The effect of using apparatus support on some physical abilities and learning the skills of giant swing forwards and backwards on high bar apparatus in artistic gymnastics for men

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Abstract
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The aim of the research is to design and manufacture an apparatus support support Takes care of Graduated by learning the skill of giant swing forwards and backwards on high bar apparatus identify the effect of using apparatus support on some physical abilities and learn the skill of giant swing forwards and backwards on high bar apparatus. The research community consisted of (5) players, and they are the original community of ages (7-9) years in Baghdad / Rusafa, As the research sample formed a percentage (100%) of the research pool. The researcher took into account a basic condition in selecting the sample, which is that the members of the research sample did not perform the skill of turning on the high bar apparatus. the apparatus support has a positive effect in teaching the skill of giant swing forwards and backwards on high bar apparatus in artistic gymnastics And that the use of the apparatus support as an aid and educational means for the player is appropriate to his skill and physical abilities. And the two researchers recommended emphasizing the use of the apparatus support because of their positive and effective effect on learning and increasing excitement and motivation in training. And confirmation on the use of the apparatus support in teaching the skill of ashtalder and the skill of the small cycle to hands standing.

Keywords. Apparatus support. Gymnastic

Introduction
The basic skills in the technical gymnastics game for men are the keys to performing the most difficult skills and the basis of the gymnastics game is the technical performance of the skill in the correct manner for it according to the paths drawn up in the law. To learn the skill as quickly as possible and with less effort and a broad understanding of how to perform it.

The pull-up device is the sixth device in the sequence of devices and the total number of its skills is 145 (skills distributed over four motor groups, in each motor group, several difficulties starting from one). A (which has a value of (0.1) and ends with difficulty (H) whose value is (0.8), the player cannot reach the highest value unless he masters the difficulty of the lowest value. Complete from a total of 10 degrees. The value of the difficulty of front and back rotation is (0.1) and the two skills are from the first group, and their numbers in the law are (13) for the front and (31) for the back. By teaching these two skills to age groups, it needs many illustrative devices and tools, manual assistance and other means Aman to reach the optimum performance that qualifies them to perform broader and more difficult skills. By looking at theses, theses and scientific research, the researcher found that there is a dearth in this subject

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in terms of teaching these two skills and the lack of devices and tools used, as the use of the auxiliary device in the early stages of learning is very important for the young. In terms of learning the skill sections, safety for him, gaining time and fun, changing the daily training routine, lifting and easing the burden of manual assistance from the coach, as well as assistive devices are very important in delivering the player. The correct movement path is in a good way, hence the importance of research in the use of an auxiliary device in learning the skills of forward and backward rotation on the pull-up device for juniors.

The researcher relied on several previous studies, including the study (Attack, 2017), which concluded that the exercises using the device have a positive effect in developing the speed of the motor response and agility among the young players in gymnastics soccer, and the development of the control sample was less than the experimental sample, and that the rate of development in The characteristic of speed of motor response and agility using the device is better than the rate of development without using the device. And the study (thirsty, 2016), which concluded that the auxiliary device contributed effectively and positively to the development of the level of skill performance of the Russian skill on the pomme horse device, and the study (Leith, 2010), which concluded that 1- The experimental group that used the manufactured device advanced over the control group in the results Dimensional skill variables tests. 2- The experimental group outperformed the control group in the percentage of development, as the back scissor lift skill achieved a development rate of (77%), while the development rate of the front scissor swing skill reached (73%).

And the study of (Mohammed, 2019), the study concluded that the assistive device had the greatest impact on learning basic skills on the throat device, and was a substitute for manual assistance, and it positively affected the level and speed of learning. It was also found through the field experiment that the experimental group that was taught using the assistive device outperformed the control group that was taught the skill with manual help.

Therefore, the researcher decided to design an innovative educational device that would develop learning the skill of back and forward rotation on the pull-up device, where the researcher could provide a means of assistance in the training process that may contribute to raising the level of skill performance. The lie of the research problem that the skill of the rotation front and back are the basics of horizontal bar and without their performance, the player is not able to score points by other motor aggregates which depend on the front and rear rotation skills. The aim of the research is, the design and manufacture of auxiliary device (proposal) takes into account the gradient learning. The skill of front and back rotation on the pull-up device, identifying the effect of using an auxiliary device on some physical abilities, and learning the skill of the front and back rotation device (the pull-up).

Method and tools

The researcher used the experimental method (by designing one group with a pre and post test) for its suitability to the nature of the problem to be solved.

The research community was determined by (5) junior players in Baghdad / Al-Rusafa for the Amana Gymnastics Club, and their ages ranged between (6-9) years, which is the junior category, and the research sample constituted (100%) of the research community. The researcher used the research means (Arabic sources and references, observation and analysis, tests and measurements, the Internet), and the researcher also used tools and devices, including a stopwatch, a camera, an assistant device, and a legal bar.

How to design the device:

After the researcher’s idea about the work mechanism and the goal of the device was completed, the device was initially designed and the correct measurements were put in line with the length, size and ages of the players, as the players are the junior category and their anthropometric measurements are special. Therefore, the device was designed and used in the main part of the two skills and its components are:
The general iron structure: - It consists of a rectangle base with a side length of (2) meters and the other side measuring (1.30). The iron used is the type of rectangle, its height is (4) cm and its width is (8) cm. 

Iron columns: - Consists of four columns installed at the end of each corner of the general iron structure so that each column is installed on a sliding base with a forward movement of (35) cm. Each column measures 4 * 4 and is 1.5 meters long. An iron ring is installed at its upper end for installation.

Iron Bar: - It is an iron bar with a length of 1.5 meters and a circumference of 2 cm. It is installed on the iron base and on a sliding base that moves forward and backward and is 10 cm high.

Rubber ropes: - The rubber ropes consist of two groups, the first consists of two rubber ropes, each one between the ends of each column, the distance between them is 1.5 meters, and the second group consists of four ropes connected to each end of the ropes to the end of each column, and the other end of which is fixed by two rubber ropes next to The belt worn by the player, as shown in the following figure.

The researcher determined the most important motor abilities related to the skill (front and back rotation) on the pull up device, and based on the sources and studies of artistic gymnastics for men, motor learning and personal interviews[□] Which was conducted by the researcher with experts and physical abilities are:-

Arm strength
The speed characteristic of the arms and upper back
The speed characteristic of the abdominal muscles
The speed characteristic of the back muscles

After reviewing the sources, studies and scientific research related to the tests of selected physical abilities, the researcher prepared a special questionnaire that includes a set of tests, and it was presented to a group of experts and specialists in the fields of (testing, measurement, kinetic learning and gymnastics), to express their opinion in determining the most important physical abilities tests, The number of them is (9) experts, and the results of the questionnaire were extracted using the leading ratio, and as shown in Table (1).

<table>
<thead>
<tr>
<th>NS</th>
<th>Capacity physical</th>
<th>Test name</th>
<th>number of approvers</th>
<th>Number of disapproves</th>
<th>percentage</th>
<th>fit first</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>endurance force the arms</td>
<td>Attachment to the arms with flexion</td>
<td>2</td>
<td>7</td>
<td>22%</td>
<td>exclude</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parallel push up test 30sec</td>
<td>8</td>
<td>1</td>
<td>88%</td>
<td>Relies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lifting a weight of 10 kg upwards for as long as possible</td>
<td>0</td>
<td>9</td>
<td>0%</td>
<td>exclude</td>
</tr>
<tr>
<td>2</td>
<td>special power speed for arms And the upper part of the back</td>
<td>Pull-up test until exhaustion of effort</td>
<td>1</td>
<td>8</td>
<td>11%</td>
<td>exclude</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-second pull-up test</td>
<td>7</td>
<td>2</td>
<td>100%</td>
<td>exclude</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sitting prone 10 sec</td>
<td>2</td>
<td>7</td>
<td>22%</td>
<td>exclude</td>
</tr>
<tr>
<td>4</td>
<td>special power fast (lying - sitting) within 15 seconds</td>
<td>Sit from prostration d for 60 seconds</td>
<td>9</td>
<td>0</td>
<td>100%</td>
<td>Relies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>9</td>
<td>0%</td>
<td>exclude</td>
</tr>
<tr>
<td>for abdominal muscles and back</td>
<td>Lie down (on the stomach) raise the torso up 10 seconds</td>
<td>7</td>
<td>2</td>
<td>77%</td>
<td>Relies</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>-----</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>5 special power fast for arms</td>
<td>Front support bending the arms</td>
<td>9</td>
<td>0</td>
<td>100%</td>
<td>exclude</td>
<td></td>
</tr>
<tr>
<td></td>
<td>And hold them continuously for 10 seconds</td>
<td>2</td>
<td>7</td>
<td>22%</td>
<td>exclude</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 sec. pull-up test</td>
<td>0</td>
<td>9</td>
<td>0%</td>
<td>exclude</td>
<td></td>
</tr>
</tbody>
</table>

Description of physical ability tests:
First, assume the power of arms
Test name: Test payment on the parallel (30) tha (Subhi, 1987, p. 250)
The purpose of the test: To measure the endurance of the strength of the arms
Test Specifications:
The push-up test is used on the parallel device 30 seconds to measure the length of the muscular strength of the arms, so that it is noticed that the parallel bars are at the height of the tester’s shoulders, and the test is performed by the tester resting on the edge of the parallelogram and then fully flexing and extending the elbow joint, calculating the largest number of correct attempts. It is also given half a degree in the event that the bend reaches half the distance, and it is not allowed to calculate more than four halves.
Second: The speed characteristic of the abdominal muscles
Test name: (lying - sitting) test during (15) seconds (Naji, 1987, page 33)
The purpose of the test: To measure the strength of the abdominal muscles and the flexors of the thigh joint
Test Specifications:: - Tools: stopwatch, sponge mat or flat surface
The tester lies on his back on the rug or (flat flat) with his feet open by thirty (30) centimeters, so that the palms touch the neck from the back and the elbows are bent (a colleague immobilizes the legs). lengthwise with the knees extended, then repeat this as many times as possible within (15) seconds 0 - REGISTRATION: records the number of times the correct performance in 15 seconds.
Third: The speed characteristic of the back
Test name: Lie down (on the stomach) and raise the torso upwards for 10 seconds (Naji, 1978, pg. 209)
The purpose of the test: To measure the characteristic strength (power) of the back muscles
Test specifications: From a lying position on the stomach, hands interlaced behind the head, with the feet fixed with the help of the colleague - raising the torso up to a certain level, to the maximum number possible in 10 seconds. Abilities and equipment: timer - teammate to calculate the number - to take the test: from the prone position, arms interlaced behind the head and feet fixed with the help of the teammate - raising the torso off the ground with the number recorded in
Fourth: the skill test (forward and backward rotation):
The purpose of the test: to test the skill of rotation.
- Tools: Aquila.
Performance specification
Assigning a score out of (10) for each skill performance
Registration: The assessor evaluates and then divides the total scores of the two assessors by (2) to extract the average of the two degrees.
The researcher conducted an exploratory experiment with the help of the assistant work team to know the effectiveness of the work of the proposed assistant device, as the exploratory experiment was carried out in the gymnastics hall in the Municipality Club next to Rusafa on a sample consisting
of one player outside the research sample, and its goal was to experience the work of the device initially on the players as well. On knowing whether the device is suitable for teaching the skill of rotation, and it became clear after taking the opinion of the experts that the proposed assistant device works in the correct manner.

And the assistant device was used in the curriculum of the research sample, especially in the important part, which is the main part. The experiment lasted for (4) weeks and included (12) educational units at the rate of (3) units per week, and the total unit time was (150) minutes divided into three Devices (the pull-up, the floor, and handles) and the educational curriculum was applied with a time period of (35) divided between the auxiliary device and the legal pull-up device using the longa tool in the initial part of the two skills. and convenience for the purpose of repetitions for the research sample), and the researcher was keen that the educational curriculum that was developed by them and by the trainer and in accordance with the foundations and scientific principles. After completing the application of the vocabulary of the educational curriculum for the skill of forward and backward rotation, the post-test was conducted in the same manner as in the pre-test, as the researcher created the atmosphere and conditions in which the tribal tests were conducted. Then the researcher photographed the skill of the research hand, and then transferred it to the calculator and from there to CDs, and then presented it to the assessors of the referees approved by the Central Federation of Gymnastics, and the evaluation degree was adopted with a range of (10) degrees for the skill. The researcher adopted the international law of artistic gymnastics by excluding the highest and lowest degrees and the adoption of the arithmetic mean of the two intermediate degrees of the judges' degrees. And dividing it by two to extract the final score of the player, the researcher used the statistical bag (spss) to extract the statistical values of the search results. Arithmetic mean Standard deviation percentage valueT for related samples.

Table (2)

<table>
<thead>
<tr>
<th>Statistical parameters</th>
<th>the sample</th>
<th>Measurement</th>
<th>pretest s ±</th>
<th>post test s ±</th>
</tr>
</thead>
<tbody>
<tr>
<td>search variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>forward rotation</td>
<td>5 Degree</td>
<td>1.520 .3701</td>
<td>5,000 .7906</td>
<td></td>
</tr>
<tr>
<td>Back rotation</td>
<td>5 Degree</td>
<td>1.440 .3647</td>
<td>4.600 .5477</td>
<td></td>
</tr>
<tr>
<td>Push up parallel 30 seconds</td>
<td>5 repetition</td>
<td>8.500 1.0000</td>
<td>10.400 .5477</td>
<td></td>
</tr>
<tr>
<td>Sitting up from prone 15 seconds</td>
<td>5 repetition</td>
<td>9.000 .7071</td>
<td>10.600 .5477</td>
<td></td>
</tr>
<tr>
<td>Test the force of the back speed for 10 seconds</td>
<td>5 repetition</td>
<td>8.000 .0000</td>
<td>10.100 .7416</td>
<td></td>
</tr>
</tbody>
</table>
shape (1)
It shows the graphs of the means and deviations and their values in the skills and physical tests of the research sample

Table (3)
Shows the differences in the means and deviations and the value of (T) and morale in the pre and post tests

<table>
<thead>
<tr>
<th>Statistical parameters search variables</th>
<th>measuring unit</th>
<th>NS</th>
<th>p</th>
<th>Values (T)calculated</th>
<th>sig</th>
<th>Indication type</th>
</tr>
</thead>
<tbody>
<tr>
<td>forward rotation</td>
<td>Degree</td>
<td>3.4800</td>
<td>.5805</td>
<td>13.404</td>
<td>.000</td>
<td>moral</td>
</tr>
<tr>
<td>reverse rotation</td>
<td>repetition</td>
<td>3.1600</td>
<td>.8325</td>
<td>8.488</td>
<td>.001</td>
<td>moral</td>
</tr>
<tr>
<td>Push up parallel 30 seconds</td>
<td>repetition</td>
<td>1.9000</td>
<td>.7416</td>
<td>5.729</td>
<td>.005</td>
<td>moral</td>
</tr>
<tr>
<td>Sitting from lying down 15 seconds</td>
<td>repetition</td>
<td>1.6000</td>
<td>1.1402</td>
<td>3.138</td>
<td>.035</td>
<td>moral</td>
</tr>
<tr>
<td>Test the force of the back speed for 10 seconds</td>
<td>repetition</td>
<td>2.1000</td>
<td>.7416</td>
<td>6.332</td>
<td>.003</td>
<td>moral</td>
</tr>
</tbody>
</table>

*significant at confidence level (0.05) If the error rate is ≤0.05). 5-1. degree of freedom

shape (2)
It shows the graphs and their values for the pre and post tests of the research sample

Discussion
By observing the tables (2,1) and figures (2,1), it appears that the difference is clear in the pre and post tests for the skill of forward and backward rotation and in favor of the post test in learning this skill. As well as looking at the physical abilities and the extent of development observed through arithmetic circles and the differences in them and in favor of the post-test

It attributes the researcher the reason for this is due to the use of the research sample proposed helper device that had impact in learning even a little part of this skill has achieved learning and the development of even relatively by adjusting the educational steps and technical skill and Tkaradtha being one of the skills that you need to bearing strength in the arms and balance the body In particular, the muscles of the arms and shoulders, and this is what the proposed auxiliary device provided, as well as to the speed characteristic of the abdominal and back muscles, and this is what the researcher sought for. The most important thing in these two skills is the initial part and the final part of it, because the final part will give the player the ability to cross the bar and complete a full 360-degree cycle and Being designed to teach the skills under discussion according to scientific foundations in a deliberate manner to be of benefit to the player and coach in delivering good performance according to the path of the center of gravity of the body and the movement of the upper extremities and providing balance as it proves the body from four sides

As the use of assistive devices is a helpful factor in encouraging players to perform well. The tools and auxiliary devices have a great role in improving and developing technical performance and helping the player to understand the motor path that the player is going through, as well as providing the necessary strength to complete the main section of the movement as well as being good safety means. However, there are some skills in which it is difficult to provide manual assistance due to the multiplicity of axes The movement and the position of the player in which it is difficult to give additional strength by the coach” (Ahmed, 2019, p. 20)

The proposed device also contributed to the development of the spirit of competition and excitement among young players, through which they reached a goal, which is to teach the skills under discussion, which is what it was set for. And (Thirsty, 2016, p. 155) asserts that “assistive devices are one of the most important factors that achieve this in gymnastics, as they are among the accelerating factors in the learning process if used well, in addition to that they simplify the learning process and facilitate the
performance of movements, in addition to that It has an important and essential role in the learning process for the purpose of improving the skill aspect, as approaching the form and method of optimal performance is an essential duty of the learning process. "For the great role represented by the auxiliary devices in gymnastics in order to facilitate the difficult motor skills that players perform on various devices" (Ahmed, 2016, pg. 27), he added to what the proposed device provided for neuromuscular coordination, high flexibility in the shoulders and great strength for the upper limbs.

We conclude from this that the development of the research group confirms the effectiveness of diversity in the use of auxiliary aids and devices in the educational process, “as the aids speed up the process of education and development and lead to performance control, especially with young people, because their muscular strength and skillful performance have not reached their maximum.” (Mahmoud, 2015, p. 22) In addition, the repetitions used on the proposed device, the scientific method, the diversity in the exercises, and the number of educational units that were (3) units per week helped such factors greatly in attracting the players and attracting them towards learning and increasing their motivation and motivation, which contributed to the development of the experimental group. (Abdul Redha, 2011, p. 76) that “using the proposed device and diversifying the use of exercises on it led to keeping players away from boredom and seriously pushing them towards better performance because the various exercises on the device make the player eager to learn and stimulate different muscle groups according to the type of exercise.”

Conclusions
The auxiliary device has a positive effect in teaching the skill of front and back rotation on the pull-up device in the artistic gymnastics. And that the use of the assistant device as an aid and instruction for the player suits his skill and physical abilities, The researcher is certainly the use of assistive devices and recommended for its positive and effective impact on learning and increase the excitement and motivation in training. And emphasizing the use of the assistant device in teaching the skill of the stalder and the skill of the small cycle of handstand

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