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The effect of 3D training on developing motor agility and the tapping and croose step shoot skills for basketball players aged (16-18) years

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Abstract

The basis of competition that extends the level of teams and their ranking. Accordingly, following the scientific method in trying to track skills is one of the important foundations that must be paid attention to in the correct technical form, especially the skills most used in the match. Hence comes the importance of researching the preparation of 3D training in developing motor agility and the skills of stepping and croose step. Shoot for basketball players aged (16-18) years in order to reach the top by building sound, strong foundations to overcome changing, fast-paced and escalating playing situations with the required speed and accuracy. The problem was embodied in answering some questions, namely knowing the levels of players in motor agility and knowing the levels of players in the skills of tapping and croose step shoot. The objectives of the research were to prepare D training³ in developing motor agility and the skills of tapping and croose step shoot for basketball players aged (16-18) years. "The research hypothesis of the exercises (D training 3) had a positive effect on developing some bio-motor abilities and some defensive skills in basketball for youth. The researcher used the experimental method (two equal groups) as a research procedure consistent with the objectives of the research. The research community consisted of Samawah basketball players aged (16-18) years, numbering 12 players. The community was divided randomly into two groups (experimental and control), where the number of each group reached: (6) players. The researcher concluded the effectiveness of 3D training exercises in developing motor agility for basketball players aged (16-18) years, and the effectiveness of 3D training exercises in developing the croose step and croose step shoot skills for basketball players aged (16-18) years.

Keywords: Kinetic agility, croose step shoot skill, plump skill

1. Introduction

The world of training is considered one of the most important fields in which many developments have occurred in recent years due to experiments and scientific research, whose only concern was and still is raising the technical level of sports in general and reaching the level of athletes to the highest possible level, as there is no longer a limit to reach and stop at, but rather it has become everything. Something that can be used to develop the level of the athlete. One of the things that must be provided to sustain the training process in general is crystallized in the use of correct scientific methods and modern scientific training curricula that contain comprehensive physical, skill, tactical and psychological preparation, which is focused on the use of correct scientific training methods that are consistent with the element to be developed, whether physical or skill. The coach must be precise in preparing the appropriate style and method for the type of sport he is training and the physical element he is developing to achieve the goal. Three-dimensional and directional training (3D training) is considered one of the latest methods that help physical and skill adaptation by one. The effectiveness of the game performance depends in particular on the performance of fast movements supported by high-level agility to overcome the opponent's defensive and offensive movements throughout a match in it. In order to compete and keep track of the movements of the opponent, the player is required to exert a significant amount of physical effort during the match.

This is followed by roles that involve offensive play and a high level of speed. It is during the transition from defence to attack and vice versa when the basketball player's requirement for physical and skill-based agility becomes apparent. The ability to maintain the performance of strong and fast movements at the maximum or submaximal level and to a sufficiently high degree is required. This is due to the fact that one of the characteristics of the game is the lack of consistency in the performance of playing movements, as well as the fact that offensive skills in basketball, particularly the tap and crooked step shoot, are the foundation of competition. Which gives the level of teams and their ranking in the competition. As a result, adhering to the scientific method when attempting to track skills is one of the essential foundations that must be paid attention to in the correct technical form. This is especially true for the skills that are utilized the most during the game. Furthermore, this brings about the significance of conducting research into the preparation of three-dimensional training for the purpose of developing motor agility and the skills of tapping and crooked step shoot for basketball players between the ages of sixteen and eighteen. This is done with the goal of reaching the top by constructing solid, robust foundations that can help players overcome changing, fast-paced, and escalating playing situations with the required speed and accuracy.

1.1 Research problem

This development, based on the presence of physical elements and abilities, gave skill performance the characteristic of continuity without a decline in level. Through this research, the researcher tried to answer some questions, the most important of which are:

1. Knowing the players' levels of motor agility
2. Knowing the players' levels in the "Croose Step Shoot" and "Croose Step Shoot" skills
3. Knowing the basic skill levels of young basketball players?
4. Knowing the effect of 3D training in developing motor agility, the tapping skills, and the croose step shoot skills for basketball players aged (16-18) years, and some basic skills for basketball players?

1.2 Research objectives

1. Preparation of D training³ in developing motor agility and the skills of tapping and croose step shoot for basketball players aged (16-18) years
2. Identify the effect of D training 3 in developing motor agility and the skills of tapping and croose step shoot for basketball players aged (16-18) years.

1.3 Research hypothesis

Exercises (D training 3) have a positive effect in developing some bio-motor abilities and some defensive skills in basketball for youth.

1.4 Areas of Research

1. **Human field:** Samawa Sports Club basketball players.
2. **Time frame:** 4/1/2024 to 8/1/2024.
3. **Spatial field:** Specialized halls affiliated with the Ministry of Youth and Sports.

Section Two

3. Research Methodology and Field Procedures

3.1 Research Methodology

The researcher used the "experimental method (two equal groups)" as a research procedure consistent with the research objectives.

3.2 Research Community

The research community consisted of "Samawa Sports Basketball players aged (16-18) years", numbering 12 players. The community was randomly divided into two groups (experimental and control), where the number of each group reached (6) players.

3.3 Research Tools, Devices and Methods

1. Tools and devices used

- Legal basketball court
- Stopwatch (2)
- Electronic calculator (Sony)
- Standard strip of fabric.
- Sign number (10).

2. Data Collection Methods

- Arab and foreign sources
- Personal interviews.
- Measurement, physical and skill tests.

3. Tests Used in Research

Basketball Agility Test

Test name

Running zigzag between the hurdles, then receiving the ball from a colleague and performing a peaceful goal with a basketball.

The purpose of the test

To measure motor agility in basketball.

Tools used

Four safety tape, stopwatch, tape measure, tape, whistle.

Method of performance

Standing at the starting line with a width of (1 m), which is 3 meters away from the first obstacle. Upon hearing the start signal, the experimenter starts running between the four obstacles, which are (1 m) between one obstacle and another, and then receives the ball from a colleague and scores, as shown in Figure.

Registration

The player is given two sessions on the signs and scoring in each session, and then the test score is calculated using the following equation ^[1].

$$\text{Indicator} = \frac{\text{Accuracy}}{\text{Time}}$$

¹ Muhammad Matar Arrak: Calculating accuracy test scores in the fields of mathematical research, 1st edition, Dar Al-Diyaa for Printing and Design, year 2017.

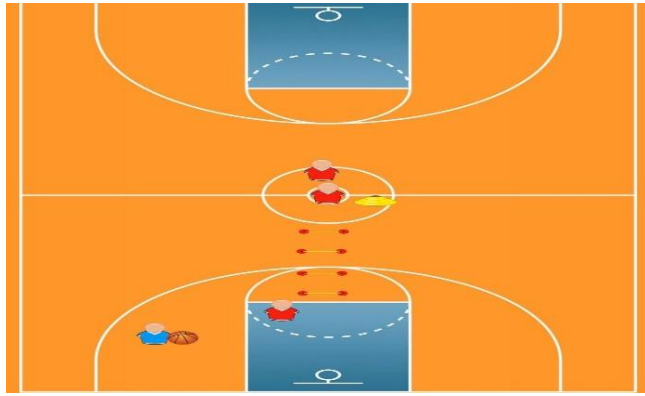


Fig 1: Illustrating a basketball agility test

Skill Tests

2. Measuring the speed of the drum by changing direction

Necessary Instruments

A basketball court, an electronic stopwatch, two (2) legal basketballs, chalk to determine the dimensions of the signs,

adhesive tape with a length of (1.50 m) as a starting line, and a whistle to give the start signal.

Procedures: See Figure No. (4).

- Drawing the dimensions of this test in terms of the locations of the six signs on the starting line, as follows:
- Place the adhesive tape on the ground, which is 1.50 meters long, then mark two points at its ends, let them be (A, B).

The first person must be 1.50 meters away from the start line, facing the start line.

- The first sign is 2.40 meters away from the second sign.
- And so is the same distance between the second and third signs, the third and the fourth, the fourth and the fifth, and the fifth and the sixth.
- All signs are fixed on the ground in a straight line and perpendicular to the start line.
- The distance between the start line and the sixth (last) sign is 13.50 meters.

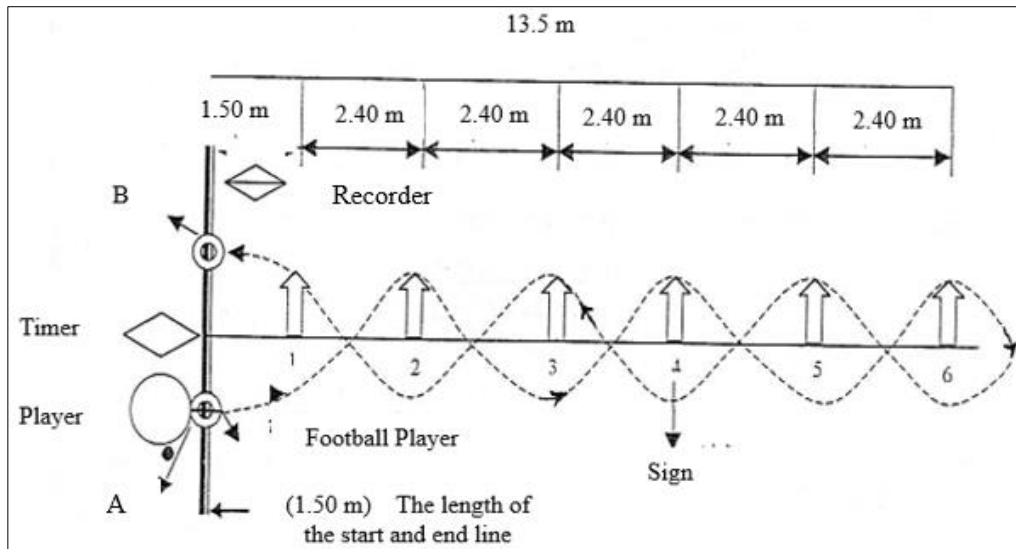


Fig 2: Measuring the speed of the tap when changing direction with a basketball

Description of performance

The player with the ball takes a ready position from the high start behind the start line at point (A).

Giving the start signal to the player who runs with the tap by changing direction between the signs. Then the player goes around the last (sixth) sign and continues to tap the ball by changing direction while running until he crosses the finish line at point (B) with the ball.

Test instructions:

- The player takes the correct position (preparing from the high start at point (A)).
- The direction of running must be with the bump, changing direction between the six marks.
- The test ends with the player crossing the finish line as quickly as possible at point (B) with the ball.
- Each player has only one attempt.
- The number that the player scores is announced to the next player to ensure the competitive factor.

Grade calculation: The time taken by the player from the moment the start signal is given until he crosses the finish line at point (B) is calculated and recorded for the player.

Croose Step Shoot skill test

Test name: Croose Step Shoot test.

N.	Player Name	Reception	Deception	Shooting performance	Shooting output	Total
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Purpose of the test: To measure the performance of the Croose Step Shoot skill.

Equipment and tools: (1) basketball, whistle.

Description of performance

The player stands at the corner formed by the intersection of the side line of the free throw area with the free throw line with his back to the basket and is defended from behind by a defender in a man-to-man manner. There is a fellow player of the attacking player who stands before the three-point line with the ball, and when the starting whistle is heard the player receives the ball. The attacker passes the ball from a teammate and turns to face the basket and the defending player, so he has the options of dribbling and shooting until he deceives the defender with one of them. Then, a rotation is performed with the foot and body so that the shoulder of

the attacking player is facing the defending player. Then he brings one of his feet forward and a fairly wide distance to place it between the feet of the defending player. The inclination of the torso from the side with the shoulder forward coincides with the advanced foot between the defender's feet and does not depart from it. Then the player the attacker returns as quickly as possible to the trailing foot and moves away from the defending player, creating a distance that separates the two players from each other. Then he ends with the process of jumping and shooting at the basket, as shown in Figure (17).

Registration

Registration is done according to the form to evaluate the actual performance of the Croose Step Shoot skill, as below:

	Degree 2	Degree 5	Degree 3	Degree 2	Degree 12
1					

Technical performance of the Croose Step Shoot skill

4. Exploratory experience

The exploratory experiment is usually conducted to identify the suitability of the tests, the level of response of the sample members to those tests, the period taken to perform the tests, and the training unit. The researcher tried to invest in the exploratory experiment in order to serve the

experiment, and it was on 4/3/2024 and on the Samawah Sports Club youth team.

4.1. Main experiment procedures

Pre-tests: Within the pre-tests of the research sample, which were conducted on Friday, April 5, 2024, in the Al-Mawhibah Sports Hall in Al-Muthanna Governorate.

4.2. The training course and its items

The researcher prepared a training course based on the foundations and principles of sports training science, by building the load components of size, intensity, and intensity, taking into account the age of the sample and its training age.

- **Time period:** (8) weeks
- Number of units per week (3) units represented by days (Saturday, Monday, and Wednesday)
- The total number of exercise units is (18).
- The researcher used multiple methods and methods for sports training
- The time for performing the special exercises ranges between (20-30) minutes of the section time
- The intensity of the exercises was determined by the pulse (in m/s) and the exercises that contained a speed component were determined by time (m/s).



Post-tests

After the end of the specified period for the training curriculum, the post-tests were conducted for the research sample at exactly six o'clock in the afternoon on Monday, June 10, 2024, taking into account adherence to the same conditions and test-taking procedures that were followed during the pre-tests. The researcher tried as much as possible to establish the circumstances surrounding the tests. In terms of (time, place, tools used, method of implementation, work team) and making them similar in the pre- and post-tests.

5. Statistical Methods

- Arithmetic mean
- Standard deviation
- T-test for symmetrical samples

Section Three

Presentation, analysis and discussion of the results

1. Presentation of the results of the control group

Table 2: Arithmetic means, standard deviations, t value, and significance level for the differences between the pre- and post-tests in the research variables for the control group

Variables	Measuring Unit	Pre-tests		Posttests		T	Statistical Significance
		H	S	H	S		
Kinetic agility	Degree	0.90	24.1	0.85	24.8	1.87	Significant
Plump skill	Degree	0.30	9.01	0.36	9.31	0.12	Significant
Croose step shoot skill	Degree	0.73	8.12	0.81	7.09	2.11	Significant

The table shows that "the significance level values of the (t) test for correlated samples and for all variables were smaller than the error rate (0.05). This indicates that there are

significant differences between the pre- and post-tests for the control group sample and in favor of the post-tests.

Table 3: Arithmetic means, standard deviations, t value, and significance level for the differences between the pre- and post-tests in the research variables for the experimental group

Variables	Measuring Unit	Pre-tests		Posttests		T-calculated Value	Statistical Significance
		H	S	H	S		
Kinetic agility	Degree	1.75	0.91	23.1	0.90	24.1	Significant
Plump skill	Degree	5.62	0.23	7.12	0.30	9.01	Significant
Croose step shoot skill	Degree	1.88	0.45	9.82	0.73	8.12	Significant

The table shows that the significance level values of the (t) test for independent samples and for all variables were smaller than the error rate (0.05)". This indicates that there are significant differences between the results of the control and experimental groups in the post-tests and in favor of the experimental group.

Showing the results of the experimental group

Results Discussion

Through the presentation of the outcomes of the motor agility test, as well as the crooked step shoot and tumbling skills, which are displayed in the tables that are located above. Furthermore, if the t-test was utilised, it seemed as though there was a substantial difference between the experimental group and the control group, and the post-test appeared to be favourable for the experimental group. The reason for this development and the superiority of the experimental group over the results of the tests taken by the control group is attributed by the researcher to the exercises that were conducted in three-dimensional training, which assisted in the development of the skills that were being investigated in a manner that simulates the actual situation. Due to the fact that performing the exercises in this direction involves a very beautiful mix of skill performance, as well as performing agility exercises with the ball and while performing the skill exercises in multiple different directions and in the shape of a triangle, it is recommended that it be performed throughout the match. Furthermore, it entailed operating at a high intensity and pace, as well as having a lengthy rest period in order to provide adequate time for recuperation following the activity. For the reason that the nature of the unique exercises that are used to develop these talents is characterized by a short duration of performance, maximum intensity, and a long rest period, in order to provide ample time for the recovery of the phosphate components, the exercises are referred to as three-dimensional training. Additionally, guided exercises are a variety of exercises; therefore, it makes sense to develop the quality that you are working on. Because all of the laws of play are covered in these exercises, agility with the ball is highly valuable, particularly in games that require strength in jumping and speed in performance. This is because of the fact that these exercises may be employed in real-life scenarios that include playing.

Conclusions and Recommendations

Conclusion: The effectiveness of 3D training exercises in developing the motor agility of basketball players aged (16-18) years.

1. The effectiveness of 3D training exercises in developing the tap and croose step shoot skills for basketball players aged (16-18) years.

2. There appeared to be statistically significant differences in the development of offensive skills (stomp and croose step shoot) and motor agility.

Recommendations

In light of the research findings, the researcher recommends the following

1. Paying attention to training the researched skills (All types of scoring, all types of handling, Fluttershot, receiving the ball in the area near the basket, offensive blocking) and bio-motor capabilities.
2. The need to diversify the use of training methods used by trainers".

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