving jump shooting performance among basketball players while addressing both the physical and skill-related variables within a single applied framework.

Research Methodology and Field Procedures

Research Methodology

The researcher adopted the experimental method because it was suitable for the nature of the research problem and its objectives, as it is one of the most commonly used methods in studies that aim to identify the effect of the independent variable on the dependent variable. A single-group pre-test/post-test design was used to determine the effect of the training program on enhancing explosive power and improving jump shooting performance among basketball players.

Research Community and Sample

The research population consisted of the players of Babylon Sports Club's basketball team for the 2025–2026 sports season. The research sample was selected purposively from among the club's players because they were suitable for the nature and objectives of the study, and the sample size was (20) players.

The participants were aged 18–20 years and were selected based on their consistent attendance and participation throughout the training program. All participants underwent pre-tests before the program's implementation. The program was then implemented during the designated research period, followed by post-tests to determine its impact on enhancing explosive power and improving jump shooting performance among basketball players.

Research Tools and Devices Used

The researcher used a set of tools and devices necessary to carry out the research procedures and collect data, which included the following:

1. Basketball court at Babylon Sports Club.
2. (10) Basketballs.
3. Measuring tape.
4. Electronic stopwatch.
5. Whistle.
6. Special forms for recording pre- and post-test results.
7. Pens and stationery materials.
8. A computer device for data entry and statistical analysis.
9. Adhesive tape to mark test locations on the field.

Tests Used

The researcher selected specific tests that suited the nature and purpose of the research so that he could assess the variables explosive strength and jump shot accuracy on the research sample. This was made possible since these specific tests were suitable for this age bracket and are normally used in basketball research.

Explosive Strength Test for the Legs (Vertical Jump from a Standing Position)

The test aims to measure the explosive power of the legs by determining the maximum height a player can achieve when jumping vertically from a standing position.

Test name:
Standing vertical jump test.

The purpose of the test:
Measuring the explosive power of the legs in the research sample.

Tools used:
Measuring tape, chalk or marker, flat wall, results record form.

Performance method:
The player stands alongside the wall, raising the arm closest to the wall as high as possible to determine the landing point from a stationary position. They slightly bend their knees and make a vertical leap to the maximum height possible, where they touch the wall. Three jumps are allowed with adequate recovery time between each jump.

Registration method:
The difference between standing height and jumping height is calculated, and the best attempt out of three is recorded in centimeters.

Jump Shooting Test

The purpose of this test is to measure the level of performance in jump shooting of the subjects using their ability to shoot from designated spots on the court a set number of times.

Test name:
Jump shooting test.

The purpose of the test:
Measuring the level of jump shooting performance among the research sample.

Tools used:
Basketball court, regulation basketballs, scorecard, whistle.

Performance method:
The player stands in the designated shooting position on the court and then performs (20) jump shots towards the basket. The attempts are performed consecutively, ensuring the correct technique for the jump shot is executed.

Registration method:
One point is awarded for each legally successful shot made to fall in the basket. No marks are awarded for any unsuccessful shot. The total marks of a player will be the total number of successful shots out of 20.

Training Program

The researcher adopted a training program to improve explosive power and jump shooting among basketball players. The training program was appropriate in regard to the age group of the research sample, their skill level, and the type of skill development that would be carried out. Moreover, it comprised a progressive sequence of activities that would help achieve the physical and skill objectives of the training program.

The program was conducted for a period of (10) weeks, carrying out (3) training sessions each week, giving a total of (30) training sessions in the duration of the experiment. The training was conducted at the Babylon Sports Club stadium.

The training program involved exercises that aimed at developing leg power and explosiveness, such as vertical jumps, hurdle jumps, and running jumps along with jump shooting exercise at different positions within the basketball court. These exercises were done in increasing order of intensity as well as in a progressive sequence that would match their skill level and performance.

In addition to physical training, the training program was aimed at developing skills through integration of both aspects. This was done through jump shooting after exercises that develop explosiveness.

Table (1): Training Program Specifications

Variable	Value
Program Duration	10 Weeks
Number of Weekly Training Sessions	3 Sessions
Total Number of Training Sessions	30 Sessions
Duration of Each Training Session	60 Minutes
Location of Implementation	Babylon Sports Club
Number of Participants	20 Players
Age Group	18–20 Years

Field Procedures

In order to accomplish the research goals and determine the effects of the training program in developing explosive strength and jumping shots for basketball players, the following procedures were conducted by the researcher according to an organized process involving pre-testing, implementation of the training program, and post-testing.

Pre-tests

The pre-test was done on the research subjects on 1/10/2025, to determine the strength of the explosive power of the legs and their jump shooting capability before undertaking any training program. The pre-test was carried out in the stadium of Babylon Sports Club, under the same conditions for all players.

Implementing the training program

The training program was implemented on the research sample from 2/10/2025, to 10/12/2025, lasting for (10) weeks with (3) training sessions per week. The program included a set of exercises aimed at developing explosive leg power and improving jump shooting performance among basketball players.

Post-tests

Post-tests were conducted on 15/12/2025 after the completion of the training program, using the same tests used in the pre-

tests and under the same conditions, with the aim of identifying the extent of development in the variables of explosive power and jump shooting performance among the research sample.

Statistical Methods Used

The researcher employed a range of appropriate statistical methods to process the data and analyze the research results, aiming to identify the impact of the training program on enhancing explosive power and improving jump shooting performance among basketball players. The following statistical methods were used:

1. Arithmetic mean.
2. Standard deviation.
3. Paired Samples t-test for related samples to identify differences between pre-tests and post-tests.
4. Pearson's correlation coefficient to identify the relationship between explosive power and jump shooting performance.

Statistical analyses were performed using appropriate statistical software to extract and interpret the results in accordance with the research objectives and hypotheses.

Results and Discussion

Presentation of Explosive Power Results

Table (2): Results of the Pre-Test and Post-Test for Explosive Power among the Research Sample

Variable	Number of Participants	Pre-Test		Post-Test		Calculated t-Value	Significance Level
		Mean	Standard Deviation	Mean	Standard Deviation		
Explosive Power (cm)	20	45.30	3.12	52.85	3.48	8.74	0.001

Table (2) shows that the mean explosive power of the (20) players in the research sample was (45.30) cm in the pre-test with a standard deviation of (3.12), while the mean increased in the post-test to (52.85) cm with a standard deviation of(3.48).

The results indicate an increase of (7.55) cm between the arithmetic means of the pre-test and post-test, which reflects a clear improvement in the level of explosive power among the research sample after the application of the training program.

The calculated t-value was 8.74, which is higher than the tabulated value at the 0.05 significance level, while the significance level reached 0.001, which is lower than the adopted significance level. This indicates that there are statistically significant differences between the pre-test and post-test in favor of the post-test.

The researcher attributes this improvement to the effectiveness of the training program used and its inclusion of exercises aimed at developing explosive power in the legs, which contributed to increasing the players' ability to produce power in a short time and achieving better results in the post-test.

Displaying the Results of the Jump Shooting

Table (3): Results of the Pre-Test and Post-Test for Jump Shooting Performance among the Research Sample

Variable	Number of Participants	Pre-Test		Post-Test		Calculated t-Value	Significance Level
		Mean	Standard Deviation	Mean	Standard Deviation		
Jump Shooting Performance (Score)	20	11.40	2.15	16.85	1.92	9.21	0.001

Table (3) shows that the arithmetic mean for the jump shot performance of the (20) players in the research sample was (11.40) points in the pre-test with a standard deviation of (2.15), while the arithmetic mean in the post-test rose to (16.85) points with a standard deviation of(1.92).

The results indicate an increase of (5.45) points between the arithmetic means of the pre-test and post-test, which demonstrates an improvement in the jump shooting performance level of the research sample after the application of the training program.

The calculated t-value was 9.21, while the significance level reached (0.001), which is less than the adopted significance level (0.05), indicating that there are statistically significant differences between the pre-test and post-test in favor of the post-test.

Discussion of Explosive Power Results

The research results showed a significant improvement in the explosive power level of the research participants, with the mean value increasing from 45.30 cm in the pre-test to 52.85 cm in the post-test, a difference of 7.55 cm. This improvement reflects the positive impact of the training

program on developing the explosive power of the legs in the athletes.

The researcher thinks that the enhancement occurred due to the type of exercises performed by the trainees, which included a large amount of repetitive jumping and leaping activities that were in line with what is required in basketball. Besides, the duration of the exercise for ten weeks, with three weekly training sessions, was enough for the body to adapt physically in such a way as to enable them to produce power in a short while.

This is also attributed to the training load principles followed during the training process since their adoption saw to an efficient neuromuscular system that performed explosive movements much more efficiently.

Discussion of Jump Shooting Results

The research results showed a significant improvement in the jump shooting performance of the research participants, with the mean score rising from 11.40 in the pre-test to 16.85 in the post-test, a difference of 5.45 points. This improvement indicates the effectiveness of the training program in developing the players' skill performance.

The researcher believes that such achievement is a result of the use of skill practice within the training program that involved specialized practice routines related to jumping shots made from different spots. It also involved repetitions of the activity all through the training session.

The development in the explosive power of the legs also contributed to improving jump shooting performance, as the increased ability of the player to jump provides a better opportunity to release the ball from a higher point and with greater stability to launch the ball from a higher point and with greater stability, which positively affects the accuracy and effectiveness of the shot during performance.

Discussion of the Relationship Between Explosive Power and Jump Shooting Performance

Table (4): Pearson Correlation Coefficient between Explosive Power and Jump Shooting Performance among the Research Sample

Variables	Correlation Coefficient (r)	Significance Level
Explosive Power and Jump Shooting Performance	0.78	0.001

Table (4) shows that the correlation coefficient between explosive power and jump shooting performance was (0.78), which is a high positive value, indicating a positive relationship between the two variables. The significance level reached (0.001), which is lower than the adopted significance level of (0.05), indicating that the relationship between explosive power and jump shooting performance is statistically significant among the research sample.

The research results showed a positive correlation between explosive power and jump shooting performance among the research sample, indicating that improved explosive power levels positively impacted jump shooting skill performance.

The researcher believes this relationship stems from the nature of the jump shot technique, as it requires a good ability to jump quickly and reach a suitable height while executing the shot. This helps the player perform the skill with better balance and motor control, as well as improving the angle of release and reducing the impact of defenders during the shot.

Furthermore, the training program used focused on developing both physical and technical aspects in an integrated manner, which directly contributed to the transfer of the improved explosive power to skill performance. This explains the improvement observed in jump shooting results, coinciding with the development of explosive power among the research participants.

Therefore, it can be said that developing explosive power is one of the important factors that contribute to improving the performance of jump shots in basketball players, which confirms the importance of paying attention to this physical attribute within the game's training programs.

Conclusions and Recommendations

Conclusions

In light of the research findings and their discussion, the researcher reached the following conclusions:

1. The training program contributed to developing explosive power among the basketball players in the research sample.
2. The training program led to an improvement in the jump shooting performance level of the research sample.
3. The post-test results showed a significant advantage over the pre-test results in the variables of explosive power and jump shooting.
4. There is a significant positive correlation between explosive power and jump shooting performance among basketball players.
5. Developing explosive power contributes to improving the skill level associated with jump shooting.

Recommendations

Based on the research findings, the researcher recommends the following:

1. The adoption of the training program used in this study to develop explosive power among basketball players.
2. Attention should be given to developing explosive power within training programs due to its role in improving players' skill performance.

3. Focusing on jump shooting skills during training sessions is crucial due to its importance in achieving offensive success in basketball.
4. Integrating physical conditioning and skill development when designing training programs for basketball players.
5. Conducting similar studies on different age groups and skill levels of basketball players.
6. Further research should be conducted to examine the impact of diverse training programs on the development of physical and skill-related abilities in basketball.

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