

Substantiation of the professiographic model of sports dances

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Abstract

Purpose: analysis of the activity of dance sport athletes using professiographic techniques to optimize the training and growth of sportsmanship.

Material & Methods: the method of developing a professiogram was used according to the accepted methodology, methods for assessing the severity and intensity of work were used.

Results: the severity and intensity of sports activities in dancing were assessed. The main professional requirements are identified, which include: the need to maintain a pose in dance, high technicality in performing elements, mandatory artistry, a sense of rhythm and performing movements in accordance with music, high noise immunity, high physical preparedness with an advantage in coordination, strength qualities and endurance, high functionality of cardiorespiratory systems.

Conclusions: the analysis of sports activities in sports dances made it possible to substantiate and develop a professional model of this sport. It has been established that sports dances belong to the 3rd category of labor in terms of severity and the 4th category in terms of intensity in accordance with the official physiological and hygienic criteria. The main professional requirements that determine the success of professional activity are highlighted. A set of methods necessary for the study and assessment of the state of the most important organs and systems that ensure the implementation of sports tasks is substantiated. These methods can be used in monitoring the functional state of athletes to develop a forecast for the growth of sportsmanship.

Анотація

Ольга Подрігало, Го Сяохун, Леонід Подрігало, Олександр Подаваленко, Олександр Галашко. Обґрунтування професіографічної моделі спортивних танців. Мета: аналіз діяльності спортсменів-танцюристів з використанням професійних методик для оптимізації підготовки та зростання спортивної майстерності. **Матеріал і методи:** використано метод розробки професіограми згідно з прийнятою методологією, використано методики оцінки тяжкості та напруженості праці. **Результати:** оцінено тяжкість та напруженість спортивної діяльності в танцях. Виділено основні професійні вимоги, до яких віднесені: необхідність підтримки пози в танці, висока технічність виконання елементів, обов'язковість артистизму, почуття ритму та виконання рухів відповідно до музики, висока завадостійкість, висока фізична підготовленість з перевагою координаційних, силових якостей та витривалості, високі функціональні можливості системи. **Висновки:** проведений аналіз спортивної діяльності у спортивних танцях дозволив обґрунтувати та розробити професіографічну модель даного виду спорту. Встановлено, що спортивні танці відносяться до 3 категорії праці за тяжкістю та 4 категорії за напруженістю у відповідності з офіційними фізіолого-гігієнічними критеріями. Виділено основні професійні вимоги, що визначають успішність професійної діяльності. Обґрунтовано комплекс методик, необхідних для дослідження та оцінки стану найважливіших органів та систем, що забезпечують виконання спортивних завдань. Ці методики можуть бути використані в моніторингу функціонального стану спортсменів для розробки прогнозу зростання спортивної майстерності.

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Introduction

The total time spent on sports activities allows us to consider it professional, and athletes to be singled out in a separate professional group. The current situation makes it possible to apply professiographic approaches to the analysis of sports. Sports professiography is a complex area of sports science, which is actively developing at the present time (Shemanaev, 2013; Podrigalo et al., 2014; Podrigalo et al., 2015; Bogatirev, 2016).

A comprehensive assessment of sports activities, the study of the main factors influencing the functional state of athletes, make it possible to draw up a professional description of a sport. It is the basis for the regulation of activities, the implementation of the necessary measures to optimize the training and growth of sportsmanship (Podrigalo & Podrihalo, 2019).

The basis of professiography is the determination of the requirements of the profession for the employee, his capabilities and abilities. Based on this analysis, a special professiogram is compiled (Garber & Kosacha, 1992). This is the main document that characterizes the relationship between the employee and his profession. The professiogram contains a comprehensive, systematized description of the socio-economic, psychological, industrial, technical, medical, sanitary and hygienic and other objective characteristics of a particular profession. These characteristics reveal the specifics of production activities and the requirements for the employee. The professiogram informs a person about the objective content of labor activity, psychophysiological and physical qualities that are required of him.

The use of professiographic methods in sports is gradually expanding. Archery and armwrestling professiograms made it possible to identify the main risk factors influencing success, to form a battery of tests to analyze the condition of athletes (Podrigalo et al., 2014; Podrigalo et al., 2015).

Shemanaev (2013) has developed a tourism instructor professiogram. It is proposed to assess the severity and intensity of the activity, highlight the qualities, abilities and skills that ensure the success of the professional activity, and the factors that hinder its effectiveness.

The concepts of professiography were used by Bogatirev (2016) when analyzing the professional and applied training of martial arts athletes. The importance of psychophysiological functions, such as reaction speed, coordination, eye, etc., is emphasized.

Eliseev et al. (2016) note that professional sports are a kind of work activity. Therefore, the psychology of work in this case is the psychology of sports work. Compilation of professiograms also requires taking into account the ratio of reliability and safety of the «man - sport» system.

The development of a professiogram is carried out in two directions - an analysis of the features of a sport and an analysis of the athlete's condition. The influence of a sport is expressed in the professional requirements for an athlete. The most important among them is the level of health, as an integral indicator of sports success and skill. Professionally important qualities are also very important for the growth of sportsmanship. These include psychophysiological features and psychological properties of the individual (Garber & Kosacha, 1992).

Dance sport is relatively young. Competitions for this species appeared only at the end of the last century. Nastase (2012a) emphasizes his intermediateness between sports and art. This sport is classified as the highest form of motor

activity, a synthesis of art and sport in general.

Shang and Wang (2019) conducted an analysis of the share of the main components of dancesport. It is noted that the aesthetic and physical components play the main role. Their share was 44,5% and 40,0%, respectively.

The growing popularity of sports dances is due to a number of reasons. First of all, this is a large number of prestigious international competitions. In addition, the growth in popularity is due to the inclusion of sports dances in the program of the Olympic Games. In this regard, their scientific and practical support is an important task of modern sports science. Based on this, **the purpose of this study** was to analyze the activities of dancers using professiographic techniques to optimize the training and growth of sportsmanship.

Material and Methods of the research

Study participants

Given the theoretical and methodological nature of the study, there was no need to involve special participants in its implementation. When developing a professiographic model of sports dances, the available literature data and the practical experience of one of the authors, who works as a trainer in this field, were taken into account.

Study organization

According to current approaches, a professiogram is developed according to a certain methodological scheme (Garber & Kosacha, 1992). Taking into account sports specifics, it has the following form: sport → professionally significant requirements for an athlete → professionally important qualities (PIQ) → the level of requirements for the corresponding sport psychophysiological properties (PPS) → research methods → ranking the level of development of the PPS → norms for assessing PIQ → psychogram → selection and adaptation of an athlete → prediction of his skill and success → types and forms of correction and optimization.

Official criteria for the physiology of labor were used to analyze the severity and intensity of production activities (Zolina & Izmerov, 1983).

Statistical analysis

Substantiation and development of a professional model of a sport does not require statistical processing and analysis.

Results of the research

Considering sports dancing as a professional activity, it is necessary to highlight the following main areas of research:

- assessment of the nature and characteristics of activities to maintain optimal performance, prevent overwork, overtraining and overstrain;
- allocation of functional systems involved in the work, justification for the use of informative and adequate methods for their study and evaluation;
- determination of the main "professional requirements" for an dance sport athletes - for the optimal regulation of his activities, their maximum possible correction.

The use of official criteria of labor physiology (Zolina & Izmerov, 1983) makes it possible to assess the severity and intensity of sports activity. When assessing the severity of work, the magnitude of energy costs, changes in heart rate and a decrease in endurance in relation to the initial level are taken into account. The predominant physical load in sports dancing is performed by the muscles of the lower extremities

and torso. Its power is up to 45 watts. This allows us to classify sports dancing as moderate. The average duration of the performance of sports dancers is 2-3 minutes, and the total movements during training exceed 5 km. Energy costs during dancing reach 450 kcal / hour, the pulse rate can reach 120 beats / min. It also makes it possible to evaluate sports dances as hard work (3rd category of severity).

The analysis of labor intensity in sports dances gives a different assessment depending on the criteria used. Athletes must control not only their own movements, but also the movements of other couples when performing exercises. The number of pairs that are simultaneously on the site can reach ten or more. This allows us to assess this activity as a little stressful (2nd degree). The duration of concentrated observation should be practically constant, the time of active actions should be more than 80% of the total time. Performing dance exercises requires a large amount of main memory due to the demonstration of more than 5 techniques. This confirms the 4th degree of tension - a very intense activity. Intellectual tension should be assessed as 3rd degree, since the performance requires solving complex problems according to the algorithm (demonstration of special techniques).

Thus, the use of official criteria of labor physiology makes it possible to evaluate sports dances as hard (category 3) and very intense (category 4) work.

However, the criteria existing in the physiology of labor do not allow to fully reflect the specifics of sports dances, which necessitates the use of professionographic approaches.

The basic professional requirements in sports dances should include:

- need to maintain a posture in dance,
- high technical performance of elements,
- obligatory artistry,
- sense of rhythm and execution of movements according to the music,
- high noise immunity,
- high physical preparedness with the advantage of coordination, strength and endurance,
- high functionality of the cardiorespiratory system.

Thus, the analysis of activity in sports dances allows us to identify a number of physical, psychophysiological and psychological factors that affect success. They are associated with the functional state of the athlete and with the level of his sportsmanship. Their study requires the selection of appropriate methods that allow us to evaluate these factors and carry out the necessary correction of the condition of athletes or the organization of training.

From the physiological and hygienic positions, the following research methods can be used for the professional characteristics of sports dances:

- timing of training and competitive activity, which allows to determine the general and motor density, to evaluate the main types of activity, allowing to characterize the intensity of work;
- goniometry of the main joints provides information on the range of motion in the main joints;
- anthropometric study of physical development, assessment of the harmony of his physique with the help of appropriate indices;
- assessment of the somatotype using the bioimpedance method, determination of the main components of the athlete's body;
- psychophysiological study of coordination, sense of rhythm, concentration and switching of attention, volume of motor memory, static and dynamic coordination - balance

maintenance;

- indicators evaluating the general adaptive potential of an athlete, his functional capabilities, the response of physiological indicators to a standardized load;
- APASM questionnaire test, which allows assessing the dynamics of the mental status (anxiety, performance, activity, self-esteem and mood).

Discussion

The training of elite athletes in almost all sports involves the use of excessive loads that exceed functional capabilities (Omelyanenko, 2014; Borisova, 2016). This necessitates the justification and development of new approaches to training, expansion of adaptive capacity and increase in functional reserves (Joyner and Coyle, 2007). The complexity of competitive activity in dance sport determines the importance of the state of physical health, the level of adaptive mechanisms and features of the implementation of genetically determined functions (Sivitsky, 2012; Demidova, 2019; Podrigalo et al., 2019).

The conducted professionographic analysis of sports dances allowed to substantiate the main directions of scientific research in this sport. The implementation of the selected areas of research provides data for improving the selection and prediction of the growth of sportsmanship, optimizing the training and monitoring the functional state of dancers.

In dance, the body is an instrument, it must be well studied and controlled. Daniela, Mircea (2013) proposed and developed a number of devices for teaching dance technique. With their help, special exercises can be created to improve certain elements of dance movements.

Success in sports dancing is largely determined by the characteristics of information processing, which depend on the development of sensations, perceptions and ideas (N. stase, 2012b). The high physiological cost of the functional support of competitive activity in sports dancing among highly qualified athletes is a prerequisite for taking into account adaptive mechanisms in the preparation and prediction of success. (Soponovich et al., 2018).

The assessment of sports dances as hard work determines the need to include in the training of athletes training sessions for the development of special and general endurance, increasing adaptive potential and expanding functionality.

This agrees with the available literature data. Kolokythas, Metsios, Wyon, et al. (2021) analyzed the causes of injuries in dance and aesthetic sports. Overexertion and training loads are highlighted as major risk factors for injury. This proves the importance of matching loads to the functional capabilities of athletes in dance sports. Available research confirms the existence of a relationship between the formation of difficult coordination dance skills and the level of endurance (Williams & Ericsson, 2007; Raczek, 2010; Artemieva, 2014). Nastase (2012c) emphasizes that the basis of a comprehensive methodology for ensuring the performance of a dance couple is a performance analysis.

The definition of sports dancing as a very intense activity requires the inclusion in the training of techniques that develop concentration, short-term memory and other psychophysiological features. The organization of monitoring the functional state of dance sport athletes should include a comprehensive psychophysiological study aimed at studying these qualities.

Techniques in dance sport are based on the implementation of complex coordination skills, taking into

account the characteristics of musical accompaniment. Their provision is carried out due to the psycho-physiological and mental abilities of the athlete (Soponovich et al., 2013; Korobeynikov et al., 2017).

Nastase (2012d) analyzes the role of sensations, perceptions, representations, memory and imagination in dancesport. The stages of learning are divided into the perception and presentation of the dance action to be performed; understanding of the technical execution to be performed; formation of correct technical stereotypes. It is emphasized that these stages are fundamental skills in teaching specific dancesport movements.

Highlighted professional requirements in sports dances require the introduction of corrective measures in the training of dancers. General physical training should be aimed at the predominant development of the strength of the muscles of the lower extremities and torso with simultaneous flexibility training. An important point of monitoring in sports dancing is the control of the somatotype of athletes.

Similar data are given in works devoted to the study of the functional state of dancers. Banio and Malchrowicz-Mosko (2021) note the importance of body features for success in ballroom dancing. This factor is recognized as one of the main ones in the selection in this sport. The authors emphasize the importance of studying and evaluating the characteristics of the somatotype, the proportion of muscle and adipose tissue.

Anthropometric indicators are important for selection in aesthetic sports, including dancing. Liiv et al. (2014) analyzed the characteristics of athletes in Latin American and standard dance sports. It is concluded that the somatotypes of athletes differ in the style of dance. Compared to other aesthetic sports, male and female dancers are less mesomorphic and more ectomorphic. Standard dancers tend to be more ectomorphic with greater height, greater arm span compared to Latin American dancers. Dancers with a more pronounced mesomorphic type had better results in the international ranking and occupied higher places.

As already noted, an important place in the preparation should be occupied by endurance training to expand adaptive capabilities. High working capacity and endurance allow demonstrating ease of dance performance, artistry and positive emotions. An important component of the dancer's

success is the sense of rhythm, the execution of movements in accordance with the musical accompaniment. Similar results are reported by Eliakim et al. (2013).

In the work of Donath et al. (2016) highlights the importance of balance research in dance teaching. Stands on one and two legs, with eyes open and closed, were used as balance tests. It is recommended to use for this technique based on virtual reality.

An important place in the preparation should be occupied by measures for psychological preparation, managing one's mental state, and correcting stress. This will significantly increase the noise immunity of athletes, optimize the mental status, and positively influence its main components. The use of the APASM test meets the objectives. This test can be used to monitor the functional state of dance sport athletes.

The proposed set of tests can be used to select and predict the growth of mastery in sports dancing. Similar results were obtained by Zabrocka et al. (2015). The authors identified selection indicators at the initial stage of training. It is concluded that at the initial stage of sports dancing, the greatest influence on special preparedness is exerted by coordination of movements, balance, flexibility, speed-strength qualities, height and weight of the body, the circumference of the pelvis, torso, and chest. The tests and indicators used in the study most fully reflect the specifics of dance sport and can be recommended in the selection process for this sport discipline.

Conclusions

The analysis of sports activities in sports dances made it possible to substantiate and develop a professional model of this sport. It has been established that sports dances belong to the 3rd category of labor in terms of severity and the 4th category in terms of intensity in accordance with the official physiological and hygienic criteria. The main professional requirements that determine the success of professional activity are highlighted. The complex of techniques necessary for the study and assessment of the state of the most important organs and systems that ensure the implementation of sports tasks is substantiated. These methods can be used in monitoring the functional state of athletes to develop a forecast for the growth of sportsmanship.

Author Contributions

Olha Podrihalo: data collection, input, data analysis, manuscript preparation; Guo Xiaohong: interpretation of data, preparation of the manuscript; Leonid Podrigalo: design, interpretation of data; Olexandr Podavalenko: design, research planning; Olexandr Halashko: analysis, literature search.

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Conflicts of Interest

The authors declare no conflict of interest.

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