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COMPETITIVE AEROBIC GYMNASTICS: HISTORICAL PATH AND DEVELOPMENT TRENDS

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Abstract

Aim. This paper emphasizes aspects regarding the development of the competitive aerobic gymnastics wherein Romania continuously imposed itself as one of the best competitors in the world.

The aim of this study is to identify the most relevant aspects generated by the 2017 – 2020/2021 and 2022 – 2024 FIG Code of points as well as the future challenges that both coaches and athletes will have to address in a scientific-based approach.

Theoretical background. Explanatory arguments are presented in order to highlight historic evolution of this sport and its development in terms of specific regulations, competition systems, strategies for professionalizing coaches and training methodologies for athletes.

Although scarce, the literature review reveals some key points structured on different levels: slight differences within the Codes of points regarding the structure of the difficulty elements groups, limiting the number of elements performed, specific requirements for scoring technical precision, including block Aerobic Movement Patterns (AMP), reduced floor elements, original elements combination, more acrobatic elements and „dynamic” constructions.

The development trends for the competitive aerobic gymnastics require streamlining the process of long-term training, identifying and maximizing capabilities of the athletes, accurately assessing the outcomes of training and competition in order to design instructional content for future stages of the gymnasts' sport career.

From the artistic standpoint the specialists have to prove creative and innovative thinking in designing original choreographies based on variety in contents, fluid movements, musicality and expressiveness.

Conclusions. Romanian teams have imposed themselves internationally since the very beginning of this competitive sport through mastering high difficulty elements and execution criterion, due to their artistic or rhythmic gymnastics training background.

Maintaining top results in this sport requires raising the scores for the artistic criterion which would underline the very specificity of aerobic gymnastics and attract audience on national and international levels.

Keywords: Competitive aerobic gymnastics, Code of points, historic overview, development trends.

Introduction

The present study reveals the main approaches of the competitive aerobic gymnastics, with a particular emphasis on its evolution and subsequent consequences for the training methodology.

The choice of this subject is based on two premises: the first one is related to the long-standing results of the Romanian gymnasts throughout the last three decades and the second one emerges from the continuous development of this sport branch, imposed by the FIG Code of points 2017 – 2020/2021 and 2022 – 2024 provisions. This fact needs to be thoroughly incorporated by the specialists (coaches, choreographers) both in creating competitive routines/exercises and in conceiving a high-quality training process.

Despite these challenges which would require a scientific-based approach in analyzing the dynamics of this sport, the literature review proves that data pertaining to this area are scarce and not necessarily addressed specifically to the physical, technical or artistic components.

We highlight in the following sections of the paper some relevant ideas that shape the vision of this sport and how the specialists correlate these provisions with enhancing the quality of the competitive routines.

Theoretical framework – explanatory arguments

Evolution and directions in competitive aerobic gymnastics

Aerobic gymnastics is a sports discipline that emerged during the fitness boom of the 1970s and 1980s. This sport represents a fusion of aerobic movement sequences, characteristic of recreational aerobic gymnastics, which are derived from the combination of seven basic steps, with upper limb movements, gymnastic difficulty elements, transitions, interactions, and collaborations between partners, as well as formations.

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Aerobic gymnastics exercises are inspired by music, making the chosen melody and theme integral to the routine. The execution of these exercises must align harmoniously with the selected musical accompaniment.

Competitive aerobic gymnastics offers numerous opportunities to showcase variety, creativity, originality, and complexity - defining aspects of this sport. Both female and male gymnasts can compete in the following categories: individual (female/male), mixed pairs (one female and one male), trio (three members), group (five members), aerobic dance (eight members), and/or aerobic step (eight members).

From a historical perspective, on October 30, 1993, the Executive Committee of the International Gymnastics Federation (FIG) was officially petitioned to introduce aerobic gymnastics into the FIG's competitive program. The following year (1994), during the FIG Congress in Geneva, this request materialized with the establishment of the Aerobic Sport Commission (later named the Aerobic Gymnastics Commission).

On March 14, 1995, the first training course for aerobic gymnastics coaches and judges was held in Switzerland. In December of the same year, the first Aerobic Gymnastics World Championships took place in Paris, where Romanian gymnasts won the silver medal in the trio event.

In 1996, FIG officially recognized aerobic gymnastics as a discipline, and since then, it has continued to evolve, both technically and artistically. In Romania, aerobic gymnastics was integrated into the Romanian Gymnastics Federation, becoming one of the branches of Romanian gymnastics with the most international achievements.

Romania's first medals in this sport were silver in the trio event and bronze in the team ranking at the 1995 Aerobic Gymnastics World Championships (Paris). Over time, Romanian aerobic gymnastics has amassed numerous gold, silver, and bronze medals, establishing itself among the world's elite. Today, the country continues to maintain this status.

Competitive aerobic gymnastics is a sports discipline coordinated by national gymnastics federations and the FIG. This branch of sport, encompassing both performance and elite performance levels, operates under specific regulations, training methodologies by classification categories and events, domestic and international competition systems, and strategies for professionalizing coaches and judges through training courses, camps, or thematic workshops.

Approximately 25 years ago, this sport was introduced into both the International Gymnastics Federation and the Romanian Gymnastics Federation. The concept around which aerobic gymnastics emerged and developed was that of a "spectacle sport." Today, this idea is easily observable in the technical content of the discipline.

Alongside other branches of gymnastics, aerobic gymnastics features a complex and spectacular technical content that challenges practitioners to their limits, testing both their neuromuscular and cardiorespiratory endurance.

Aerobic gymnastics can be defined as a branch of gymnastics that involves performing a routine to music, consisting of difficulty elements and choreographic sequences of aerobic steps combined with upper limb movements, transitions, partnerships, and formations, using various directions of movement and changes in execution levels.

Competitive aerobic gymnastics is described as "an original choreographic synthesis of technical elements harmonized in combinations of steps and movements specific to aerobic dance, demonstrating through execution, posture, expressiveness, difficulty, originality, balance, and complex individual or group skills and abilities" (Popescu, 2005).

"Competitive aerobic gymnastics represents the ability to continuously perform complex, high-intensity movements to music, movements rooted in traditional aerobic exercises, ensuring that the routine demonstrates continuous movement, mobility, strength, and the use of the seven basic steps and perfectly executed difficulty elements" (Code of Points 2017–2020).

It can be argued that competitive aerobic gymnastics combines elements of rhythmic and artistic gymnastics, as well as acrobatic elements, integrated into choreographies that express a specific concept or theme (Chayun, Kletsov & Manzheley, 2020).

Authors such as Mertashl, Rohani, Farzaneh & Nasiri (2015) and Manzheley & Chayun (2018) highlight the dynamic regulations imposed by the FIG technical committee, which shape the development trends of this sport with significant implications for the training process.

The technical regulations developed by the International Gymnastics Federation structure aerobic gymnastics into competition events and classification categories. Aerobic gymnastics competition events include:

- female individual;
- male individual;
- mixed pairs;
- trio;
- group;
- aerobic dance;
- aerobic step.

Classification categories, based on practitioners' age, include:

- junior III (9–11 years);
- junior II (12–14 years);
- junior I (15–17 years);
- senior (18 years and older).

A distinctive feature of aerobic gymnastics is the music accompanying the competition routines, which must be dynamic, modern, original, and characterized by rhythmic and stylistic variations. The musical accompaniment for competition routines lasts 1 minute and 15 seconds (± 5 seconds) for lower age categories (junior III and junior II) and 1 minute and 20 seconds (± 5 seconds) for higher age categories (junior I and senior).

Depending on the category and event, athletes perform on one of two square spaces marked on the podium, measuring 7×7 meters or 10×10 meters. During the competition routine, gymnasts must cover the entire surface of their designated space through movement, configuring original „maps” of this area.

Development trends in competitive aerobic gymnastics

Aerobic gymnastics today, as a general concept demonstrates remarkable dynamism, across all its spheres (recreational, competitive and mass aerobic gymnastics). The evolution of competitive aerobic gymnastics reflects the interplay of two fundamental aspects of the discipline: sport and artistry. The athletic aspect is defined by movement sequences that push gymnasts to their physical and mental limits, while the spectacle element emerges from the artistic, aesthetic, and expressive manner of execution.

The high level of aerobic gymnastics today is also explained by numerous changes that have contributed over the years to the development of this sport branch through the work of specialists, both practically in gyms with athletes of various ages (categories), and theoretically in research and academic approaches. These efforts have focused on creating new elements, training systems, and evaluation methods with superior efficiency.

Most athletes with exceptional results began practicing gymnastics early, following a training model that included both general preparation and sport-specific preparation aspects. The start of practical activity, along with the establishment of objectives, training strategies, and methods for completing training, must align with the complexity of the field, development trends related to performance levels, and participation in high-profile competitions (European Championships, World Championships).

The projection of gymnastics' evolution plays a crucial role in planning and approaching athletic training. Due to the dynamic development trends in gymnastics, specialists consistently update (every four years) the requirements for competition participation, evaluation criteria, and internal and international competition systems.

The evolution of gymnastics is also reflected in the increasing number of competing teams from countries that, until recently, lacked tradition in this discipline. These nations have invested in training specialists, building modern facilities, and establishing phased training systems with predictable and realistic outcomes.

One challenge specialists face is the heightened emphasis on the difficulty of technical elements, a trend often viewed as a "race" to higher complexity. This led FIG decision-makers to limit the number of elements permitted in routines across various age categories. Implementing these significant changes required developing new selection systems, training strategies, scientific forecasts, and a strong foundational preparation for athletes.

The current approach to performance aerobic gymnastics allows athletes to practice the sport for extended periods, expressing themselves through artistic, aesthetic, and fluid movements, but also through exquisite technique. This shift emphasizes technical precision, innovative combinations, expressiveness, and the artistic presentation of competition routines.

To align with new trends in aerobic gymnastics, governing bodies have introduced updated systems for evaluating competition routines and judges' performance, enhancing objectivity during evaluations.

In synthesis, the key aspects of performance aerobic gymnastics' development include:

- Widespread practice, engaging an increasing number of gymnasts and specialists worldwide.
- Comprehensive competition calendars, conducted under FIG's technical regulations.
- Progressive scoring systems, periodically updated to reflect advancements in technical, artistic, and execution requirements for competition routines.

Preparing an athlete for success in high-level competitions requires years of dedication. Achieving performance in aerobic gymnastics involves continuously developing psycho-motor and motor skills through intense work, perseverance, and access to modern technologies, equipment, and highly qualified specialists.

Another relevant aspect pertains to selecting and training gymnasts solely based on the specific requirements of the category they belong to at a particular stage of their athletic career. This clearly represents a narrow perspective that can hinder their potential for performance growth. Therefore, it is essential to plan the athlete's development with a long-term vision, taking into account their progression in the years to come.

In this perspective the analysis of competitions serves as a means to obtain valuable data regarding the qualitative and quantitative progress achieved, the distribution of values, social impact, and the advanced level of preparation attained at a given time, in relation to the ideal model established by the scoring code of the International Gymnastics Federation.

The international governing body has consistently aimed to establish a unified and objective approach to training gymnasts. To this end, the Technical Committee periodically develops the scoring code. The revision and improvement of the existing edition every four years transform the scoring code into a fundamental document comprising a set of technical and organizational aspects that provide a standardized interpretation of the specific components of aerobic

gymnastics. Essentially, the scoring code outlines the content and requirements reflective of the current developmental level of the sport, while precisely defining the technical, artistic, and execution directions for each competitive event.

Practice has revealed imperfections in the scoring code over time. It has demonstrated that creating routines with a higher number of difficulties within a maximum duration of 1 minute and 25 seconds imposes an extremely high level of effort on all athletes (both female and male), often leading to negative impacts on technical performance. In the past, the increased number of technical combinations included in routines also resulted in confusing and less aesthetically pleasing presentations, due to a lack of harmony between body movements and music in certain compositional sequences.

Members of the governing bodies, as well as experienced gymnastics coaches, believe that the composition of routines should align with the athletes' actual potential. This approach helps protect their health, sustain their passion for the sport, and achieve high scores in artistic and execution criteria, thereby ensuring a high-quality sporting performance.

An analysis by FIG's Technical Committee (2022) highlights that the sport's image has improved significantly with the introduction of the 2022–2024 scoring code. The return to the sport's specificity, including "block" aerobic movement patterns, reduced floor-level elements, and improved jump techniques, has been notable. Additionally, musical accompaniment has become less overwhelming, minimizing excessive "beats" and sound effects that distort the original music through editing (Newsletters - FIG / AER / TC).

Popescu, Dina and Stroescu (2021) reviewed the last two scoring codes, noting efforts to crystallize and define the sport's specificity. Noteworthy changes include reducing technical difficulty elements, awarding additional points for element combinations, "dynamic" constructions, and incorporating more acrobatic elements, enhancing variety and spectacle in routines.

A structural analysis of performance, focusing on technical difficulty and originality, shows that competitive results in aerobic gymnastics have improved. Furthermore, recent years have seen a homogenization of competitors' value, leading to closer medal contests. The continuous increase in difficulty (via original and spectacular elements) and specific technical levels remain a priority for athletes and coaches, who must build the training foundations necessary to meet these demands. In this light, specialists assert that achieving performance in this sport requires:

- streamlining the organization of long-term training programs;
- determining the optimal amount of time and content for training and competition phases to enhance work efficiency;
- identifying, developing, and maximizing all individual performance resources;
- accurately assessing the effects of training and competitions to design instructional content for future stages.

Beyond the specific technical aspects that drive the dynamics of this sport, Payne (2024) identifies six development trends in performance gymnastics. Below is a brief overview of the key elements shaping this evolution:

- culturally different approaches: In recent years, gymnastics has increasingly prioritized the athletes' needs within the training process. Coaches and managers are expected to focus on the physical and emotional well-being of gymnasts, fostering a positive and safe training environment.
- impact of sports science: Coaches are progressively basing their decisions on scientific evidence rather than intuition, which once formed the cornerstone of training. As information accumulates, they become increasingly reliant on data from research and analysis, leading to more efficient training programs and injury prevention strategies.
- creative and innovative thinking: The introduction of technology in gymnastics is beginning to revolutionize the sport, changing how athletes train and compete.
- impact of artificial intelligence (AI): AI is becoming a significant factor, as major tech companies develop systems to evaluate gymnastics routines. For example, Fujitsu has integrated three technological modules for competition judging—3D sensors, AI analysis that compares collected data with technical standards, and scoring systems that identify deviations from perfect execution and assign scores accordingly.
- virtual competitions: An innovation born during the pandemic, virtual competitions eliminate travel times and associated costs, enabling gymnasts to compete regardless of external conditions.
- gymnastics club software: The use of specialized software enhances database management and training session organization, allowing coaches to monitor athletes' progress, design training programs, and manage administrative tasks more efficiently.

Conclusions

Reviewing the recent literature led us to some focal aspects which reveal the present and the future of the competitive aerobic gymnastics.

The present shape of aerobic gymnastics incorporates the valuable resources from its historic evolution and lays the foundation which makes possible the further development of this sport.

The 2017 – 2020/ 2021 and 2022 – 2024 FIG Code of points have settled important characteristics regarding the specific rules for technical accuracy, the reframing of the difficulty elements, specific provisions for Aerobic Movement Patterns (AMP) in terms of sequencing.



One challenge specialists face is the heightened emphasis on the difficulty of technical elements, a trend often viewed as a „race” to higher complexity. This led FIG decision-makers to limit the number of elements permitted in routines across various age categories.

Concerning the artistic factor, our practical experience led us to understanding in a more complex manner the way a choreography must be created, along with developing higher artistic abilities in gymnasts performing both in junior and senior levels.

The last years marked a certain return to the sport specificity, including block AMP, reduced floor elements, improved difficulty elements, original elements combination, more acrobatic elements and „dynamic” constructions.

Romanian teams have imposed themselves internationally since the very beginning of this competitive sport through mastering high difficulty elements and execution criterion, due to their artistic or rhythmic gymnastics training background. Still, the future results have to rely more on raising the scores for the artistic criterion which would underline the very specificity of this sport and would attract audience on national and international levels.

Author contributions

All authors have equally contributed to this paper.

References

- Chayun, D., Kletsov, K. & Manzheley, I. (2020). Acrobatics as a new trend in Aerobic Gymnastics. *Journal of Physical Education and Sport*, Vol. 20 (2), art 109, 759 - 767, doi:10.7752/Jpes.2020.02109.
- International Gymnastics Federation – Aerobic Gymnastics – Code of Points 2017 – 2020. https://www.gymnasticsnz.com/wp-content/uploads/2017/02/AER_CoP_2017-2020-e_January_2017.pdf.
- International Gymnastics Federation – Aerobic Gymnastics – Code of Points 2022 – 2024. https://www.gymnastics.sport/publicdir/rules/files/en_AER%20CoP%202022-2024.pdf.
- Manzheley, I., Chayun, D. (2018). Psychological Follow-Up of Athletes' Training in Aerobic Gymnastics. *Tomsk State University Journal*, (434), 155-161.
- Mertashl, M., Rohani, H., Farzaneh, E., Nasiri, R. (2015). The Effect of 6 Months Specific Aerobic Gymnastic Training on Motor Abilities in 10 - 12 Years Old Boys. *Science of Gymnastics Journal*, Vol. 7, Issue 1, 51 – 60.
- Payne, A. (2024). *The Future Trends in Gymnastics (7 Big Predictions)*. <https://www.synergygymnastics.co.uk/trends-in-gymnastics/>.
- Popescu, G. (2005). *Impact aerobic*. București: Editura Elisaváros.
- Popescu, G., Dina, L., Stroescu, S. (2021). Transformations and Contradictions in Elite Aerobic Gymnastics. *Discobolul – Physical Education, Sport and Kinetotherapy Journal*, Volume 60, Supplementary Issue, 635-645, <https://Doi.Org/10.35189/Dpeskj.2021.60.S10>.