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Effect of Weight Exercise on the Development of Some Components of Special Muscle Strength and Perform Some Artistic Gymnastics Skills

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ABSTRACT

Muscle strength is the most important physical element in all sporting activities in general and in the sport of gymnasium in particular. The most powerful athlete has a hand of length in the event of a rapprochement of artistic level. In addition to increasing speed, ability and fitness play an important role in progressing in many of the skills of artistic art with complex motor duties installation. Maximum strength, distinctive strength of speed, and explosive power are one of the main physical requirements that a practitioner needs for gynecology due to the multiplicity of his devices and diversity of his skills and because of a great role in the success of the technical performance of various skills, re are several ways and methods to train and develop muscle strength, as training becomes strength using weightlifting is one of the scientific methods used in developing strength and the first step towards practicing any sports, as weightlifting devices are more suitable for beginners training programs, as why they are safest and easiest means of controlling. The main importance of research is to provide some solutions and treatments due to weakness of strength caused by the weak performance of students to some of the technical gymnasium skills using weightlifting and Multi gym workout to develop and develop muscle strength as a basic rule.

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1. INTRODUCTION

Development and creativity that the world witnesses today in various areas of life, including the sports field is a cause of pride and pleasure for some countries. Development has reached advanced stages and sports as they are the rest possibility of showing the highest level of physical, skill, and planning efficiency in resolving motor duties required by sports competition. And, gymnastics sports are one of the types of sports that are included in the development. The emergence of new skills with high difficulties on its various apparatus in international and Olympic championships made some countries plan to lead and stay at the forefront. Indeed, it is following modern scientific and sports training methods. Players always need physical development as a basic training base and physical development associated with sports activity practiced increasing strength, endurance, speed development, improving flexibility and/or physical qualities to fulfill the requirements of this activity and achieve advanced levels. In this case, muscle strength is considered the most important physical element in all sporting activities (Villa *et al.,* 2022).

The most powerful athlete has a hand of length in the event of a rapprochement of technical level. In addition to increasing speed, ability and fitness play an important role in progressing in many of the skills of the art gymnasium with complex motor duties composition as it is prepared maximum strength, distinctive strength of speed, and explosive power. One of the main physical requirements is the performance needed for various gymnasium devices and given the multiplicity, complication, and diversity of skills. Their great role in the success of performance. They are several ways and methods for training and developing muscle strength where the force of weight has become one of the scientific methods used in developing strength and the first step towards practicing any sport.

Weightlifting devices are more suitable for beginners' training programs since it is the safest and easiest means of control. The importance of research is to provide some solutions and treatments due to weakness of strength caused by the weak performance of students to various technical skills of gymnasium using weightlifting and Multi gym workout to develop and develop muscle strength as a basic rule. It is based on the rest of the physical qualities of the research sample and its investment to improve the level of skill performance for better (Bakinde, 2022a).

Research problems were in terms of ways, means, and methods of training muscle strength of all kinds as the most important component and basis for fitness elements in all sporting activities. They called for the use of many exercises to develop both using Multi gym workout, which is one of the most important and famous of some devices for multiple stations. And, its use in training is the largest number from muscular groups in the body in a circular way. Indeed, it can be done using weightlifting exercises or using body weight, given the importance of strength in gymnastic sports.

But it lacks research related to weightlifting training for gymnastics. Weakness and low technical performance of most students in most of the skills of the gymnasium is caused by weakness of special strength. The subject of gynecology is taught in colleges of physical education and sports sciences in all universities in Iraq. It includes many individual and interconnected skills on its various devices. The correct performance of some skills is required for the requirements of success. This study deliberately provided some solutions and treatments for the research problem through the development of some components of the strength of weight lifting and Multi gym workout devices. It is also due to its availability in Gymnastics Technical Hall for students and its investment to upgrade the level of skill performance for better (Singh & Keur, 2022).

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The research aims are the following:

(i) Learn about the effect of weightlifting exercises in developing some muscle strength components.

(ii) Identify the effect of developing some of the muscle strength components in the performance of some of the technical gymnasium skills.

The research Hypotheses are the following:

(i) Presence of statistically significant differences in some components of special muscle strength between tribal and post-tests of the research sample.

(ii) Presence of statistically significant differences in some of the technical and post-gymnasium skills between tribal and post-tests of the research sample.

2. METHODS

Research fields are the following:

(i) Human field: Third-year students in the Faculty of Physical Education and Sports Science-Basrah University for the academic year 2022-2023.

(ii) Spatial field: gymnasium Technical Hall in Faculty of Physical Education and Sports Sciences, Basrah University.

(iii) Time field: from 23 /10 /2022 to 15 /5/2023.

The research curriculum is adopted from an experimental curriculum with the design of one group due to its suitability. This study has identified a community of research students from the third-year students in the Faculty of Physical Education and Sports Sciences, Basra University for the academic year 2021-2022. 201 students were then divided into 7 groups. The research sample was chosen intentionally from students who complain of a clear weakness and inability to perform some of the skills technician and indicator by lecturers of the subject.

This study performed some measurements for members of the research sample in each parameter (length, weight, and age) because it influenced the dependent variable. For the sample to be homogeneous, differences were present and statistical monuments were conducted, considering that it did not affect this study for sample individuals using the difference coefficient, as shown in **Table 1**.

Table 1. Homogeneity research sample.

verbal's	Unit Measurement	Mean	Standard deviation	Difference factor
Body length	Cm	171500.	5.61	3.275
Body mass	Kg	73.375	7.915	10.787
Age	Year	21.29	1.28	6.012

Devices and tools are the following:

(i) Multi Jim device

(ii) A device (ground movements, horse handles, jumping table).

(iii) Tablets of different weights (5, 2.5, 10, 15, 20 kg), I iron (4) weight (15, 20) kg

(iv) Swedish seat, balance

(v) Panasonic - Digital with its accessories.

(vi) Pentium 4 HP computer with tablets (DVD) type Sony.

For collecting data and information, arab and foreign sources, International Information Network (Internet), Data emptying form, and Measurement tape.

Maximum force tests for arms are the following (Stephen & Festus, 2022):

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(i) Test Name: Bending arms and extending m from lying (Bing Press).
(ii) Purpose of test: measuring the strength of muscles of arms and chest.
(iii) Tools used: level Swedish seat - iron rod - tablets (iron weights).
(iv) Performance method: the laboratory test is lying on a Swedish seat (it decreases the distance between two fists and raised iron pen over the chest), laboratory baptizes (it extends arms up to one time and severity is 100%)
(v) Laboratory data was taken 3 attempts to record attempt, in which the largest weight is taken

The maximum strength test of two legs is in the following (Shibaguchi *et al.,* 2017):

(i) Test Name: Bending knees and extending m from standing (Dibbi back)
(ii) Purpose of test: Measuring the strength of muscles of two legs.
(iii) Tools used: iron rod, tablets (iron weights), supporting iron, and a belt.
(iv) Performance method: laboratory raises iron over shoulders behind neck from standing with the righteousness of entire body erect.
(v) Method of registration: laboratory is given 3 attempts to record, taking the largest value.

The test of force is distinguished by the speed of arms (Calixtro, 2021):

(i) Test Name: Importable Power Test for Arms.
(ii) Purpose of test: measuring the strength of the speed of arms.
(iii) Tools used: Time hour.
(iv) Test procedure: From inclined formalization mode, noting that the body takes good and correct position during the entire bending of arms, n extend entire arms. "
(v) Registration: number of times bending and tide within 10 seconds is considered indicator of distinctive force of speed of muscles of arms.

Distinguished strength test of the abdomen (Vijayarani *et al.,* 2003) is in the following:

(i) Test Name: Sitting Test of Slacks from Putting Knees During (10) Sec.
(ii) Purpose of test: This test aims to measure the fast strength of abdominal muscles.
(iii) Tools used: an electronic timing watch, and ground rug.
(iv) Performance specifications: laboratory lies on his back over the rug, with his feet open by 20 cm. Thus, the palm touches the neck, elbows are bent, and we bend the knees (colleague installs two men). Upon hearing the start signal, the laboratory bends the trunk to reach the sitting position, and the knees are bent. It is repeated quickly as possible in 10 seconds.
(v) Registration: The record also checked the correct number of times in 10 seconds.

Distinguished strength test for two legs (Bangkerd & Sangsawang, 2021) is in the following:

(i) Test Name: fullest jump test is a maximum of 10 seconds
(ii) Test goal: measuring the strength of speed of two legs.
(iii) Tools used: Strong Games Rank, Time Watch, Measurement Strip.
(iv) Performing method: laboratory takes the position of preparation behind starting line, and when hearing the start signal, the laboratory is fully folded with its knees fully to cut the longest possible distance in 10 seconds.
(v) Registration: the distance that the laboratory traveled within 10 seconds.

The test of Explosive power of arms and shoulders (Bakinde, 2022b) is in the following:

(i) Test Name: Throwing Medical Ball (3 kg) with two hands.
(ii) Purpose of test: Measuring explosive strength of muscles of arms and shoulders
(iii) Sex and age: from 10 years old students to university students. This study used samples of boys and girls.

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(iv) Test Calendar: Jin Ford recorded objective laboratories (0.99) and record Havlec. Female stability laboratories (0.83)
(v) Tools used: (flat area, small rope, chair, medical ball, measuring bar, marks used for marking)
(vi) Performance specifications: laboratory sits on the chair and the medical ball is carried by two hands over the head and the trunk is adjacent to the background of the chair (back).
(vii) A rope is placed around the laboratory chest and grabbed from the back by a tight, to prevent the laboratory from moving to the front while throwing the ball with two hands.
(viii) Test conditions: the laboratory is given an independent attempt at the beginning of the test as performance training, and laboratory is given two consecutive attempts, when the laboratory is shaken or moved during throw, result is not counted and attempt is given instead.

Test management:

(i) A registrar who calls on laboratory and records.
(ii) Ruling: It installs rope, and observes performance and measurement.
(iii) Observer: The observer sets the place of the ball and measurement.
(iv) Calculating grades: degree of each attempt is the distance between the front edge of the chair and the nearest point that the ball places on the ground, close to (± 15 cm), and the degree of the laboratory is the degree of best attempt from two attempts.

The long jump test from stability (Masuda *et al.,* 2017) follows the order:

(i) Test goal: Measuring muscular explosive strength of two legs in jumping forward
(ii) Tools: a tape measurement and a place for jumping with a width of 1.5 m and a length of no less than 3.5 m, and it is taken into account that the place is free of obstacles.
(iii) Performance method: laboratory stands behind starting line and the feet are slightly apart and parallel to the feet touches starting line from outside, laboratory begins with the best of arms back with knees bending and tilted a little forward and n jumping forward for the maximum possible distance by extending the knees and pushing feet with likely of arms. Forward.
(iv) Registration: measurement is from starting line until the last part of the body touches land towards this line. Each attempt is measured for the closest 5 cm, and the laboratory is given three consecutive attempts and is calculated for him best degree in se attempts.
(v) Test Evaluation: Test for Sincerity laboratories (0.60), stability laboratories (0.96), and objective laboratories (0.96).

This study identified the skills in gymnastics:

(i) First: the skill of front hands-on ground movement device.
(ii) Second: the skill of anterior scissors from saddle pivots on handicraft device
(iii) Third: the skill of front hands on handles of the handle.

In the tests, this study relied on the evaluation of those with experience and specialization in a technical gymnasium that consisted of four rulers, as filming of tests was distributed to m with a pre-prepared evaluation form. Every skill was evaluated from 10 degrees and extracted after deleting the above less degree, collecting two middle classes, and dividing them into two aspects.

The exploratory experience was conducted on Monday (10/30/2022) on 10 students among (39) students and outside the main research sample of 10 students for the third grade:

(i) Knowing the time to take the test.
(ii) Validity of devices and tools used.

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(iii) Determining the time of performance, training intensity, and time of comfort for exercises prepared in this study
(iv) Except for mistakes that this study may encounter when conducting the main experience.
(v) Ensure the validity of the camera and location
(vi) Define the assistant team with their duties.

This study gave two introductory units in skills under research. A tribal test of the search sample was conducted from Monday (7/11/2022) until Thursday (10/11/2022) according to the following order:

The test on Monday (7/11/2022) is in the following:

(i) Test of maximum force of arms.
(ii) Test maximum strength of two legs.
(iii) Test of speed force for arms.
(iv) Test of force that is characterized by speed of trunk.
(v) Test of speed force for two leg
(vi) Test of the explosive force of arms.
(vii) Explosive force test for two legs.

The test on Thursday (11/10/2022) is in the following:

(i) Test skill of front hands-on ground movement device.
(ii) Front scissors skill test on handles of the handle.
(iii) Test skill of front hands-on jumping table.

This study also installed conditions related to tests such as place, time, and method of implementation to achieve the same circumstances or as close as possible to conditions of the remote test.

After reviewing some scientific sources in the field of sports training, the technical sport of technical and related research, and after consulting some sports training professors in the Faculty of Physical Education and Sports Sciences, at Basra University, this study puts a set of exercises using weightlifting and Multi Gem device to develop physical qualities restriction research:

(i) The first unit for training program exercises was applied on Sunday, 13/11/2022 until 1/5/2023
(ii) The proposed training program took 8 weeks at 24 training units, at an average of 3 units per week for days (Sunday, Tuesday, and Thursday).
(iii) The time of a single training unit reached between 45 and 50 minutes outside the time of the lesson.
(iv) This study used 14 exercise points for each training unit with 2 exercise plans and each physical adjective with weights or devices.
(v) The number of exercises used in the training program reached 112 exercises.
(vi) This study used a training intensity of 60-80% of maximum that students could perform.
(vii) This study used a load volume repeated 8-10 times from 3 groups.
(viii) The density of pregnancy was legalized by a period of rest, ranging between 3 and 5 minutes until recovery is restored.
(ix) Loads used for each exercise were legalized, relying on the maximum ability of the player (RM1)
(x) This study conducted post-tests for the research sample for the period from Monday (9/1/2023) until Thursday (12/1/2023) using the same tests and in the same arrangement and conditions.

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To support the statistical data, this study used a set of statistical methods to process research data and find results using the SPSS V23 statistical bag.

3. RESULTS AND DISCUSSION

Views and analyses of the results of tribal and post-physical tests for physical and skill changes are shown in **Table 2**.

Table 2. Statistical data.

No	Physical variables	M/U	Tribal – Test		Post-test		Standard error	T collected	probability value
			M	S	M	S			
1	The Maximum power of arms	kg	49.670	5.450	54.960	5.740	1.42	3.725	0.004
2	The maximum strength of two leg	kg	71.200	5.960	77.240	6.580	1.57	3.847	0.003
3	The Strength of arms is distinguished	count	9.125	0.834	11.375	0.517	0.411	5.463	0.001
4	Distinguished strength tested for abdomen	count	9.625	0.517	11.750	0.462	0.295	7.202	0.000
5	Speed strength test for two leg	M	19.950	1.125	24.412	1.562	0.475	9.379	0.000
6	Explosive force test for arms	M	3.620	0.370	3.900	0.400	0.090	3.111	0.012
7	Explosive force test for two leg	Cm	220	19.420	236	18.000	3.250	4.923	0.000
8	Hands jump skill on the rug of ground movements	degree	1.562	0.291	7.818	0.672	0.312	20.050	0.000
9	The skill of front scissors of the saddle on horse handles	degree	2.093	0.399	8.250	1.093	0.411	14.953	0.000
10	Maximum power of arms	degree	2.093	0.399	7.000	0.640	0.231	21.225	0.000

Through the results shown in **Table 2**, it becomes clear that all values for all research variables were smaller than 0.05. This indicates the existence of statistically significant differences between tribal and post-tests in all research variables and favors dimensional tests. This study is the cause of moral differences. To use qualitative exercises, appropriate to capabilities and capabilities of students in terms of carrying training and according to the training program as well as rules and foundations of sports training, students in front of

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training obligations develop their will. This had great credit for improving and developing muscle strength that students need to perform registration skills.

This study also considers weighting training as one of the most important methods used. It has a great and tangible impact on developing muscle strength in all its forms because muscle strength is one of the most important components of fitness that can be developed by training. It is one of the factors affecting sporting performance and not developing appropriately. It develops according to the requirements of the game. It gives negative results that affect achievement and skill performance. Training directed to certain muscle groups leads to events of development and a gradual increase in weights used in training units to reach adaptation muscular for new weight making the muscle more susceptible to facing new weight. It is not possible to benefit from weightlifting without weight gain. As the ability to quickly fill the largest number of muscles fibers at the beginning of the movement is one of the important characteristics of the development of strength.

This study also refers to development in maximum strength to maximum training loads on which research sample has been trained. Muscle intensity and making participating working muscles work with maximum possible strength by stimulating the largest number of muscles fibers raised. Continuation of training on high loads for a long period makes muscle increase strength. This is consistent with what some reports pointed out. Strength improves the result of regular training. Especially, this training contains weightlifting suitable for players' capabilities with the gradual intensity of loads according to the improvement of their abilities (Jensen & Fisher, 1972). Through kinetic units in each muscle fiber and thus increasing muscular strength produced, the use of weightlifting training in high lines is that work is focused and directed towards more muscular groups than others. This is in line with the requirements. The use of the method of tender training contributed effectively to improving the amount of muscle strength for muscular groups working. Weights training in partial training is the best option for developing and increasing amount of muscle strength. The use of various training devices and tools had an impact.

It is clear in adding the element of excitement and suspense among students. The use of the Multi gym workout device had a great role in improving and developing muscle strength. It demonstrated the effectiveness of device training, which is in line with the literature. Severe changes within the structural structure of muscle. This study also found that students tend to use training devices significantly and prefer them in training. The use of diversification in training is on several different types that gives a change in motor sensation during muscle contracting. This study also attributed moral results of skill tests that physical exercises using weightlifting have contributed effectively to developing special muscle strength components and thus contributed to the development of the technical performance of skills under research.

4. CONCLUSION

The conclusions are the following:

(i) Weight training is one of the most important methods of developing muscle strength of all kinds.

(ii) Exercises prepared with weightlifting and Multi gym workout have a positive effect in improving the technical performance of students in research skills.

(iii) Existence of moral differences with statistically significant between tribal and dimensional tests of physical and skilled research variables and in favor of dimensional tests.

Recommendations are the following:

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(i) Emphasizing the development of the character of muscle strength because it is the main element of fitness elements and the most important characteristic of gymnastics.
(ii) Providing gymnasium halls with free transfers and some devices that will develop force.
(iii) Use of devices and tools in halls to improve and develop muscle strength and thus improve performance.
(iv) Using weightlifting and Multi Gem) in developing muscle strength and variables.
(v) The necessity of allocating part of the educational unit to train weights to contribute to meeting some of the requirements of skill performance.
(vi) Attention to giving physical exercises accompanying skill exercises to develop technical performance.
(vii) Conducting studies and research on hardware devices and skills.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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