# A DEVICE FOR BALANCING THE WEIGHT AND ITS IMPACT ON THE ACHIEVEMENT OF YOUNG LIFTERS

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**Abstract**

The purpose of this study is to determine a device for balancing the ends of a weight and its effect on the performance of young weightlifters, using an experimental approach to the research question, with a sample size of (12) athletes representing the club (Al-Rafidain Al-Diwaniyah Al-Ettifaq Al-Iskan) applicants. The homogeneity and equivalence processes were carried out to verify the starting line of their data, after taking their tribal measurements (height, weight, arm grip strength, and the relative achievement of the snatch and nether lifts). When performing and due to the absence of such a device, the usual sample approach was used and training units were entered into it using the training method. The results of the pre and post arithmetic circles for the two groups were compared and treated statistically. After that, the most important conclusions of the device were reached that had a positive impact on achievement and improvement of some kinematic variables for the two Snatch lifts Walther.

**Keywords**: Sports psychology. Sport exercise. Electronic device. Track. Weightlifting. Achievement

Manuscrito recibido: 05/10/2022
Manuscrito aceptado: 19/10/2022

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## Introduction

The world is now in a continuous development due to the evolution of the research movement. After the countries of the world employed great capabilities to raise the level of sports to shorten time and effort in scientific ways through which to raise the technical and physical capabilities of all athletes, which made them reach the highest levels and win medals on the local, international and Olympic scale, and this came as a result of many experiences and efforts of many years of scientific work. Studied and use of modern scientific means in planning and training.

Weightlifting is a sport with special requirements because it requires high-intensity physical fitness and is one of the important individual sports, characterized by the difficulty of technical performance. Since the correct execution of routine weightlifting (Snatch - Nitro) requires high technique and a correct kinetic path to successfully complete these lifts. It's no secret that improving the level of physical elements and good control of skill and technical performance leads to great results in the sport. A powerlifter must possess performing arts and other qualities in order to not lose in the competition by applying the best scientific methods and theories to sports training, putting a lot of effort into the competition.

Previous studies did not address electronic devices to be used in the field of sports training, as the idea of this device lies in knowing the defect in the production of strength between the arms and giving feedback to the player and coach to correct mistakes, as balance is required for the success of the lifts, which leads to the success of the completion process. The training devices, especially electronic ones, which are based on scientific foundations and which are implemented on a regular basis, cause a rapid and orderly development in the physical and skill efficiency of the athlete, "and they reach their goals in the training process, and their success is measured by the extent of the achievement achieved by the player" (Hussein Ali Al-Ali, 2010).

Previous studies identified the kinetic path of weight and analyzed it in detail, as it showed us the differences between good movements with similar magnitudes and enriched these studies with ideal values for the kinetic path of weight, and gives relatively different ranges, which helps us in two ways. The first trend is to correct actions based on their form and execution. The second trend is to reduce training time and effort. Hence, the research acquires its importance in the use of this electronic device in the process of correcting the lifting process, training and adjusting the motor path and the art of performance to approach the optimal achievement. As the researcher noted that the training sports environments can be controlled electronically through devices that give us data about the target sample, which saves effort and time for coaches and training institutions. Hence the question, does this method have an effect on the training process, motor path and achievement. This is what the researcher will go through to find out.

## Purpose of the study

The study aims to prove that the electronic training device corrects the training process through real-time feedback during performance. The researcher also assumed that there is a statistically significant difference between the pre and post tests of the research group and for the benefit of the post test in the relative achievement of the Snatch raise, as the training devices that are built on correcting performance enable players to invest in finding their mistakes quickly to avoid them, which makes it easier for them to understand the movement and not to make mistakes again. From here came the research problem, which is the question whether this training method has the ability to correct performance in lifting through vocal determinants that the player and coach feel, which leads to correcting and treating errors.

## Method and Procedure

The experimental method was used in the style of a single experimental group to solve the research problem, "that is, the use of experiment to prove hypotheses" (Dowidri, 2000).

### Research sample

The study sample was specially selected from the young weightlifters of the Al-Rafidain club in Al-Diwaniyah, numbered (6) athletes. The test variables were related to the homogeneity of the samples (dimensions, weight, relative tear height achieved and grip strength) and they were tested in special preparation stages. according to their weight class. The experimental group consisted of several weight classes, namely (No. 56 No. 1-62 No. 2-69 No. 2-85 No. 1) kg.

The researchers intentionally homogenized the study samples of members of one group and the study samples of the two groups with coefficients of variation. "The closer the coefficient of variation is (1%), the higher the homogeneity is, and if it exceeds (30%), the sample is not homogenous" (Al-Tikriti, 1999). Right arm strength 6.5 - left arm strength 5.2) was the same as the experimental group (4.4% for length - 2.4% for age - 2% for relative strength).

### Tools and equipment used in the research

1. A form for soliciting opinions from experts and experts in the field of athletic training (effectiveness of equipment).

2. A table used to gather opinions from experts and biomechanics to determine the difference in strength between the two arms of a snatch lift. The researchers used resources and references related to the science of biomechanics to lift weights to determine the productive strength of both arms and their convergence with the balance of the weight bar, and developed in their questionnaires to biomechanics experts and experts. -M2) Agreed rate (81.21% or higher), noting that the number of experts is (8) Annex (1).

3. Auxiliary work team

4. Integrated weightlifting hall.

### Balancing device for both ends of the weight

The device is designed with the following steps:

1. Arduino Strength sensors: Gyroscope to maintain the balance of the weight :They are two force sensors placed on the weight bar in the place

where the player is holding the weight bar. They work to convert the strength of the grip of the weight during the pull into digital data and audio signals indicating the failure of the strength of one arm to produce the force, and it works with the wireless Bluetooth data transmission system (Figures 1 and 2).

2. The amplifier on both sides of the quad: It is a device that gives a specific sound signal when there is imbalance in one of the lifting arms, that is, if the failure to produce the force for lifting in the right arm receives a signal from the force sensors that gives an audio signal from the right, which alerts the player to correct Performance when lifting from this side.

**Scientific transactions of the device**

**Validity of the device:**

Apparent honesty was adopted, "which means judging a thing by mere apparent observation that it is true in measuring what it was set for" (Hassanin, 2001). In the manufacture of the device and also the sensors in the device bear the friction due to the sliding and force of the hand on the weight bar (bar) from the inner edges.

**Stability of the device:**

Stability coefficients were extracted by the (retest) method (Hassanin, 2001), in which the researchers deliberately selected (4) players who were good at weighted snatch as a sample. Tests were conducted with the device and repeated with the device a week later to see how stable the device was, with both tests assessed by referees on the field.

After completing the data for reliability tests, the researchers processed them statistically. This is done by extracting the value of the Pearson correlation coefficient between the two test results, which reaches (0.918), greater than the list value (0.707) in degrees of freedom (2) and levels of significance (0, 05 ), which indicates a significant correlation between the two tests. This shows the stability of the device's effectiveness.

**Main experiment**

**Pretest:** With the help of the working group, members of the study group were tested (*) on Saturday, November 12, 2021 at 4pm in the closed hall of the Diwaniyah Provincial Club Championships and Housing Club. (height-weight-relative strength-arm grip).

**Figure 1:** Parts of the device.

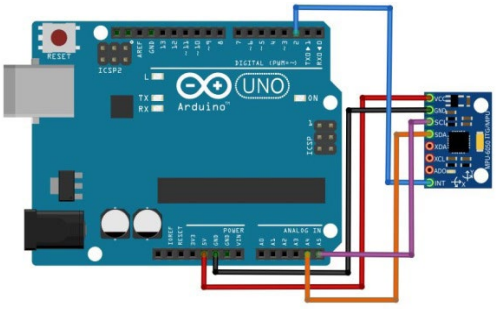

**Figure 2:** Parts of the device.

**Training Curriculum:** The researchers In cooperation with Rafidain Club trainer's syllabus during a special training period after homogenizing the samples. The course starts at the same time as the training period of the research group. For 6 weeks and within limits:

1. The method is applied in parallel during the special preparation of the study samples.

2. The duration of the course is (6) weeks.

3. Training time is (80-100) minutes (4) per week.

4. The training course will be implemented from December 12, 2021 to July 1, 2022.

5. The first week of the course, Sessions 1 and 2, is the trainer's explanation of the practical and full implementation of the training session. The researcher's work is limited to monitoring the course of the course and following up on the training phase.

6. The introduction of the means with the training units and according to the curriculum.

**Post-test:** After completing the application of the vocabulary of the training curriculum, the researcher conducted the post-test for the experimental group on Sunday, 9/1/2022 in the annual weightlifting championship to choose the club team to test the achievement, as well as taking the performance data (relative achievement of the snatch lift).

**Statistical means**

In the statistical analysis, the researcher relied on the spss statistical package.

**Presentation, analysis and discussion of the results**

**Introduction and discussion of the pre- and post-test results of relevant proficiency tests.**

Presenting the results of the tribal and remote performance tests using abduction lifts revealed significant differences between the tribal and remote tests in both study groups in favor of post-testing (Table 1). The researchers attribute this positive change in performance to:

- training sessions are positively reflected in the digital achievement of the research sample, "as the opinions of experts, no matter how different the sources of their scientific and practical culture, confirm that the training program inevitably leads to the development of achievement, as it is built on a scientific basis in organizing and programming the training process, using appropriate and gradual intensity, noting the necessary individual differences, as well as the use of repetitions The optimal and effective inter-rest period and under the supervision of specialized trainers under good training conditions with regard to the place, time and tools used" (Ismail, 1996).

- The training sessions address exercise economics requirements by only targeting the movement specifically and not involving muscle groups that are not required in training (i.e. directly targeting performance) so that these groups are developed to provide a high level of efficiency in their work. This is in line with (Gonden et al.) "optimal performance is achieved by increasing the level of muscle required for work and performance" (J, 2005). And (Peen) believes, "The strength improves as a result of regular training, especially if this training contains weights for the players' abilities with the gradation of these loads according to their abilities." (Peen, 1999).

The researcher also attributes these differences to the increase in the activity of the motor nerves that work to transmit alerts from the main centers of the brain and spinal cord to the muscles, and thus leads to an increase in the reflex action of the muscles and thus the enlargement of the muscle fiber. spinal cord to muscle.

This is consistent with what was indicated by (Raysan Khouribet, 1995) "The second type of inflation is the hypertrophy of muscle fibers with an increase in the size and number of muscle fibers, and thus there is a doubling in the thickness of muscle fibers and a significant growth in the maximum muscle strength." (Raysan Khuraibet, 1995).

- The researchers noticed an improvement in the performance of

**Table 1:** It shows the arithmetic mean of relative (snatch) heights, standard deviations, calculated (t) values and relative aptitude tests of the relative (snatch) heights of the two tests before and after the sum of the study.

| S.D | Value (T) | | Posttest | | Pretest | | Group | |
|---|---|---|---|---|---|---|---|---|
| | Tabular | Calculated | ±S | M** | ±S | M** | | |
| signify | 2.01 | 3.14 | 1.02 | 1.8 | 1.21 | 1.22 | Snatch | Experimental |
| * Table (T) value at degree of freedom (5) and error probability ≤ (0.05) | | | | | | | | |
| ** % of body weight are relative values. | | | | | | | | |

the members of the experimental group because the researchers attributed this improvement to the use of exercise equipment, thereby avoiding and correcting errors in technical performance. And provide mechanical variables in favor of weightlifting, since one of the reasons for technical performance failure is "the athlete fails to apply mechanical rules to weightlifting. And does not apply corrective methods" (Al-Sudani, 2002). Because "the error correction process leads the athlete toward better performance" (Nassif, 1988). Ali Shaabout adds: "Failure to correct mistakes in the performing arts, in turn, leads to underdevelopment of the performance level. (Al-Sudani, 2002). From this we conclude that due to corrections and counterweights to the performing arts Balanced at both ends, the device has led to the development of a level of performance.

## Conclusions and Recommendations

### Conclusions

1. The device has a positive effect on performance, improving the performance technique of lifting the snatch.

2. The device is a training method that can put effort and time into training.

### Recommendations

1. The trainer needs to use the device in the course because it has a noticeable impact.

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