

The effect of training units to develop flexibility on artistic performance in gymnastics

تأثير برنامج تدريبي لتنمية المرونة على الأداء الفني عند لاعبي رياضة الجمباز

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**Abstract**

this research is like a proposed program; to improve the flexibility of athletes in the field of gymnastics, were the exploratory study was conducted and the validity of the study was confirmed and the program was tried its effectiveness was confirmed in advance, and the study relied on the experimental motivation .

**Keywords:** flexibility attribute, gymnastics specialty, proposed training program .good trie

**الملخص:**

إن هذا البحث هو بمثابة برنامج تدريبي مقترح لتنمية صفة المرونة لدى رياضي الجمباز، حيث تم إجراء الدراسة الاستطلاعية وتم التأكد من ملاءمة الدراسة، وقد اعتمدنا على المنهج التجريبي، وكانت النتائج جد إيجابية، وأن صفة المرونة تحسنت بعد تطبيق البرنامج تدريجيا، وبذلك تحققت الفرضيات في دراستنا الميدانية.  
- الكلمات المفتاحية: صفة المرونة؛ الجمباز؛ برنامج تدريبي؛ تحسين المهارة؛ الأداء الجيد

## 1- Introduction

Gymnastics is a type of sport that requires a combination of physical fitness, strength, flexibility, balance, and coordination. This sport includes a variety of movements and exercises that are performed on a sports floor or on apparatus such as the horse for men, the individual apparatus for women, rings, artistic gymnastics, and more (<https://www.ammonnews.net/article/h22,00.23/04/2023>).

Artistic gymnastics is one of the most prominent forms of gymnastics, and it includes performing various exercises on different machines, such as the horse for men, the individual machine for women, rings, trampolines, and the floor. Athletes perform multiple movements that require a high level of fitness, coordination, physical strength and flexibility.

Some exercises in artistic gymnastics include jumps, spins, handstands, balancing on machines, and flutes in the air. These moves are evaluated by gymnastics judges and experts and players are given scores based on technique, execution and overall excellence. Overall, gymnastics is an exciting and amazing sport to watch and practice, and it requires athletes to be extremely committed and constantly train to develop the required skills.

The primary goal of developing flexibility is to improve the elasticity of the muscles, tendons, and connective tissues surrounding the joints, taking into account that achieving optimal flexibility occurs to a degree greater than the amount of skill performance during competition (Al-Fatih,2002), and this increased range is called the flexibility reserve, noting here that flexibility must be within certain limits and not infinitely so as not to lead to a state of unwanted increased mobility, as we observe in children, who are forced to perform exercises that require Their joints move more than the physiological range

(Shehata and El-Shazly, 1986), especially in swimming and gymnastics, which leads to negative changes: such as preventing the flow of oxygenated blood around the joint and disintegration of the ligaments and capsules that surround it.

### **1.1- The problem:**

In his daily life, whether at work or in a normal activity, a person faces multiple and varied movements, which requires his body to have the necessary flexibility to avoid any injuries to the joints or muscles. As for athletes, they are the most vulnerable to sports injuries as they practice the most dangerous movements and therefore must have a flexible body (Ahmed ,1999).

As we have noticed that athletes in gymnastics lack many elements of physical fitness, especially flexibility during the performance of various gymnastics skills, which is a problem that students suffer from in the educational process of motor skills and the way they acquire them. In addition, acquiring a degree of flexibility helps facilitate the artistic learning of the gymnastics student (Shehata and Al-Shazly,1986).

Hence the idea of conducting the study emerged by proposing a training program based on scientific foundations through which we aim to develop the quality of flexibility in the gymnastics specialty. The research question came as follows:

What is the effect of a proposed training program to develop flexibility on the artistic performance of gymnastics students?

**1.2- Partial problems:**

1- Does the proposed training program have a positive effect on developing flexibility to improve the technical performance of gymnastics students?

2 - Does using a program to develop flexibility have a positive effect on improving technical performance in gymnastics?

3- Does using a program to develop flexibility have a positive effect on the performance of the front roll in gymnastics?

**1.3- Partial hypotheses:**

1- The proposed training program has a positive effect on developing flexibility to improve the technical performance of gymnastics students

2 - Using a program to develop flexibility has a positive effect on improving technical performance in gymnastics

3- Using a program to develop flexibility positively affects the performance of the front roll in gymnastics

**2- the importance of studying:**

Our study of this topic has shown that it is of great importance, as follows:

It allows the researcher to identify the extent of the effect of flexibility on the technical performance of the front roll in gymnastics.

Knowing the importance of flexibility, and supporting future research and studies in the field of training in gymnastics,

Educating and alerting gymnasts to the importance of flexibility.

**3- Objectives of the study:**Through our study of this topic, we have identified the following objectives:

Explaining the effect of flexibility on artistic performance in gymnastics

Explaining the importance of the proposed program in improving flexibility

Demonstrating the effect of flexibility on forward roll in gymnastics

**4- Reasons for choosing the topic:** Among the reasons that made us choose this topic are:

-There is an urgent need to address this issue

-Neglect or lack of familiarity with flexibility

**5- Previous studies: Among the previous studies are:**

- Study of Aour Al-Taher 2016: The effect of a proposed training program (some gymnastic movements) in developing the flexibility of younger football players (13-15)

The study aimed to develop flexibility to the required level that would help reduce exposure to sports injuries among football players.

The researcher conducted the study on a sample consisting of: 14 players with identical characteristics to the control and experimental sample, including 7 players from the Asghar team of the Ain Fakroun Municipal Association, which is the source of the control sample, and 7 players from the Ain Karsha Municipality Association team, which is the source of the experimental sample. The test was done at the same time as the test for the study on Wednesday, February 1, 2017 AD, and the test was repeated 4 days later under the same conditions. This was in order to study the scientific foundations of the test in terms of validity, consistency and objectivity, and it was done with the help of the team coaches.

## **6- Practical aspect and field study:**

### **6.1- Exploratory study:**

There is no doubt that to ensure the good conduct of any field research, the researcher must conduct a reconnaissance study to determine the suitability of the field of study for field research procedures. This is in order to find the best way to conduct tests and avoid the obstacles and problems that we may encounter during field work.

The exploratory study constitutes the necessary and obligatory condition for the study, as without it we cannot imagine any credibility for scientific work. Accordingly, the exploratory study is synonymous with scientific goals that cannot be ignored in any way (Al-Zayoud,2006).

### **6.2- Study population and sample:**

The study population consisted of students majoring in the Department of Sports Training at the University of M'sila, which included the research sample32 students were divided into two groups:

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| Significance level (x) | value (v) | Control group |         | Experimental group |         | measuring unit | Variables             |
|------------------------|-----------|---------------|---------|--------------------|---------|----------------|-----------------------|
|                        |           | deviation     | Average | deviation          | Average |                |                       |
| 0.65                   | 0.44      | 0.70          | 18.50   | 0.77               | 18.38   | year           | the age               |
| 0.34                   | 0.96      | 4.71          | 172.55  | 4.21               | 174.00  | poison         | height                |
| 0.50                   | 0.66      | 3.94          | 67.94   | 4.01               | 68.83   | kg             | body mass             |
| 0.74                   | 0.33      | 3.84          | 44.77   | 4.15               | 45.22   | poison         | Ability for both legs |
| 0.74                   | 0.32      | 0.36          | 3.76    | 0.38               | 3.80    | meter          | Power for the arms    |
| 0.68                   | 0.41      | 1.98          | 13.77   | 2.01               | 14.05   | Once           | Strength for both men |
| 0.42                   | 0.80      | 1.58          | 11.55   | 1.30               | 11.94   | Once           | Strength for the arms |

Experimental group 16 students, 8 males-8 females

A control group consisting of:16 students, 8 males-8 females

In order to achieve equality between the members of the two groups regarding work, height, and body mass, in addition to the pre-measurements of the variables under study, the researcher used the t-test for two independent groups, and the results of the table (1) Show that:

**Schedule (1):** Results of a t-test for two independent groups for equivalence between the experimental and control groups.

Tabular (T) value (2.04).

It is clear from Table No.1) All values of the t-test for two independent groups for the variables under study were less than the tabular value (2.04), meaning that there are no statistically significant differences in all variables between the members of the two groups, and this in turn means that there is parity between the members of the two groups before starting to implement the program.

- As for morphological differences, comparisons are made between pre- and post-tests for the same group to measure the amount of improvement achieved. Therefore, differences between members of two groups are not a factor influencing the results obtained. Despite this, the two groups were close in terms of measurements.

- The two samples are close and homogeneous in all aspects (age, weight, height,)

- The pre- and post-physical tests were conducted at approximately the same time for the two samples and under the same conditions.

- We supervised this process with the help of a team working in the same spatial and temporal conditions.



- The researcher planned the proposed training program, taking into account unifying the general framework of the training programs for both groups in terms of training periods, the number of training times per week, timing, time, number of daily training units, and training location. We also introduced technical and skill training to the proposed program.

- The individuals of both samples were distinguished by their will and willingness to work.

- Do not change or alter the means of measurement during the pre- and post-tests for the two samples.

### **6.3-Tools for collecting data and information:**

In order to collect the required data related to the study, the researcher used the following:

#### **First: The training program:**

The proposed training program was implemented for (8) weeks, with (3) training units per week.

#### **Second: Arabic and foreign sources and references.**

#### **Second: Tools and devices that help in applying the program:**

Flexibility box and wall mind.

A questionnaire form to present flexibility exercises to experts

Numbered ruler and measuring tape.

Telescope:

Front roll test: The researcher designed this test and presented it to a group of experts to agree on its validity. After that, it was found that the test was suitable for measurement, as the results of the experts' opinions showed this.

6 Ground movement mat for forward roll with the starting point marked

3 boards for different attempts are presented to the subject for one second before the attempt begins. The first board and the last two boards were used in the test to perform the training program, as they were approved while performing the training program.

And also:

2 clock hours.

4 scoreboards to record performance time and record correct and failed attempts.

### **6.3- Test design:**

Pretests:

- Tests to measure flexibility according to the measurement table for the research sample (the three groups) and recording their degree of flexibility before starting to implement the training program to develop flexibility and (Appendices No.1-2-3-4-5).

Posttests:

-Tests measuring flexibility according to the measurement table for the research sample after applying the study program at the end of the semester.

### **Training program design:**

In developing the training program to develop flexibility, the researcher relied on the scientific sources related to this study, his field experience in teaching gymnastics courses, and presented the program's exercises to experts from teachers at the Institute of Physical Education and coaches in gymnastics. The program includes exercises to develop flexibility during eight weeks each. One week, two training units, the time of the training unit 012 minutes (In the first unit, exercises for static positive flexibility are applied, and in the second unit, exercises for static negative flexibility are applied every week. The sample was divided into three groups, each group consisting of 10 students. A measurement of the degree of flexibility was conducted for all members of the three groups to record the degree of flexibility for Diem before starting. By applying the program according to a program to measure the degree of flexibility, the first group began with the warm-up period naturally as scheduled in the gymnastics lesson for the students of the Department of Sports Training and the Institute of Physical Education in accordance with the prescribed curriculum. The second group began applying the training program during the warm-up period before starting the gymnastics lesson, and the third group applied the training program. After completing the scheduled gymnastics lesson.

### **6.4-Statistical methods used:**

Arithmetic mean, standard deviation, and test T for bound samples and unbound samples.

### **7- View and analyze results:**

The following table shows that students' flexibility has witnessed a noticeable development, as the calculated value of the difference between the pre-test and the post-test is 4.219, 3.338, and 9.012 for the first, second, and third

groups, respectively, show a significant difference at the 0.05 level, where the value of the 0.00 level appeared, and Table (4) shows this.

| Groups     | Tribal  | after me | valueT | level at0.05 |
|------------|---------|----------|--------|--------------|
| the group1 | 11.0667 | 12.333   | 4.219  | 0.001        |
| the group2 | 12.733  | 13.8661  | 3.238  | 0.006        |
| the group3 | 11.0667 | 15.0667  | 9.012  | 0.00         |

Schedule (4) Explains the differences between the results of the value and post-test of the research groups

Through the tables (5. 6. 7) which explains the difference between the groups. We note that there is a difference between the first and second group, in favor of the second, and between the first and third group, in favor of the third, and between the second and third group, and in favor of the third. Through the results of the differences, we find that the third group is the one that excelled more than the two groups. The last two.

| Groups     | the numbe rN | the middle | deviation | valuet | the level0.05 Sig |
|------------|--------------|------------|-----------|--------|-------------------|
| the group1 | 15           | 12.3333    | 1.17514   | 6.973- | 0.00              |
| the group2 | 15           | 13.8667    | 1.59762   |        |                   |

Schedule (5) Explains the difference between the first and second groups in the degree of flexibility

The difference favors the second over the first

| Groups     | the number<br>rN | the middle | deviation | valuet | the level0.05 Sig |
|------------|------------------|------------|-----------|--------|-------------------|
| the group1 | 15               | 12.3333    | 1.17514   | 6.973- | 0.00              |
| the group3 | 15               | 15.0667    | 96115     |        |                   |

Schedule (6) Explains the difference between the first and third groups in the degree of flexibility

The difference is in favor of the third group at the expense of the first

| Groups     | the number<br>rN | the middle | deviation | valuet | the level0.05 Sig |
|------------|------------------|------------|-----------|--------|-------------------|
| the group2 | 15               | 12.3333    | 1.17514   | 2.493- | 0.016             |
| the group3 | 15               | 15.0667    | 96115     |        |                   |

Schedule (7) Explains the difference between the second and third groups in the degree of flexibility

The difference is in favor of third over second

**8- Conclusions, suggestions and recommendations:**

Through the results of the research that were presented, we conclude the following:

- Flexibility improved in the control group, but only slightly and insufficiently.
- There is a clear development in the level of flexibility for both the second and third experimental groups.
- The third group improved more than the second group in flexibility, which applied the training program at the end
- The training programme. This was shown by measuring the degrees of flexibility before and after exposure to the training programme.

### **9-Recommendations:**

- During the quantitative admission tests, emphasis is placed on selecting students who have proportional height and weight because this has a positive impact on developing physical fitness qualities and learning motor skills in an easier way.
- Performing stretching and flexibility exercises at the end of each lesson because of their impact on developing flexibility well.
- It is necessary to pay special attention to the practical program according to the specialty of the lesson and its needs for flexibility in order to develop it among students, especially for studying gymnastics courses.

### **10- Conclusion:**

After the field tests that we conducted, we found that, through the results of the research that were presented, we conclude: The training program to which the students were exposed had a positive impact on the trait of flexibility. It also improved the flexibility of the control group, but only slightly, and there is a clear development in the level of flexibility. For both the second and third experimental groups.

We note that the third group improved more than the second group in flexibility, which applied the training program, and therefore the hypotheses were fulfilled.

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