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Use Modern Techniques and Applications to Recognize the Relation of the Driving Force of the Arms and Legs with the Athletic Achievement of the Swimmer 50 m Chests

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Abstract: The aim of the research was to identify the relation of the driving force of the arms to the athletic achievement of the swimmers 50 meters. The aim of the research was to identify the relation between the driving forces of the two men with the sport achievement of 50 meters. The research sample was chosen in a deliberate manner, and 6 young swimmers The first six centers in the Iraqi Clubs Championship. The descriptive approach was used by the two researchers, and the arithmetic mean, standard deviations, mean, torsion coefficient, Spearman correlation coefficient, and multiple regression coefficient were used. The results showed that there was a statistically significant relationship at (α 0.05 0.05) between the driving force of the arms and the athletic achievement of the 50-meter swimmers. The results also showed that there was a statistically significant relationship at (≤ 0.05) between the driving force of the two men and the athletic achievement My swimmers have 50 m breast. In light of the results of the research, the researchers recommend that obtaining the real values of the driving force within the water of swimmers, allows the trainers to know the strengths and weaknesses, which facilitates the development of training programs that work to address errors and progress and improve the level of swimmers. Virtual reality techniques were used to conduct research outside the swimming pool to add effects simulating actual swimming.

Introduction and Importance of Research

Swimming is one of the most popular sporting events for its positive impact on the physical, health and recreational aspects. The chest swimming is one of the four Olympic swimmers. It is ranked fourth in the Olympic curriculum in terms of speed. General in sport swimming in particular was not a coincidence, but was an important aspect of research and survey by researchers in the finest details, whether training or applied or psychological, if their sole concern to give explanations of the results of

training data on In order to evaluate and evaluate the training process on the one hand and to develop and improve the achievement on the other hand, Rizk (2003) points out that the strength of swimming is the basis upon which the swimmer reaches the top of the championship because it greatly affects the development (1990) that scientific studies have created a relationship between strength and speed, indicating that the muscle or muscle group cannot contract (contraction) or infarction unless it has the power to perform properly, adds Rizk (2003).) That muscle strength is linked to the speed component, Especially the transitional speed, such as running and swimming, where it confirms that increasing the momentum of the foot of the earth increases the length of the running step, and the strength of tensile in swimming to increase the momentum of the swimmer's body forward, and both workers (increase the momentum or tensile) to the speed of cutting distance in less The motive force is the force that moves the body of the swimmer in the water, the body of the swimmer moves by the movements of the arms and legs, and the application of the law of Newton III (Reaction Law), the body of the swimmer moving in the opposite direction of power,) That any movement of arms movements or legs back will work The body is moving forward and vice versa. The body is unable to generate forward momentum except through movements of the arms and legs. Due to the difference in the articular structure, motor ability and work mechanics, the percentage of driving force of the imam varies between movements of the arms and legs, The driving force in the sport of swimming in determining the outcome of the race and the importance of identifying the amount of digitally swim chest, hence the importance of research by identifying the relationship of the driving force of the arms and legs with the achievement of sports swimmers 50 meters, in order to identify The driving force of each of them in precise quantification, to be a help and guidance to training curricula and trainers to ensure better production of power in the swimmer, which leads to the improvement of achievement.

The scientific progress that has had a positive impact in the creation and development of many different devices in the field of sports and contributed to the delivery of sports teams to the best achievements, in order to identify the physical levels must be available devices and tests to help detect the levels of progress in training and aids in detection On the strengths and weaknesses in the processes of payment within the water, both arms or legs, and because of the difficulty of estimating and measuring strength during performance, especially in the sport of swimming for the surrounding variables, the most important water center, which is different from the performance of all other sports and lack of appreciation Quantification of the strength of swimmers in the swimming pool chest inside the water, and the importance of driving force in swimming in resolving the result sports, especially short distance races 50 m. Hence the problem of research in the absence of specialized technical and technical equipment to measure the driving force of the body of the swimmer in the water, resulting from the movements of the arms and legs during the performance of breast movements, in an attempt to provide the training process by important means through which to assess the level of driving force generated for each swimmer As a guide for trainers and new data to identify the strength values of swimmers in order to improve the level of swimming. The goal of the research is to identify the relationship of the driving force of the arms and legs to the athletic achievement of the 50-meter swimmers. The effect of the research is that there are statistically significant differences at ($\alpha 0.05$) between the relationship of the driving force of the arms and legs to the athletic achievement of the 50-meter swimmers.

Research Methodology

The researchers used the descriptive approach in its survey method and correlative relationships to suit the nature and objectives of the research.

Sample and research community.

The study sample consisted of (6) young swimmers, ages (15-17) years, and training ages of (5-6) years, where they were chosen in a deliberate manner. They are the winners of the first six positions in the Iraqi Clubs Championship for swimming 50 m .

Devices and tools used in the search

Force measuring device.

Video cameras type (Sony) number (1).

Whistle type (fox) number (1).

Stopwatch type (Diamond) number (1).

Floating board and installation number (1).

Device idea used:

The idea of using the device came through the observation of the researchers of the electronic device, which is used to measure any strength of the force or mass that dominates the upper and lower ends, he can read the units of kilograms and parts accurately on the electronic digital screen, and what distinguishes the work of the device is its ability to read any change occurs in the amount of tensile tension And that the movements of the swim are a driving force during the performance in the water, through the movements of arms and legs, and since most roads and devices in the field of sports measure the amount of power in kilograms, but are out of water, which led the researchers to Employ the work of the device by designing parts of the attachment to be installed and contact with an innovative body swimmer inside the water, in a manner that enables him to perform swimming movements in a regular way to be recognized by the amount of driving force actually produced by the swimmer of his movement within the water. Annex (1)

The way the device works with the swimmer

Install the device with the edge of the swimming pool and stabilize the base of the electronic device level with the level of the surface of the water, and connects to the body of the swimmer by a elastic rope length (5) m used in the swimmers training around the waist, where the swimmer can actually perform the movements of the chest swimming in the water, When the swimmer performs any of the tests, the force will be pulled through the movements of the two men or arms to move the amount of tensile strength obtained through the flex cord directly to the electronic device to display the amount of height or decrease on the electronic screen of the device in kilograms and parts and accurately

Tests used in research

The researchers used the tests used to measure the driving force of both men and arms of swimmers.

First: test the measurement of the driving force of the two men.

Test Name: Measure the maximum driving force of the two men in water for 10 (w).

The purpose of the test: To identify the maximum amount of driving force for the two men within the water during the time (10) w.

Test method: swimmer goes down to the swimming pool and then wears the swimmer belt around the waist area that connects to the device through the rubber cord then hold the hand plate to prevent the arms from moving, as the swimmer and buoyancy for the purpose of waiting for the whistle of the absolute and after hearing the whistle start swimming at full speed For 10 (w).

Registration: Record the amount of force produced by the two men during the test time by recording the camera on the electronic measuring device (kg).

Second: Test the measurement of the driving force of the arms.

Test Name: Measure the maximum driving force of the arms inside the water for (10) w.

The purpose of the test: To identify the maximum amount of driving force of the swimmer's arms within the water during the time (10) w.

Test method: swimmer goes down to the swimming pool and then wearing the swimmer belt around the waist, which connects to the device through the rubber cord then puts the plate between the thighs to prevent the movement of the two men, as the swimmer and buoyancy for the purpose of waiting for the whistle of the absolute and after hearing the whistle start swimming at full speed For 10 (w).

Registration: Record the amount of force produced by the arms during the testing time by recording the camera on the electronic measuring device (kg). The tool is reliable and stable believe the tool to verify the validity of the tool, the researcher presented the tests of the study to a number of arbitrators and experts, was the answer of specialists in the validity of tests in measuring the driving force under study.

Stability of the tool

The stability coefficient of the instrument was calculated using the test-retest method to find the stability coefficient of the test under the same conditions as the first test. The test was repeated after seven days of the main experiment. The researchers used the simple correlation coefficient (Pearson) To find the correlation between all the tests, and the results showed that it has a high degree of stability As shown in Table (1).

Table (1)

Shows the coefficient of stability and self-honesty of the research tests

<i>Tests</i>	<i>stability coefficient</i>	<i>Self-honesty</i>
<i>test of the driving force of the two men (10) w</i>	<i>0.96</i>	<i>0.98</i>
<i>Measurement of the driving force of the arms (10) w</i>	<i>0.95</i>	<i>0.97</i>

Statistical treatments

The researchers used the computer system (SPSS) to process data statistically. In this study, a series of statistical operations were used to answer the following hypotheses:

Arithmetical averages and standard deviations.

Spearman correlation.

Mediator.

Torsion coefficient and multiple regression coefficient.

View search results

First: The text of the question: Are there differences of statistical significance at ($\alpha 0.05$) between the relation of the driving force of the arms and legs with the athletic achievement of the 50-meter swimmers.

This question was ascertained as follows: Mathematical averages, standard deviations, the mediator and the coefficient of torsion for the tests were used.

Table (2)

Mathematical averages, standard deviations, the mediator, the coefficient of torsion for the tests under study

<i>Sprains</i>	<i>Mediator</i>	<i>standard deviation</i>	<i>Arithmetic mean</i>	<i>measuring unit</i>	<i>Statistical treatments Variables</i>
<i>0.067</i>	<i>32.47</i>	<i>1.47</i>	<i>32.43</i>	<i>cons</i>	<i>Mathematical achievement</i>
<i>-0.154</i>	<i>4.72</i>	<i>0.47</i>	<i>4.68</i>	<i>kg</i>	<i>The driving force of the legs</i>
<i>-0.702</i>	<i>6.77</i>	<i>0.44</i>	<i>6.63</i>	<i>kg</i>	<i>The driving force of the arms</i>

Table (2) shows the values of the results of the tests of the study. The mathematical mean of the mathematical achievement number reached (32.43), the standard deviation (1.47), the median (32.75) and the spindle coefficient (0.067). (4.67), standard deviation (0.47), mean (4.72), and spindle (0.154). The maximum force test achieved an average of 6.63 and a standard deviation of 0.44. Sprain (0.702).

Discussion of search results

*The results showed that there was a statistically significant relationship at the level of (α 0.05 0.05) between the driving force of the arms and the athletic achievement of the swimmers 50 m, which achieved the highest correlation was (0.932 -) and at the level of significance (0.003 *), And the results showed that there was a statistically significant relationship at the level of (α 0.05 0.05) between the driving force of the two men and the athletic achievement in the swimmers of 50 m, which achieved a significant correlation reached (-0.861) and at the level of significance (0.028 *). There was a statistically significant difference between the driving force of arms and legs and the athletic achievement of 50-meter swimmers The result is that the higher the driving force of the arms and legs the greater the speed in achieving athletic achievement and the less time spent in the race, and through the values shown by the device for tests where the higher the values of the driving force there was a higher correlation to the achievement of the swimmer, (2003) that the strength is based on the arrival of the swimmer to the highest levels of the championship, and therefore the driving force in swimming is closely related to the speed of the swimmer has a high driving force has increased speed and thus reduced the time of competition, and the driving force associated with the correct technical performance Du In order to increase the speed of the swimmer so that he can cut the race distances in the shortest possible time, it is necessary to emphasize the good mechanics of the blows, ie the technical performance and the high muscular strength of the body. The researchers add that strength is the basis of other physical characteristics, Without the development of power first, because it has an impact on the distance of the race, especially short distances, and the researchers say that the compatibility in the performance of work between the arms and legs and the smoothness of their work in addition to high technical performance with power and speed, is one of the main reasons to show higher values of the driving force of the swimmer's body and The mathematical mean for the achievement of the maximum strength of the two men (4.67) kg, while the test of maximum driving force of the arms averaged (6.63) kg, notes The result of the study showed that arm movements caused a greater driving force (4). The results of the study showed that the movements of the arms caused a greater driving force of the movements of the two men within the water to swim 50 m breast, This finding coincides with the study of cat (2004), which pointed to the small role of the movements of the two men in the production of momentum, they share less than the driving force of the body forward, and agreed the result of research with the study of Hashimi (1999), which confirmed that the arms the largest role in the representation The strength of the forward body of the swimmer's body is the result of arms movements compared to the movement of the two men. This is in line with the study of James (1988) to determine the percentages that Achieved movements of arms and men In which he pointed out that swimmers achieve more than 70% of the momentum using arm movement and less than 30% of the movement of the two legs. He also adds that there are studies indicating that the proportion of arms contribution to generate forward momentum up to 85% of the total force the researchers applied the special tests to measure the driving force of the two men and arms of the swimmers each so that accurate numerical values are obtained. This is in line with the safety of 2009, which confirmed the determination of these percentages and values by isolating the work of the arms once and for the two men during the race and taking Ages are each part of the descent, he adds The researchers believe that the ability of this device to give numerical values clear to produce the driving force of the arms and legs, allowing the trainers to detect the strengths and weaknesses of swimmers and thus develop appropriate training programs for the development of swimmers and raise their levels, And the swimmer is able to assess the actual level of him by knowing the momentum of the arms and two men each, and the researchers suggest that the driving force within the water does not depend only on the movements of the arms and legs, but there is also the effect of the correct motor path, , And Alwan (2005), which stressed that the*

correct motor path during the stages of the work of the arms and legs in the water has a significant impact on the speed of the body during the distance of the swimming race, and should not lose sight of the role of quality and flexibility of muscles in addition to the physical and psychological factors and other factors that effect on the speed of the swimmer inside the water. This is in line with the study of Ibrahim (2008), who emphasized that the focus and willpower are factors that affect the achievement of high speed, as well as flexibility and elasticity of the muscle are important factors that affect the completion of movements of high frequency of speed.

Conclusion

The researchers concluded that the driving force of arms movements in water is greater than the driving force of the two men's movements in the 50-meter swimmers and that the relationship of the driving force of the arms to athletic achievement is stronger than the driving relationship of the two men to the athletic achievement of the 50-meter swimmers. The researchers recommend using this device to measure the driving force of the arms and legs of other types of swimming pools such as butterfly and back swimming, and for different age groups, but the acquisition of real values and digital driving force allows the trainers to know the strengths and weaknesses of swimmers, which facilitates the development of training programs to address errors and development and advancement of swimmers.

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