

## THE EFFECT OF CORRECTIVE EXERCISES FOR SOME BIOMECHANICAL VARIABLES TO MASTER THE SKILL OF HITTING THE QATARI SMASH IN VOLLEYBALL

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### **Abstract**

The study aimed to: prepare corrective exercises according to some biomechanical variables to master the skill of the qatari smash hit with volleyball, identify the effect of corrective exercises according to some biomechanical variables to master the skill of the qatari smash hit with volleyball, and the research community was represented by students of the college of basic education/department of physical and sports sciences, al-mustansiriya university for the year academic year (2023 - 2024) and the research population was determined in a deliberate manner to conduct the research on them. As for the research sample, it was chosen by a random lottery method, provided that the research requirements were met among them who were late in learning skills well, as this was determined through observation and asking the subject teacher, and their number reached ( 23) students aged (22-23) years. The experimental group was chosen by random lottery and consisted of (6) students. (3) students were chosen for the exploratory experiment from outside the research sample, and two students who did not commit to attending the pre-test were replaced. Thus the percentage of the research sample was (43.478%). The conclusions were: the exercises prepared by the researcher had an impact on improving the mechanical and skill variables. The applied corrective exercises had an impact in improving the skill performance of volleyball, which was calculated through kinetic analysis. The corrective exercises improved the level of skill performance for the skill of smashing the ball. The researcher recommends using special suggested exercises that take into account mechanical variables from a skills perspective in order to obtain a rapid improvement in mastering the skill of hitting the qatari smash with volleyball. As were the recommendations: the researcher recommends the use of modern devices in measurement and motor analysis by teachers to know the strengths and weaknesses of the volleyball. Performance of

skills in general and the skill of crushing multiplication in particular among students who are late in learning the skills. The researcher recommends using educational and corrective methods to benefit from them in learning the skills faster and more accurately.

## **Introduction**

### **Introduction To The Research And Its Importance**

Since ancient times, man has invented the necessary means and tools in his life to facilitate his living matters. Thus, he began to invent and manufacture many of the means he needed to meet his need for materials needed to work in all his professions. With the passage of time, human needs developed and diversified, and life became of a civil nature, as man began to inhabit and populate cities, and credit goes to this is also due to the means that he invented over time, and this character has come to bestow on man the luxury of living and this luxury made him find means of entertainment, including the various games that appeared since the first emergence of civilizations, and these games that were played by the noble classes in the city developed, along with games of a similar nature. It is a competitive game that is practiced by everyone, and international tournaments are held for it and prizes are given to the top winners. One of these games is tennis, which is described as the game of kings. It is a very popular game because of its fun to play and is played by children and adults alike, and this game has special features that must be the ability to be enjoyed by its practitioners is mastering the skills and learning them at a satisfactory level. These skills need a correct foundation for learning them. Today's students are the pillars of the future, and the teachers to whom we place our trust to complete the path of knowledge. If they are provided with the capabilities to teach them the skills in the correct and effective manner, they will become superior players in the future requires education with a high level of competence and mastery. The process of education is a complex and intertwined process, as each side has its own axis around which it revolves, around which the teacher must set the bars of education in the right direction and work hard to provide the right path to reach the goal of the process. Since the recipient is a human being with multiple interests, characteristics, and instincts, this process becomes it is complex and greatly, and therefore the teacher becomes in a position in which he is forced to choose the best and simplest methods in order to achieve good results for the learners. Therefore, the choice of educational methods is always taken into account by the teacher, which helps to overcome many of the errors or delays that students may encounter during the period of study, and that skills the basic basics that students must use: smashing the volleyball is one of the difficult skills because it requires a lot of

skill and biomechanical components and scientific knowledge before that. Any deficiency in the biomechanical variables or other circumstances will cause a delay in learning among the students or incorrect learning of the skill, and the smashing skills the qatari country needs special exercises, as the use of educational exercises aims to achieve an acceptable level of these skills with the aim of improving the skill performance of the qatari smashing skill. The importance of the research lies in the use of corrective exercises according to some biomechanical variables to improve some of the biomechanical variables of the smashing skill, which is considered a skill of high difficulty because it is one of the difficult skills and its learning requires complete mastery of the motor paths.

### **Research Problem**

The educational process is accompanied by many problems, and they are almost its shadow that does not leave it, because the target is the student, who has distinctive characteristics that differ from one individual to another. Therefore, we can be certain that the presence of individual differences among learners makes it difficult to learn all skills and all individuals at the same level or close, it does not correspond in complete proportion to each individual learner. Therefore, the inevitability of the problem of some students' delay in learning has become certain, but it varies in certain proportions and according to the surrounding circumstances. Also, the educational process in educational institutions in general is a process limited within a specific period and therefore requires the teacher to he must give a specific subject according to a specific schedule or study plan and not delay it. Otherwise, the student may be affected by what he acquires from the subject he is supposed to study during that period, and thus the course becomes he is in a position that does not allow him to repeat and repeat the material or exercises sufficiently. Also, the presence of a large number of students during one class makes the educational process more difficult to convey information, learn skills, and repeat them for the purpose of reaching a sufficient skill level. What was mentioned is a number of reasons that make it inevitable. Some students were late in improving their skill level by correcting some biomechanical variables that contribute to correcting and improving the students' skill level of the volleyball crushing skill for fourth stage students / al-mustansiriyauniversity, college of basic education / department of physical education and sports sciences.

## **Research Objectives**

1. Preparing corrective exercises according to some biomechanical variables to master the skill of hitting the qatari smash with volleyball.
2. Identifying the effect of corrective exercises according to some biomechanical variables to master the skill of hitting the qatari smash in volleyball.

## **Research Hypothesis**

There are statistically significant differences between the pre- and post-tests of the experimental group for mastering the skill of hitting the qatari smash with volleyball, in favor of the post-test.

## **Areas of Research**

- Human field: fourth stage students / college of basic education / department of physical education and sports sciences.
- Time frame: the period from 10/15/2023 until 12/31/2023.
- Spatial area: volleyball court in the college of basic education/department of physical education and sports sciences.

## **Methods, Devices and Tools Used In the Research**

### **Research Methodology and Field Procedures**

#### **Research Methodology**

One of the most important necessary requirements in scientific research is choosing the research method in a way that suits the nature of the problem and through which the researcher achieves the research objectives that he wants to achieve. Therefore, the researcher used the experimental method to suit it with the nature of the problem. The experimental research method is known as “the method that it is based on direct and realistic dealing with various phenomena, and is based on two basic pillars: observation and experience of all kinds.” (et al., 2009, p. 80)

#### **Society And Research Sample**

The research community was represented by students from the college of basic education/department of physical and sports sciences, Al-Mustansiriya University for the academic year (2023 - 2024). The research community was determined in a deliberate way to conduct the research on them. As for the research sample, it was selected by random lottery method, provided that the research requirements were met, including those who were late in learning skills in a way. Good, as this was determined through observation and questioning the subject teacher and their

number reached (23) students aged (22-23) years. The experimental group was chosen by random lottery and consisted of (6) students, and (3) students were chosen for the exploratory experiment from outside the country. The research sample, and two students who did not commit to appearing for the pre-test were replaced, thus the percentage of the research sample reached (43.478%) to ensure the homogeneity of the sample members and the validity of the normal distribution among its members, the researcher used the arithmetic mean, standard deviation, and skewness coefficient for the results of the field survey in measurements (biological age, weight, and height), as shown in table (2-1)

Table (2-1) homogeneity of the research sample members

Torsion coefficient	standard deviation	Mediator	Arithmetic mean	measuring unit	Painful changes
0.030	2.911	1 74	1 74.14	poison	height
0.007	1.976	6 8	6 7.29	kg	the weight
0.353	0.900	22	22.98	year	the age

The values of the skewness coefficient were all limited to ( $\pm 3$ ), which indicates the homogeneity of the research sample

Devices, tools and means of collecting information

Tools and methods used in the research

Chinese-made stopwatch (swan), whistle, (5) volleyballs, basket to hold the balls, hp computer, cds, (2) latitudek stopwatches, volleyball court (legal) , adhesive.

### Field Research Procedures

#### Determine The Tests

Some biomechanical variables have been identified and tests are calculated using kinematic analysis and digital cameras.

#### The Exploratory Experiment

The exploratory experiment is one of the most important necessary procedures that the researcher carries out before conducting the basic experiment, and it is in two stages:

The first stage

On 9/19/2023, corresponding to Thursday at eleven in the morning, at the stadium of the college of basic education/department of physical and sports sciences, al-mustansiriya university, on a sample of (3) students, but from outside the experimental group, for the following purposes: the safety and

adequacy of the educational means used in the units, the possibility of performing exercises and applying them using educational means, the adequacy of the supporting work team.

### **The Second Phase**

The researcher conducted the exploratory experiment on the same sample on which the previous exploratory experiment was conducted, on 9/21/2023, corresponding to (Thursday) at eleven in the morning. The purpose of this was the following: calculating the time allocated for each test, the method of sequencing the tests in terms of performance, the method registration of tests.

### **Pretests**

The pre-tests were conducted under the supervision of the researcher and with the assistance of the assistant work team. The procedures for each test, the number of attempts in it, how to calculate and record points, and other test conditions were explained on the two days (Sunday and Monday) corresponding to (9/24-25/2023) for conducting the tests.

### **The Main Experiment (Application of Exercises)**

The researcher prepared corrective exercises included in (16) educational units containing exercises during (the main section) of the educational unit on the game of volleyball, by relying on scientific sources and experts in the game of volleyball and what is compatible with the educational methods that the researcher adopted to teach the research sample, with note the following points in the process of developing exercises: that the exercises used are appropriate to the level of the sample, that there is a gradation in the level of difficulty of the exercises used in the units, that the exercises used achieve their purpose. the application of the corrective exercises began on (9/27/2023), corresponding to wednesday, and the researcher supervised the application of the experimental exercises only and applied them to the research sample of the assistant team with experience in the field of teaching volleyball, as the corrective exercises included part of the educational unit, which is the main section, which is equivalent to (75) minutes at a rate of two units per week, and the unit begins at (10:30-12) in the morning. The educational unit included (5) exercises during one unit and (25) exercises from the total exercises used during the duration of the experiment, which were distributed to the educational units, and the researcher took into account the progression in applying the exercises from easy to difficult with a gradual increase in the difficulty of performance.

### **Post-Tests**

After the researcher completed applying the experiment to the research sample by applying the corrective exercises prepared by the researcher, over a period of (8) weeks starting from (9/27/2023)

until (12/12/2023), post-tests were conducted for the experimental group. On the day (12/13/2023), which coincides with Thursday for biomechanical tests, the researcher was keen to follow the same procedures and similar conditions in the pre- and post-tests and provide the appropriate tools and the same assistant staff.

### Statistical Methods

The researcher used the statistical package (spss) to complete the research.

### Presentation, Analysis and Discussion of The Results

Presentation of the research results for the research groups between the pre-test and post-test for the research groups and their analysis:

Table (3-1) arithmetic means, standard deviations, the value of the difference of means and deviations, and the value (t) calculated for the pre- and post-tests of skills for the research group

indication	Calculated value	AH	F	Experimental group posttest		Experimental test-group pre		measuring unit	Variables
				p ±	s	p ±	s		
moral	16.189	5.416	35.832	13.20	297.10	7.19	281.14	s/degrees	Angular velocity of the arm
moral	11.458	0.413	1.929	0.918	14.517	1.101	12.585	tha/m	Ball speed
moral	7.00	0.407	1.165	1.869	58.49	1.752	59.65	degree	Arm angle

#### •At A Significance Level (0.05) And A Degree Of Freedom (5)

#### Discussing The Results Of The Pre- And Post-Tests Of The Investigated Skill Tests

By looking at table (4), we notice the significance of the differences and the calculated (t) value in favor of the post-test of the investigated skills, and this indicates the improvement of the skills of the learners, as the researcher attributes this improvement to the corrective exercises that contributed effectively to improving the skills of the students, as diversifying the corrective exercises it addresses obvious errors that have been diagnosed through motor analysis of the skill, as corrective exercises work to identify errors and weak points of the student in performance and work to develop skills that are late in learning or mastering. This work is according to specific paths of performance that are consistent with the biomechanical paths of skill performance and work. The researcher seeks to increase the performance of repetitions

more during the educational unit, apply the exercises accurately, and place those exercises in a way that suits the level of the learners and their simple ability to perform the exercises. Ensuring that the repetitions are appropriate for each exercise is the main factor for new learners to learn new skills, and yarubkhayoun confirms by saying: “learning is the repetition of performance in order to improve the individual’s motor paths to reach the desired performance” (khayoun, 2010). The researcher also intended to display the learners’ performance on a visual display screen in order to have a positive impact on the improvement of the learners’ performance and avoid monotony in the educational process, as he mentioned. (mahmoud et al.) “getting rid of the traditional restrictions on learning, as well as providing high-quality learning, shortening time and effort, and providing information repeatedly and accurately with the correct model” (et al., 2000). Also, the researcher was keen to find motivation among the players and encourage them, through the exercises used, to develop themselves. Generating motivation among students increases the possibility of rapid progress for the player, as motivation is a condition for learning, as nahidaabdelzaid states, “the learning process is every attempt made by the learner to learn a specific skill or activity and the steps that follow in which the senses participate.” And the body’s various functional and psychological systems” (al-dulaimi, 2011)

## **Conclusions and Recommendations**

### **Conclusions**

1. The exercises prepared by the researcher have an impact on improving mechanical and skill variables.
2. The applied corrective exercises had an impact on improving the performance of volleyball skills, which was calculated through motor analysis.
3. Corrective exercises improved the level of skill performance for the volleyball smash.
4. Corrective exercises have influenced teaching the skill of the volleyball smash hit and reduced the percentage of errors made during the final performance.
5. The students’ vision of their mistakes became clearer and distinct as a result of the work on improving the biomechanical variables and comparing them to the performance of the corrective exercises.



## Recommendations

1. The researcher recommends using special suggested exercises that take into account mechanical variables from a skills perspective in order to obtain a rapid improvement in mastering the skill of hitting the qatari smash with volleyball.
2. The researcher recommends the use of modern devices for motor measurement and analysis by teachers to know the strengths and weaknesses when performing skills in general and the crushing skill in particular for students who are late in learning the skills.
3. The researcher recommends using educational and corrective methods for the purpose of benefiting from them in learning skills faster and more accurately.
4. The researcher recommends applying the principle of isolating weak students in performance and giving them exercises and details that take into account the individual differences they have or the circumstances that surround them.
5. The researcher recommends conducting similar research with different samples of assistive tools.

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