Movement Exercises and their Effect on the Values of Some Physical Abilities for Youth and the Accuracy of Overwhelming Hitting From Position (1) on the Volleyball

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Abstract

The aim of this study is to identify the effect of movement training in some physical abilities of the skill of overwhelming hitting of the volleyball for an experimental youth group. The researcher assumed that the movement training has a positive moral effect on the physical abilities and the accuracy of overwhelming hitting with volleyball for youth. The research community was identified by the researcher in the youth volleyball center in Al-Shatrah district. The researcher subjected the research sample to experimentation through the application of movement exercises where the researcher took into account the preparation of those exercises scientific steps in the implementation and application of the independent variable, which continued for eight weeks. The researcher dealt with the results obtained from the pre-test and post-test tests by using the statistical bag. The researcher concluded that there is an improvement in the physical capabilities of the experimental group in the post-test tests as a result of using them for movement exercises in the experimental group in the dimensional tests because of their subject to training. As for the most important thing the researcher reached, is the need to use movement training, as it works to develop some physical capabilities for youth volleyball players.

Keywords: *Physical abilities, youth, overwhelming hitting, volleyball*

Introduction

The sport training is a purely specialized process that enters the public and private construction of athletes and is an important factor in mutual relations [1]. The modern sports training programs and their sub-units, whether monthly, weekly, or even daily, have become full of new things, where they occupied a great interest among those in charge of the training [2] process in preparing athletes and correcting training programs. Especially those directed at some group sporting activities, including the movement training approach, which worked to raise the level of physical abilities. Among those activities, volleyball, which is characterized by the abundance of its offensive and defensive skills [3]. Volleyball is a team sport that is famous for excitement and suspense, especially in offensive skills, where the skill of overwhelming hitting is one of the most important offensive skills in this game, which has a large and effective role in disrupting the reception of the opposing team [4]. As this skill requires attention in the particles of each of its preparatory, main, and final sections, and this requires upgrading the physical and motor capabilities of the players that constitute the main pillar in raising the level of this skill. All this requires from the coaches and specialists in this field the usage of the modern training methods that contribute scientifically to develop these capabilities [5]. Especially the force characterized by speed, explosive power, agility, and compatibility that the dispatching player needs during the performance of the overwhelming hitting skill.

Methodology

The scientific research determines the method to be used, when research is applied, it needs an experimental approach to solve the problem. Where the experimental approach "is a deliberate and controlled change with the conditions specified for a particular event and noting the resulting changes in the same incident for its

interpretation [1].

Research's community and sample

The research community included the young players in the Volleyball Specialized Center in Al-Shatra district, who represent the youth category and ranged between 16-18 years old, they were 20 players, but 16 players were randomly chosen by draw lots method. Where they represented 80% of the parent community. The sample was divided into the experimental and control groups randomly by draw lots method to 8 players in each group.

Homogeneity of the sample

In order to verify the homogeneity of the sample, the researcher has taken some measures to control the variables, even though the selected sample is from a close age group and the homogeneity was performed on the sample together before it was divided into two experimental and control groups.

Table 1. The homogeneity of the research sample in the training age, height and weight using the coefficient of difference

	Measurements and variables	The unit of measurement	the arithmetic mean	standard deviation	Coefficient of variation (%)
1	Training age	Month	38.16	0.57	13.3
2	Mass	Kg	77.58	2.02	2.6
3	Length	cm	185.83	6.30	3.4
4	Arm length	cm	80.1	5.12	6.4
5	Torso length	cm	81.33	6.70	8.2
6	Leg length	cm	104.5	2.84	2.7

Equivalence of the two research groups

One of the most important things that the researcher must consider is that the differences return to the experimental factor. On this basis, the control and experimental groups must be equal in all variables and indicators completely. Therefore, statistical methods were used by the mean, standard deviation and T-test for independent samples (between the experimental and control groups) before applying the method as shown in Table 2.

Table 2. Arithmetic mean, standard deviations, calculated (T) value and (Sig) value for the experimental and control groups in the pre-test

Processors	The unit of measurement	Diametrical overwhelming hitting (pre-test _ control)		Diametrical overwhelming hitting (pre-test _ experimental)		Calculated T value	Significance level (0.05)	significance
Measurements		$\bar{x}$	+ σ	$\bar{x}$	+ σ			
The explosive force of the legs	M	21.6	0.7	22.1	0.99	1.3	0.2	Not significant
The explosive force of the arms	M	2.7	0.04	2.7	0.04	0.1	0.9	Not significant
The force marked by speed of the legs	time	4.2	0.3	4.1	0.3	0.07	0.9	Not significant
The accuracy of the overwhelming hitting	Degree	6.6	0.5	6.5	0.5	0.6	0.5	Not significant

Methodology

Means of collecting information:

Arabic and foreign references, Personal interviews, Observation and analysis, Experimentation, Testing and measurement.

Tools and devices used:

Tape Measure, Volleyball, Japanese-made whistle, Medical scale, Japanese-made (CASIO) computer. Irish-made Dell Ci7 laptop. DVD (6) legal volleyball court and legal volleyball balls (3). 5 cm wide adhesive tape and office tools. Casio electronic stopwatch.

Exploratory experiment

The most important thing that scientific research scientists recommend for the purpose of obtaining accurate and reliable results is conducting the exploratory experiment. Which is defined as "a mini-experiment from the main experiment, the purpose of which is to experiment the work to reveal the obstacles and negatives [6] facing the application of the main experiment or for the purpose of training some cadres to assist in the work."

The researcher conducted the exploratory experiment on Friday 4/1/2019 at nine o'clock in the closed hall of sports in the College of Physical Education and Sports Science, Thi Qar University on the a sample of (6) players out of the community of the research "from the Euphrates Sports Club to apply the physical and mobility capabilities, the accuracy of the overwhelming hitting. The purpose of this experiment is to assess performance and know the negative aspects and variables which will face work and also to check the following:

1- Knowing the appropriate tools and devices to conduct these tests.

2- Knowing the appropriate time and place to conduct it.

3- Ensuring the adequacy of the supporting staff.

4- The definition of the auxiliary staff in how to apply these tests.

5- Knowing the difficulties and problems facing the researcher in applying these tests before applying them in the main experiment

Field research procedures

Tests for the research sample

The researcher conducted the tests and pre-measurement for the experimental and control groups before starting the implementation of the training curriculum on Friday and Saturday, 11-12 /January/ 2019 at nine in the morning (in the closed hall Youth Forum Shatrah / Thi Qar / Shatrah). All members of the sample (16) as players, the researcher and the assistant team worked on the first day where the measurements (lengths, mass, and age) were identified, then physical tests were performed. On the second day, the accuracy of overwhelming hitting of the volleyball was tested, a camera was placed in its assigned location on the front level of the player who performs the skill of overwhelming hitting with the right hand on the side of the beating area, about 8.78 m.

Statistical means

As mentioned above, in order to verify the homogeneity of the sample, the researcher has taken some measures to control the variables, for this purpose the statistical methods were used as:

- ü Arithmetic mean.
- ü Standard deviation.
- ü Coefficient of variation.
- ü Pearson correlation coefficient.
- ü T-test for correlated samples.
- ü T-test for independent samples.

Results and Discussion

Table 3. the values of the arithmetic mean, the standard deviations, and the calculated value (T) of the values of some physical and motor abilities

	Variables	Units	Pre-test control group		Post-test control group		Difference in (x^-)	level of development %	The calculated T	level of significance 0.05 *	result
			x^-	$+\sigma$	x^-	$+\sigma$					
1	The explosive force of the legs	M	21.6	0.7	27.1	1.8	5.5	20.4	7.4	0.000	Significant
2	The explosive force of the arms	M	2.7	0.04	2.9	0.09	0.2	6.9	5.9	0.000	Significant
3	The force marked by speed of the legs	time	4.1	0.3	4.1	0.3	0.01	0.3	0.08	0.9	Not significant
4	The accuracy of the overwhelming hitting	Degree	6.6	0.5	6.5	0.5	0.125	1.9	0.5	0.6	Not significant
* At the significance level ≤ 0.05											

Table (3) shows the values of the arithmetic mean, the standard deviations, the difference between the arithmetic means, the percentage of evolution, the value of (t-test) and the level of significance between the pre-test and post-tests of the control group for the explosive strength of the two legs, the explosive force of the two arms, the force distinguished by the speed, and the accuracy of the overwhelming multiplication. The explosive strength of the arms, it appeared through Table (3) that there were significant differences between the pre-test and post-test and in favour of the post-test.

Table 4. the values of the arithmetic mean, standard deviations, and the calculated value (T) of the values of some physical, motor, and accuracy capabilities of the pre and post tests of the experimental group.

	Variables	**Units**	**Pre-test experimental group**		**Post-test experimental group**		**Difference in (x^-)**	**level of development %**	**The calculated T**	**level of significance 0.05 ***	**result**
			x^-	$+\sigma$	x^-	$+\sigma$					
1	The explosive force of the legs	m	22.1	0.9	34.02	1.09	34.9	34.9	20.5	0.000	Significant
2	The explosive force of the arms	m	2.7	0.04	3.4	0.5	0.7	21.2	4.4	0.003	Significant
3	The force marked by speed of the legs	time	4.1	0.3	3.3	0.09	25.642	25.6	6.3	0.000	Significant
4	The accuracy of the overwhelming hitting	Degree	6.5	0.5	9.4	1.8	30.7	30.7	5.6	0.000	Significant
* At the significance level ≤ 0.05											

Table (4) shows the arithmetic mean, standard deviations, the difference between the arithmetic means, evolution ratio, value (t-test) and the level of significance between the pre-test and post- tests of the experimental group for both the explosive strength of the two legs, the explosive strength of the arms, the force distinguished by the speed, and the accuracy of the overwhelming multiplication.

The overwhelming hitting for experimental group:

From Table 4, it appeared that there are significant differences in physical abilities and the accuracy of overwhelming hitting between pre-test and post-tests and in favour of the post-test. [7] The researcher attributes that the development in the explosive force variable for the legs is due to the diversity and effectiveness of the movement exercises adopted by the researcher and applied by the experimental group.

Which increased the ability to the working muscles, as Mohamed Tawfiq stresses that "exercises similar to the stages of the overwhelming hitting skill are one of the most effective forms in developing the explosive force because these exercises impose a high effort on the body, especially on the muscles, tendons and the working joints, for this reason there is rapid adaptation and adaptation of the body and progressively on this Type of exercises by starting with exercises of the lowest intensity and then the most difficult and the highest intensity [8,9].

Table 5. Values for mean, standard deviations, and value of calculated (T) for some physical, motor, and accuracy capabilities for pre-test and post-tests of the experimental and control groups

	Variables	Units	Post-test control group		Post-test experimental group		Difference in (x^-)	The calculated T	level of significance 0.05 *	result
			x^-	$+\sigma$	x^-	$+\sigma$				
1	The explosive force of the legs	m	27, 125	1, 807	34, 015	1, 086	6, 890	9, 240	0, 000	Significant
2	The explosive force of the arms	m	2, 905	0, 093	3, 426	0, 470	31, 110	3, 07589	0, 00821	Significant
3	The force marked by speed of the legs	time	4, 131	0, 317	3, 268	0, 090	0, 863	7, 384	0, 000	Significant
4	The accuracy of the overwhelming hitting	Degree	6, 500	0, 533	9, 375	1, 767	2, 875	4, 403	0, 000	Significant
* At the significance level ≤ 0.05										

Table (5) shows the arithmetic mean, standard deviations, the differences in the arithmetic mean, significance level between the pre-test (t-test) and the post-test of the experimental group for both the explosive strength of the two legs, the explosive force of the arms, the force distinguished by the speed, and the accuracy of the overwhelming hit.

From Table 5 we can see that there were significant differences in physical abilities and accuracy of multiplication in the post-test_post-tests of the control and experimental groups and in favour of the

experimental group. The researcher attributes the reason for these differences to the effectiveness of the movement exercises that were applied by the experimental group, where the explosive force of the legs developed in the experimental group and significantly.

As the movement exercises included jumping exercises with both feet and jumping in a way that is consistent with the direction of strength in the skill of overwhelming hitting as well as the vertical and horizontal jump exercises, whether with an instrument or without a tool, it was limited only to jumping to the highest possible point, and nothing else, as happened in some studies that used exercises to develop that [4].

The researcher adds that the effectiveness of the movement exercises focused on developing the explosive force of legs through preparing exercises that targeted the performing of different forms of jumping and hopping for the purpose of developing the activity stage when performing overwhelming hitting.

The explosive force of the arms of the experimental group, it showed a superiority in the dimensional measurement from what it is in the post-test of the control group. The researcher believes that the reason for this is because the used movement exercises focused on the working muscles of the preferred and un-preferred hand. As in the exercises of standing by clapping and throwing the medical ball with the striking hand that contributed to the development of the explosive force of the muscles of the hands.

As well as providing an adequate and appropriate amount of compatibility between the two settings physical and skill which can be achieved through the established movement exercises if they are repeated according to the basic principles of sports training with some adjustments.

The reason for the development in the force marked by the speed of the two legs of the experimental group compared to the value of this ability in the control group is due to the organized planning in the given training doses for the used movement exercises as well as the rapid transition exercises that contributed to employing the muscular work well with the stability of the kinetic range of the joints which helps to increase the distinctive force by speed and increase its capacity in the experimental sample.

Conclusions

The sport training is an important specialized process that enters the public and private construction of athletes which works to raise the level of physical abilities. Based on the followed procedure in this research, the researcher have the following conclusions:

There was an evolution in the physical abilities (explosive force and speed characteristic) of the experimental group in the post-tests as a result of using them for movement exercises.

There was a noticeable development in the force marked by the speed of the control group in the post-tests as a result of its use of the trainer's exercises that focused on developing the approaching speed of the control sample, while there was no significant development in the rest of the variables under investigation.

The movement exercises contributed to the development of the accuracy of the overwhelming hit for the volleyball of the experimental group in the post-test through the development of physical capabilities.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Thi Qar University and all experiments were carried out in accordance with approved guidelines.

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