

# PREPARING EXERCISES USING AUXILIARY TRAINING TOOLS TO ENHANCE AGILITY AND SPEED OF MOVEMENT AND THEIR IMPACT ON CERTAIN COMPLEX OFFENSIVE SKILLS IN BASKETBALL FOR PLAYERS UNDER 18 YEARS OLD

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## Abstract

The aim of this study was to prepare specific exercises using auxiliary training tools for basketball players under 18 years old to enhance agility and speed of movement, and to examine the impact of these exercises on certain complex offensive skills in basketball. The study hypothesized that there would be statistically significant differences between the pre-test and post-test results of the sample, and that exercises designed to improve agility and speed of movement using auxiliary training tools would positively affect the development of some complex offensive skills in basketball players under 18 years old.

The researcher used the experimental method, which was suitable for the nature and problem of the study. The research sample consisted of fourteen players who were selected intentionally, with four players excluded for conducting the exploratory trial. The experimental group, consisting of ten players, performed the agility and speed training exercises, with a total of twenty-four training units divided over 8 weeks, with three training units per week. The exercises designed for agility and speed took 20 minutes per training unit. The researcher employed the interval training method, with both low and high-intensity sessions, ranging from 75% to 90% of the player's maximum capacity, using the principle of positive rest between exercises. The load structure followed a wave-like pattern across the weeks.

The study concluded that the specific exercises and the auxiliary training tools used by the researcher were effective in improving agility and speed of movement. Additionally, the development of physical variables through these exercises had a positive impact on the development of complex offensive skills in basketball players under 18 years old. The interval training method, both low and high intensity, played a key role in improving the physical variables and complex offensive skills studied.

Based on the findings, the researcher recommends the following:

- It is essential to focus on agility and speed exercises during training sessions, as they play a significant role in improving complex offensive skills.
- Continuous use of auxiliary training tools during training sessions is recommended to maximize physical and skill development.
- The use of both low and high-intensity interval training should be emphasized in training units, as this has a crucial role in enhancing physical variables and the complex offensive skills under study.

**Keywords:** interval – agility – tools – auxiliary – complex.

## Introduction

### 1.1. Introduction and Importance of the Research:

Basketball is a fast-paced game characterized by rapid body movements and continuous transitions across the court. Players must quickly adapt to changing game situations by performing complex movements such as passing, dribbling, shooting, and defense. The nature of the game demands quick execution while minimizing errors, whether in offense or defense, as mistakes can lead to points being lost, which could be crucial in deciding the outcome of the game.

There has been noticeable progress in the movement and performance of basketball skills worldwide, both with and without the ball, especially in individual skills. Coaches often rely on players with excellent individual abilities to implement specific strategies that help them outperform their opponents. This can be the key to securing a game victory, sometimes in the final seconds.

Among the essential physical attributes for a basketball player are agility and speed of movement. Through these, players can outperform their opponents, increasing the effectiveness of skill execution during the game. Agility and speed of movement directly influence a player's ability to move across the court while maintaining balance and body coordination, especially when reacting to sudden changes in the movements of the opposing player. This is particularly crucial in performing complex offensive skills and outmaneuvering defenders to achieve a high success rate.

As stated by Whiddon (Mohamed), "The ability of both the arms and legs, along with agility and speed of movement, are considered fundamental capacities for acquiring basketball skills."<sup>1</sup>

Here lies the importance of the research, which is the development of specific exercises by the researcher to improve agility and speed of movement for basketball players under 18 years old. In addition, the use of *auxiliary training tools* is aimed at increasing the training load, which leads to the development of both skill and physical performance simultaneously, closely resembling game situations. This, in turn, impacts certain complex offensive skills. As Helal (1918) mentions, "It is extremely important to emphasize the importance of using auxiliary tools in physical or technical preparation training for basketball, as modern training methods consider these tools essential for improving individual performance in basketball players."<sup>2</sup>

### 1.2. Problem of the Research:

Through the researcher's observation of many basketballs matches for players under 18 years old, as well as his previous field experience in basketball, it was noted that the level of agility and speed of movement was weak among players in teams under 18 years old during matches. This led to difficulty in performing movements that require agility and speed, and

<sup>1</sup> Mohamed Ahmed Al-Tantawi, "The Effectiveness of Developing Aerobic and Anaerobic Capacity and Its Impact on Some Physical Components and Their Relationship with the Skill Performance Level of Basketball Youth Players," Ph.D. Dissertation, 2005, p. 34.

<sup>2</sup> Hilal Abdul Karim Saleh, *Basketball: Training Culture and the Art of Management*, 1st ed. (Dar Al-Wadah Publishing, Amman, 1918), p. 91.

subsequently, a decrease in the success rate of some complex offensive skills. Given that basketball is a sport that requires frequent transitions between defense and offense, and quick movement across the court, players must synchronize their movements with those of their opponents, whether on defense or offense. This results in a decline in both physical and skill performance levels.

Therefore, the researcher decided to address this problem by preparing specific exercises using auxiliary training tools during training sessions, aiming to improve agility and speed of movement, which are crucial for basketball players under 18 years old. The researcher also sought to examine the impact of these exercises on certain complex offensive skills, aiming to improve their physical and skill performance during matches.

### **1.3. Objectives of the Research:**

- To Prepare specific exercises using auxiliary training tools for basketball players under 18 years old to enhance agility and speed of movement.
- To investigate the impact of these specific exercises for agility and speed of movement using auxiliary training tools on certain complex offensive skills among basketball players under 18 years old.

### **1.4. Hypotheses of the Research:**

- There is an impact of specific exercises for agility and speed of movement using auxiliary training tools in developing certain complex offensive skills for basketball players under 18 years old.
- There are statistically significant differences between the pre-test and post-test results of the research sample regarding the level of complex offensive skills.

### **1.5. Research Domains:**

#### **1.5.1. Human Domain:**

Players of the Salahaddin Education Department team for the 2023-2024 sports season.

#### **1.5.2. Time Domain:**

From September 1, 2024, to October 29, 2024.

#### **1.5.3. Spatial Domain:**

The School Activity Hall in Tuz Khurmatu.

## **2. Research Methodology and Field Procedures:**

### **2.1. Research Methodology:**

The researcher used the experimental method due to its suitability for the nature and problem of the research. It is considered one of the most accurate scientific research methods for obtaining precise results.<sup>3</sup>

<sup>3</sup> Wajih Mahjoub, *Methods of Scientific Research and Its Approach in Physical Education*, 3rd ed. (Baghdad: Dar Al-Hurriya for Printing and Publishing, 1993), p. 221.

**2.2. Research Population and Sample:**

The researcher selected the research sample from the research population, which consists of five teams from the educational districts in the northern region for the 2023-2024 season. The total number of players from these teams was sixty. As shown in Table (1), the sample was selected intentionally, and it consisted of the basketball players of the Salahaddin Education Department team, all under 18 years old. The team had fourteen players, but four players were excluded for their participation in the exploratory trial, leaving ten players as the experimental group for applying the training program. Table (2) illustrates the number of players in the research population and the sample, along with their corresponding percentages.

The selection of this sample was based on the following reasons:

1. The individuals in the sample represent the original population in the most accurate manner.
2. The availability of coaches to implement the training program and the presence of a sports hall to carry out the tests and exercises.
3. The sample's ability to carry out the training program components and the possibility of continuous supervision of the tests and the main experiment.
4. The availability of equipment and tools to assist the researcher in completing the experiment.

Table (1): Basketball Teams of the Educational Districts (Northern Region)

No.	Team Name	Number of Players	Exploratory Trial
1	Salahaddin Education Team	14	4
2	Mosul Education Team	12	-
3	Diyala Education Team	12	-
4	Kirkuk Education Team	12	-
5	Anbar Education Team	10	-

Table (2): Number of Players in the Research Population and Sample, and Their Corresponding Percentages

Category	Number of Players	Percentage (%)
Research Population	60	100%
Research Sample	14	23.33%
Experimental Group	10	16.66%
Exploratory Group	4	6.66%

**2.4. Homogeneity of the Research Sample:**

To ensure the homogeneity of the research sample and to avoid any factors that could affect the sample, the researcher used the skewness coefficient to assess the homogeneity of the sample in terms of (height, weight, and chronological age), as shown in **Table (3)**.

Variable	Unit of Measurement	Mean (M)	Standard Deviation (SD)	Median	Skewness Coefficient
1. Height	cm	182.9	8.0	181	0.146
2. Weight	kg	68.45	8.99	67	0.409
3. Chronological Age	years	16.71	0.637	16	-0.810

### 2.3. Methods of Information Collection and Equipment Used:

#### 2.3.1. Methods of Information Collection:

- Arabic Sources and References
- Tests and Measurements
- Personal Interviews
- International Information Network (Internet)
- Expert Opinion Survey Form
- Form for Recording and Analyzing Test Results Related to the Research

#### 2.3.2. Equipment and Tools Used:

- Laptop (DELL brand)
- 2 Stopwatch (CASIO brand)
- Medical Scale
- 2 Basketball Hoops
- 12 Plastic Cones (30 cm high)
- 5 Sand Wrist Weights (500 grams each)
- Speed Ladder
- 20 Small Cones (5 cm high)
- Colored Adhesive Tape
- 50m Measuring Tape
- 5 Molten Basketballs
- Box for Arm Speed Test
- Chair

#### 2.5.1. Selection of Tests Used in the Research:

To choose the appropriate tests for the research, the researcher conducted personal interviews with experts in the field, reviewed various sources, references, and scientific studies. A set of suitable and standardized tests were selected, as follows:

##### 2.5.2.1. Physical Tests:

- **Test 1: Barrow Zigzag Running Test** for measuring agility.<sup>4</sup>

<sup>4</sup> Faiyez Bashir Hammoudat & Moayad Abdullah Jassim, *Basketball* (Mosul University, Dar Al-Kutub for Printing and Publishing, 1987), pp. 169-170.

- **Test 2: Running in Place for Ten Seconds** to measure the speed of movement of the leg muscles.<sup>5</sup>
- **Test 3: Arm Speed Movement Test** to assess the speed of movement of the arms.<sup>6</sup>

#### 2.5.2.2. Complex Skills Tests:

- **Test 1:** High reception and dribbling followed by a layup shot.<sup>7</sup>
- **Test 2:** High reception and dribbling followed by a jump shot – two-point shot.<sup>8</sup>

#### 2.5. Pilot Study:

The researcher conducted the pilot study on Sunday and Monday, September 1st and 2nd, 2024, at 4:00 PM, at the School Activity Hall in Tuz Khurmatu. The sample consisted of four players from the Salahaddin Education Department team, out of a total of fourteen players. The players who participated in the pilot study were excluded from the main experiment. The following tests were administered to the participants to achieve the following objectives:

- To assess the suitability of the tests for the skill level of the sample participants.
- To evaluate the understanding of the research sample regarding the details of the tests.
- To avoid errors in administering the tests during the main experiment.
- To determine the time required to complete the experiment.
- To ensure the safety and adequacy of the tools and equipment used in the study.
- To regulate the punctuality of the sample participants and the supporting team.

#### 2.6. Field Procedures:

##### 2.7.1. Pre-Tests:

Pre-tests were conducted on the research sample, consisting of ten players. These tests took place on Tuesday and Wednesday, September 3rd and 4th, 2024, at 4:00 PM, at the School Activity Hall. Prior to conducting the tests, the researcher provided detailed explanations of each test to the participants to ensure they understood the procedures clearly.

The tests conducted on Tuesday, September 3rd, 2024, included:

- **Test 1:** Barrow Zigzag Running Test for measuring agility.
- **Test 2:** Running in place for 10 seconds to measure the speed of leg muscles.
- **Test 3:** Arm speed movement test.

On the following day, Wednesday, September 4th, 2024, the complex offensive skill tests were administered to the same group of players, as follows:

- High reception and dribbling followed by a layup shot.
- High reception and dribbling followed by a jump shot – two-point shot.

<sup>5</sup> Mohamed Mahmoud Abdeldayem & Mohamed Sobhi Hassanien, *Modern Basketball: Scientific and Practical Foundations* (Cairo, Dar Al-Fikr Al-Arabi, 1999), p. 124.

<sup>6</sup> Qasem Al-Mandlawi, Shamil Kamel, & Qais Naji, *Tests, Measurement, and Evaluation in Physical Education* (Mosul, Higher Education Press, 1989), p. 149.

<sup>7</sup> Fares Sami Youssef, *Building and Standardizing a Battery of Tests to Measure Some Complex Offensive Skills in Basketball for Youth*, Ph.D. Dissertation, University of Baghdad, 2006, p. 197.

<sup>8</sup> Fares Sami Youssef, *Same Source*, p. 192.



**2.7.2. Special Exercises Used:**

The researcher designed a set of specific exercises for agility and movement speed, relying on his field experience in basketball. These special exercises were implemented on the research sample, considering their general fitness levels. The training program consisted of **twenty-four training units**, distributed over **8 weeks**, with **three training units per week** (on Thursday, Friday, and Saturday).

As **Abu Al-Ala** emphasizes, "Most of the changes resulting from training typically occur within a period of 6-8 weeks."<sup>9</sup> The duration of each training session was between **90 to 120 minutes**. The specific exercises for agility and movement speed, designed by the researcher, lasted for **20 minutes** per session. The total time spent on these specific exercises in the training sessions amounted to **480 minutes**. The training program was implemented on **Thursday, September 5th, 2024**, from **3:30 PM to 5:30 PM**.

In applying the specific exercises, the researcher used the **interval training method** with both low and high intensity, ranging from **70% to 90%** of the player's maximum capacity. This is supported by **Mufti Ibrahim Hamad**, who states: "Submaximal load levels, ranging between **70% to 90%**, are used to develop certain types of motor performance (whether technical or tactical), such as training on skills and strategies in conditions similar to competition."<sup>10</sup> The **fixed load** method was used throughout the weekly training program, along with the principle of **positive rest** between exercises. The training load was gradually increased across the weeks, as illustrated in **Figure 1**.

The specific exercises for agility and movement speed, designed by the researcher, were applied during the **specific warm-up period**, following the general warm-up conducted by the coach. These exercises were performed for **20 minutes** during the specific warm-up phase of each training session.

The researcher considered that the **general warm-up**, the **second part of the main session**, and the **cool-down section** were all to be chosen by the coach. After completing the specific exercises designed by the researcher, the research participants returned to the prescribed training exercises as per the coach's program.

**Figure (1)** represents the increase and decrease of the training load during the implementation of the specific exercises within the training program.

Intensity Level	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
90%	✓							
85%		✓						
80%			✓					
75%				✓				
70%					✓	✓	✓	✓

<sup>9</sup> Abu Al-Ala Ahmed, *Training Load and Athlete Health* (Cairo, Dar Al-Fikr Al-Arabi, 1996), p. 32.

<sup>10</sup> Mufti Ibrahim Hamad, *Modern Sports Training* (Cairo, Dar Al-Fikr Al-Arabi, 2001), p. 76.

**2-7-3 Post-Tests:**

Post-tests for the variables under study were conducted on the research sample after completing the specific exercises for **agility** and **movement speed**. The researcher aimed to maintain the same conditions as the pre-test, including time, location, equipment, method of execution, and the assisting team that conducted the pre-test.

- **Physical variables tests** were conducted on **Sunday, 28th October 2024**.
- **Defensive skills tests** were conducted on **Monday, 29th October 2024**, from **3:00 PM to 5:00 PM**.

**2-8 Statistical Methods:**

The researcher used the following statistical methods:

1. **Mean (Arithmetic Average)**
2. **Standard Deviation**
3. **Median**
4. **Skewness Coefficient**
5. **T-test for paired samples**

**3- Presentation of Results and Discussion:****3-1-1 Presentation and Analysis of Physical Tests Results:****3-1-1-1 Results and Analysis of the Shuttle Run Test (Agility) Using the Barrow Method:**

Table (4): Difference in Means, Standard Deviation, Calculated T-Value, Statistical Significance, and Percentage Improvement Between Pre-Test and Post-Test Results for the Shuttle Run Test (Barrow Method) for Agility.

Variables	Unit	SD F	M F	T-Value		Sig.
				Cal.	Tab.	
Agility	Sec.	3,239	1,220	8,825	2,228	Sig

Significant at the 0.05% significance level with degrees of freedom (n-1) = 9.

Table (4) shows the difference in the arithmetic means in the "Barrow Zigzag Run" test for measuring *agility*, where the mean difference was (3.239) with a standard error of (1.220). The computed *t* value was (8.825), which is greater than the tabulated *t* value of (2.228), indicating that the difference between the pre-test and post-test is statistically significant, favoring the post-test results.

**3-1-1-2 Presentation of Results for the "Running in Place for Ten Seconds" Test to Measure Leg Muscle Speed:**

Table (5) Shows the difference in the arithmetic means, the standard deviation, the computed *t* value, the significance level, and the rate of improvement between the pre-test and post-test results in the "Running in Place for Ten Seconds" test to measure the leg muscle speed.

Variables	Unit of Measurement	Mean (S)	Standard Deviation (S)	Calculated t Value (t <sub>s</sub> )	Tabulated t Value (t <sub>i</sub> )	Significance Level
Leg Muscle Speed	Seconds (s)	24.7	1.01	12.02	2.19	Significant



Significant at the 0.05% significance level with degrees of freedom ( $n-1$ ) = 9.

The table (5) shows the difference in the arithmetic means in the running-in-place test for 10 seconds to measure the speed of the lower limb muscles. The mean was (24.7) with a standard deviation of (1.01) for the difference in means. The calculated value of (t) was (12.02), which is greater than the table value of (2.19), indicating a statistically significant difference between the pre-test and post-test in favor of the post-test.

#### 4-1-1-3 Presentation of Results for Arm Speed Test

Table (6) shows the difference in arithmetic means, standard deviation, calculated t-value, and the significance of the difference, as well as the percentage improvement between the pre-test and post-test results in the right arm speed test.

Variables	Unit of Measurement	Mean ( $\bar{S}$ )	Standard Deviation (S.D.)	t-Value (Calculated)	t-Value (Table)	Significance
Right Arm Speed (Count)	(Count)	28.8	1.38	0.679	0.627	Significant

Significant at the 0.05% significance level with degrees of freedom ( $N-1$ ) = 9.

Table (6) shows the difference in the mean scores for the right arm movement speed test, which was 28.8, with a standard deviation of the mean difference of 1.38. The calculated t-value was 0.679, which is greater than the tabulated t-value of 0.627, indicating that the difference is statistically significant between the pre-test and post-test, in favor of the post-test.

Table (7) shows the difference in the mean scores, the standard deviation, the calculated t-value, the statistical significance, and the percentage of improvement between the pre-test and post-test results in the left arm movement speed test.

Variable	Unit of Measurement	Mean ( $\bar{S}$ )	Standard Deviation (F)	Calculated t-value (T)	Table t-value	Significance
Left Arm Movement Speed	(Number)	28.9	2.03	0.645	0.625	Significant

Significant at the 0.05% level with degrees of freedom ( $N-1$ ) = 9.

**Table (7)** shows the difference in means for the *arm speed test for the left arm*. The mean was (28.9) with a standard deviation of (2.03), and the calculated t-value was (0.645), which is greater than the table t-value of (0.625), indicating that the difference between the pre-test and post-test is significant and in favor of the post-test.

**3-1-2- Skill Tests for Offensive Combined Skills:****3-1-2-1- High Catch and Dribbling Followed by Simple Shooting:**

**Table (8)** shows the means and standard deviations between the results of the pre-test and post-test for the *high catch and dribbling followed by simple shooting test*.

Variables	Unit of Measurement	Mean (S <sup>-</sup> )	Standard Deviation (S)	Calculated T-Value (T <sub>c</sub> )	Table T-Value (T <sub>t</sub> )	Significance
High Catch and Dribbling Followed by Simple Shooting	Degree	9.105	2.794	10.643	2.211	Significant

"Significant at the 0.05% level of significance and under degrees of freedom (N-1) = (9)."

Table (8) shows the difference in the means of the pre-test and post-test for the *high reception and dribbling followed by a normal shot* test. The mean was (9.105), with a standard deviation of the difference in means (2.794), and the calculated t-value was (10.643), which is greater than the table t-value of (2.211). This indicates that the difference between the pre-test and post-test is significant, favoring the post-test.

**3-1-2-2: High reception and dribbling followed by a jump shot – two points**

Table (9) shows the means and standard deviations between the results of the pre-test and post-test for the high reception and dribbling followed by a jump shot – two points tests.

Variables	Unit of Measurement	Mean (M)	Standard Deviation (SD)	Calculated t-value	Table t-value	Significance
High Reception and Dribbling followed by Jump Shot - Two Points	Degree	4.54	1.499	10.178	2.217	Significant

Significant at the 0.05% significance level with degrees of freedom (N-1) = (9).

**Table (9)** shows the difference in the arithmetic means in the test of high reception and dribbling followed by a jump shot (two-point shot). The result was (4.54) with a standard deviation of the mean differences (1.499), and the calculated **t** value was (10.178), which is greater than the tabulated **t** value of (2.217). This indicates that the difference is significant between the pre-test and post-test, in favor of the post-test.

**3-2 - Discussion of Results:**

From the previously presented results of physical and skill-based tests, it was observed that there are significant differences in favor of the post-test. The researcher attributes these improvements to the effectiveness of the special exercises used in the training units, which led to the development of the physical variables. Additionally, training with auxiliary training tools is considered one of the most important methods used, and it has a significant and tangible effect on developing these physical variables addressed in the study. The use of

proper training loads, training intensity, and adequate rest periods all contributed to the development of the complex offensive skills under investigation.

### **3-2-2 - Discussion of Physical Variable Results (Agility and Movement Speed):**

Tables (4, 5, 6, 7) present the results of the physical tests (agility and movement speed), showing that the differences in the arithmetic means were significant and in favor of the post-tests. The researcher attributes these improvements to the special exercises prepared by the researcher, which led to the development of the physical variables under investigation. Additionally, the auxiliary training tools used in the application of the special exercises played a significant role in this development, as they had a positive impact on enhancing the physical variables. These tools helped increase excitement and motivation among the players.

**Ali (2016)** emphasizes the importance of using auxiliary devices and tools in "learning and training sports movements, as they simplify the learning and training process and facilitate the performance of movements. Furthermore, the variety of auxiliary devices and tools encourages the player to continue training."<sup>11</sup>

### **3-2-1- Discussion of the Results of the "High Reception and Dribbling Finished with a Layup" Test:**

Table (8) shows the results of the "High Reception and Dribbling Finished with a Layup" test. The difference in the mean scores was statistically significant and in favor of the post-test. The researcher attributes this result to the special exercises for agility and speed of movement, which were effectively combined with the use of auxiliary training tools. This combination had a significant impact on developing the physical variables under investigation, and consequently, it led to an improvement in the "High Reception and Dribbling Finished with a Layup" skill. This is because the movements involved in performing this skill are closely linked to both agility and speed of movement, which are essential elements for achieving success in basketball. Both factors directly influence the player's ability to move quickly across the court, whether in offense or defense.

"Agility is one of the important physical attributes for basketball players, and its importance is enhanced by its ability to facilitate transitions between different skills easily and smoothly. Additionally, it aids in changing speed and direction, conserving energy, and connecting one skill to another. It also enables players to perform motor skills under pressure, such as deception and feints with the torso or legs, or executing sudden stops" (Ali, 2016).<sup>12</sup>

### **3-2-2- Discussion of the Results of the High Reception and Dribbling Test Ending with a Jump Shot - Two Points**

Table (9) shows the results of the high reception and dribbling test ending with a jump shot - two points. The difference in the means is significant and in favor of the post-test. The researcher attributes this improvement to the special exercises for agility and movement speed using training tools that were applied in the training units with appropriate intensity and volume. This led to the development of the high reception and dribbling skill ending with a jump shot - two points. Agility is considered one of the most important requirements of

<sup>11</sup> **Ali Salah Nayef**; The Use of Special Exercises with Auxiliary Tools and Their Effect on Learning Some Offensive Skills for Mini-Basketball Players, Master's Thesis, University of Baghdad - College of Physical Education and Sports Science, 2016, p. 28.

<sup>12</sup> **Adel Ramadan Bakhit**; *Basketball: Theory and Practice*, 1st edition: (Cairo, Modern Book Center, 2017), p. 228.

physical fitness, "as it is an essential and effective element in performing all motor skills. It serves as a coordinator for movements, helps economize energy expenditure, contributes to learning basic skills, and ensures that players achieve the correct direction for motor performance".<sup>13</sup>

From the above, the researcher believes that performing compound skills in basketball requires agility and movement speed to perform more than one skill in the shortest time possible, to match the fast-paced nature of the game. This is confirmed by (Mufti), who states that "movement speed is the ability to perform multiple skills at once in the shortest possible time"<sup>14</sup>

#### **4- Conclusions and Recommendations:**

##### **4-1- Conclusions:**

- The special exercises and auxiliary training tools used by the researcher in the training units were effective in developing the level of agility and movement speed.
- The development of physical variables using special exercises with auxiliary training tools had a positive impact on the development of compound offensive skills for basketball players under 18 years old.
- The interval training method, both of low and high intensity, used in the application of the special exercises with auxiliary training tools, played a key role in developing the physical variables and compound offensive skills under study.

##### **4-2- Recommendations:**

- It is essential to focus on agility and movement speed exercises in the training units and work on improving them due to their significant role in developing compound offensive skills.
- Continuous use of auxiliary training tools in the training units is necessary to achieve the greatest development in physical and skill preparation.
- Emphasizing the use of both low and high-intensity interval training methods in the training units is important, as they have a significant role in developing the physical variables and compound offensive skills under study.

#### **Footnotes:**

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<sup>13</sup> Mohamed Hassan Alawi and Mohamed Nasr El-Din Radwan; *Skill and Psychological Tests in the Sports Field*: (Cairo, Arab Thought House, 1987), p. 91.

<sup>14</sup> Mufti Ibrahim Hamada; *Modern Sports Training*: (Cairo, Arab Thought House, 2001), p. 204.

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Section of the Unit	Time (minutes)	Exercises	Volume	Exercise Time	Rest Between Repetitions	Rest Between Sets	Total Work Time	Total Rest Time	Intensity Used
General Warm-up	10	General warm-up exercises							70%
Special Warm-up	20	Sunday: Exercise (1), Exercise (2), Exercise (3), Exercise (4)	3×1, 3×1, 3×1, 3×1	30 seconds	30 seconds	(60-120 seconds), (90 seconds)	6 minutes	14 minutes	
Main Set 2	40-50	Coach's training program components							
Cool-down	15	Jogging with relaxation and equipment transfer							