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## The effect of suggested exercises using cross-training to develop some physical abilities and its relationship to the accuracy of the performance of the straight spike hit in volleyball

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### Abstract

For the purpose of achieving any good results, it is necessary to follow the appropriate training methods and to crystallize the research problem about the low level of physical and skill performance of the players and the instability of the level of performance, continuing to train with high efficiency, which negatively affects the level of (PA) and volleyball players skills. Therefore, the researchers determined to study the problem by trying to develop suggested exercises using cross-training (CT) to develop some (PA) and to identify its relationship to the accuracy of the performance of the straight spike hit in volleyball. Research goal to:

- Preparation of exercises proposed using training to cross the development of some (PA).
- Identifying the effect of the proposed exercises using (CT) on some (PA) under study.
- Identifying the relationship of the proposed exercises using (CT) with the accuracy of straight spiking in volleyball. Among the most important conclusions reached by the research:
- The effect of (CT) in creating a significant difference in the results of the pre- posttests of the experimental group in all variables studies and in choose of the post-tests.
- The effect of (CT) on the results of the post-tests for the two research groups in some variables studies and in choose of the experimental group.

**Keywords:** exercises, cross training, physical abilities, spike hit, volleyball

### Introduction

Physical and skill preparation is taken into consideration one of the maximum important ingredients for success in all sports, especially volleyball, and the first starting step on which to reach the volleyball player to achieve excellence in performance. And work to develop it to the maximum possible degree in order for the player to reach the highest possible level of technical performance. The process of developing the special (PA) of volleyball players is one of the most important training duties to be achieved in the sport, as it agrees with the opinion of (Zaki: 2004, 14-22) <sup>[17]</sup>. To the emergence of a new organizational form called (CT) Cross Training It aims to improve (PA) through the use of multiple means and techniques is related to proficient activity, and this may give players fun and excitement, which will increase their motivation when carrying out duties in there training, which will be turning into reflected the level of their performance in the competition, and (CT) leads to getting rid of stereotyped performance, which negatively affects the components of the training status of athletes. indicates (Werner & Sharon: 2011, 292) <sup>[16]</sup> "Cross training is a training method that combines two or more activities in the program, and is specifically designed to develop physical fitness and provide the necessary rest for stressed muscle groups, reduce injury and eliminate monotony in training." and knows (Brad: 2007, 28) <sup>[3]</sup> Cross training "Using various activities outside specialized training to provide relief from the effects of training for muscles, tendons, bones, joints and ligaments, a short break, and work to achieve muscular balance for the athlete and maintain the physical and technical level." The phenomenon of fatigue affects the level of performance of the player, and it is a multi-faceted phenomenon where there are different types of muscle fatigue. Present during performance. And this is with Ray (Raul:20 05, 132) <sup>[13]</sup> "The (CT) is a training program designed to give many changes in the training program, a development in the level of anaerobic aerobic endurance and some (PA), each of which will improve the skill performance in the specialized sports activity."

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(CT) includes training with weights, plyometric exercises such as jumping on the box, and ballistic training, it also includes activities related to aerobic endurance and the use of a moving belt and a stationary training wheel. And the performance level of a volleyball player is affected by several factors, including physical, physiological and psychological factors, but the physical factors are among the important factors that are closely related. Closely carrying training and adaptation processes by resisting fatigue and continuing to perform throughout the match, and improving the physical level of the players and delaying the appearance of fatigue are among the main things that coaches seek to achieve or reach, as fatigue leads to the inability to implement the tactical aspects during the match.

**The problem of the research:** Its lies in the researchers' observation of the low level of physical and skill performance of the players and the instability of the level of performance, and this is due to the method of implementing the training units steadily and the lack of change in the selection in training methods, which leads to players' boredom and weakness in their enthusiasm to continue training efficiently High, which negatively affects the level of physical and skill abilities of volleyball players, and work to find scientific solutions to them by developing various training programs according to modern and diverse training methods. The importance of the research lies in the researchers' attempt to develop suggested exercises using (CT) to develop some (PA) and to identify its relationship to the accuracy of the performance of the straight spike hit in volleyball.

#### The research Aim to

- 1- Preparing suggested exercises using (CT) to develop some physical abilities.
- 2- Recognizing the effect of the proposed exercises using (CT) on some (PA) under study.
- 3- Recognizing the relationship of the proposed exercises using (CT) with the accuracy of straight spiking in volleyball.

#### Research procedures

##### Research Methodology

The researchers used the experimental method in a two-group style, due to its relation to the nature of the research.

#### Sample of research

Its chosen in a deliberate way from the players of the Dhuluiya Volleyball Club for applicants in the 2019-2020 sports season, and the research sample was selected from (16) players, and (4) players were excluded for the purpose of conducting the exploratory experiment for the tests under research.

**Data collection methods:** Arab and foreign sources and references, questionnaire, form for data recording and unloading, tests and measurement.

#### Devices and tools used in the research

A stopwatch, a device for measuring weight and height, a volleyball court, a tape measure, boxes of different heights, barriers, weights of different weights, a medicine ball.

#### Tests that were used in the research

1. Speed-distinguishing strength test of the front leaning arms (flexion and extension of the arms) continuously for (10) seconds (Mohammed, 1987).
2. A test of the speed-distinguishing strength of the two legs in successive jumps in place (Mohammed: 1996, 382).
3. Tests of the explosive ability of the muscles of the arms and shoulders (Mohammed, 1987, 212)
4. The wide jump test for stability (Ali, 2004, p. 91).
5. Accuracy test of straight spike hit (Mohammed; 208, 1997).

#### The Experimental Experiment

The preliminary experiment was conducted on a sample of (4) players. On 16-17/10/2019.

#### Field research procedures

**Cardiac tests:** Researchers conducted tribal tests for research sample 10/19-20/2019

#### Training Curriculum

After the researchers prepared suggested exercises using (CT) to develop some (PA) and to identify its relationship to the accuracy of the performance of the straight spike hit in volleyball, the proposed exercise period was determined (8) weeks and on days (Su, Tues, Thurs) of each week starting from Tuesday (Thurs). 10/22/2019) and until (23/1/2020) in Dhuluiya Sports Club at a rate of (3) training units per week so that the training units reached (24) units, and the time of the training unit was (90-95) minutes, and the experimental group used The proposed training curriculum, while the control group used the method used by the team coach.

#### Dimensional tests

The post-tests of the research were conducted in the same way that the tribal research tests groups were held on 1/25/24/2020.

#### Statistical means

System is approved SPSS Statistical extraction of results. Percentage, mean, standard deviation, law t (for symmetrical samples, law t) for asymmetric samples, law of correlation (Pearson).

#### Presentation, analysis and discussion of the results

1. Presenting results of pre-post tests for two groups studied in study
2. Presenting the results of the strength tests characterized by the pre-post speed of control group in volleyball, Table (1):

**Table 1:** The results of the strength tests characterized by the pre-post speed of control group in volleyball.

T	Measurements the exams	Measuring Unit	Tribal Tests		Dimensional Tests		(v) Calculated	Mistake Percentage	Indication
			Q-	$\#$	Q-	$\#$			
1	The speed characteristic of the arms	Number	6.826	0.523	7.376	0.437	2.709	0.042	Insignificant
2	The speed characteristic of the legs	Number	11.320	0.598	12.101	0.508	5.141	0.004	Moral

Presentation of the results of the tests of explosive ability and spike hit, before and after the control group in volleyball, Table (2)

**Table 2:** The results of the tests of explosive ability and spike hit, before and after the control group in volleyball.

T	Measurements The exams	Measuring unit	Tribal tests		Dimensional tests		(v) calculated	Mistake percentage	Indication
			Q <sup>-</sup>	<sup>#</sup> p	Q <sup>-</sup>	<sup>#</sup> p			
1	Explosive ability of the arms	Meter	3.533	0.311	3.931	0.060	2.848	0.036	Insignificant
2	Explosive ability of the legs	Cm	48,233	1.604	50,586	0.592	3.879	0.012	Insignificant
3	Accuracy of spike beating	Degree	5.625	0.270	6.140	0.139	5.718	0.002	Moral

Shows the results of the strength tests distinguished by the tribal and dimensional speed of the experimental group in volleyball, Table (3):

**Table 3:** The results of the strength tests distinguished by the tribal and dimensional speed of the experimental group in volleyball.

T	measurements The exams	Measuring unit	Tribal tests		Dimensional tests		v) calculated	Mistake percentage	Indication
			Q <sup>-</sup>	<sup>#</sup> p	Q <sup>-</sup>	<sup>#</sup> p			
1	The speed characteristic of the arms	Number	7.188	0.255	8.028	0.093	6.353	0.001	moral
2	The speed characteristic of the legs	Number	11.648	0.178	12,931	0.056	5.728	000	moral

Presentation of the results of the tests of explosive ability and spike hitting, before and after the experimental group in volleyball, Table 4:

**Table 4:** The results of the tests of explosive ability and spike hitting, before and after the experimental group in volleyball.

T	Measurements The exams	Measuring unit	Tribal tests		Dimensional tests		(v) calculated	Mistake percentage	Indication
			Q <sup>-</sup>	<sup>#</sup> p	Q <sup>-</sup>	<sup>#</sup> p			
1	Explosive ability of the arms	Meter	3.478	0.147	4.035	0.665	9.229	000	Moral
2	Explosive ability of the legs	Cm	48,810	0.337	51.196	0.108	15,849	000	Moral
3	Accuracy of spike beating	Degree	5.566	0.172	7.146	0.120	14.128	0.000	Moral

Display and analysis of the results of the posttests of the control and experimental groups in the variables under discussion in volleyball.

Presentation and analysis of the results of the force characterized by speed in the dimensional tests of the two experimental and control groups in volleyball Table (5):

**Table 5:** The results of the force characterized by speed in the dimensional tests of the two experimental and control groups in volleyball.

T	Measurements The exams	Measuring unit	Control group		Experimental group		(C) calculated	Mistake percentage	Indication
			Q <sup>-</sup>	<sup>#</sup> p	Q <sup>-</sup>	<sup>#</sup> p			
1	The speed characteristic of the arms	Number	7.543	0.404	8.028	0.093	2.864	0.017	Insignificant
2	The speed characteristic of the legs	Number	12.101	0.508	12,931	0.056	3.976	0.001	Moral

Presentation and analysis of the results of the explosive ability and spike beating by the post tests of the control and

experimental groups in volleyball Table (6):

**Table 6:** The results of the explosive ability and spike beating by the post tests of the control and experimental groups in volleyball.

T	measurements The exams	Measuring unit	Control group		Experimental group		(c) calculated	Mistake percentage	Indication
			q <sup>-</sup>	<sup>#</sup> p	q <sup>-</sup>	<sup>#</sup> p			
1	Explosive ability of the arms	Meter	3.931	0.060	4.035	0.066	2.808	0.019	Insignificant
2	Explosive ability of the legs	Cm	50,586	0.592	51.996	0.108	3.481	0.003	Moral
3	accuracy of spike beating	Degree	6.140	0.139	7.146	0.120	13.375	000	Moral

It can be seen in the two tables (5,6), which show the arithmetic mean, standard deviation, and the value of (t) Calculated for the post tests and for the control and experimental research groups in the physical and skill variables, in the speed-distinguishing power test for the two arms of (control), the arithmetic mean: (7.543) and the std (0.404), while for the experimental group, the arithmetic mean (8.028) and the STD (0.093) and the value of (T) calculated (2.864) with an error rate (0.017) below the level significance (0.05) and the freedom degree (10), which indicates that there are no significant differences between the results of the post-test.

In the speed-distinguishing power test for the two legs of the

(control), the arithmetic mean was (12.101) and the (sd) (0.508), while for experimental group, the arithmetic mean was (12.931) and the (std) (0.056), the value of (T) calculated (3.976) with an error (0.001) below the significance level (0.05) and the (df) (10), which indicates existence of std.. Differences between results of posttest for the sample and in choose of the (experimental).

As for explosive power test (two arms) of (control), the arithmetic mean (3.931), (std.) (0.060), as for (experimental), the arithmetic mean (4.035) (std.) (0.066) and the value of (T) calculated (2.808) with an error rate (0.019) below the sig level (0.05) the (df) (10), it indicates there are no sig. in the results of post-test for the players.

(0.592), as for the experimental, it reached arithmetic mean (51.996), the (STD) (0.108), and the value of (T) calculated (3.481) with an error rate (0.003) below the sig level (0.05) and (df) (10), which indicates the existence of sig. differences in the results of post-test for the sample and in choose of (experimental).

In spike accuracy test for control group, arithmetic mean: (6.140) and std. (0.139), and experimental group, arithmetic mean:(7.146), the std. (0.120), and value of (T) calculated (13.375) with an error rate (000) below sig level (0.05) and df (10), which indicates existence (significant differences) between the results of the post-test for the research sample and in choose of the (experimental group).

Discussing the results of the post-tests of the (experimental and control groups) for the variables under investigation in volleyball.

Through what was presented in Tables (5, 6) of the results of the dimensional tests and of the (experimental and control groups), which showed that there were (significant differences) in the results of tests of force characteristic of speed for the two legs and the explosive ability of the two legs and the accuracy of the dimensional spike in choose (experimental). The researchers refer the sig. differences in optimal use is a (CT) training approach, which was applied to the players of the experimental group, and which depended in its application on the principle of diversity in the exercises used, as well as the repetitions and stresses that were set to suit the level of the sample members and the specificity of the volleyball game, and this was confirmed by (Singer, Robert, 1982: 227 <sup>[14]</sup> "Since the motor skill is achieved only with an acceptable level of special physical abilities." The prepared approach affected the physical performance and advancement of the players, which is of great importance for the volleyball player, and this is evident in the results of the strength test distinguished by the speed of legs and the explosive ability of the two legs And the accuracy of the spike beating, in which there was a great development in the ability of the muscles to produce force, and this applies with the opinion of (Qasim, 1978) up and behind." This was confirmed by (Hanafi: 1997, 54) <sup>[5]</sup> that "focusing on one quality during training brings the quick and desired effect," and that diversification and reliance on the important principles of sports training represented in the principle of privacy and gradualism in training, diversification and change in activities, exercises, repetitions and training tools contributed greatly to the development taking place In the results of the tests, this agrees with the opinion of (Mohammed: 2004) "It is necessary to use an activity or technique other than the activity that the player engages in in order to help improve performance in the activity or in the type of sport he practices," and this was confirmed by (Talha, 1997:, 68) <sup>[15]</sup> that " the severity of pregnancy and the period of permanency are essential components in the development of any platform training, whatever its objectives tools curriculum development and the development of the training status of the player physical or technical skills", and this is in line what was said (Issam, 127: 2005 "Exercises work to prepare the individual for the practiced sports activity and develop the motor abilities necessary for this activity." The use of exercises in a timely and stressed manner commensurate with working times contributed to the development of the players' performance level. (Organized – programmed) training, the use of standardized types of

intensity in training, and the use of optimal types of rest between repetitions leads to the development of achievement. (Kamal:, 2001, 126) <sup>[6]</sup> in that "diversity in sports performance is one of the basic factors for the process of balance in physical integration, and works to increase the desire for training." The task is for the success of the training, because it includes many and varied exercises that can be applied, as well as giving special exercises that the players have previously trained in conditions close to what happens during the match with appropriate repetitions while giving rest times commensurate with the working times and this is consistent with the opinion (Adel: 1999, 108) <sup>[11]</sup>. "Performing exercises characterized by quick and new reactions is one of the most effective means in influencing the development of each of the variables related to the type of activity being practiced." It is also clear from tables (5, 6) that there is no significant difference in some of the physical and motor abilities, which was represented in the speed characteristic of the arms and the explosive power of the arms, despite the presence of a noticeable improvement in the arithmetic circles of the pre-posttests. I mentioned above due to the training curriculum used was not comprehensive and diversified and did not take into account the use of exercises for physical abilities.

### Conclusions

The effect of (CT) in creating significant differences between the results of the pre- and post-tests of the experimental group in all variables studies and in choose of the post-tests.

The effect of (CT) on the results of the post-tests for the two research groups in some variables studies and in choose of the (experimental group).

### Recommendations

1. Emphasizing be in need for volleyball coaches to pay attention to (CT) in developing the physical and skill abilities of players.
2. It is necessary to prepare training curricula by (CT) and to conduct physical and skill tests on a continuous basis on the plane to ensure the effectiveness of the curriculum used.
3. The necessity of conducting similar studies for (CT) for other (PA) and for other age groups in volleyball.

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