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The Effect Of Extreme Physical Effort Training On Developing Rapid Strength And Some Biomechanical Indicators And The Accuracy Of Shooting By Jumping High With The Hand Ball

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Abstract: Reaching high levels of sports requires an integrated preparation in terms of physical, technical and biomechanical. Many developed countries have achieved sporting achievements and winning championships depending on scientific development in the sports field, and as a result of the close and great connection and the link between physical and skill numbers in handball It became necessary to pay attention to the physical abilities, especially (the rapid strength of the arms and legs)Which is one of the special physical abilities affecting the success of performing basic skills in handball, and among these sciences that helped in the scientific progress of motor performance is the science of biomechanics, which is concerned with studying the movement of the athlete by analyzing, clarifying, improving and developing a lot of sports skills based on the latest tools and devices represented With imaging devices that achieved accurate objective results in motor performance Hence the importance of research on the impact of extreme physical exertion exercises in terms of developing physical ability (rapid strength of arms and legs) that illustrates the importance and effectiveness of biomechanical properties and the extent to which they are applied effectively in order to obtain positive results that give their effective effect in a way that contributes to the implementation of the offensive requirements for the performance of physical duty And the technical for the accuracy of the correction is high for the handball competition.

1. RESEARCH PROBLEM:

The handball competition in the world has witnessed a remarkable development in recent years in terms of physical and skill, which has characterized the modern nature of the competition with speed and strength in accurate technical preparation and this has affected the development of skills through the coaches following the scientific foundations in programming training and various training methods by raising the teams to a high level And through the presence of the researcher in the field, I noticed that the skill of long-range shooting by jumping high is one of the basic and necessary skills for all handball players.It is

considered a way to overcome the defensive plans of the competition, as any failure in the level of technical performance of this skill causes great failure in resolving the outcome of the match, so the researcher decided to study this problem that this skill requires reaching the highest height and aiming strongly at the goal in terms of studying the effectiveness of the characteristics Mechanism for the development of the kinetic transmission index for the accuracy of shooting by jumping high with the hand ball.

Research objectives:

- Preparing maximum physical effort exercises in developing fast power, some biomechanical indicators, and accuracy of shooting by jumping high with the hand ball.

- Learn about maximum physical effort exercises in developing fast power, some biomechanical indicators, and the accuracy of shooting high by jumping with the hand ball.

Research hypotheses:

- The maximum physical effort exercises have a positive effect on the development of rapid strength, some biomechanical indicators, and the accuracy of shooting high by jumping with a hand ball.

Research fields:

- The human field: Players of Al-Qasim Sports Club for men's handball for the 2020 season.

- Time domain: Duration 2/10/2020, 4/5/2020.

- Spatial domain: on the hall of Al-Qasim Sports Forum / Babil Governorate.

Search procedures:

The researcher used the experimental method of pre- and post-testing of the experimental group and the control group, in accordance with the nature of the research.

The research community was determined for the players of Al-Qasim Sports Club for Handball / Babil Governorate for the 2020 season, whose number was (30) players, and the sample was divided into two groups, the experimental group and the control group, with (15) players for each group.

Table (1) shows the homogeneity of the sample

Variables	measuring unit	arithmetic mean	Mediator	standard deviation	Coefficient of torsion
Length	Cm	**172.18**	**172**	**4.179**	**0.265**
weight	Kg	**76.87**	**74.16**	**6.322**	**1.812**
Age	Year	**20.67**	**22.00**	**1.887**	**0.443**

Table (2): shows the arithmetic mean, standard deviations, the calculated (t) value and the significance of the differences in the examined tests between the experimental and control groups in the pretest.

Variables and tests		group	A	STD±	)T(Calculated	error percentage	Significance
1	The fast power of the arms	Experimental	**29.22**	**0.643**	**1.314**	**0.225**	Non-sign
		Control	**31.01**	**0.876**			
2	The fast power of the legs	Experimental	**18,27**	**0.657**	**1.477**	**0.176**	Non-sign
		Control	**20,43**	**0.675**			
3	First step distance	Experimental	**95.22**	**6.206**	**1.223**	**0.234**	Non-sign
		Control	**94.43**	**6.108**			
4	Second step distance	Experimental	**87.33**	**7.104**	**1.367**	**0.219**	Non-sign
		Control	**88.56**	**6.803**			
	Third step distance	Experimental	**115.12**	**8.606**	**1.765**	**0.345**	Non-sign
		Control	**117.22**	**8.109**			
	Approximate run speed	Experimental	**2.84**	**0.396**	**1,673**	**0.876**	Non-sign
		Control	**2.87**	**0.363**			
5	The accuracy of the shot by jumping high	Experimental	**12.02**	**0.677**	**1.276**	**0.284**	Non-sign
		Control	**8.03**	**0.733**			

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

The following methods and tools were used in the research:

Observation - tests and measurements - a device for measuring height and weight - handball balls count (20) - a legal field for handball - an electronic stopwatch 1/100 of a second, videography, programs and scientific applications used in the computer, a drawing scale with a length of (1 meter), A 30-meter tape measure, a Japanese Sony video camera, count (2) with a frequency of 25 pictures per second, (20) jump boxes, (20) barriers, count (10) terraces.

Tests used:

- The rapid strength test of the arms, - The rapid strength test of the two men (Muhammad Sobhi Hassanein, Ahmad Kusra: 1995, p.105)

- First step distance test, second step distance, third step distance, proximity jog speed.

- The accuracy of the shot by jumping high (Saad Mohsen and Iman Hussein: 1993, p. 35).

Exploratory experience:

The researcher conducted an exploratory experiment on Saturday 4/7/20 on (6) players from the original research community who were randomly selected, and the aim of the experiment was the following:

- Knowing the extent of the players' understanding and understanding of the vocabulary of skill tests.

- Identify the factors and obstacles that may appear when implementing the tests and the training program.

- Knowing the safety of the devices and tools used in the test, as well as knowing the assistant's work on time and taking the tests.

Pre-tests:

The researcher conducted the pre-tests on Monday, 7/6/2020, at the Al-Qasim Sports Forum Hall / Babel Governorate.

2. MAIN EXPERIENCE:

The training program started on 7/11/2020 until 9/10/2020.

- The duration of the exercises set in weeks: (8) weeks.

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

- Number of weekly training units: (3) units.

Training unit	The vocabulary of the training unit	Intensity %	Repetition	Groups	Rest in between	
					Repetition	Groups
Saturday	-Throwing a 2 kg medicine ball with the colleague in a variety of ways -Half squat from the position of the back support with the colleague. -Shooting on staggered squares on the wall, the distance between the player and the wall is 6 meters -Long handling (fast break) Shooting a handball goal	%80	5 5 5 5	2 2 2 2	30sec 30sec 45sec 45	1min 1min 1min 1min
Monday	-Throwing a 3 kg medicine ball with both hands towards the colleague -Partridge on one leg to the middle of the field	%80	5 5 5 5	2 2 2 2	30sec 30sec 45sec 45	1min 1min 1min 1min

	and then switch on the other leg to the end of the field. -Handling and receiving from jogging for a distance of 20 meters, then correction -tapotement to the middle of the pitch and then return the correction area of 9m.					
Wednesday	-Throwing a medicine ball weighing 4 kg in both arms during long sitting -Carrying a medicine ball with alternating rotation for a distance of 30 meters. -Handling and receiving from the start of the field, then jumping on a glove and shooting at a handball goal -tapotement to the middle of the pitch and then return the correction area of 9m	%80	5 5 5 5	2 2 2 2	30sec 30sec 45sec 45	1min 1min 1min 1min

Videography:

The researcher used a (2) Japanese-made 8 mm sony camera with a frequency of 25 images / second, and the researcher also used sony video films with a tripod during the exploratory research experiment and the main experiment, the cameras were installed in two locations, one side and the other diagonal They were installed on the basis of the main axes of the body, which are (the deep cross axis, where the camera represents No. (1), the transverse axis extending from the side of the aiming arm and was placed on a tripod, and the distance between the aiming lens and the middle of the aiming circle was 20.7 meters and on Height (1.40) m from the ground level, and the camera No. (2)It represents the diagonal axis extending from the back of the test player, and the distance between the focus of the camera lens and the middle of the aiming circle was (7.50) meters and at a height of (1.40) meters from the level of the ground, where the use of this camera is to obtain the approximate jog speed And the scale was photographed with a length of (1) m to be a reference for measurement when performing the analysis.

Computer analysis:

The researcher analyzed the video film using the electronic calculator of the (Pentium 4) laptop type, and the researcher analyzed the attempt that obtained the most accurate performance in performing the remote aim by jumping high with the handball out of three attempts for each side of the upper target (left and right) and the analysis procedures included steps the following:

First: The video material was converted from a video clip to a (files) format using the (snazzy) transfer card and then to CD-ROM, in order to facilitate the steps of computer analysis.

Second: The animation was cut by the (hero 2000) program into sections to extract the specified variables (the first, second and third step distance) and those clips were stored in the form of files stored in the calculator files.

Third: Then these files (motion clips) were transferred to the (dart fish) program installed on a laptop calculator (with high specifications), which is a program dedicated to analyzing mathematical movements.

Post-tests:

After completing the implementation of the program within the specified period, then conducting the research-specific tests on Sunday 13/9/2020, and the researcher took into account the provision of conditions similar to the pre-tests in terms of (time, place, tools used, and the method of conducting tests).

And statistical methods were used: the researcher used the statistical package (SPSS) to find the appropriate statistical treatments.

research results:

The results of the experimental and control groups in the researched variables were presented, analyzed and discussed, as well as the results of the differences between the pre- and post-tests of the experimental group in the studied variables were presented and analyzed.

Table (3) shows the difference of arithmetic means, its standard deviation, the value of (t), and the significance of the differences between the results of the pre- and post-tests of the two groups of research in the variables under investigation.

Tests	measuring unit	Groups	Pre-test		Post-test		T) value(Calculated	error percentage	Significance Of differences
			A	STD	A	STD			
The fast power of the arms	Number	Experimental	**31.54**	**2.187**	**34.61**	**1.576**	**3.500**	**0.025**	sign
		Control	**29.34**	**1.454**	**30.87**	**2.232**	**2.829**	**0.047**	sign
The fast power of the legs	Sec	Experimental	**18.21**	**1.768**	**17.43**	**2.754**	**3.942**	**0.017**	Sign
		Control	**20.32**	**1.854**	**18.65**	**3.212**	**2.833**	**0.049**	Sign
First step distance	Cm	Experimental	**95.20**	**0.487**	**86.32**	**0.765**	**6.061**	**0.004**	Sign
		Control	**94.43**	**2.954**	**92.90**	**00.276**	**4.209**	**0.014**	Sign
Second step distance	Cm	Experimental	**80.22**	**2.912**	**79.01**	**2.132**	**7.133**	**0.002**	Sign
		Control	**82.22**	**2.443**	**81.56**	**2.587**	**3.833**	**0.019**	Sign
Third step distance	Cm	Experimental	**100.22**	**1.765**	**98.56**	**2.696**	**3.921**	**0.017**	Sign
		Control	**116.11**	**1.874**	**115.02**	**2.355**	**3.247**	**0.082**	Sign
Approximate run speed	M\Sec	Experimental	**2.84**	**1.852**	**3.84**	**2.763**	**2.875**	**0.023**	Sign
		Control	**287**	**1.632**	**299**	**2.954**	**2.923**	**0.034**	Sign
Aim accuracy shooting by jumpingh igh	Degree	Experimental	**12.01**	**1.985**	**13.06**	**3.976**	**3.764**	**0.12**	Sign
		Control	**8.03**	**1.281**	**10.11**	**3.432**	**2.971**	**0.031**	Sign

* Significant at the significance level (0.05)

Table (4) shows the difference of the mean, the value of (t), the level of error and the significance of the differences between the results of the post-test for the two groups of research in the variables under investigation.

Tests	measuring unit	Experimental		Control		T) value(Calculated	error percentage	Significance Of differences
		A	STD	A	STD			
The fast power of the arms	Number	**34.42**	**1.576**	**30.41**	**2.223**	**3.975**	**0.003**	Sign
The fast power of the legs	Sec	**16.65**	**2.743**	**18.21**	**3.0212**	**4.934**	**0.002**	Sign
First step distance	Cm	**85.31**	**0.7043**	**91.43**	**0.265**	**4.262**	**0.003**	Sign
Second step distance	Cm	**78.67**	**2.132**	**80.11**	**2.523**	**4.380**	**0.002**	Sign
Third step distance	Cm	**96.77**	**2.665**	**112.74**	**2.352**	**3.271**	**0.011**	Sign
Approximate run speed	M\Sec	**3.81**	**2.765**	**2.97**	**2.654**	**2.345**	**0.032**	Sign
Aim accuracy shooting by jumping high	Degree	**14.32**	**2.543**	**11.04**	**2.765**	**3.675**	**0.023**	Sign

* Significant at the significance level (0.05)

3. DISCUSSING THE RESULTS:

The results of the dimensional tests of the biomechanical research variables showed that there is a significant significance for these tests in the distances of the three steps and the approximate jog speed, and the researcher attributes the reason for this development in the dimensional tests to the exercises, the maximum physical effort in terms of codifying the exercises according to the components of the training load through the use of the computer and the segmentation of the skills presentation. To its minute details as well as to the accuracy of the presentation of the skills through its ability to slowly display the skill, which provides a good opportunity to know the minutes of the movement and the speed of its absorption so that it makes it able to correct its conditions of its movements to control the final steps before getting up leads to getting rid of any accumulated error and applying that without any loss in Time and thus does not lead to a loss in horizontal velocity (Jim Bush: 1999, p132)The skill of high precision shooting in the handball competition has developed as

a result of muscle gaining the appropriate strength, increasing its speed and reducing its performance time, and this means that the development of the rapid strength of the players addressed by the training has worked to develop the speed of movement performance because speed plays an important role in skill performance and depends mainly on Muscle strength and that the development in the experimental group came as a result of the effectiveness of the training program training according to mechanical properties, which had an effect on the development of this variable as an inevitable consequence that correcting errors results in an increase in the individual's performance capacity as a result of performing physical exercises for several days, weeks or months. The way to adapt body systems to the optimal performance of exercises (Hag, JG: 1998.p422)And the development of the strength of the arm muscles worked on the speed of the skillful performance as a result of increasing his control over the ball stroke and his ability to control it on the need to increase the ability and ability of the player while controlling the ball during the stroke as it becomes an extension of the compatibility of the arms during the technical performance of the skill (1999, p11): (Mario Blason)The development of the rapid strength of the leg muscles and the development of the strength of the muscles of the arms depend mainly on weight training exercises of different weights and the use of medical balls with a performance that depends on strength and speed all of this led to the development of this physical ability that is needed by the motor work in correction and thus positively affected the performance (Brin Coleman, Peter Ray: 2001, p107).

The accuracy of the shot by jumping high with the hand ball means controlling the kinematic alignment of the skill of shooting in addition to directing the ball to the desired direction with the accuracy necessary to hit the goal (Qasim Hassan Hussein and Abd Ali Nassif: 1990, p. 239)

The researcher attributes that the development in the values of shooting accuracy by jumping high with the hand ball to the effectiveness of the exercises prepared within the vocabulary of the training program that contributed effectively and effectively by correcting some of the errors that accompanied the march of this skill, which were diagnosed through the filming process.

4. CONCLUSIONS:

- The results showed significant physical ability for rapid force (arms and legs) between pre- and post-measurement through the educational program of the experimental group and for the benefit of post measurement.

- The results showed significant between estimating the variable of the first, second and third distances, and the approximate jog speed variable between the pre- and post-measurement of the experimental group and in favor of the post measurement.

- The results showed significant between the skill of high precision aiming with the hand ball between the pre- and post-measurement of the experimental group and in favor of the telemetry.

5. RECOMMENDATIONS:

- Emphasis on the implementation of the training program for players of other groups and for both sexes with the biomechanical characteristics due to its positive impact on the development of the technical performance of the skill of shooting accuracy by jumping high with handball

- Conducting research on other skills and abilities and for other preparation periods for handball players.

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