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Application of breathing exercises in the educational process of future artists specializing in traditional art crafts

Abstract. The paper examines health preservation and improvement of students' performance during studies at the Russian university of traditional art crafts. Characteristics of wellness measures that effectively alleviate physical and psychological fatigue and stress are presented. Survey results, questionnaire responses and test findings regarding students' physical condition confirm significant health problems among many learners. Additionally, the beneficial effects of breathing exercises on students' well-being are demonstrated. The author emphasizes that mastering techniques of respiratory gymnastics can become an element of forming healthy lifestyle habits and contribute to improving students' physical and emotional state.

Keywords: health-preserving technologies, prevention of occupational diseases, breathing, gymnastics, self-control.

The specificity of educational activities at the Russian university of traditional art crafts involves prolonged periods of sitting still, maintaining fixed body positions and intense concentration. Fine manual labor demands precise hand movements and visual strain, negatively affecting the spine structure [4, p. 384].

Several factors adversely affect students' productivity: monotony, hypodynamia, static posture and environmental conditions such as solvent odors, paint vapors, lacquer residues, metal shavings and dust particles [2, p. 269]. These conditions induce fatigue and impair general health. On one hand, meticulous artistic work requires robust health; on the other hand, excessive physical effort can diminish efficiency.

How can we resolve this contradiction? How can physical culture methods influence the negative manifestations in students' health? One path is the application of respiratory gymnastics as a means to overcome the physical fatigue of students arising during the execution of assignments in performing arts mastery.

"Gymnastics" derives from Greek and means "to exercise, to train". Breathing is an indispensable component of our existence. There are no precise historical data about where the concept of controlling one's breath as a preventive health measure originated, but it can be stated that the emergence of mankind has been accompanied by breathing from its very first seconds.

Respiratory gymnastics promotes normalization of metabolic processes in the organism, delivers oxygen to tissues at the cellular level and enriches blood with oxygen. During inspiration, pressure decreases in the thoracic cavity, leading to

increased venous return to the heart's right atrium, thereby relieving cardiac workload. During expiration, upward displacement of the diaphragm facilitates the movement of blood, accumulated in lower extremities, toward the heart. Thus, a continuous circulatory loop is formed.

Frequently, inadequate carbon dioxide levels in the body impede proper utilization of oxygen, which may occur due to impaired skin respiration, polluted air, allergies or stress.

The above-listed causes can disrupt normal breathing patterns, leading to hyperventilation, loss of carbon dioxide from the organism, and subsequent oxygen deficiency formation [6, p. 175].

Respiratory gymnastics is diverse in its manifestations. It is used therapeutically for pulmonary diseases, cardiovascular system disorders, to improve cognitive capabilities, for calming down, reducing blood pressure, etc. For example, yoga, whose task is to control the body, is aimed at the spiritual state of personality; Strelnikova breathing gymnastics is applied for treatment of respiratory organs, purification of lungs and blood vessels from toxins, strengthening of immune system, reduction of stress, elimination of tension during and after exercising [7, p. 187]; wushu has therapeutic effect on human reproductive organs, weight correction is achieved through meditation; bodyflex – a respiratory gymnastics utilizing aerobic breathing – helps to reduce stress level; Buteyko breathing method corrects chronic fatigue syndrome, assists in maintaining a healthy lifestyle. Practice of these respiratory gymnastics increases vital forces, produces intense massage of internal organs [11, p. 160].

Physical training of future artists entails purposefully cultivating professionally-applicable motor skills tailored to the specifics of their chosen profession [5, p. 362] and respiratory gymnastics is included in this skillset.

Breathing is the sole visceral system susceptible to voluntary control, meaning that the respiratory system can be influenced through selective respiratory gymnastics exercises adapted to individual functional capabilities of the student [9, p. 203].

The technique and methodology of employing respiratory gymnastics boil down to mastering the primary skill – controlling one’s breath. Specifically, slowing it down, holding it and practicing shallow breathing. The advantage of respiratory gymnastics compared to other health-improving methods lies in its simplicity and effectiveness – it requires no financial investments. It is a health-preserving and accessible mechanism creating a comfortable environment in the educational process [1, p. 153].

When choosing methodologies for respiratory gymnastics, their efficacy and effectiveness in overcoming physical strain occurring during artistic work, fatigue, dizziness, apathy, sleepiness, distraction, etc., are critical considerations.

A minimum number of respiratory gymnastics exercises have been selected for implementation, maximizing usefulness and efficiency. Equally important are ease and accessibility of acquiring breathing techniques for students, ensuring that they do not distract from their academic responsibilities.

To attract first-year students to perform health-promoting respiratory gymnastics, a survey was conducted among freshmen. The survey yielded the following results: 55% of respondents had heard about respiratory gymnastics but never practiced it; 4% were unaware of respiratory gymnastics altogether; 41% personally encountered respiratory gymnastics during the COVID-19 pandemic, dealing with various illnesses such as allergies, bronchial asthma, etc.

The next step was conducting a survey among students with the aim of identifying health issues. According to the survey results: 62% of students experience fatigue during the school day; 73% find it uncomfortable to start artistic work in the morning; 46% struggle with tasks requiring fine motor accuracy; 55% face difficulties concentrating while performing practical assignments in performance artistry, drawing, painting, academic sculpture and practical modeling; 60% have trouble coping with large amounts of information; 80% suffer from pronounced drowsiness; 25% experience stiffness of movements due to cold fingers.

Medical certificates verifying students' health status were included in the study materials to increase reliability.

The next stage of the investigation involved testing students' health condition at the beginning and end of the school day, allowing for identification of the overall picture of different forms of fatigue manifestation. Parameters assessed included: arterial blood pressure (ABP); quantitative indicator of respiratory cycles per minute; presence of cold sensation in fingertips.

As a result of testing, the following data were obtained: morning measurement of blood pressure (BP) showed that in 60% of students the BP was within normal range (117/77) (group A); in 32%, the BP reached minimal values (105/73) (group B); in 14% of examinees, BP corresponded to maximum values (122/82) (group C); in 6%, BP was at its highest (126/84) (group D); among all students, 65% had cold hands.

Post-class testing of blood pressure revealed changes in average indicators: among 100% of examined students with normal BP, in group A, 30% approached maximum values (121/82); in 14%, BP decreased to medium values; in 16% of examinees, BP remained within normal limits. Among group B, in 22%, BP did not change; in 8%, BP remained within normal range. In 4% of studied individuals from group B, BP normalized; in the remaining subjects, BP stayed at the previous level. Among group D, in 4%, BP normalized; in 2%, BP remained high.

At the end of the school day, 80% of students experienced symptoms such as fatigue, dizziness and sleepiness, etc. Therefore, certain health problems emerged as a consequence of strenuous professional activity. The goal was set to overcome these health difficulties using respiratory gymnastics, identified through analysis of survey, questionnaire and testing results.

Arriving at class, a student is psychologically and physically prepared for work. Before starting their tasks, they carry out a specialized warm-up routine. For artists, it is important to feel confident, relaxed and free-spirited. In case of fatigue, knowing the techniques of respiratory gymnastics allows students to improve their physiological state and overcome the negative effects of overload.

Teaching students the techniques of respiratory gymnastics is not difficult; it typically takes two to three weeks. Respiratory gymnastics is used to synchronize components of basic physical exercises with respiratory cycles [11, p. 33].

We will consider three main methods of performing exercises that are easiest for students to assimilate and help relieve fatigue during educational activities.

1. Slow breathing. In this respiratory exercise, an inhalation is performed slowly, extending the process to approximately 4-5 seconds, while the exhalation is even slower, lasting roughly 6 seconds. This exercise helps reduce stress and regulate pulse rate. It's best done during breaks, dedicating 1-2 minutes to it.

2. Deep breathing. Air is inhaled slowly into the abdomen, then filling the chest cavity, holding the breath for about 4 seconds and finally releasing it gently through the mouth over a period of 6 seconds. This exercise is preferable to perform after lunch [12, p. 6]. Such exhalation contributes to dispelling negative emotions.

3. Breathing combined with hand movements. This exercise involves coordinating breathing rhythm with hand motions during drawing. For instance, when making strokes or sketching ornamental designs, it is important to synchronize breathing with hand movements. This creates coordination between fine motor skills and respiratory rhythm.

Movements coordinated with proper breathing contribute to balancing the nervous system. Over time, the established rhythm of body movements and thoughts merges with breathing, inducing emotional uplift and increasing work efficiency [10, p. 3].

Applying respiratory exercises consistently over two weeks yielded the following results: after instructing students in respiratory exercises, a trend toward improved well-being became apparent. 76% of students noted a beneficial impact of respiratory gymnastics. 20% failed to fully master breathing techniques, although they appreciated the ability to independently restore emotional and physical activity without medication. 4% found respiratory gymnastics contraindicated due to health conditions (table 1).

Table 1

Results of blood pressure measurement among first-year students at the institute of traditional applied arts

Blood pressure indicators	Morning blood pressure	Blood pressure after classes	Morning blood pressure after 2 weeks	Blood pressure after classes after 2 weeks	Variability	Blood pressure indicators within the framework
Normal blood pressure (BP)	60%	44%	62%	76%	+16%	Normal blood pressure (BP)
Low blood pressure	24%	38%	28%	18%	-14%	Low blood pressure
Maximum blood pressure	14%	18%	10%	8%	-6%	Maximum blood pressure
Excluded from classes	2%	–	–	–	–	–

The results of measuring blood pressure after a two-week course of training in respiratory gymnastics techniques showed modest but consistent improvements in students' well-being. An increase in functional fitness was observed, particularly noticeable in easing the adaptation period for first-year students (table 2).

Table 2

Schedule of educational and training process
for respiratory gymnastics over two weeks

Types of events for training in exercises	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Physical culture lessons	–	2 hours	–	2 hours	–	–	–
Extra session during breaks	–	–	5-10 min		5-10 min	–	–
Home assignment	General respiratory exercises	–	–	Specialized exercises	–	–	General physical fitness training (GPFT)
Independent study	–	–	–		–	15 min	–

Formation of a healthy lifestyle through the application of breathing techniques enables modification of the body's reaction to stress, fatigue and physical strain, shifting it towards improvement.

The outcome of this study serves as a crucial marker of success in future academic pursuits and the acquired knowledge of health-promoting respiratory gymnastics techniques can accompany students throughout their lives.

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