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Use of Means of Occupationally Applied Physical Training in Preventing Diseases among Future Artists of Traditional Crafts

Abstract. The article reveals factors that negatively affect the health status of future artists of traditional crafts. It presents the results of scientific research confirming the relationship between prolonged exposure to negative health factors and the development of certain diseases in these individuals. Recommendations are provided on the application of means of occupationally applied physical training aimed at improving the health level of students.

Keywords: health status, factors negatively affecting health, physical performance, means of occupationally applied physical training.

Occupationally applied physical training is a form of specialized physical training focused on the selective use of physical culture and sports means to enhance the psycho-physical readiness of trainees for their chosen profession. Its goals and tasks are determined based on the requirements imposed by the profession [2; 8, p. 12].

Research on occupationally applied physical training for students of various fields of specialization has been conducted and defended by S.I. Kirichenko, O.V. Karavashkina, and V.S. Ezhev, highlighting its relevance [3]. The significance of occupationally applied physical training increases particularly as an effective means of optimizing educational activity and mitigating unfavorable factors that adversely impact the health of students in institutions with an artistic orientation [9, p. 7].

Occupationally applied physical training for future artists of traditional crafts involves targeted development of both physical and moral-psychological qualities, as well as the formation of professionally applied motor skills considering the specifics of their chosen professional activities: modeling in artistic lacemaking, modeling with artistic embroidery, artistic metal (jewelry making), artistic bone carving, decorative painting, artistic leather processing, and painting [9, p. 10].

For self-realization, future artists of traditional crafts must possess physical preparedness enabling them to effectively perform minor forceful tasks while executing fine and precise hand and finger movements through coordinated actions of key systems: nervous, muscular, and skeletal. Professional activities in areas such

as artistic embroidery, artistic lacemaking, lacquer miniature painting, jewelry and bone carving, and other forms of traditional crafts require skills and abilities to execute quick and accurate hand movements with lightweight objects and professional tools, along with physical attributes like dexterity, local endurance, reaction speed, and coordination of hand and finger movements [1].

The creation of a complex of physical culture and sports means for preparing future artists of traditional crafts for their chosen professional activities, aimed at preventing occupational diseases, was the goal of the authors' research.

Research Objectives:

- To study the theoretical aspects of physical preparation of future artists of traditional crafts using occupationally applied physical training methods;
- To develop a set of occupationally applied physical training measures aimed at preventing occupational diseases among future artists of traditional crafts and preparing them for their chosen professional activities;
- To determine the effectiveness of using a set of occupationally applied physical training measures on the functional readiness of future artists of traditional crafts.

The following materials were studied as part of the research:

- Dynamics of morbidity among students during the 2022/23 and 2023/24 academic years;
- Means of occupationally applied physical training contributing to the prevention of diseases among future artists of traditional crafts;
- The state of cardiovascular and respiratory system functions (CVS and RS) of students.

The following research methods were employed in the study: analysis and synthesis of literature data relevant to the research problem, questionnaires, testing (including assessment of cardiovascular and respiratory system functions), and mathematical statistical methods.

During the research, an analysis of the dynamics of morbidity rates among students during the 2022/23 and 2023/24 academic years was conducted; factors negatively affecting students' health were identified; means of occupationally applied physical training contributing to disease prevention among students were defined; and the results of testing the cardiovascular and respiratory system functions (CVS and RS) of students were obtained and analyzed.

The research was carried out during the 2022/23 and 2023/24 academic years at the FSBEI HE "Higher School of Folk Arts (Academy)". A total of 204 first-to-third-year students participated in the study, having received medical clearance based on preventive medical examinations.

To assess the health status, the authors analyzed morbidity rates based on medical examination data, which were recorded by physicians in the students' medical records. Groups of students were classified according to their health status for participation in physical education and sports. Comparative data are presented in Table 1.

Table 1

Comparative data on the distribution of students at the Higher School of Folk Arts (Academy) by medical health groups

Medical health groups	Academic year of examination	
	2022-2023	2023-2024
1st group	27	17
2nd group	77	61
3rd group	9	13

It was found that in the 2022-2023 academic year, the group of practically healthy students accounted for 24%, while 76% had deviations in their health condition. In the 2023-2024 academic year, only 18% of students were considered practically healthy, with 82% showing health deviations. Over the 2022/23 and 2023/24 academic years, there was a 6% increase in the number of students assigned to the special medical group.

Figures 1⁴² and 2 present diagrams illustrating quantitative data on student morbidity and the dynamics of their illness levels over the 2022/23 and 2023/24 academic years.

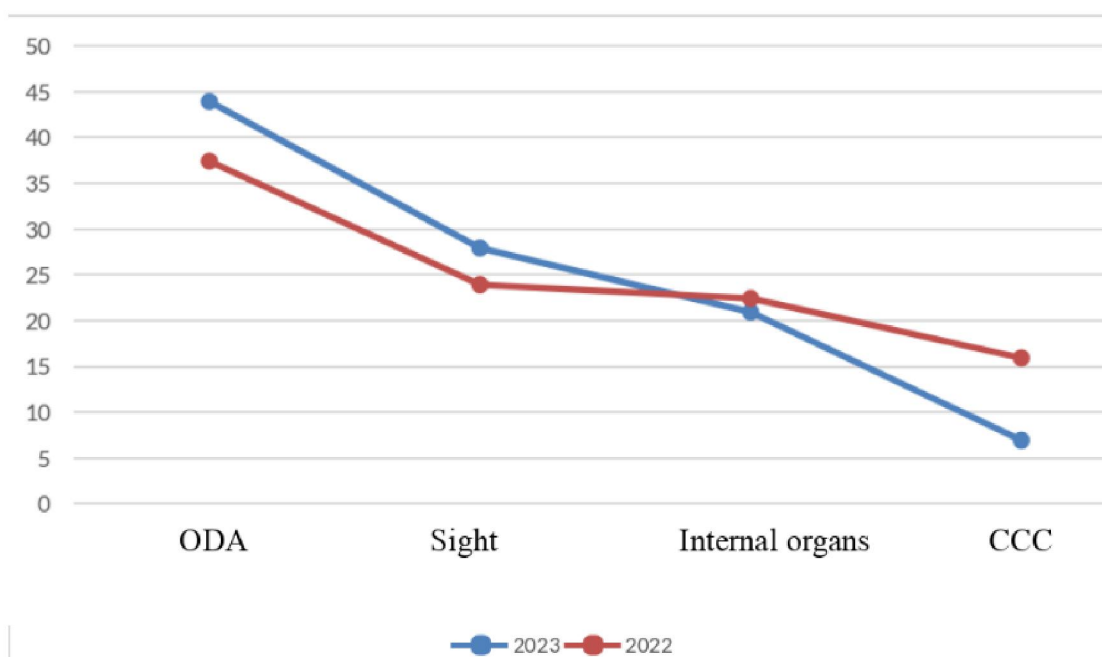


Fig. 1. Diagram of student morbidity characteristics

⁴² Figs. 1-3. Diagrams and scheme by the article's authors.

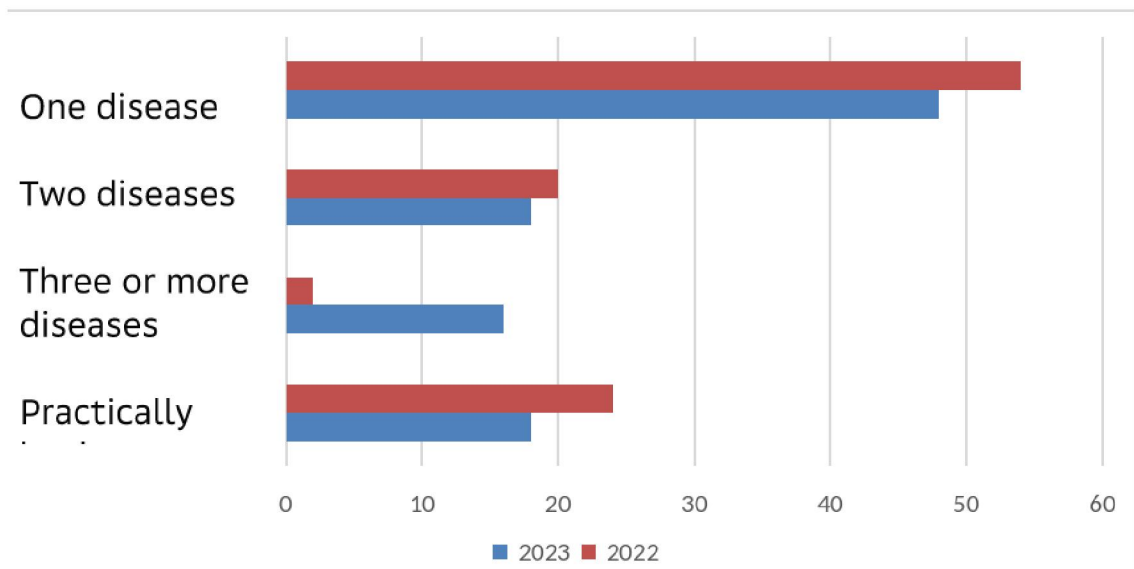


Fig. 2. Diagram of the dynamics of students' somatic health level

Upon analyzing the diagram's indicators, it was established that musculoskeletal disorders rank first in terms of prevalence, followed by vision problems, internal organ diseases, and cardiovascular conditions.

The findings indicate an increase in the incidence rate among students in the 2023/24 academic year compared to the 2022/23 academic year. According to the authors, the 6% rise in the number of students categorized under the special medical group in the 2023/24 academic year is a logical consequence of their sedentary lifestyle, stress, hypokinesia, monotony, prolonged periods spent in a working posture, and heightened emotional tension [4; 7].

The outcomes of our studies align closely with those reported by Russian universities, corroborating the negative trend in morbidity across all nosological forms among students. Statistics on the number of university students in Russia who have been exempted from practical classes or placed in the special medical group due to health issues show that their numbers have risen from an average of 7.7% to 38.2% over recent years [5].

Preserving and strengthening the health of future artists in traditional crafts necessitates the development of a comprehensive program encompassing motivation towards a healthy lifestyle, medical monitoring of physical condition, early detection, and prevention of diseases [10, pp. 47-48]. The elaboration of such a program will be the focus of further investigations by the department of physical culture.

To identify factors influencing students' health and determine appropriate means of occupationally applied physical training to improve their wellbeing, a survey was conducted. Respondents were asked to select from nine factors those that negatively impacted their health. Analysis of responses revealed a group of significant factors, including stress, hypokinesia, monotony, extended periods in a working posture, and elevated emotional strain. Additionally, contemporary gymnastic practices (aerobics, shaping, Eastern wellness systems) emerged as popular and sought-after forms of physical activity (Table 2).

Identifying the most critical health-affecting factors enabled the authors to select suitable means of occupationally applied physical training for disease prevention [6; 7]. These selections were made considering the survey results, students' nosological group affiliations, and the primary focus of their activities, as detailed in Table 2.

Table 2

Means of Occupationally Applied Physical Training in Preventing Diseases
Among Future Artists of Traditional Crafts

<i>Factors Negatively Impacting Students' Health and Corresponding Illnesses</i>	<i>Priority Focus of Activities</i>	<i>Means of Occupationally Applied Physical Training</i>
Hypodynamia, Cardiovascular diseases, arterial hypertension, respiratory and digestive disorders, musculoskeletal disorders. Exacerbation of chronic pathologies.	Development of physical qualities: strength, agility, speed, endurance, flexibility	General developmental exercises of moderate intensity
		Exercises on weight-training machines
		Gymnastic exercises (stretching, aerobics)
		Dance-rhythmic composition exercises
Working posture during study activities Spinal and musculoskeletal disorders.	Posture correction	Exercises with dance-rhythm compositions
	Prevention of cervical-thoracic osteochondrosis	Breathing exercises, neck muscle exercises
	Prevention of lumbar-sacral spine diseases	Exercises starting from standing knee support, lying down, sitting, with a fitball
	Elimination of stagnant phenomena in the pelvic and lower limb regions	Exercises for developing leg and hip muscles
Muscle tension in hands, Biceps tendinitis, myofascial pain syndrome, muscle cramps, contracture, myositis	Prevention of neuromuscular hand diseases	Relaxation exercises, massage, finger gymnastics
Monotony, Central nervous system diseases	Replacement of stimuli, increasing emotionality	Gymnastics during the school day, exercises with dance-rhythmic compositions, sports games
Eye fatigue, Asthenopia	Eliminating eye fatigue	Eye muscle exercises

Based on the analysis of respondents' questionnaire answers, it was found that the most rational and effective means of preventing their illnesses are exercises from basic and remedial gymnastics, which include: moderate-intensity general developmental exercises, general developmental exercises with dance-rhythmic compositions, exercises for developing motor skills, exercises for developing general and specific endurance, stretching, breathing exercises, finger gymnastics, and eye muscle exercises.

All of the above exercises were incorporated into the preparatory, main, and concluding parts of the lesson, taking into account the main requirements of professional activity, the sequence of covering the curriculum, and the volume and content of the resources used [6].

The structure of occupationally applied physical training within the lesson is shown in Figure 3.

To evaluate the effectiveness of using occupationally applied physical training methods, two groups of students were formed: an experimental group and a control group. Each group consisted of 15-17 people, predominantly from the second health group.

The effectiveness of lessons incorporating occupationally applied physical training was assessed by comparing the functional status indicators of students before and after the experiment.

During the experiment period, the Genchi test results (breath-holding test on exhalation, indicating oxygen deficiency tolerance) significantly improved in the experimental group from 20.6 ± 1.4 to 26.9 ± 1.3 seconds, with an increase of 2.91 seconds ($p \leq 0.05$).

In the Schange test (breath-holding test after almost maximal inhalation, 85-95 percent of possible inhalation), the results significantly improved from 33.8 ± 2.9 to 46.2 ± 3.2 seconds, with an increase of 2.91 seconds ($p \leq 0.05$).

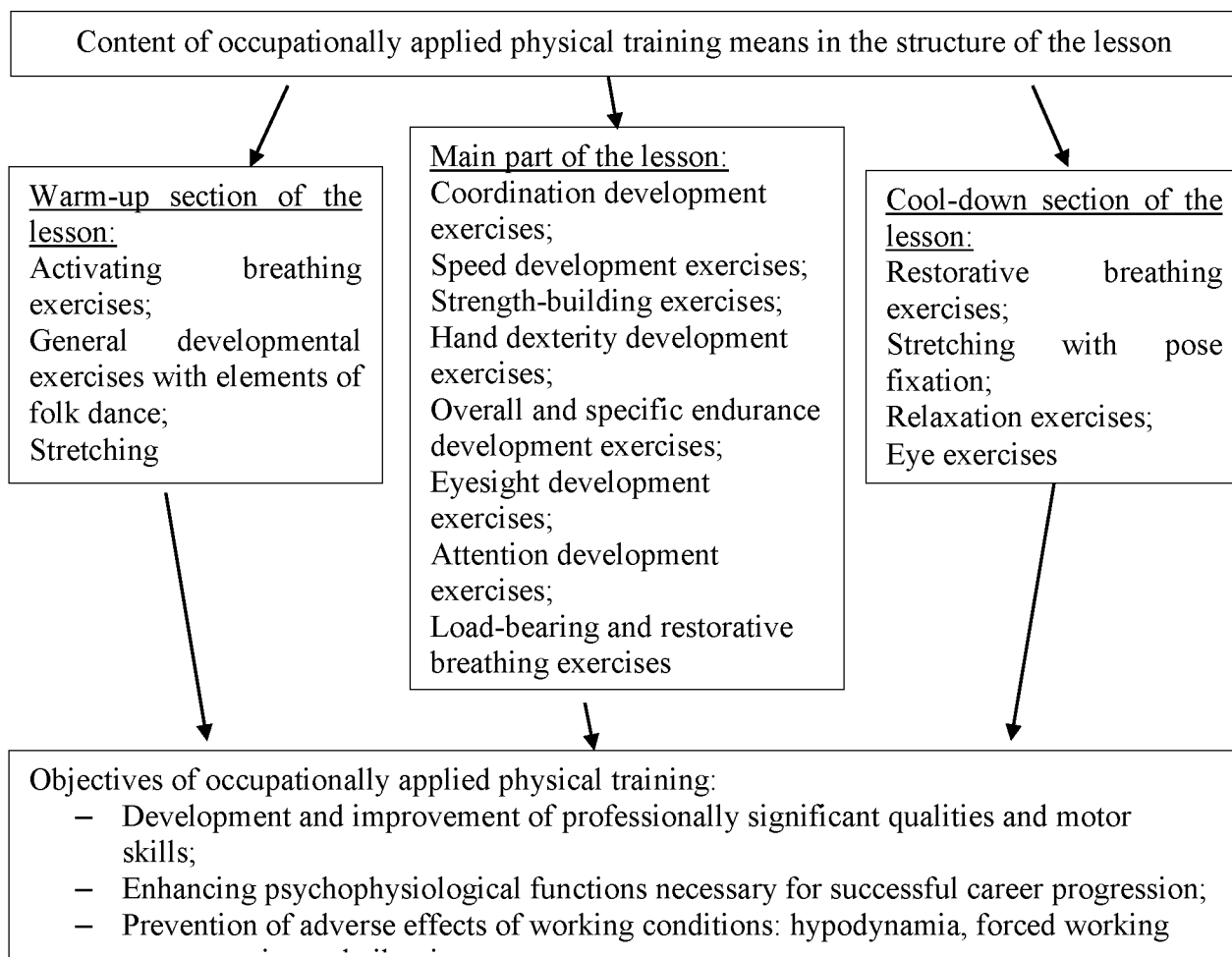


Fig. 3. Structure of a lesson using occupationally applied physical training means.

Both tests are methods for investigating the regulation of human physiological functions, allowing for an evaluation of lung and heart health.

Indicators of physical fitness (Cooper test) improved from 1071.8 ± 32.8 to 1256.5 ± 30.6 meters, with an increase of 3.58 with statistical significance ≤ 0.01 . The Cooper test evaluates the condition of the muscle corset, cardiovascular and respiratory systems, and calculates the norm of maximum oxygen consumption.

Orthostatic test scores (heart rate when standing beats/min, evaluates the effect of body position on heart rate, heart rhythm, and blood pressure for diagnosing many cardiovascular and neurological diseases) improved from 86.4 ± 4.2 to 82.5 ± 3.9 , with an increase of 2.17 with statistical significance ≤ 0.05 . No significant changes were observed in the control group.

The results suggest that the use of occupationally applied physical training methods, such as basic and therapeutic gymnastics, moderately intense general developmental exercises, breathing exercises, finger gymnastics, and eye muscle exercises, positively impacts the range of functional capabilities of the cardiovascular and respiratory systems of students, thereby helping to prevent diseases among future artists in traditional crafts.

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