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The Effect of some Coordination Abilities on Developing kinematical Motor behavior and the Accuracy of Jump Spike Serve in volleyball players

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Abstract

The intentional sample of the research consisted of Baghdad University volleyball team players (volleyball (2019-2020), whose number was (12) players. The researcher used special exercises according to coordination abilities (sense-kinetics) to develop kinematic motor behavior and the accuracy of the jump spike serve skill, as the analysis program was used(Kinovea) in order to extract the kinematic variables of the jump spike serve skill.The jump spike serve skill accuracy test was used for volleyball players in three regions. The aim of the study was to identify the effect of coordination abilities exercises (kinetic motor) on the kinematic variables (kinematic behavior) and the accuracy of jump spike serve skill of the University of Baghdad players in volleyball.

The individuals of the sample were characterized by the performance of the jump spike serve skill with the highest accuracy. The mechanical variables (such as motor mechanical kinetic behavior) improved as a result of the effect of coordination exercises (sense-kinetics).

Key words: coordination abilities, kinematic behavior, jump spike serve accuracy, volleyball

1-Introduction

Volleyball is one of the games that is characterized by rapid performance linked to a high level of physical, psychological and physiological abilities because of the many skills that characterize the game, such as jump spike and jump spike serve.

The jump spike serve skill is one of the most important types of serve skill, which was introduced to the game of volleyball since the year 1960.[] It has developed from that time to the present as it has reached high performance levels, which is a skill that requires a high degree of attention, focus and speed Kinetic response. Due to

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its speed and reactions, attention must be paid to the biological and nervous aspects associated with the emergence of rapid movements associated with this game.

Cognition is the ultimate outcome of sensation after interpretation and organization. It is a process based on an understanding of the data that comes with reactions according to the required positions. Mohammed A R and others think that neurological symbols that are recognized in the brain and in terms of cognitive organization, you find in it estimates based on mental calculations that merge past knowledge with the present evidence, up to the stimulator within the cognitive context and to reach in its vision to identify and recognize perceptions through its meaning.[]

Cognition (sensory-kinetic) is built as a coordination ability on a physiological basis, as it is nervous stimuli in the organs of the senses resulting from external stimuli that go to different parts of the brain to produce close neurological connections.[] The perceptive receptors (sense-kinetic) are responsible for changing and the formation and adaptation of the body's position, direction and relationship of the parts to each other, (singer n. rober. The importance of cognition (sensory-kinetic) is great and clear in the sport field as it represents a function of the important psychological, motor and mental functions that contribute to the assimilation of the individual and the acquisition of habits and abilities mobility in many activities. This need to estimate mechanical, temporal, and kinematic relationships, as perceptual receptors are responsible for changing the body's position, shape, adaptation, direction and relationship of its parts to each other.[]

So, the neuromuscular compatibility exercises that require a high degree of mental, physical and motor abilities are among the priorities that have an effective influence on the performance of the movements and skills of this game according to its mechanical conditions. Therefore, the importance given to developing these consensual abilities and the improvement of mental abilities and mechanical conditions appropriate for the type of skill may be reflected in the quality of the skill performance of the players. Including the jump spike serve skill, which appears in the form of the integration of the kinematic aspects that are linked as kinematic pathways that express the kinematic motor behavior of these skill and accuracy.

The accuracy of motor and skill performance plays a large role in the ability of players to control the ball in the required positions and directions, since it determines the final status of something in the goal.[] Therefore, the factor of accuracy in motor and skill performance is one of the important variables of volleyball, as it has become It is necessary for the player to predict where the ball will fall and he must think about the movement that follows it when it reaches it, regardless of its speed and direction.

The research problem is that the jump spike serve skill is a difficult and complicated skill in volleyball. It requires a high physical and intellectual effort at the moment of its implementation. This leaves an impact on the mental level, and this effect is withdrawn on the level of skill implementation, which is inferred through the mechanical variables, so that There is a link between the kinetic image stored in the brain and its appearance in the form of previous kinetic experience such as the application of skill behavior, and its money is directly related to the level of development of these coordination abilities (sense-kinetics) in influencing the integration of movement mechanically as behavior. The focus on developing and training mental capabilities through diversification in training

related to the nervous and physical side, such as various coordination exercises, did not receive adequate attention to studies of researchers and those interested in this field. As no one has previously addressed the development of these coordination abilities and their reflection on the development of kinetic motor behavior.

The aim of the research is to identify the effect of combinatorial capabilities exercises (sense - kinetics) on kinematic variables (kinetic motor behavior) and the accuracy of the jump spike serve skill of the players of the University of Baghdad in volleyball.

The researcher has assumed that there is a positive effect of coordination abilities exercises (sensitivity - kinetics) on the kinematic variables (as mechanical behavior) and the accuracy of the jump spike serve skill.

2- Materials and methods:

The research sample was chosen intentionally. They are the University of Baghdad players in volleyball (2019-2020). They are (12) players and ages (21-24) years. Table (1) shows the homogeneity of the research sample in terms of (age - length - weight - age Training).

It is clear from Table (1) that the torsional coefficients of the research sample were confined between (± 3) in the measurements (age - length - weight - training age), which indicates the consistency of the research sample. Test nomination form.

No	Variables	Mean	Std.Deviation	Mode	Skewness
1	Age (year)	22.78	2.05	22	1.14
2	Length (cm)	178.39	4.01	158	0.29
3	Weight (kg)	78.56	3.46	55	0.59
4	training age (year)	3.66	0.86	4	1.54

Equipments and tools used:

1- HP Pentium (4) computer (Korean).

2- Sony (140) speed video camera with support, (Japanese origin).

3- Legal volleyball stadium.

4- Volleyball (legal) (Molten) type (15 balls).

5- Type (fox) whistles (2).

6- Adhesive tape, width (10) cm, number (2).

Kinematic variables:

Kinovea was used to extract the kinematic variables of jump spike serve skill. The research sample was filmed in the prior and post search experiments with a high-frequency video camera type (sony) .The frequency was set to (140) images per second. The camera was placed in the form of Perpendicular to the right side of the player, and they were (8 m) and a height (55.1 m) from the ground, and the following biochemical variables (as kinematic behavior) were extracted:

1- The starting speed: it is the result of the starting distance represented by the line connecting with (body gravity centre) before leaving the ground and after leaving the ground for a short period divided by the transmission time, it was measured directly from the analysis.

2- The starting angle: It is the angle that is sandwiched between the same starting path line mentioned in the above paragraph with the horizontal line passing through (body gravity centre) before leaving the Earth. It was measured directly by the program for the analysis.

- **Serve accuracy test.[]**
- The purpose of the test: To measure the accuracy of the serve skill of volleyball players in three regions.
- Tools: a volleyball stadium to seven regions, as shown in Figure 3, 10 volleyballs - sticky tape.
- Performance specifications: The laboratory performs (5) legal serves in each region that it sends from the end of the stadium line directed to the half of the stadium from regions (A). Each score within the division is considered to be the degree that is granted to try in the event of a fall of the ball within the region. The speed is set on a stand, and the results are later extracted through an electronic calculator and analysis software.

- **The conditions :**

1- The performance of each serve is required in accordance with the legal conditions for serve.

2- In the event the ball falls on the line, the score in which the upper region is awarded.

- Score: The score of the player is recorded according to the place of the ball falling and as installed in the square, the maximum (25) degrees.

The accuracy of the technical performance of jump spike serve test in volleyball.

Main experience:

Pre- tests:

On Wednesday, 11/13/2019, the researcher conducted the pre-test tests for the (12) sample of the research team, from the University of Baghdad team in volleyball, at 10 A.M.

Special exercises:

The special exercises started on Thursday, 14/11/2019. The training continued with the special exercises for a period of (two months) and included (24) training units, at the rate of (3) training units per week on days (Sunday - Tuesday - Thursday). The application of special exercises in the main section included special exercises according to the coordination abilities (sense-kinetics) to develop motor kinematic behavior and the accuracy of the jump spike serve skill.

Post- tests:

Post- tests of the research sample were conducted on Thursday 16/1/2020 at 10 A.M. in the College of Physical Education and Sports Science at the University of Baghdad.

- **Statistical means:**

The researcher used the SPSS program that included the following:

- Arithmetic mean.
- Median.
- standard deviation.
- T-test for symmetrical samples.
- Coefficient of skewness.

3- Results:

Table (2)

Arithmetic media, standard deviations, the calculated value (T) and the significance of the differences between the pre and post tests of the control and experimental groups to measure the jump spike serve accuracy.

N	Serve accuracy test		t	df	
	Pre- tests	Post- tests			

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	Mean	Std. Deviation	Mean	Std. Deviation			Sig. (2-tailed)
12	8.51	3.13	19.17	4.30	3.547	11	0.016

Table 3

Arithmetic means, standard deviations, calculated value (T) and significance of differences between the pre and post tests of the control and experimental groups of the biomechanical variables

Variables kinematic	Measuring unit	N	Pre- tests		Post- tests		t	df	Sig. (2-tailed)
			Mean	Std. Deviation	Mean	Std. Deviation			
starting angle	Degree	12	34.7	4.2	48.4	5.3	5.40	11	0.000
starting speed	m/s	12	1.70	0.45	2.35	0.41	3.68	11	0.021

4- Discussion:

Through Table (2), there are significant differences between the pre and post tests of the experimental group. The researcher attributes this: to the effectiveness of using skillful coordination training programs that helped members of the experimental group to respond to stimuli in a calm and balanced manner, as they give these programs and because of the continuous training to create a state of increased confidence, psychological balance, comfort and psychological reassurance, which helped to in turn leads to increasing the accuracy of the heart's beats through mastering the technical performance, since the adoption of the level of the heartbeat is very important for different sports players as an indication of effort.It works as a safety factor that helps to encourage and urge the athlete to continue playing and skillful performance.[] This requires dependence on the psychological side with a high degree, which leads thus to a reflection on technical performance and the development of the ability to control their voluntary actions and the stability of their level of training, which will undoubtedly be reflected in the accuracy of the

performance of the jump spike serve skill. Here (Schuhfried et al) stresses that "personal traits have an impact on athletic performance and on the trainer's leadership style.[]

The researcher also believes that modern training programs and methods must be consistent with the capabilities of individuals, and help to raise the level of his movements and create the atmosphere to reduce psychological burdens that lead to the development and improvement of mental processes for them with the least time and effort. He indicates (the success of Shalash, 2011) that "programs Training and educational help the player or the learner to know the amount of improvement in mental processes and the degree of effort exerted and appropriate to the capabilities of the individual and the level he reached in order to be able to organize educational situations. That lead him to the correct results as well as he can know the causes of the mistakes he commits when acquiring skill, training appropriate means effective training that achieves the correct results, because if it is not, it will be a waste of time and effort.[]

The researcher also attributes the appearance of the results of Table (3) to these mechanical variables and their improvement related to the development of consensual processes and the ability to feel the right time and distance, which is later reflected on the development of the motor pathway, which can be expressed by mechanical behavior and its efficiency, and the consensual exercises experienced by members of the experimental group .The actor was in effecting a change in these required mechanical conditions during the upgrade to jump, which requires the members of the experimental group to rely on self when applying technical performance according to its mechanical conditions during the performance of the jump spike serve skill, as sensory awareness exercises left their impact and is the source of the correction in memory which was learned from the feedback from the correct location of the motor performance goal.[] The matter that leads to positive reflection and the mechanical changes that follow lead to the ability to control their voluntary actions and the stability of their level of training, which will undoubtedly be reflected in their sporting achievements. Here, Abd al-Karim expresses (Rachel et al.) That "it is possible to control the muscular actions according to the spatial and temporal field and in harmony with the efficiency of the neuromuscular processes, which are often gradually improved."

In this field, the researcher assures a reflection of the effect of the coordination exercises used on the kinematic variables according to the skill performance, and thus the mechanical variables appear with better efficiency when performing.

5- Conclusions:

It was concluded through this research that kinesthetic abilities developed as a result of special coordination (kinesthetic) exercises after exposure to the research sample.

The sample members were distinguished by implementing the special duties of performing the overwhelming transmission skill with the highest accuracy as a result of the effect of harmonic exercises (kinesthesia).

The mechanical variables (as a mechanical kinematic behavior) regarding the performance of the jump spike serve skill have improved as a result of ccrdination (kinesthetic) exercises.

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