

The Effect Of Physical Exercises Using The (DYNA FOOT) Device. In The Development Of Some Biochemical Variables And The Skill Of Shooting By Jumping In Front - High With The Hand Ball For Juniors

Sikna Abdulrazzaq Taresh

University of Baghdad - Ibn Rushd College

sukna.abdalrazzak@ircoedu.uobaghdad.edu.iq

Abstract:

The physical superiority of the player in the level of his performance of the basic offensive skills, including shooting by jumping forward and high, does not depend on the development of physical and skill capabilities only, but is linked to the biochemical variables characteristic of performance, which are approach speed, flight speed and flight time in addition to that momentary force, i.e. the amounts of force exerted in one step of While using the (DYNA FOOT) device. Which gives real indicators in terms of strength, time and speed during the movement of the movement through the stages of running the distance and mastering the correct movement path to other parts to achieve the mechanical goal of the skill of correction, which is to score a goal with all speed and accuracy, and by following the researcher to most of the training units for handball players it became clear there Lack of training related to biochemical variables, which is reflected in the level of players 'performance, which affects the nature of performance and accuracy of shooting. The objective of the research is to prepare and recognize the effect of physical exercises using the (DYNA FOOT) device. In developing some biochemical variables and the skill of shooting by jumping in front - high with handball emerging, the researcher used the experimental method of experimental design with pre and posttest for the two equal groups (experimental and control) to suit the nature of the research. The research community was identified with handball players (Specialized School for Gifted People of the Ministry of Youth and Sports) of ages (14-15) years for the 2019 training season, which amounted to 16 players. As the research sample was selected using the comprehensive inventory method, the sample was divided into two groups (experimental and control) with seven players for each group. The most important conclusions were the results of a remarkable development between the pre- and post-measurement in the development of some biochemical variables and the skill of shooting by jumping in front - high with the handball youth for the experimental group and in favor of the post-measurement.

1. RESEARCH PROBLEM:

The athletic progress in the handball competition results from the development in all the basic skills of the competition because good technical performance leads to reaching the best achievements because the skill of shooting by jumping in front and high constitutes a major role in achieving goals during the competition that qualifies the team to win, and by following the researcher to most of the units Training I noticed that there is a weakness in the search variables of the players so that they can continue with high efficiency without dropping their level of performance throughout the period of training and competition, so the researcher decided that using the scientific method is a device (DYNA FOOT) through which the amounts of force that each exerts to the player during performance are determined and then Extraction of the time of biochemical variables in terms of time of approach speed, flight speed and flight time that must be employed to serve the nature of physical and technical performance and determine the accuracy of aiming and the quantities of instantaneous thrust of the feet. Therefore, the researcher intended to focus on developing various exercises to develop them in a standardized manner and sufficient attention to exercises related to the biomechanical aspect, which is reflected in the level of performance and accuracy of correction towards the target, which has the main role in the success of the accuracy of shooting.

Research objectives:

- Preparing physical exercises using the (DYNA FOOT) device in developing some biochemical variables and the skill of shooting by jumping in front - high with the hand ball emerging.
- Identifying the effect of physical exercise using the (DYNA FOOT) device, on the development of some biochemical variables and the skill of shooting by jumping in front - high with the hand ball emerging.

Research hypotheses:

- The physical exercises using the (DYNA FOOT) device have a positive effect on the development of some biochemical variables and the skill of shooting by jumping in front - high with the hand ball for juniors.

Research areas:

- The human field: handball players, the Specialized School for Gifted People of the Ministry of Youth and Sports) for the 2019 sports season.
- Time domain: for the period from 7/6/2019 to 10/9/2019.
- Spatial domain: the closed hall of the specialized schools of handball of the Ministry of Youth and Sports / Baghdad Governorate.

2. RESEARCH METHODOLOGY AND FIELD PROCEDURE:

Research Methodology:

The researcher used the experimental method with the experimental design of the pre- and post-test for the two equivalent groups (experimental and control) for its suitability to the nature of the research.

Research community and sample:

The research community was identified with the players of the handball competition, the handball players, the Specialized School for Giftedness of the Ministry of Youth and Sports (ages 14-16) for the 2019 training season, which totaled 16 players. As the research sample was selected using a comprehensive inventory method, the sample was divided into two groups (experimental and control) with (8) players for each group.

Sample homogeneity and equivalence:

Table (1) shows the equivalence and homogeneity of the sample						
Num	Variables	measuring unit	Leven) test value(The level of significance	homogeneity
			calculated	Standard error		
1	Age	Year	1,543	0,299	Non-sign	Homogeneous
2	Age of training	Year	0,343	0,398	Non-sign	Homogeneous
3	Mass	Kg	0,079	0,821	Non-sign	Homogeneous
4	Length	Cm	1,333	0,401	Non-sign	Homogeneous

Table (2) shows the arithmetic mean, standard deviations, the calculated (t) value, and the significance of the differences in the examined tests between the control and experimental groups in the pretest.								
Variables	measuring unit	Control group		Experimental group		(T) value Calculated	The level of significance	significance of differences
		A	STD	A	STD			
PowerOf instantaneous push	Newton	252,5	325,3	388,2	177,24	2,243	0,086	Non-sign
Approach speed	m\sec	2,89	0,05	3,22	0,48	0,54	0,64	Non-sign
Flight speed	m\sec	2,62	0,47	2,93	0,62	0,57	0,58	Non-sign
Flight time	sec	0,33	0,04	0,33	0,02	0,32	0,75	Non-sign
accuracy of shooting	Degree	1,12	0,34	1,04	0,24	1,01	0,34	Non-sign

* Significant below the degree of freedom (14) and the level of error ≤ 0.05

Methods for gathering information:

-Observation. Tests and measurements. And personal interviews.

Devices Tools used in the search:

- A device for measuring height and weight, CASIO electronic stopwatches count 6. The handball court is legal and hand balls, count (10). (LENOVO) computer, count (1). (DYNA FOOT) device, 1 count.

Impact force measurement system (DYNA FOOT):

A system for measuring the force variables imposed on the ground during each step of the run, which is made up of four parts: the data delivery base (it is a foot pedal that is placed in the shoes with a connecting wire to the force computer that connects to the laboratory leg) and the signal receiver device that connects with the laptop and receives the signal from After 60 meters. An electronic watch (Watch Unit), and the system works after wearing the device with the tester's leg and fixing it on his leg and installing the step sensor on the player's foot and entering data on the player's age, height, weight and gender, and the system measures the variables of speed and distance traveled, and this data can be used as feed information for subsequent training units the information can be stored in the system.

Measurements of the search variables used:

First: Approach speed: It is the result of dividing the distance traveled by the player during the approximate steps divided by the time taken to travel this distance and the unit of measurement (m / s).

Secondly, the flight velocity: It is the ratio between the launch distance represented by the path of the object's launch from the moment it left the ground to the moment the ball was hit to the time of this launch (the unit of measurement m / s).

Third: Flight time: It is the time calculated from the moment the player left the ground (the moment of rise) to the highest altitude the player's mechanism reaches (the highest height of the hip joint) and is measured in seconds.

Fourth: shooting from flying from the side

The purpose of the test: shooting accuracy.

Tools used:

(3) hand balls, and a correction box (60 x 60) cm in the corner of the goal, count (2).

Method of performance: The player stands in the specified correction area and when he hears the start signal he starts to the front and receives from the coach and can do the ball punch once between the 60 m line and the 9 m line and flies from the side and points at an angle to the goal on one of the two suspended squares and then repeats until the three balls end.

Test conditions:

- That the shot player does not touch the 6 m line and any part of his body.

- For the player to leave the ground and aim while in the air.
- Perform the flight test from the side according to the condition of the shooting arm.
- Not to take more than three steps.

Register:

- Two points are counted when the ball enters the square in square (2), one point when it enters square (1), and zero if it does not touch any square.
- The result of a shot that is not flying and in which the player does not move more than three steps are not counted.

Exploratory experience:

The researcher conducted the pilot experiment on a sample of (4) players on Saturday 6/7/2019 in the closed hall of the Specialized Schools of Handball of the Ministry of Youth and Sports / Baghdad Governorate. The exploratory experience of the researcher helped to identify:

- The validity of the devices and tools used in the research.
- The time it takes to run the tests.
- To find out the difficulties that the researcher may encounter when performing the main tests.
- The ability to measure force with the used device (DYNA FOOT).

Pre-tests:

The researcher conducted the pre-tests on Monday, 7/8/2019, in the closed hall of the Specialized Schools of Handball of the Ministry of Youth and Sports / Baghdad Governorate.

3. MAIN EXPERIENCE:

The exercises began on 7/10/2019 until 9/7/2019.

Duration of exercises placed in weeks: (8) weeks.

The total number of training units: (24) training units.

Number of weekly training units: (3) units.

Weekly training days: (Sunday - Tuesday - Thursday).

The training method used: high intensity interval training.

Training intensity used: (80 - 90%).

Dimensional tests:

After completing the implementation of the exercises set within the specified period, then conducting the exams for the search on Monday 10/9/2019 in the closed hall of the

Specialized Schools of Handball of the Ministry of Youth and Sports / Baghdad Governorate. The researcher took care to provide conditions similar to the pre-tests in terms of (time, place, tools used, and the method of conducting tests).

Statistical methods used in the research:

The researcher used the statistical package (SPSS) to find the appropriate statistical treatments.

Presentation, analysis and discussion of results:

- Presenting the results of the experimental and control groups regarding the studied variables, analyzing and discussing them.
- Presenting the results of the differences between the pre and post- tests of the experimental group in the researched variables and analyzing them.

Table (3) shows the difference of the arithmetic mean, its standard deviation, the value of (t) and the significance of the differences between the results of the pre and post- tests of the control group in the variables under investigation								
Variables	measuring unit	Pre-test		Post-test		(T) value Calculated	The level of significance	significance of differences
		A	STD	A	STD			
PowerOf instantaneous push	Newton	2526	325,4	3883	177,25	2,245	0,088	Non-sign
Approach speed	m\sec	2,89	0,05	3,17	0,44	2,07	0,08	Non-sign
Flight speed	m\sec	2,62	0,47	3,31	0,42	2,08	0,94	Non-sign
Flight time	sec	0,33	0,04	0,33	0,04	0,75	0,48	Non-sign
accuracy of shooting	Degree	1,12	0,34	1,12	0,47	0,01	1,01	Non-sign

* Significance below the level of significance of $\leq (0.05)$ and before the degree of freedom ($8 - 1 = 7$).

Presentation and analysis of the results of the differences between the pre and post- tests of the control group in the researched variables.

Table (4) shows the difference of the arithmetic mean, its standard deviation, the value of (t), and the significance of the differences between the results of the pre and post- tests of the experimental group in the variables under investigation.								
Variables	measuring unit	Pre-test		Post-test		(T) value Calculated	The level of significance	significance of differences
		A	STD	A	STD			
PowerOf	Newton	261	429,	360	330,0	2,245	0.005	sign

instantaneous push		4	9	1	6			
Approach speed	m\sec	3,22	0,48	4,25	0,51	2,07	0,000	sign
Flight speed	m\sec	2,81	0,62	3,96	0,43	2,08	0,001	sign
Flight time	sec	0,33	0,04	0,43	0,01	0,75	0,002	sign
accuracy of shooting	Degree	1,04	0,22	1,89	0,33	0,01	0,000	sign

* Significance below the level of significance of $\leq (0.05)$ and before the degree of freedom ($8 - 1 = 7$).

Presentation of the results of the differences between the posttests of the control and experimental groups in the studied variables.

Table (5) shows the value of (t), the level of error and the significance of the differences between the results of the post-test for the control and experimental groups in the variables under investigation..								
Variables	measuring unit	Control group		Experimental group		(T) value Calculate	The level of significance	significance of differences
		A	STD	A	STD			
PowerOf instantaneous push	Newton	3601	330,06	3883	163,6	4,44	0,002	sign
Approach speed	m\sec	3,17	0,46	4,23	0,52	4,15	0,000	sign
Flight speed	m\sec	3,32	0,43	3,96	0,45	2,56	0,001	sign
Flight time	sec	0,33	0,03	0,43	0,01	11,68	0,000	sign
accuracy of shooting	Degree	1,12	0,48	1,89	0,34	5,22	0,001	sign

* sign at a level of significance $\leq (0.05)$ and before a degree of freedom ($8 + 8 - 2 = 14$).

4. DISCUSS THE RESULTS:

The results showed a significant difference between the pre- and post-tests of the experimental research sample of the research variables, some biochemical variables and the skill of shooting by jumping in front - high with the hand ball. The post- test. Individual differences and this development in biochemical variables were reflected in the shooting accuracy test results. The physical exercises prepared by the researcher on the basis of the results of measuring the force exerted while running through the (DYNA FOOT) device strengthened the positive relationship between the exerted force with increasing acceleration and speed, as the greater the force that is used to push the body when running, the greater its acceleration. The researcher believes that the remarkable development in the results of biochemical measurements has the effectiveness and adequacy of standardized exercises that contributed to developing the accuracy of shooting by jumping in front - high with the hand

ball, as most of the specialized studies indicated that the increase in strength is inversely proportional to time and directly with the speed with a relative stability of the mass according to the following rule:

Force = mass x velocity / time (2). As the exercises used by the researcher included various exercises complex of jumping and jogging movements and quick jumping exercises with body weight for developing muscles working in fast and accelerating running has achieved an improvement in muscle efficiency and improved the level of achievement of the experimental group in the exerted strength, which is the real influence in the development of (Approach speed, flight speed, flight time, momentary thrust) which contributed to the accuracy of the shooting.

And that special strength training should focus on strengthening the force bond between the muscles of the two legs, and this is what the researcher confirmed when applying her training program using jumping exercises for different distances and movements similar to the basic handball movements, as (Steen Hous 1991) and (WilkieD 1998) confirmed that there is A need to increase the intensity and the amount of work performed to develop muscle strength, with an emphasis on the importance of the volume of exercises used and paying close attention to these exercises and the amount of muscle contraction clearly. Movement to the instantaneous position that the body performs at the moment of the start of the measurement. In the shooting skill of jumping high or in the dimensional tests, this indicates that any effect of the exercises on the distance variable was of little value because the exercises when preparing them were aimed at achieving the best transmission speed for the center of gravity of the player's body on the basis of shortening the time up and calculating the lengthening of the distance For its failure, and (Muhammad Jaber and Khayriyah Ibrahim) assert that the distance traveled is the change of the object's location from one point in the space to another point, it is simply a measure of the length of the path in which the movement occurred, from the starting line to the end point line.

5. CONCLUSIONS:

- The results showed a significant superiority between the pre- and post-measurement in the biochemical variables of the handball players of the experimental group and in favor of the post measurement.
- The results showed a significant superiority between the pre- and post-measurement in (accuracy of shooting by jumping forward and high) for the players of the experimental group and in favor of the post measurement.
- The experimental group surpasses the control group in the post-measurement of the investigated variables in favor of the experimental group.

5. RECOMMENDATIONS

- Method of determining and measuring the exerted force of other biochemical variables (angle of flight, angle of advancement) from preparing special abilities development programs for the handball competition.

- Preparing training programs using the force sensor device according to acceleration indicators and in proportion to the physical and skill capabilities of hand reel.
- Conducting similar studies on other games in order to improve physical aptitude and study the interrelationship between physiological and mechanical indicators.

6. REFERENCES:

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