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The effect of a proposed device on developing the muscles of arms trunk to perform the serve from above in volleyball for third stage students

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Abstract

The aim of the research is to design and manufacture a mechanical device that contributes to the development of the muscles of the arms and torso, as they represent the most influential aspect of working in a volleyball game as well as developing the transmission skill from the top, and that their development achieves excellence and achievement in performance, this skill required physical and motor capabilities that depend on the investment of the nervous system The central and periphery determining the player's movement within the field of play where the device contributed to developing these capabilities through its ability to work on it and the nature of the work of each part of its parts and as shown in its details in the body of this research, the two researchers used the experimental curriculum and the research sample consisted of (11 students) from Baghdad University, College of Physical Education and Sports Science, and the proposed training program (physical and skill) has been applied according to the specific curriculum and exercises chosen by the experts and specialists in the field of (training, volleyball, biomechanics, and tests). After completing the curriculum, the researcher extracted the results and Statistically processed according to the statistical bag (SPSS) and several conclusions were reached, including: The use of exercises that were prepared and performed on The device designed and proposed by the researcher led to an evolution in the level of physical and skill performance (the variables discussed) among the research sample under study.

Keywords: *mechanical device, arm and torso muscles, high serve volleyball.*

I. Introduction:

By examining the researcher on previous studies and research and watching the implementation of students 'performance of the transmission skill from the top in daily lessons, I noticed that there is a weakness in the performance of the transmission skill from

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the top in a way that prevents the ball from reaching the other side of the stadium, for this the researcher put his sweet is to manufacture a special device to strengthen the muscles of the arms and trunk that Is the basis for the skillful performance of the transmission from the top. Thus, we will learn about the suitability of the device in developing strength and skill. The researcher determined the number of repetitions of each exercise in the light of two reconnaissance experiments in which she selected the abilities of students in calculating the maximum number of repetitions for each exercise during (5) seconds and during (10 seconds) and in the light of results, the number of repetitions for each student was determined in light of the severity used .

The main goals that the researcher set is to prepare and manufacture a device for developing the muscles of the arms and torso to succeed in performing the transmission skill from the top and also to identify the effect of the proposed device among the sample members. Including the researcher assumed that there are significant differences between the pre and posttests in the effect of the proposed device on developing the strength of the muscles of the arms and trunk of the sample members who are students of the third stage in the College of Physical Education and Sports Science - Baghdad University of Jadriya for the academic year (2018-2019).

In a study by (Wali and Abdel Zahra 2016), the researchers designed a device to measure the kinetic response to audiovisual effects, and the researchers concluded that there was a variation in the level of response of fencing players according to the type of weapon.

In another study by (Attia and Zayer, 2015), the researchers used the mobile goalkeeper device to develop the motor response to football players, in which the researchers emphasized that the use of the devices helped greatly in developing the motor response by exposing the player to previously unknown stimuli, which was reflected positively on Kinetic response level.

II. Method and Tools:

The researcher used the following devices and tools:

- Molten Type 5 balls.

- Metric tape.

- Volleyball court is legal with the network.

- The designed device

Log to jot down.

The researcher used the experimental approach to design the one group of pre and posttests to solve the research problem, as the main experiment was conducted on the research sample consisting of (11) students who were pre-tested on Thursday, 3/1-2019 and the procedures were carried out in the hall of the Specialized Laboratory for Physiotherapy and Rehabilitation In the College of Physical Education and Sports Science - University of Baghdad (Al-Jadriya). All proposed exercises were determined by the experts and specialists and explained in Appendix (1) on the research sample and the main experiment lasted for 6 weeks with 3 units per week for each unit (15- 20 d) As shown in Appendix (1) after that, the post-test was conducted on Sunday 3/3/2019, and the researcher took into account the conduct of the tests under the same conditions as the pre-trial.

The device was designed and designed by an Iraqi team of raw materials available in the local markets and low costs and is characterized by ease of use and movement. The goal is to develop muscles working on the arms and trunk, and the device consists of the following parts: -

First: Iron Base: It is a base that represents the device's structure. It is made of puree steel square (1 inch) to install other parts of the device on it, measuring (210 cm long x 65 cm wide).

Second: The Wooden base: It is for the trainees to sit or lie down while performing the exercises designated on the designer device made of wood and covered with sponge and leather, fixed on the iron base (the structure) and can be moved forward and backward according to the length of the trainee's legs, with dimensions (40) Cm long x 65 cm wide) and rise from the ground (45 cm), knowing that the distance that the wooden base can be moved from one place to another on the iron base is (30 cm) in front and (30 cm) behind.

Third: The mobile arm: it is linked from the bottom to the iron base (structure), with a variable length ranging from (90 cm - 110 cm), and it consists of (the handle, the moving arm).

Fourth: Springs: These are four iron springs, the length of one spring (12 cm), all of which are fixed with an iron piece (anchor) iron and fixed from the bottom with the iron base (the structure) and from the top with the moving arm, the purpose of which is to increase the difficulty (intensity) of the exercise, from While some resistors (springs) can be isolated to enable gradual increase in the training load.

Fifth: the hydraulic spring: the spring is a spring installed on the sides of the iron base (the structure) from the outside, the length of each of them (30 cm), the aim of which is to increase the difficulty (intensity) of the exercise.

Six: Spring of resistance: Five of the springs attached to one of the two ends at the bottom and on both sides of the wooden base and at the other end are handles for grabbing by the trainee during the performance of the exercises for the purpose of using them as strength exercises to develop the muscles supporting the shoulder and arms and complementing the work of other exercises that lead On the device, the length of each total spring with a fist is (55 cm). It is possible to increase the difficulty (intensity) of the exercise; through the possibility of isolating some of the resistors (springs) to be able to gradually increase the training load by increasing the intensity of the exercise and the following table showing the springs in terms of:

serial	Length	Actual length	Elongation	weight
	47cm	18cm	29cm	1kg
	59cm	18cm	41cm	2kg
	74cm	18cm	56cm	3kg
	84cm	18cm	66cm	4kg
	93cm	18cm	75cm	5kg

Seventh: Footrest (footrest): fixed on the back end of the iron base (the structure). Its purpose is to fix the feet of the trainee during the performance of the abdominal exercise from the position of long sitting on the wooden base and extend the trunk and arms as far as possible and according to what is shown in the accompanying exercises to perform on the device, and reach Footrest length (35 cm).
Eighth: The base of supporting the feet:
Ninth: Wheel (wheels):

III. Tests to work:

1- Testing the transmission skill facing from above (Raisan Khoreibt, 1989, pp. 399-400)
2- Sitting test from lying down (sit-up, straight legs). Muhammad Hassan Allawi,

Muhammad Nasruddin Radwan, 1987, p. 53)
3- Throwing a medical ball from long sitting (Hashem Ahmed Suleiman, 1997, p. 34)
4- Bend and trainers from setting the forward reference in (10s). (Qassem Hassan Hussein and Ahmed Bastawisy, 1979, p. 156).

Table (1)
shows the arithmetic mean, standard deviations and torsion coefficient of the pre- and post-test of search variables

S	Skill	Test	L	±Q	skewness
1	The transmitter	Before	12.8333	2.03753	.424
		After	25.0000	2.00000	.245
2	Sit from lying down	Before	21.8333	1.89896	-.480-
		After	30.5833	1.56428	-.553-
3	Medical Ball	Before	6.0000	.70711	.231
		After	7.5000	.79772	-.203-
4	Front leaning	Before	17.7500	1.54479	.144
		After	22.8333	1.74946	-.552-

Table (2)
shows the calculated value (T) and the error percentage before and after the performance level of the search variables

S	Skills	K -S	R -S	G S	Value T	Error percentage
1	The sender	-12.16667-	2.75791	.79614	15.282-	.000
		-8.75000-	1.35680	.39167	22.340-	.000

2	Setting from leaning	-1.50000-	.97701	.28204	-5.318-	.000
		-5.08333-	2.15146	.62107	-8.185-	.000
3	Medical ball	-12.16667-	2.75791	.79614	15.282-	.000
4	Front leaning	-8.75000-	1.35680	.39167	22.340-	.000

Moral at the significance level 0.05

IV. Discussion

Through the presentation of tables (1, 2), it was found that the results of the variables in the tests (posting - Glossorqud - throwing a medical ball - forward reference), in the pre and posttests in the search variables, there were significant differences in favor of the posttest in all the variables under consideration, as the value reached Arithmetic mean, respectively: the transmitter test (12.8333 in the pre-test and 25.0000 in the post-test). The value of the standard deviation (2.03753 for the pre-test and 2.00000 for the post-test) as well as for the sitting recess test reached (21.8333 for the pre-test and 30.5833 for the post-test) with a deviation Standard (1.89896 for the pre-test and 1.56428 for the post-test) In the medical ball throw test the value of the arithmetic mean (6.0000 for the pre-test and 7.5,000 for the post-test) and with a standard deviation of (.70711 for the pre-test and 79772 for the post-test) either in the front-authority test as it reached the value of Arithmetic mean (17.7500 for the pre-test and 22.8333 for the post-test) with a standard deviation of (1.54479 for the pre-test and 1.74946 for the post-test). This indicates that there are significant differences in all the exams under consideration and in favor of the post-test. This came as a result of using the proposed device and designed by the researcher, which led to a remarkable development among the research sample and for all physical and skill tests, as the proposed exercises and the designed device led to a major development, which helped in developing the muscles of the arms and trunk, and this helped the testers to master the skill significantly compared to others who did not They are subject to the proposed curriculum. This comes in line with what he mentioned: (Ismail Qassem Jamil, 2009) In his study, the researcher designed a device to measure representative systems (audio - visual - sensory) to develop the learning process and save less time and effort in the learning process. It also comes with what was stated in a study by (Sami, Omar, and Souad, 2010) The researchers used some tools and training methods to improve the level of performance of some physical and skill capabilities of volleyball players for young people ages 13-14 years,

the researchers concluded that the tools, means and assistive devices have made great progress In raising the levels of performance of physical and skill capabilities, the researchers recommend the use of assistive devices, means and tools in various training programs as an advanced method for physical and skill capabilities and their provision by the competent authorities, especially with emerging teams.

As for what came in Table (2), as there were significant differences also in all search variables: (dispatch - sitting - throwing a medical ball - front authority) as they all showed significant differences in favor of the post test. As (the value of T) was as follows (15.282-22.340--5.318--8.185-15.282-22.340), respectively, and with a degree of freedom (11) and at the level of significance (0.05), which indicates that all variables proved significant and in favor of the post-test of the research sample under study. The researcher attributes this to the fact that the use of exercises and assistive and modern equipment helps in developing (muscles of the arms and trunk) of the sample. And that this would lead to positive changes that will be reflected in the level of skill performance with regard to the skill of the transmission and the physical in relation to the tests (sending - sitting recesses - throwing a medical ball - authority),

This comes in line with what was mentioned (Muayyad Hadid Muhammad, 2013 AD) in a study the researcher used a proposed mechanical device on some fitness components for housewives, the aim of which is to develop some parts of the body. As he indicated that the proposed mechanical apparatus had a positive effect in developing and improving abdominal muscle strength and shoulder elasticity.

V. Conclusions

Through the results of the researcher under study, she reached the following conclusions:

1 the use of the proposed device, designed by the researcher, led to a noticeable development in all research tests, namely (sending - sitting - throwing a medical ball - authority).

2 that the use of the auxiliary exercises proposed by the researcher led to an evolution in the level of physical and skill performance of the research sample under study.

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