EXCELLENCIA
INTERNATIONAL MULTI-DISCIPLINARY JOURNAL OF EDUCATION
Volume 3, Issue 4, 2025 ISSN (E): 2994-9521

The Use of Harmonic Exercises in the Development of Some Biomechanical Variables and Physical Abilities of the Jump Shot Skill in Basketball

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Abstract:

The first chapter included the definition of motor coordination as a motor ability that can be developed through movement within the skill for sports competition and it is noted that if there is a large reserve of performances, movements and skills performed by the player, the more rich in motor expertise and has a broad base to master other new forms of motor activity to reach a high degree of motor coordination, The research issue involved in the correct selection of motor coordination training in the skill of jump shooting in basketball, which expresses the ability of the nervous system and the muscular system to produce movement in internal synchronization and external coordination between the largest body mass represented by the trunk, which is completely straight and stable while one limb swings and the other takes the desired movement position. The second chapter included the research methodology and field procedures The researcher used the experimental method using the experimental design for an experimental group by measuring the tribal dimension of the group because of its suitability to the nature and objectives of the research, where the research community consisted of the electricity club for the year 2023 – 2024- 2024 and their number 35 As for the research sample, (20 junior players) were selected as a research sample by random method from the age group (14-17 years old). 17) years old and those who are regular in training at the club. The third chapter included a discussion of the results of the pre and post tests of the research sample for biochemical variables in the skill of scoring by jumping in basketball. Statistically significant differences between the average results of the pre and post measurements of the research sample and in favor of the post measurement in some biochemical variables and some special physical abilities of the juniors in the skill of scoring In the fourth chapter, the researcher

concluded that the motor coordination training improved the speed, strength, and preservation of the motor pathway of the jump shot skill in basketball for juniors.

The first chapter:

1.1 Introduction and significance of the research:

It is noted that if there is a large reserve of performances, movements and skills performed by the player, the more rich he is in motor expertise and has a broad base to master other new forms of motor activity and reach a high degree of motor compatibility, it can be defined as a motor ability that can be developed through movement within the skill for sports competition.

The transfer of body weight during a few moments in the phase of approaching the ground with one of the legs and the other foot contact with the ground, and this running step is determined by three basic stages: the push phase, the flight phase and the pivot phase, and they also add that jumping in basketball scoring is one of the basic movement patterns in which the body is pushed into the air by one of the legs The main goal of the jump is to reach the maximum possible height and the mechanics of the performance is responsible for both the height or distance of the jump and begins the preparation for the ascent process, which must be performed calmly and smoothly to ascend gracefully and the ascent phase is divided into two main phases, namely the flexion phase of the ascent.

The central nervous system (CNS) is of paramount importance in the training and development of muscular strength. Muscular strength is not only determined by the amount of muscle mass, but also by the extent to which individual fibers within a muscle and between muscles are activated by muscle coordination.) Maximum strength effort is a skillful movement for which many muscles must be activated appropriately and this is called the harmonic activation of several muscle groups.

1.2 Research Problem: The research problem is determined by the correct selection of motor coordination exercises for the basketball jump shot skill, which expresses the ability of the nervous system and the muscular system to produce the movement in internal synchronization and external coordination between the largest body mass represented by the trunk, which is completely straight and stable while one limb swings and the other takes the required movement position. As juniors need to carefully select drills that develop the motor effectiveness of different skills that establish the foundation for strong competition later on in the form of legal competitions at a high level, the researcher has selected the harmonic skill drills for the scoring skill in basketball, as well as the harmonic skill drills for the scoring skill.

1-3 Research Objectives:

This research aims to develop some biomechanical variables and some special physical abilities

The aim of this research is to develop some biomechanical variables and some special physical abilities of basketball jumpers by using special compatibility training through:

1- Differences between the average results of the pre- and post-measurements of the research sample in some biochemical variables and some special physical abilities of juniors in the skill of scoring by jumping from movement in basketball.

2- Percentages of improvement between the average results of the pre and post measurements of the research sample in some biochemical variables and some special physical abilities of juniors in the skill of jump shooting in basketball in the research sample.

1-4 Research hypotheses: In light of the research objective, the researcher sets the following hypotheses:

1. There are statistically significant differences between the mean results of the pre- and post-measurements of the research sample and in favour of the post-measurement in some biochemical variables and some special physical abilities of the juniors in the skill of scoring by jumping from movement in basketball in the research sample.

2. There are statistically significant differences between the pre- and post-measurements of the research sample in some biochemical variables and some physical abilities of juniors in the skill of jump shooting in basketball.

1-5 Research Areas:

1.5.1 Spatial area: The indoor hall of the Electricity Basketball Club

1-5-2 Temporal domain: The study was conducted during the period from (20/9/2023) to (25/4/2024).

1-5-3 Human Domain: The junior players of the Electricity Basketball Club for the year 2023-2024.

Chapter Two:

2- Research Methodology and Field Procedures:

2.1 Research Methodology: The researcher used the experimental method using an experimental design for an experimental group with a pre-post measurement of the group due to its suitability to the nature and objectives of the research.

2-2 Research population and sample: The research population includes 35 players from the Electricity Club for the year 2023-2024.

2.3 Research sample: (20 players) were randomly selected as a sample for the research from the age group (14-17) years and those who are regular in training at the club

2-4 Reasons for selecting the sample:

The sample is within the reach of the researcher, which makes it easier for the researcher to apply the research because of the commitment of the players to training and the regularity of the sample in training by 3 training units per week with the possibility of the availability of the necessary tools and equipment at the club to apply the research experiment.

Table (1) Description of the research sample Basic Faculty

Total	Research sample	Description
20	20	Issue
% 57.1	% 57.1	Percentage

Table (2) Homogenization of the research sample in growth variables

Flattening	Torsion coefficient	Standard Deviation	Medium	The arithmetic mean	Unit of measure	Variables	t
0.27	-0.16	0.87	9.98	9.96	سنة	Training age	1
- 0.39	- 0.81	2.79	147.9	147.5	سم	Player's height	2
- 1.67	0.93	1.85	42.12	41.6	كغم	Player's weight	3

It is clear from Table (2) that all the values of the skewness coefficients for the total research sample ranged between ,(0.93 - 0.81 -) which indicates that the total research sample fell within the

moderation curve for these variables and this indicates the moderation of the basic data of the sample members in these variables.

5-2Measurements and tests used in the research: Annex (1(

2.5.1Biochemical variables :

1. Instantaneous velocity of the centre of gravity at the moment of jumping
2. Aiming angle at the moment of jumping.
3. The height of the centre of gravity at the moment of the jump.
4. The launch speed.
5. Maximum height at the moment of scoring.
6. The rise time.
7. Angle of departure

2-6 Tests used in the research:

2.6.1 10m hurdle and shot put test: (8,Mutaz,2020)

Objective: Measuring (jump shot speed) from chasing and dodging.

Tools: (3) beam, whistle, stopwatch, basketball, basketball court, tape measure, recording form.

Description of the performance: A line is drawn with a length of (1) m at a distance of (10) m from the goal and (3) figures are distributed on it, the first figure is (3) m away from the starting line, the distance between the figures is (2) m, and (3) m between the third figure and the goal on the command, the player dribbles and passes between the figures, and after the third figure, he jumps and shoots.

Measurement: Calculating the performance time, as the stopwatch is stopped from the moment the ball leaves the player's hand.

2.6.2 Shooting test by jumping from the front left of the free throw line and then moving semi-circularly to the centre and right: (8, Mutaz, 2020)

Test Objective: To measure the accuracy of the jump shot.

Tools needed:

- ✓ Basketball court.
- ✓ Tape measure
- ✓ Basketball (5)
- ✓ Basketball goal
- ✓ Chalk
- ➢ Procedures:

Draw three points in the form of small circles with a diameter of (15cm) as markers to indicate the three areas where the test is performed as follows:

- ✓ The first mark is to the left of the free throw line and at a distance of (30cm).
- ✓ The second mark is the centre of the free throw line and 90cm away from the free throw line towards the three-point line.
- ✓ The third mark is to the right of the free throw line and 30cm away.

➢ **Description:**

✓ Players take a standing position in the designated area outside the free throw area on the left side with the ball.

✓ The player performs the shot by jumping with one hand towards the basket without the ball touching the basket board (direct shot).

✓ The player (15) throws in three equally divided sets of five throws each.

The first group from the left of the shooting line and 30cm away (extension of the imaginary line of the free throw) The second group from the centre of the free throw line and 90cm away (imaginary line of the bisector of the free throw line) The third group from the right of the free throw line and 30cm away (extension of the imaginary line of the free throw)

➢ **administer the test:**

✓ A scorer who calls the names and records the results of the shots.

✓ An umpire stands near the player to give him the ball.

➢ **Scoring:**

✓ A player is awarded 2 points when the ball enters the basket (successful shot).

✓ One point is awarded for each shot where the ball touches the hoop but does not enter the basket.

The player's score is equal to the sum of the points earned on all 15 shots.

Maximum Test Score (30 points)

2.6.2 Physical tests:

1. Measuring the compatibility of the rapid numbered circles test**. (1, Al-Atoum, 2011)**
2. Agility measurement: 9 meter slalom run**.(2,Andy,2004)**
3. Measurement of leg muscle strength: Dynamometer leg muscle strength test **(11, Laplaud, 2006).**

2.7 Exploratory study:

The researcher conducted the exploratory study on 10 junior players from the same research community and outside the main sample on Thursday (28/9/2023) in order to achieve the following objectives:

1. Training assistants and recognizing the validity of the tools used
2. Determine the appropriate exercises for the sample in light of the selected age group
3. Adjusting and standardizing the programme used.
4. Ensuring the validity of the tools used during the application.
5. Ensuring the suitability of the exercises used for the research sample and deleting the inappropriate ones
6. Special adaptation exercises suitable for the sample were identified and the programme used was adjusted and standardized
7. The time of the exercises used and thus the total time of the unit and the total time of the programme were determined.
8. The time required for the measurement process of each test has been determined.

9. Verify the placement of the cameras and their different angles.
10. Recognise the suitability of some exercises for the sample.
11. Deficiencies and weaknesses were discovered and minimized.
12. Data Collection Tools and Means

2-8 Equipment and tools used:

- ✓ 10 legal basketballs
- ✓ Basketball court
- ✓ Kenova motion analysis software.
- ✓ 2 cameras with a frequency of 300 images/second.
- ✓ 2 camera stands.
- ✓ Rasta meter to measure height (cm).
- ✓ Medical scale to measure weight (kg).
- ✓ Stopwatch to measure time to the nearest 0.01 seconds.
- ✓ Tape measure (cm).
- ✓ Ruler (cm) included to measure flexibility.

2-9 Special compatibility exercises used:

First: Objective of the proposed special compatibility exercises:

1- Developing some specific biomechanical and physical variables (jumping and scoring in basketball) for juniors.

2- Improving the skill performance (jumping and scoring in basketball) of juniors.

Second: Foundations for the development of the proposed special compatibility training:

The researcher took into account the following scientific bases when developing the proposed motor compatibility training:

1. The suitability of the proposed special compatibility exercises with the abilities of the members of the basic research sample.
2. Giving a set of stretching and mobile flexibility exercises at the beginning of the training unit to prepare the working muscles for skill performance
3. The number of training units (3) units per week to suit the age group.
4. Variation in the proposed motor coordination exercises to include training all joints within the framework of building the correct technique.
5. Giving positive rest periods between repetitions (30-45 seconds).
6. Giving positive rest periods between sets from (2) - (3) minutes of recovery.
7. Observe the principle of gradually increasing the intensity of the load so that the intensity is not less than (75%) and not more than (95%), while increasing the repetitions and sets gradually.
8. The intensity of the load in the first four weeks of the programme starts with an intensity ranging from 75%: 85%), with repetitions ranging between (2) - (3) repetitions, and groups (2) groups. The intensity of the load starts in the second four weeks of the programme with an

intensity higher than (85%: 90%), the repetitions ranged between (2) - (3) repetitions, and the groups (1,2).

Third: The content of the proposed special adaptation training:

Based on the theoretical readings and the use of reference studies, the researcher identified special compatibility drills that are consistent with the characteristics and requirements of the basketball jumping skill, as these skills depend on the special compatibility between the upper and lower limb represented by the leg with the opposite arm, the strength and stability of the centre area, the ability of the nervous system to high frequency in the shortest time, and the motor speed to transfer the body mass through jumping.

Forth: Time distribution of the proposed special adaptive training programme:

The researcher divided the programme into (24) training units for (8) weeks at (3) training units per week and the average time of the daily training unit (90 d).

Fifth: Parts of the daily training unit:

A - Physical conditioning of this part (15) minutes and performed by the members of the main research sample to prepare the circulatory and respiratory systems with a focus on stretching and mobile flexibility exercises

B. The main part: The duration of the main part is (70) minutes in which motor coordination drills are used for the skill of scoring by jumping in basketball by (70) minutes.

C - Conclusion: This part is (5) minutes and is performed by all members of the main research sample and includes recovery and cool down exercises.

2- 10 Pre-test:

The researcher conducted the pre-measurement of the research sample on Tuesday (17/10/2023) in accordance with the specifications and performance conditions of each test, with standardisation of measurements, those involved in the measurement process and the time of measurement for the experimental and control groups:

- This step included placing the control (guiding) signs in the background of the filming and in the field of movement and preparing the drawing scale.
- The researcher used (2) imaging cameras with a frequency of (300 images/s), and the cameras were installed on tripods and the researcher made sure that the vertical axis of the lens of the camera was perpendicular to the vertical axis, which is the frontal plane in which the skill of scoring by jumping in basketball is performed.
- The first camera was placed 5 meters away from the shooting circle and at a height of (80 cm) on the front right side of the players along the middle of the shooting circle, and the second camera at the same distance and height
- The biomechanical variables of the jump shot skill for juniors were determined.
- The researcher applied the training programme within the training unit with (3) training units per week and (8) weeks, the time of the training unit (90) minutes for a total time of (2160) minutes

2- 11 Post-tests:

After the completion of the specified period for the implementation of the proposed programme, the researcher conducted the post-test according to the special variables of the research sample under the same conditions and specifications as the pre-test to ensure the accuracy and integrity of the

data, on Monday (12/2/2024), where the data were transcribed in tables prepared for that purpose in preparation for statistical processing

2-12 Statistical treatments:

- ✓ Arithmetic mean
- ✓ Standard Deviation
- ✓ Median
- ✓ Torsion coefficient
- ✓ Flattening coefficient
- ✓ T-test for differences for before and after measurements
- ✓ Improvement %

Chapter three:

3- Presentation and discussion of results:

3-1Presentation of the results of the pre and post-tests of the biochemical variables in the skill of jump shooting in basketball

Table (3) Significance of the differences between the pre and post tests of the biochemical variables in the skill of jump shooting in basketball

Value (t)	Meta-testing		The pre-test		Unit of measure	Biomechanical variables
	Standard Deviation	The arithmetic mean	Standard Deviation	The arithmetic mean		
2.53	0.91	6.98	0.77	6.21	**m/s**	**Instantaneous velocity of the centre of gravity at the moment of the jump**
2.26	4.61	31.23	5.61	32.11	**degree**	**Aiming angle at the moment of jumping**
2.67	3.17	52.19	4.17	51.12	**cm**	**Centre of gravity height at the moment of jump**
3.47	0.39	7.01	0.55	6.37	**cm**	**Launch speed**
5.12	5.47	120.1	4.51	111.12	**cm**	**Maximum height at the moment of the shot**
4.31	0.04	0.31	0.03	0.21	**s**	**Ascent time**
5.21	4.29	40.10	3.32	31.10	**degree**	**Launch angle**

It is clear from table (3) that there are statistically significant differences at the level of (0.05) between the pre-test and post-test of the research sample in the biochemical variables in the skill of scoring by jumping in basketball in favor of the post-test.

Table (4) Significance of the differences between the pre and post measurements of the individuals in the research sample in physical variables

Value (t)	Meta-testing		The pre-test		Unit of measure	Physical variables
	Standard Deviation	The arithmetic mean	Standard Deviation	The arithmetic mean		
11.93	1.13	16.22	1.11	11.70	Number of	Running in place test for 15 seconds
3.63	0.46	5.27	0.57	5.76	s	m run test10
10.22	1.55	57.33	1.54	47.12	Newton	Leg muscle strength (in dynamometers) ((Strength
14.49	0.09	4.03	0.21	5.22	s	Rapid Numbered Circuits Test ((Compatibility
16.22	1.98	95.02	1.89	87.11	cm	Vertical Jump Test ((Vertical Jump
8.07	0.59	5.88	0.59	3.96	meters	Medical Ball Push Test ((1kg
3.17	0.27	3.08	0.41	3.63	s	Slalom Running Test ((Agility

Table (t) value at (0.05) level = 2.093

It is clear from table (4) that there are statistically significant differences at the level of (0.05) between the pre and post tests of the research sample in the physical variables in the skill of scoring by jumping in basketball in favor of the post test.

Table (5) Percentages of improvement of the post-measurement from the premeasurement in the biomechanical variables in the sprint step, long jump, and shot put.

Value (t)	Meta-testing		The pre-test		Unit of measure	Biomechanical variables
	Standard Deviation	The arithmetic mean	Standard Deviation	The arithmetic mean		
2.67	0.93	6.91	0.79	5.34	m/s	Instantaneous velocity of the centre of gravity at the moment of the jump
2.23	4.87	30.97	5.81	33.01	degree	Aiming angle at the moment of jumping
2.78	3.19	58.13	4.21	50.13	cm	Centre of gravity height at the moment of jump
3.49	0.39	7.11	0.51	6.43	m/s	Launch speed
5.41	5.42	134.12	4.69	127.12	cm	Maximum height at the moment of the shot
4.37	0.04	0.31	0.04	0.37	s	Ascent time
5.49	4.28	39.16	3.12	33.43	degree	Launch angle

Table (5) shows the percentages of improvement in the biomechanical variables in the basketball jump shot skill.

Table (6) The percentages of improvement of the post-measurement from the premeasurement in the physical variables

(t) Value	Meta-testing	The pre-test	Unit of measure	Physical variables
% 14.65	8.21	7.11	**Number of**	**Running in place test for 15 seconds**
%13.06	7.23	6.11	**s**	**m run test10**
%22.80	197.2	189.1	**Newton**	**Leg muscle strength (in dynamometers) ((Strength**
%18.67	15.97	10.54	**s**	**Rapid Numbered Circuits Test ((Compatibility**
%10.34	40.09	35.11	**cm**	**Vertical Jump Test ((Vertical Jump**
%12.70	6.12	5.01	**meters**	**Medical Ball Push Test ((1kg**
%17.07	13.17	11.07	**s**	**Slalom Running Test ((Agility**

Table (6) shows the percentages of improvement of the post-measurement from the pre-measurement of the research sample in the physical variables

Chapter Three:

3.1 Discussion of the results:

It is clear from table (3) that there are statistically significant differences between the pre and post measurements of the research sample in some biomechanical variables in the skill of scoring by jumping in basketball, as the results indicate that the average instantaneous speed of the push was (6.21) m/s in the pre measurement and increased to (6.98) m/s in the post measurement. This variable indicates the speed of movement through the pushing foot, which leaves the ground in the shortest possible time and pushing with maximum power by minimizing friction and a correct landing by touching the ground with the instep and bending the knee joint without momentary deceleration and then the maximum push of the body against gravity up and forward while the results indicate that the scoring angle reached in the tribal measurement (32. 11 degrees). The aiming angle expresses the ability and strength of the foot, knee and pelvic joints. The aiming angle is also related to the height of the centre of gravity. The results indicate that the height of the centre of gravity reached (51.12) cm in the tribal measurement, while it increased in the post measurement to (52.19) cm.

Variables are the most important scoring variables in basketball that show the quality of the jump during scoring, as emphasized by **(9, Hewitt, 2006)** The principles of projectile motion govern the flight phase at the moment of jumping as the player's body is mainly propelled in the air while we can do little about the air resistance and the height of the centre of gravity The angle of thrust can be adjusted while the speed of thrust is of fundamental importance and will show how long the jumping height will be The correct launch angle is determined by the ground reaction force exerted by the player, which in turn is the result of the ground reaction force. In order to maximize this momentum, the triple extension of the pelvis, knee and wrist is essential, while the ability to

increase the distance of the lift phase through a good range of motion of the pelvic extension will allow this force to be applied for a longer period of time.

The researcher explains this improvement to the use of special motor coordination drills that improved the speed, angle and height of the transfer centre in the step and in the long jump because these drills are derived from the motor structure of the basketball jumping skill that was applied to the research sample with perfect symmetry and the use of some training methods in the same positions that work to stabilize the correct technique. While the results in Table (5) indicate that there are statistically significant differences between the average results of the pre and post measurements in the variables (launch speed, launch angle, maximum height at the moment of scoring) through jumping and rising in basketball, where they reached respectively in the pre measurement (6. 43 m/s, 33.43 degrees, 127.11 cm) and 7.11 m/s, 39.16 degrees, 134.12 cm). (12 cm) These variables are considered to be the most important variables for the distance of elevation at the moment of scoring, as indicated by **(10, Wakai, 2005)** that the biomechanical characteristics of throwing competitions depend on the distance moved by any object thrown in light of a number of factors, namely the disposal factors in height, speed and angle. The height of the disposal is determined by the height of the player's body despite the influence of the player's position at the disposal and the speed and angle of the disposal is a product of what the player does before and during the disposal, unlike the aerodynamic specifications and environmental factors in which the player has no influence, but some adjustments can be made to the throwing method that leads to increasing the potential distance of the throw.

The researcher attributes this improvement to the quality of the exercises used in the technical positions derived from the skill at different moments using the pellet, medicine balls and iron bar, which improve the technique, especially for beginners and are used with light weights so as not to hinder the technique and speed during the performance and are done in controlled repetitions and sets so that the technique improves at each stage of the performance and thus improves the motor sequence of the skill as a whole, as confirmed by Sareeh Abdul Karim **(4), Candid, 2010)** that the competence of the youngster increases in jumping and rising with age. Around the age of six and a half and beyond, the performance is mature where the performance specifications improve to a great degree and this is evident in the known movement bases (temporal basis, spatial basis, dynamic basis), we can observe a clear change in timing, intensity used, force exerted and the range of weighting used, we find that there is a faster performance and there is improvement with increasing age.

While the results in Table (6) indicate that there are significant differences between the premeasurement and the post measurement and in favor of the post measurement in the physical variables of the tests (running in place test for 15 seconds, running test for 10 m), leg muscle strength (dynamometer) (strength), fast numbered circles test (coordination), vertical jump test (vertical jump), medical ball push test (1kg), the researcher attributes this improvement in the special physical tests to the special motor coordination training for the research sample because it is associated with

The researcher used motor speed training, represented by jumping from different positions and for different distances, and foot frequency training for forward, backward and sideways, as well as jumps, various wheels and throwing with different weights from the positions of the technical stages of the skills and reflected on the improvement in the level of these abilities and this is what Thelen points out **(11), Thelen, 2006)** that the vertical jump depends on the work of the central nervous system, the quality of muscle fibres and the length of the limbs, so if the muscle fibers in the leg of the player increase the angle of departure.

While the results in Table (6) indicate the percentage of improvement in special physical abilities in the post-measurement compared to the pre-measurement, represented by the tests (running in place

test for 15 seconds, running test for 10 m, leg muscle strength (dynamometer) (strength), fast numbered circles test (coordination), vertical jump test (vertical jump), medical ball push test (1 kg), where the percentage of improvement reached (14.65%, 13.06%, 13.06%). 65%, 13.06%, 22.80%, 18.67%, 10.34%, 12.70%, 17.07%) Special coordination training plays an important role in achieving synchronization between the swinging and pushing limbs through muscle coordination to achieve the required muscular capacity and this is influenced by the physical structure of lengths, widths and sizes, especially at this age stage and the proportions of body parts **(Knudson 13, Knudson, 2007).** The production of maximal power is influenced by morphological factors consisting of the contribution of fiber type, muscle area, muscle structural features and tendon characteristics as well as neurological factors that include motor unit mobilization, firing frequency, synchronized coordination and intramuscular coordination.

The researcher explains this to the special compatibility training, which contains physical and technical training that led to a development in strength, speed and muscular endurance, which was reflected in these skills, especially since the response of juniors to this type of training is rapid and their level is affected and appears clearly at the beginning of training, as confirmed by Al-Mardini, Walid Al-Rabadi **(6, Al-Mardini, 2011),** (2011) The budding player reaches the peak point in terms of motor learning during the period of movement development. The movements at this age are characterized by the nature of mastery and direction and are economical and purposeful in addition to being consistent, which obtains accuracy and skill in his movements that he cannot maintain for the coming years except with continuous training. This stage is the best stage suitable for learning, whether in physical education lessons or in other lessons, boys and girls get many new movements without much effort.

Chapter for:

4- Conclusions and Recommendations:

4.1 Conclusions:

1. Special motor coordination drills in the basketball jump shot skill consist of the characteristics of the technical phases of the skill characterized by the instantaneous stabilization of one side of the body and the swinging of the other side in instantaneous synchronization between the two sides to maintain the speed and trajectory.
2. Special motor coordination drills improved speed, power, and trajectory maintenance in the skill of jump shooting in junior basketball.
3. Special motor coordination drills improve the angles of thrust and height of thrust in the junior basketball jump shot.

Motor coordination training improves the numerical level of the jump shot in junior basketball.

4.1 Recommendations:

1. the need to use motor coordination drills in junior basketball jump shot skill derived from the motor structure of the skill that improves the physical capabilities of the skill.
2. The use of motor coordination drills in the skill of jump shooting in junior basketball with light and varied tools to develop and master the tactics of this skill.
3. Maintain the use of special motor coordination drills that are similar to the motor structure in the junior basketball jump shot skill and integrate them with physical training in the training programmers.
4. Consider adjusting the volume and intensity of specific motor coordination drills in the junior basketball jump shot skill so that proper technique is maintained.

5. Conduct further studies on the selection of specific motor coordination drills that contribute to the development of the jump shot in junior basketball

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