



## **The Effect of Specific Exercises Using the Blazepod Device on Developing Some Motor Abilities of Basketball Players Under 18 Years Old**

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### **Abstract**

The study aimed to design specialized exercises using the Blazepod training device for young basketball players and examine their effectiveness in developing selected motor abilities . The research sample consisted of 12 players from the Adhamiya Club participating in the Iraqi Summer Youth Basketball League for the 2024 / 2025 season. The players were randomly assigned into two equal groups: an experimental group (n=6) that trained using Blazepod based exercises and a control group (n=6) that followed traditional training. The researcher employed the experimental method with two equivalent groups and developed a training program consisting of 24 units each lasting 26–35 minutes implemented over eight weeks at a frequency of three sessions per week. The findings indicated that the Blazepod exercises led to significant improvements in the motor abilities of young basketball players as shown by the differences in mean scores between the pre- and post-tests . Furthermore , the results demonstrated the superiority of the Blazepod based program over the conventional training methods used by the coach in enhancing motor performance. Based on these results , the researcher recommends integrating Blazepod specific exercises into training programs for basketball players across all age categories as well as designing additional individual and group exercises with varied formations and complexities to further develop motor abilities .

**Keywords:** exercises, motor skills, blazepod, basketball.

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## Introduction

Basketball is considered one of the sports that require high physical, motor, and skill-related demands, which are reflected in the beauty and speed of performance. Its skills take various forms in terms of movement paths, which have rapidly evolved, and this development has certainly aligned with the speed requirements of the game. It necessitates the player to exert significant offensive effort to overcome the opponent's defensive strategies (Abdulgussain et al., 2025).

Most international basketball teams and national squads have turned to training using devices and auxiliary tools for age groups, especially the youth category, to a greater extent. This category is the foundation for preparing and developing a distinguished player with high skills in the future, capable of representing advanced clubs and national teams. The execution of these exercises mimics the performance and nature of muscle work in regular basketball training thereby optimizing movement performance and enhancing and developing motor abilities and offensive skills more effectively (Abdulkareem & Hameed, 2017; Abdulkareem & Sattar Jabbar, 2025).

Motor skills play a significant role in most offensive basketball skills, which requires players to maintain a high level of neuromuscular coordination throughout the game, in addition to performance accuracy. Therefore, it is essential to use tools and devices that assist in exercises similar to the skills and movements that occur in the game, so that the player can cope with the continuous defensive changes of the opponent. This is what the researcher will attempt to find on one of the training devices, specifically the (Blazepod) training device, by applying special exercises with this device (Moody et al., 2020; Zhang et al., 2019).

The importance of the research is highlighted by applying a set of interactive exercises using the training device (Blazepod) and demonstrating the extent to which these exercises affect the development of certain motor skills (coordination and agility) among young basketball players. These interactive exercises with this device are considered one of the auxiliary means used to facilitate the training process, which increases speed, accuracy, coordination, and direction changes at a high level among young players throughout the duration of the game (Laursen, 2010; Pan et al., 2022).

The research problem emerged from the researcher's observation of many club training sessions and some matches of the age-group league accompanying the premier basketball league. He noticed that there is a problem represented in the weakness of motor skills (coordination and agility) and the inability to cope with changes in the individual and collective defensive positions of the opponent, which negatively affected the teams' results and the effectiveness of most young basketball players.

The novelty of devices and tools provides researchers with valuable information and helps convey the coach's ideas to the player in the form of exercises that align with the flow of the game,



raising the level of athletic performance to achieve high performance levels during matches and the ability to outperform the opponent (Maqableh et al., 2023; Pekas et al., 2023) . This has led coaches to choose or select the most beneficial and time saving auxiliary devices and tools and to optimally use these tools that help improve technical performance on one hand and develop motor skills on the other . This has prompted the researcher to envision the need for a study and research to prepare interactive exercises using the training device (Blazepod) which works on developing motor skills and enhancing the player's ability to cope with changes in the opponent's defensive position at a high level for the longest possible duration giving it a greater role in the training process (Hassan & Abdulkareem, 2026; Howard et al., 2016) .

The study aims to: Preparing special exercises using the (Blazepod) training device for young basketball players. Identifying the impact of exercises using the (Blazepod) training device on developing certain motor skills in young basketball players.

As for the research hypotheses, they are: There are no statistically significant differences between the pre-test and post-test for the experimental and control groups in developing some motor skills of young basketball players. There are no statistically significant differences between the post-tests of the experimental and control groups in developing some motor skills of young basketball players.

The research was conducted on the players of the Al-Adhamiya Sports Club for youth basketball, totaling 12 players, in Baghdad at the Al-Adhamiya Sports Club for Indoor Games from 05/07/2025 to 27/08/2025.

## Methodology

The researcher chose the experimental method with the method of two equal groups (experimental and control), with pre and post tests, as “experimental research is one of the most sufficient means of reaching reliable knowledge” (Mahjoub, Physical and physiological analysis of sports movements, 1990, page 83), and the researcher identified the research community with the players of the Adhamiya Club (12) players participating in the Iraqi Summer Youth Basketball League for the 2024/2025 sports season, and the sample was selected by the random method, which consists of (12) players representing the Adhamiya Sports Club for basketball, due to the availability of the sample, ease of control and commitment to daily training, as well as the availability of the training hall, and the sample percentage reached (66. The sample was divided by lottery method into two groups, one experimental and the other control (6) players for the experimental group, and (6) players for the control group, and for the purpose of ensuring the start of the same line of action between the two groups and to verify that the results are moderately

distributed between the two research groups, the researcher performed equivalence in the research variables as shown in table (1).

**Table 1.** *Equivalence of the Experimental and Control Groups in the Research Variables*

| Variables    | Unit of Measurement | Experimental Group |       | Control Group |       | T value | Sig. value |
|--------------|---------------------|--------------------|-------|---------------|-------|---------|------------|
|              |                     | M                  | SD    | M             | SD    |         |            |
| Coordination | Seconds             | 8.596              | 0.396 | 8.636         | 0.367 | 0.181   | 0.859      |
| Agility      | Seconds             | 12.248             | 0.204 | 12.278        | 0.204 | 0.253   | 0.804      |

(\*) Degrees of freedom ( $12 - 2 = 10$ )

(\*) Significant if the significance level is less than (0.05).

Table (1) above shows that the error level values for the research variables are greater than the significance level (0.05), indicating that there are no significant differences in the variables between the experimental and control groups, which suggests the equivalence of the research groups and the initiation of a single starting line for both groups.

The researcher chose the compatibility test (Shaba, 2016, p. 29) and the agility test (Shaba, 2015, p. 458), and the researcher conducted the pre-test for the research sample, on Wednesday 02/07/2025 at 5 pm at Al-Adhamiya court, and the researcher prepared the exercises, which consisted of (24) training units and the time of each unit (26 - 35 minutes) for a period of (8) weeks with (3) units per week (Saturday, Monday, and Wednesday), and the exercises were applied on Saturday 05/07/2025 on the experimental group. 35) minutes for a period of (8) weeks with (3) units per week (Saturday, Monday and Wednesday), and the exercises were applied on Saturday on 05/07/2025 on the experimental group, and was completed on Wednesday 27/08/2025, and the researcher made sure that the conditions in which the post-test will be conducted are similar to the conditions of the pre-test in terms of tools, the place and time of conducting the pre-test, the method of implementation and the sequence of tests, as well as the calculation of grades and with the help of the same assistant work team the post-test was implemented on Saturday 30/08/2025.

## Statistical Methods

The statistical package (SPSS) was used to process the results of the research using the following rules: The arithmetic mean, the standard deviation, the median, the skewness coefficient, the paired sample t-test, the independent sample t-test.

## Results

**Table 2.** *Means and Standard Deviations of the Research Variables Between the Pre- and Post-Tests for the Experimental Group*

| Variable     | Unit of Measurement | Pre-test |       | Post-test |       |
|--------------|---------------------|----------|-------|-----------|-------|
|              |                     | M        | SD    | M         | SD    |
| Coordination | Seconds             | 8.596    | 0.396 | 6.223     | 0.151 |

|         |         |        |       |        |       |
|---------|---------|--------|-------|--------|-------|
| Agility | Seconds | 12.248 | 0.204 | 10.276 | 0.103 |
|---------|---------|--------|-------|--------|-------|

**Table 3.** Differences in Means, Standard Deviations, Calculated (t) Value, and Significance of Differences for the Research Variables Between the Pre- and Post-Tests for the Experimental Group

| Variable     | Unit of Measurement | Mean Difference | SD of Difference | Calculated t | p-value |
|--------------|---------------------|-----------------|------------------|--------------|---------|
| Coordination | Seconds             | 2.373           | 0.378            | 15.367       | 0.000   |
| Agility      | Seconds             | 1.971           | 0.278            | 17.362       | 0.000   |

(\*) Degrees of freedom ( $df = 6-1 = 5$ ).

(\*) The result is considered significant if the p-value is less than the significance level (0.05).

**Table 4.** Means and Standard Deviations of the Research Variables Between the Pre- and Post-Tests for the Control Group

| Variable     | Unit of Measurement | Pre-test M | Pre-test SD | Post-test M | Post-test SD |
|--------------|---------------------|------------|-------------|-------------|--------------|
| Coordination | Seconds             | 8.636      | 0.367       | 7.430       | 0.101        |
| Agility      | Seconds             | 12.278     | 0.204       | 11.281      | 0.142        |

**Table 5.** Differences in Means, Standard Deviations, Calculated t-Values, and Significance Levels of the Research Variables Between the Pre- and Post-Tests for the Control Group

| Variable     | Unit of Measurement | Mean Difference (MD) | SD of MD | Calculated t | p-value |
|--------------|---------------------|----------------------|----------|--------------|---------|
| Coordination | Seconds             | 1.206                | 0.395    | 7.472        | 0.001   |
| Agility      | Seconds             | 0.996                | 0.153    | 15.950       | 0.000   |

(\*) Degrees of freedom ( $df = 6-1 = 5$ ).

(\*) The difference is considered significant if the p-value is less than the significance level (0.05).

**Table 6.** Means, Standard Deviations, Calculated t-Values, and Significance Levels of the Research Variables Between the Experimental and Control Groups in the Post-Test

| No. | Variable     | Experimental Group (Mean $\pm$ SD) | Control Group (Mean $\pm$ SD) | Calculated t | p-value |
|-----|--------------|------------------------------------|-------------------------------|--------------|---------|
| 1   | Coordination | 6.223 $\pm$ 0.151                  | 7.430 $\pm$ 0.101             | 16.224       | 0.000   |
| 2   | Agility      | 10.276 $\pm$ 0.103                 | 11.281 $\pm$ 0.142            | 13.945       | 0.000   |

(\*) Degrees of freedom ( $df = 12 - 2 = 10$ ).

(\*) The difference is considered significant if the p-value is less than the significance level (0.05).

## Discussion

The researcher attributes this to the effectiveness of the specific and varied exercises using the (Blazepod) device, as the exercises were graduated from easy to difficult, individual to



compound, with the progression of the training units. Additionally, they included elements of excitement, thrill, and competition among the players, which significantly and effectively developed their motor skills. Therefore, we need to diversify the exercises and introduce a new element during training to increase the players' motivation.

In addition to adopting the correct and codified scientific principles in terms of (intensity, volume and rest), it lasted for two months (eight weeks), as the exercises prepared by the researcher using the Blazepod device worked to develop physical abilities effectively and significantly, which is what a basketball player needs in most individual and collective defensive skills that are consistent with the nature of the situations faced by basketball players from the offensive game situations of the opposing team and the speed of response to changes in the offensive situation. The researcher made the exercises more difficult as the training units progressed by increasing the number of pods so that the player performs the maximum number of motor responses without knowing where the light is on in order to be fully prepared to defend, assist and cover during the game for the opponent's offensive situations, and this forced the player during the exercises to increase the speed of performance, which worked to develop agility and coordination.

The researcher attributes it to the effectiveness of the defensive drills prepared by him, which were chosen in a similar way to the offensive game situations of the opposing teams, as well as the development of motor abilities and the link between them and the movements of the defender and the different game situations in terms of assisting, covering and stopping shots from different areas to serve the required motor performance.

This requires “the player to be able to execute these skills with mastery and integration so that he executes them correctly in all conditions of the game” (Hassan, 2000), and that the choice of exercises should be according to the motor path of the skills (focusing on the working muscles), and diversify the exercises and be similar to the different game situations, This all gives the player opportunities to deal with difficult and changing game situations that occur through competition, and this is what the researcher did through his exercises using the (Blazepod) device, which works to give different signals to the player to perform different and varied defensive movements according to the type of lighting and its location to suit the nature of the variables of the game, as the goal of training on basic defensive skills is to diversify its options and situations "that the success of the player's skill performance depends on the degree of mastery of motor skills regardless of the change of circumstances, which leads to the player reaching a high degree of performance mechanism and its effectiveness so that the inevitable result is to achieve the goal. The inevitable result is the implementation of the desired goal (Mohammed, 2000), as well as the quality of the exercises prepared by the researcher worked to develop all the muscles working on skill performance through continuous repetition of defensive skills in terms of leg movement, assistance, coverage and stopping the shot from different areas, and this requires continuous



movement and alertness from the player, thus improving the speed of response, the physical aspect and the compatibility between vision and foot movements “Exercises inevitably lead to improved neuromuscular coordination and adequacy of working muscles to improve their performance capabilities” (Al-Harouri, 1993, page 101).

## Conclusions

1. The specialized exercises prepared by the researcher using the (Blazepod) training device significantly improved the motor skills of young basketball players, as evidenced by the differences in the means between the pre-test and post-test.
2. The effectiveness of the special exercises prepared by the researcher using the (Blazepod) training device compared to the traditional exercises prepared by the coach in significantly developing the motor skills of young basketball players is evident from the differences in the arithmetic means between the pre- and post-tests.

## Recommendations

1. Using specific exercises with the (Blazepod) training device to develop motor skills in basketball players of all age groups.
2. Preparing more exercises with varied formations and greater complexities, both individually and collectively, using the (Blazepod) training device to develop motor skills and offensive and defensive techniques.
3. Using the (Blazepod) training device individually by the player who wishes to develop their offensive and defensive skills, due to its ease of carrying and use.



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