

AEROBIC CAPACITY AND ITS RELATIONSHIP TO FEMALE STUDENTS' ARTISTIC GYMNASTICS PERFORMANCE

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ABSTRACT

Sports, in their various games and practices in the world, are considered the true standard for the majority of the developed countries of the world. Indeed, some countries have relied on them greatly, and sports are a great sign of the renaissance of those countries. The sport of artistic gymnastics is considered one of those basic sports for its renaissance, and the sport of gymnastics is considered one of the sports. Important, fun and interesting sports games, especially the Olympic Games and World Championships, where we noticed the development in the decline of these sports, and this came as a result of scientific progress in various areas of life, especially sports.

Since advanced and modern physiological studies have increased the interest of the majority of specialists in physical education, especially artistic gymnastics, most of the modern physiological research and studies have confirmed this. The current study aimed to identify the aerobic capacity of the first-stage female students in the Department of Physical Education and Sports Sciences - Ahl al-Bayt University, as well as to identify the performance of the front roll skill among the first-stage female students, as well as to identify the relationship between aerobic capacity and the front roll performance of the first-stage female students - Ahl al-Bayt University. The research hypothesis was it can be concluded with statistical significance that there exists a relationship between aerobic capacity and front roll performance for first-stage female students. The research population was made up of first-stage female students, numbering (15 female students) for the morning study, which the researchers chose in an intentional manner. As for the research methodology, it was determined by the descriptive method to suit the chosen nature of the research. By the two researchers.

KEYWORDS: Aerobic gymnastics and performance.

INTRODUCTION

Sports, in their various games and practices in the world, are considered the true standard for the majority of the developed countries of the world. Indeed, some countries have relied on them greatly, and sports are a great sign of the renaissance of those countries. The sport of artistic gymnastics is considered one of those basic sports for its renaissance, and the sport of gymnastics is considered one of the sports. Important, fun and interesting sports games, especially the Olympic Games and World Championships, where we noticed the development in the decline of these sports, and this came as a result of scientific progress in various areas of life, especially sports.

Since advanced and modern physiological studies have increased the interest of the majority of specialists in physical education, especially artistic gymnastics, most of the modern physiological researches and studies have confirmed this.¹

Hence the importance of research through paying attention to the physiological process, especially the aerobic capacity of first-year female students in the College of Physical Education and Sports Sciences - University of Karbala. Aerobic capacity is one of the physiological conditions that affect the artistic gymnastics subject, so it will be helped to develop aerobic capacity by giving some Special exercises for female students to practice artistic gymnastics using various methods and modern means to develop them.

Research Problem

The game of artistic gymnastics is one of the games that gives the character of beauty to those who practice it or watch it beautiful by the female students because it gives the body strength, flexibility, strength and agility to the body, as the successful coach or teacher is to stimulate the inner strength of the player or student by providing them with exercises for their physical and motor abilities and making them do The best activities that lead them to education.

Through the researchers' observation of the female students of the first stage - Ahl al-Bayt University, they noticed that most of the female students had weak or almost non-existent aerobic capacity when performing the front roll of artistic gymnastics for the female students. For these reasons, in order to determine the physiological state of the female students, especially the aerobic capacity, it was necessary to know the state of the aerobic capacity. I have female students to find the necessary solutions to this research problem.

Research Objectives

1. Identifying the aerobic capacity of first-year female students in the Department of Physical Education and Sports Sciences - Ahl al-Bayt University
2. Identifying the performance of the front roll skill among first-year female students - Ahl al-Bayt University
3. Identifying the relationship between aerobic capacity and front roll performance for first-year female students - Ahl al-Bayt University

Research Hypothesis

- There is a statistically significant relationship between aerobic capacity and front roll performance for first-stage female students

Field of Research

- Human field: First-year female students, Department of Physical Education and Sports Sciences - Ahl al-Bayt University
- Spatial field: Gymnastics Hall, Department of Physical Education and Sports Sciences.
- Time frame: Second semester 2024.

RESEARCH METHODOLOGY

The researchers used the descriptive research method to suit the nature of the problem at hand.

Research community

The researchers chose their research community from for the academic year, the female students enrolled in the Department of Physical Education and Sports Sciences at Ahl al-Bayt University are in their first year of study 2024, who numbered (15) students, and they were chosen intentionally by the researchers.

Means of collecting information and tools used in research

- Arab and foreign sources and references.

- Note.
- Electronic calculator.
- Fitmata pro device.
- Japanese-made medical scale.
- Ground movements rug.
- Paper and pens to record data.
- Measuring tape.

Field research procedures for the research

Through scanning sources, references, and scientific tests, in addition to the scientific and practical experience of the researchers, the test for the research was determined:

Tests used in research

1. **Air capacity test²**

Tools and devices used by the researchers in the test:

1. Stationary bike
2. Disinfectant solution for masks used by laboratories.
3. A balance to measure weight for laboratories.
4. Iron measuring tape.
- Performance description: Before starting to conduct the test for the female students, the researchers connected the device and fixed the device’s pulse belt on the tester’s chest. The researchers also installed the pulse signal receiver in the device used for the experiment. Then the researchers entered some information that included the student’s name - her height - her weight - then the researchers chose the type of test: Air capacity because the system or device contains several other tests, and also the breathing mask and belts are tightly fixed so that the breathing air does not run out to the tester. Then the tester mounts on a stationary bike that operates on the hand-leg. Then the tester increases the speed of the stationary bike gradually, as the device used contains an electronic screen.
- Conditions for carrying out the test:
 1. The tester must be in normal condition before the test begins
 2. The maximum pulse of the laboratory must be taken by equation 220 - the number of years tested
 3. The increase in speed must be gradual until the tester runs out of voltage

How to register for the laboratory: The device gives a full reading tape to measure the air capacity of the laboratory.

Exploratory experiment

The researchers conducted an exploratory experiment to find out the most important positives that occur and evaluate them, or the negatives that could occur in the main experiment of the research and to address them in order to avoid mistakes. The number of female students who carried out this experiment was (5 female students) on Sunday, 2/4/2024, at exactly Ten o'clock in the morning.

Scientific foundations of testing

1. Validity of the test: There are many ways to extract the validity coefficient of the test. The researchers used face validity to determine the validity of the test through scientific sources and research.
2. Stability of the test: The researchers used the test and retest method, so the researchers applied the test and retest with an interval of one week and under the same conditions in the exploratory experiment.
3. Objectivity of the test: It means that the test is not affected by changing the arbitrators, meaning that the test gives the same results.

Table 1. Shows the reliability and objectivity of the aerobic capacity test

Name of tests	Stability of the test	Indication	Objectivity of the test	Indication
Aerobic capacity	0.872	Sig.	0.917	Sig.
Front roll	0.863	Sig.	0.907	Sig.

Main experience

The researchers prepared exercises related to the research variable for the first-stage female students, relying on reviewing many academic, scholarly, and specialized sources, in addition to the researchers’ experience in this specialty.

RESULTS

- The variables of pre- and post-tests will be presented and analyzed in order to showcase the results aerodynamic capacity and frontal roll.
- Presentation and analysis of the results of the pre- and post-tests for the variables of aerobic capacity and forward roll for the experimental group

Table 2. Shows the means, the statistical analysis of the research variables for the experimental group includes calculations of standard deviation, mean differences, standard error of differences, t-value, level of significance, and the determination of the type of statistical significance for both the pre- and post-tests

Variables	Tests	mean	STD	mean Diff.	STD diff.	(T) value	Significant level	Indication
Aerobic capacity	Pre	41.63	0.69	-2.647	0.311	-5.531	0.002	Sig.
	Post	46.175	0.49					
Front roll	Pre	8.06	3.37	0.043	0.0047	7.552	0.003	Sig.
	Post	9.01	2.27					

We note from Table (2) that the results of the pre- and post-tests for the aerobic capacity and forward roll variables that the female laboratory students of the first stage underwent. The special results in the two tests were that the mean values were better in the post-test for the aerobic capacity-forward roll variables, the results indicate that there are significant differences between the two tests, with the post-tests showing favorable outcomes for female students.

DISCUSSION

When we want to develop or improve any variable, we must take into account the possibility of training and exercises being linked to the specificity of this variable to be developed, and to what extent it can influence the construction of this variable in terms of the opinions of specialists in the specific field, as well as relying on scientific sources, research and experiments, as the two researchers confirmed that The exercises that they prepared and included in the gymnastics lecture for the members of the research sample, female students of the first stage, had a major role in developing aerobic capacity, as the exercises were characterized in terms of intensity and volume and in a correct scientific manner, “The exercises aim to develop aerobic capacity.”³ It is recommended to use training volumes that suit the nature of the specialized game.⁴

The researchers point out that the prepared exercises increase the ability of the students’ bodies to benefit from energy production, and this training process requires the body to provide sufficient O2 during the student’s physical effort, as well as increasing the ability of the body and muscle fibers in particular to benefit from oxygen, and this is what distinguishes the exercises prepared by the researchers. It helps increase the ability of the body and muscles to benefit from oxygen during training and sports competition, which in turn is reflected in increasing the athlete’s aerobic capacity.⁵

This is what was confirmed by (Whyte Gregory) that aerobic capacity training helps the body and muscles make better use of O2, as it increases the ability of the muscle fibers to use more than the current oxygen, and this greater use of oxygen means using more aerobic energy for the body, and thus increases the maximum consumption of oxygen. Oxygen.⁶

CONCLUSIONS

1. The exercises that the teacher practices with the students to learn the skill of front rolling have a positive effect that contributes to increasing their hobby capacity.
2. Mastering the gymnastics game well and smoothly facilitates learning the front roll skill for female students.
3. The level of rolling performance is affected by the high level of air capacity.

RECOMMENDATIONS

1. Applying exercises in other sports competitions is dangerous and difficult to perform and apply.

2. The teacher teaching the forward roll skill must practice feedback before applying it to the students.
3. Continuous encouragement from the teachers to the students while they perform the skill required in the lecture.

REFERENCES

- [1]. Aleksandraviciene R, Zaicenkoviene K, Stasiule L, Stasiulis A. Physiological responses and energetics of competitive group exercise in female aerobic gymnasts with different levels of performance. *Perceptual and motor skills*. 2015 Jun;120(3):787-803.
- [2]. Kolimechikov S, Petrov L, Alexandrova A. Artistic gymnastics improves biomarkers related to physical fitness and health at primary school age. *International Journal of Applied Exercise Physiology*. 2021;10(1):115-28.
- [3]. Montosa I, Vernetta M, López-Bedoya J. Cardiorespiratory capacity and body composition in girls and adolescents practitioners of rhythmic gymnastics. *Archivos de Medicina del Deporte*. 2018;35(3):151-6.
- [4]. Sun YA, Jiang H. Effects of aerobic gymnastics on heart rate variability and physical performance in male college students. *Revista Brasileira de Medicina do Esporte*. 2023 Jan 30;29:e2022_0488.
- [5]. Jamal Sabri: *Speed Endurance, Concept and Physiology*, 1st edition, Amman, Al-Wefaq Publishing House, 2022.
- [6]. Whyte Gregory: *physiology of training*, British, British Library Cataloguing, 2007.