

A FIELD STUDY CONDUCTED ON THE BEGINNERS OF ARTISTIC GYMNASTICS AT AL-AFAQ MOSTAGANEM SCHOOL

The effect of a mental perception training program on improving the level of skillful performance of some ground movement apparatus skills among artistic gymnastics beginners (11-12) years

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Abstract: This study introduces one of the modern techniques in the field of cognitive psychology and complements to the training process for artistic gymnastics coaches, in order to develop the level of athletic performance and skill performance in general.

In particular, the study contained two homogeneous and equal groups, one experimental and the other controlled. The researcher applied a training program on the skill of mental imagery accompanying the skill training on the experimental sample consisting of (8) juniors in artistic gymnastics, to know the effect of this type of training in developing the level of skill performance of some basic skills on the ground movement apparatus (wheel with quarter turn – back flip – back somersault straight).

The duration of the program was defined as (08) weeks at the rate of (03) training units per week, and the units of the proposed program included exercises (muscle and mental relaxation, basic mental imagery and multidimensional mental perception).

The results indicated that there is a positive direct relationship between the development of the level of mental imagery and the level of skill performance of the motion skills under study.

Accordingly, the researcher recommends the need to incorporate such mental programs while planning various preparation programs, in order to develop the mental abilities of athletes to improve the level of skill performance.

Keywords: progressive relaxation, mental perception, skill performance, floor movements, artistic gymnastics.

THEORETICAL ASPECT METHODOLOGICAL STEPS FOR THE SCIENTIFIC ARTICLE

Introduction and the study's problematic

Men's artistic gymnastics is a competitive sport activity that is important in the competitive world and Olympic fields, and in which players compete on six devices where the nature of performance on each machine varies according to the geometric elements of each machine.

Floor movements are the mainstay of all gymnastics movements, and considered as a preparation for the gymnastics movements by machines, beginners start to learn them in a young age, and in order to get the player to perform ideally with the least muscle effort, modern techniques should be adopted during the preparation stages. The training of mental skills such as relaxation, mental imagery and focusing attention are one of the most important ways to help achieve skill and movement requirements in a good and fast way. (Mohamed Hussein, 2009, p. 56).

Performance on floor movements machine is linked to certain motion paths that depend on the connection between brain and motion performance, which requires the player to be fully focused, good with visualization and linking motion skills to each other so that he can perform a dynamic skill. So, the physical and skill preparations on this machine are not enough to excel and make achievement.

Mental imagery in the athletic field is a type of mental process and an important technique when retrieving or recalling the experiences of an individual's learning that draws a memory image of the movement or skill to be performed which improves the performance of the movement or skill. (Kassem, 2005, p. 226)

In light of this, Allawi (2002) emphasized on the importance of mental imagery as a key element in developing motion skills and performance, and plays an important role in developing players' abilities and level, and has many benefits in learning motion skills, and that the movement's pre-training eases the development of movement's guidelines to stabilize them" (Allawi, 2002, p. 14)

And through the work experience of gymnastics training researchers and their field knowledge on the content of training programs for some gymnastics trainers, they noted that most of their main focus is on physical, professional and planning aspects, with complete disregard for the mental aspects that should go simultaneously with other methods of preparation. Mental aspects are an integral and essential complement to the training process.

And relying on what is mentioned above and taking by the opinions of experts and specialists in the field of athletic psychology and motion learning, researchers tried with this study to highlight the positive impact a mental-imagery based training program on developing the skill performance of some skills of the floor mat set is for beginner of artistic gymnastics (11-12) years.

The practical aspect

Research methodology: The researchers relied on the experimental method with its scientific steps for its suitability to the nature of the study and its objectives.

Appropriate experimental design: The researcher chose the experimental design with the two equal groups (controlled, experimental).

Research community: It was represented in all the beginners of the artistic gymnastics of the Al-Afaq School in Hai Tajdid Mostaganem, with a number of 30 players.

Sample research: The main research sample consisted of 20 youngsters of artistic gymnastics at Al-Afaq Mostaganem School, who were deliberately chosen, as they were divided into two equal and homogeneous groups, and each group consisted of 10 players.

Data and Information Collection Tools

Morphological measurements

The length in centimeters of the (body, arm length, torso length, leg length) and body weight in kilograms, chronological age in year, and the training age.

Skills tests

Through the researchers’ access to the various sources, a set of floor movement device skills was obtained, which was presented in a survey form 5 experts in gymnastics, and accordingly the skills were nominated for which more than 80% of the judges agreed, and thus the study concluded that the following skills were identified: (wheel with quarter turn – back flip – back somersault straight – somersault).

Preparation of the skills performance assessment form

A form was prepared to evaluate the motion skills under study and it was divided into three sections (preparatory section, main section, final section), and the skill degree was determined from (10) grades, and each section had a specific grade, and the type of error and the value of the discount were suggested and then presented to 5 experts specialized in international arbitration of gymnastics, after the experts’ agreement, the final score for each skill section was fixed, the discount value was determined for the type of error, and its final form is shown in Table (1).

Table 1. Arbitration system

| Skill sections | Grade | Overall grade | Error Type | The value of the discount |
|---------------------|-------|---------------|------------|---------------------------|
| Preparatory Section | 3 | 10 | Simple | 0.10 |
| Main Section | 5 | | Medium | 0.30 |
| Final section | 2 | | Large | 0.50 |
| | | | Fall | 1 |

Evaluation of skill Performance

The researchers filmed the motion skills under study in the form of a video and presented them with a form of evaluation of the level of performance on 4 experts specialized in international arbitration law for gymnastics, where

the highest and lowest scores were disqualified and the average of the two intermediate scores was calculated according to Article 11 of the law.

Scale of mental imagery in sports

Through the researchers reviewing previous references and studies that dealt with the mental training in sports, they selected the mental imagery scale designed by Martinez (1982) and the Arabization of Osaama Ratib (2000) and its paragraphs were reformulated by Daa Jaber (2002), due to the ease of its paragraphs. And it measures the degree to which a player can use senses during mental imagery and consists of 4 dimensions (visual perception, auditory perception, kinesthetic perception, emotional perception) and 4 situations (practicing alone / practicing with others / watching a colleague / performing in a competition).

Statistical methods used in the study

The researchers in this study relied on the (Spss19) program to calculate: the arithmetic mean, standard deviation, T-test for the significance of differences, correlation coefficient.

The devices used in the study

Floor movements device, wall bars, Swedish seats, stopwatch, Restameter, medical scale, video camera.

The proposed mental imagery program

The researcher determined the content, time, dimensions, and objectives of the mental imagery program through a reference survey of the most important scientific theses that dealt with mental training in the sports field in addition to experts' opinions poll.

Objectives of the proposed program

Defining the research sample of the importance of training mental skills to raise the level of skill performance in artistic gymnastics.

Eliminate stress and anxiety through gradual relaxation exercises of Jacobson.

Improve the ability of the basic mental imagery and the multidimensional mental imagery.

Isolate stimulations that are not related to performance and reach the highest levels of concentration of attention.

Access to anger control and its guidance during training and competitions.

Developing the skill level of some of the skills of the floor mat among the beginners of artistic gymnastics youngsters.

Duration of the proposed mental imagery program

Based on the scientific references and previous studies, the duration of the application of the program was determined to be (08) weeks, at (3) units per week, at a rate of (15) minutes per unit. Thus, the total number of training units in the proposed program as a whole is (24) training units, and the number of hours of mental imagery in the program as a whole is (06) hours, i.e. (360) minutes, and table (7) illustrates this.

Table 2. shows the percentage of the time distribution of the proposed program dimensions

| Program dimensions | Weeks | Units | Time per minute | percentage |
|---|-------|-------|-----------------|------------|
| Progressive relaxation | 1 | 3 | 45 | 12.5% |
| Main mental imagery | 2 | 6 | 90 | 25% |
| Multidimensional mental imagery | 2 | 6 | 90 | 25% |
| Mental imagery of motion skills under study | 3 | 9 | 135 | 37.5% |
| Total | 08 | 24 | 360 | 100% |

Program implementation steps

The player begins to visualize the performance and is free from stress by sitting in an appropriate relaxation position closed eyes, then he starts to visualize the performance that he wants to develop begins with the realization of the realistic image of the performance in an ideal form for it without stopping from the beginning to the end of determining the place and the nature of the place, while invoking the different senses in relation to realistic images of performance, with focus on the breathing accompanying the performance, in order to reach the complete perception for the skill to be developed.

Presentation, analysis and discussion of results

Presentation, analysis and discussion of the results of the 1st hypothesis

There are statistically significant differences at the level of significance ($\alpha = 0.01$) between the pre and post measurements of the experimental group in the level of mental imagery and the skill variables under study in favor of the post measurement.

Table No. 3: shows the calculation of the “T” test to indicate the differences between the mean of the pre and post measurements for the experimental group in the level of dimensions of mental imagery and skill variables under study.

Table 3. The “T” test for the experimental group in the level of dimensions of mental imagery and skill variables under study the first hypothesis

| Mental and skill variables | Pre | | Post | | Value “T” | Statistical significance | |
|----------------------------|--|----------|-------|----------|-----------|--------------------------|--------------------------|
| | A | σ | A | σ | | | |
| Mental imagery | Visual perception | 10.80 | 1.476 | 14.20 | 1.317 | -5.437 | S. statistically at 0.01 |
| | Audio perception | 10.00 | 1.247 | 13.60 | 1,578 | -5.661 | S. statistically at 0.01 |
| | Kinesthetic perception | 10.00 | 1.247 | 13.60 | 1.350 | -6.194 | S. statistically at 0.01 |
| | Emotional perception | 7.40 | 1.430 | 11.40 | 1.506 | -6.092 | S. statistically at 0.01 |
| | Overall perception | 38.30 | 3.917 | 53.00 | 3.972 | -8.333 | S. statistically at 0.01 |
| Skills | Side Somersault on two hands with a quarter turn | 2.80 | .632 | 5.70 | 1.252 | -6.539 | S. statistically at 0.01 |
| | Back flip on two hands | 3.00 | .667 | 6.20 | 1.033 | -8.232 | S. statistically at 0.01 |
| | Back somersault straight | 2.50 | .527 | 5.50 | 1.179 | -7.348 | S. statistically at 0.01 |
| | Total of experimental skills | 13.20 | 1.619 | 29.00 | 2.309 | -17.714 | S. statistically at 0.01 |

Through the results obtained and shown in Table 3, we note that there are statistically significant differences at the level of significance 0.01 between the pre and post measurement of the experimental group in the level of the mental imagery dimensions and the skill variables under study in favor of the post measurement.

The researchers believe that these differences and the results obtained are due to the proposed mental imagery program, in which its training units contain exercises to develop the main mental perception and the multi-dimensional mental perception (visual, auditory, kinesthetic, emotional) and clarity of the image, which helped the player to visualize performance in all its details with full control over retrieval of performance strategies with clearly seeing them without actually performing them.

This is in agreement with what Shamoun (2001) pointed out, that mental imagery is an essential factor in the development of motion skills and performance. (Shamon M., 1996, page 219)

And Martin & Hall (1999) The mental perception process aims to facilitate the process of learning a new movement or improving its performance. The cognitive function of mental perception is to facilitate the process of acquiring and performing motor skills. (Martin & Hall, 1999, page245-268).

And Allawi (2001) adds that mental imagery requires the use of all senses to retrieve perceptions, images, and ideas that the individual has previously perceived, or requires the production of new images and ideas in the individual’s mind. (Muhammad Hassan, 2001, page 249)

This also agrees with the study of Boujemaa (2008) entitled: The effect of mental training on some skills of the floor movement device among second-year students, Department of Management and Sports Management Mesilla. And the results of which reached the group whose members benefited from the proposed training program aimed at developing psychological skills (relaxation, mental imagery, focus and concentration), recorded much better results at psychological skills and motion skills tests under study.

The researchers also attributed these differences to progressive relaxation exercises for different areas of the body in which stress is concentrated, which had a great effect in reducing tension, anxiety and feeling comfortable before starting on the mental imagery of skills.

And what Shamon (2001) mentioned that relaxation is the common factor and the main entrance to mental retrieval, and the mastery of this skill is usually made sure before entering any of the other dimensions of the mental imagery program, and on the extent of mastering this skill depends on the success and effectiveness of these programs. (Shamon 2001, page 158).

Ratib (2004) adds that progressive relaxation training achieves the acquisition of the skill of de-stressing and the feeling of comfort for different areas of the body, and the skill of easy breathing leads to the acquisition of the skill of relaxation for athletes, and mental training contributes positively in the development of physical performance and then the development of athletic performance, this helps in performing the skills smoothly and providing mental responses properly (Ratib, 2004, page 317).

Therefore, it can be said that the first hypothesis which states that there are statistically significant differences at the level of significance ($\alpha = 0.01$) between the pre and post measurements of the experimental group in the level of mental perception and the skill variables under study and in favor of the post measurement have been achieved.

Presentation, analysis and discussion of the results of the 2nd hypothesis:

There are statistically significant differences in the level of significance ($\alpha = 0.01$) in the post measurements of the controlled and experimental group in the level of mental imagery and skill variables under study in favor of the experimental group.

Table 4. The “T” test for the significance of the differences between the post measurements averages of the experimental and control groups in the level of mental imagery dimensions and the skill variables under study is illustrated.

Table 4. The “T” test for the experimental group in the level of dimensions of mental imagery and skill variables under study the second hypothesis

| Mental and skill variables | Pre | | Post | | Value “T” | Statistical significance | |
|----------------------------|--|----------|-------|----------|-----------|--------------------------|--------------------------|
| | A | σ | A | σ | | | |
| Mental imagery | Visual perception | 14.20 | 1.317 | 9.90 | 1.370 | 7.156 | S. statistically at 0.01 |
| | Audio perception | 13.90 | 1.449 | 9.50 | 1.080 | 7.698 | S. statistically at 0.01 |
| | Kinesthetic perception | 14.10 | 1.101 | 9.50 | 0.850 | 10.462 | S. statistically at 0.01 |
| | Emotional perception | 12.00 | 1.333 | 7.40 | 1.430 | 7.440 | S. statistically at 0.01 |
| | Overall perception | 55.00 | 3.972 | 38.30 | 3.917 | 9.466 | S. statistically at 0.01 |
| Skills | Side Somersault on two hands with a quarter turn | 6.40 | 0.699 | 4.60 | 0.516 | 6.548 | S. statistically at 0.01 |
| | Back flip on two hands | 6.40 | 0.699 | 4.40 | 0.516 | 7.276 | S. statistically at 0.01 |
| | Back somersault straight | 6.20 | 0.632 | 4.30 | 0.483 | 7.550 | S. statistically at 0.01 |
| | Total of experimental skills | 31.60 | 1.174 | 22.10 | 1.101 | 18.671 | S. statistically at 0.01 |

Through the results obtained, which are shown in Table 4, we note that there are statistically significant differences at the level of significance 0.01 in the post measurements of the experimental and controlled group in the level of the mental imagery dimensions and the skill variables under study in favor of the experimental group.

The researchers attribute this improvement to the effect of the proposed mental imagery program, which was applied to the members of the experimental group in parallel with the skill training, meaning that the method of combining skill training and mental training of the experimental group led to the correct learning of the skill in its stages, that is, correcting errors inside the player’s mind and visualizing the correct skill mentally and focusing on the subtle aspects that most players may overlook from performing properly and isolating all unrelated stimulations, all this allowed the formation of an ideal image within the player’s mind and thus forming a correct imprint of the skill and free of mistakes.

This is what Allawi (2002) mentioned, that mental imagery is used to help speed learning and mastery of motion skills and to practice some psychological skills. (Muhammad Hassan, 2001, page 251)

This is consistent with the study of Abdulkader Akil (2008) entitled: The extent of the influence of mental training on the development of open motion skills (counter-attack) for the Karaté-Do athletes, the results of which concluded that the application of the mental training program has an important effect in developing the level of mental

imagery for elite athletes of Karaté-Do. And that there is a proportional positive relationship between mental training and the development of the counter-attack skill of Karaté-Do.

Also, Bouchareb Rafahia Study (2018) entitled: The Impact of a Mental Imagination Program on Golf Players' Performance in Close-Ups (PUTTS). Its results reached the proposed training program that improved the level of mental imagery in its four dimensions (Visual, auditory, kinesthetic, and emotional) and the level of skill performance of close-hits in golf among the members of the experimental sample.

Accordingly, it can be said that the second hypothesis, which states that there are statistically significant differences, the level of significance ($\alpha = 0.01$) in the post measurements of the controlled and experimental group in the level of mental imagery and the skill variables under study in favor of the experimental group have been achieved.

CONCLUSIONS

An improvement in the level of mental imagery dimensions (visual, auditory, kinesthetic, emotional) among the members of the experimental group. Improving the level of performance of the skills: the floor movements device for the experimental group that benefited from the mental imagery program accompanying the skill training

Future suggestions and hypotheses

Standing on results and conclusions reached by the researchers, we propose the following:

- Giving the use of mental imagery more space in planning the various preparation programs to reach the best results.
- Study the methods of training on mental imagery of all kinds.
- To rely more on mental imagery in preparing athletes in various sports disciplines and for all age groups.
- The need to pay attention to training coaches in the field of mental training in order to develop the skills and mental abilities of athletes.
- Developing methods of measuring and evaluating the athlete's mental abilities by urging researchers and research centers to do so.
- Conducting further studies on the uses of mental imagery in the sports field.

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