Correction of the psychophysiological state of professional musicians by means of physical culture

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Abstract

Objective of the study was to develop and test a set of exercises to correct the psychophysiological state of professional musicians.

Methods and structure of the study. The participants of the experiment were professional orchestral musicians of the string-plucked group of the Russian folk orchestra during the period of intense concert activity. The diagnostics of well-being was carried out using the methods of observation and questioning. A quantitative assessment of the components of health and health in general has been determined. Based on the information received, sets of exercises were compiled, recommended for carrying out during breaks in the process of rehearsal work.

Results and conclusions. It has been established that the introduction of the proposed complex of physical exercises into the structure of the rehearsal process increases the indicator of the quantitative assessment of the components of health and general health, delays the onset of fatigue, and reduces pain in the back and hands.

Keywords: *musicians, occupational diseases, prevention, physical exercises.*

Introduction. The problem of occupational diseases of musicians attracted attention at the end of the 19th century due to the increase in hand diseases among pianists [6]. The main reasons for the occurrence of pathologies were the ignorance by the performers of the emerging pain syndromes of “overplayed hands” and the overestimated requirements for their own performing skills in the presence of a powerful creative dominant [1, 3, 4].

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Methods and structure of the study. The study involved professional orchestral musicians of the string-plucked group of the Russian folk orchestra of the Belgorod State Philharmonic during the period of intensive concert activity. The study was aimed at identifying the effectiveness of using a complex of health-improving exercises to prevent or alleviate the manifestations of occupational diseases of musicians-performers.

The composition of the orchestra: a string-plucked group of instruments (40 people), a group of button accordions (6 people), a group of wind instruments (4 people), a group of percussion instruments and percussion (4 people). On average, five rehearsals were held per week, which lasted 4 academic hours with three breaks of 15 minutes each. Within a month, the orchestra performed on average at three large academic concerts at the Philharmonic. More than 15 traveling concerts on average per month were held in the districts of the region and beyond. The duration of the concert program varied from 45 minutes to 2.5 hours (in two parts).

To reduce the tension of the body systems, a set of exercises integrated into the working rehearsal process has been developed. The content of the complex of exercises is aimed at improving the functioning of

the body systems and achieving high performance in the mode of musical performance.

The set of exercises included the following:

1. Slow walking (20 s) with uniform breathing, head and torso in a straight position, arms in free movement.

2. Exercises to relieve muscle tension in the collar zone, shoulder girdle, hands. Head tilts forward, backward, to the sides. Rotation of the hands in different directions. Tension exercises - relaxation of the shoulder girdle. Circular movements of the hands in different directions (watch your posture). Supination and pronation of lowered hands (perform with the whole hand). Up to 10 repetitions of each exercise are recommended.

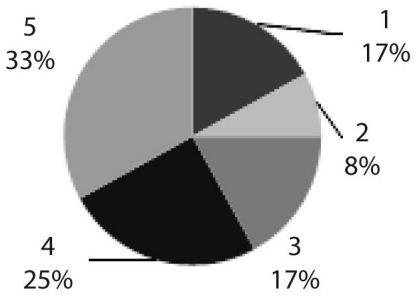
3. Pull-ups, tilts to the side, squats. Up to 10 repetitions of each exercise are recommended.

4. Breathing exercises. Strong and deep inhalation and exhalation. At the end of the exercise, blow out the air in jerks. Recommended several times. Recommended up to 10 repetitions.

The complex of exercises was used in the conditions of a standard rehearsal lasting 4 academic hours. Three 15-minute breaks provided the opportunity to combine exercises. In total, the duration of the proposed warm-up was approximately 7 minutes (about 50% of the break time).

In the course of the study, a quantitative assessment of the components of health and general health was carried out among representatives of the performing arts [2], and the time intervals for the onset of fatigue during a concert performance were determined.

Results of the study and their discussion. It has been established that during the rehearsal process, the majority of professional orchestral performing musicians do not follow the recommendations regarding occupational and rest hygiene, using the breaks between rehearsals irrationally in relation to their health and well-being. As a result of the conversation, almost all respondents (more than 90%) associate their illnesses with their professional activities. The figure shows the most common diseases of orchestra musicians, among which disorders of the musculoskeletal system predominate - 33%.



The structure of diseases of orchestra musicians

Designations: 1 - cardiovascular system; 2 - urinary system; 3 - visual analyzer; 4 - nervous system; 5 - musculoskeletal system.

During the survey, it was found that about 70% of musicians prefer to engage in various types of physical activity, preferably at home, the rest do not pay due attention to this issue. Respondents noted great physical and mental fatigue and general malaise after the end of the rehearsal process, accompanied by muscle stiffness and pain in the lower back, hands, neck and collar area. After the end of the concert, most musicians note the presence of strong and persistent emotional excitement. All respondents gave an affirmative answer to the question of whether they use medication to relieve tension.

Almost all musicians indicated that they master the technique of "releasing" muscle tension while playing a musical instrument, but, nevertheless, they noted a systematic overstrain of the playing apparatus (fingers, hands, hands in general). As a solution to this problem, the majority (more than 70%) would prefer regular massage sessions, the rest would prefer rest and exercise therapy.

During the study, the musicians noted the moments of fatigue and muscle discomfort during the performance of the same concert program. The average time of onset of fatigue in different body systems is presented in the table.

The general well-being during the concert activity of the subjects improved after the application of the developed methodology, and the time of onset of discomfort was delayed by 10-15 minutes. The onset of fatigue of the visual analyzer has not changed, which can be explained by insufficiently comfortable working conditions (lighting and quality of musical material) and the lack of exercises for training the visual analyzer in the developed set of exercises.

When analyzing the dynamics of indicators of quantitative assessment of health components and general health of representatives of performing arts, it was found that before the study, with a maximum numerical indicator of well-being equal to 63 points, the minimum number of points scored was 35 points, the maximum - 50 points. The average number of points was 42. After the end of the study, the minimum number of points was 40 points, the maximum - 55 points. The average number of points was 47. Thus, the in-

The time of onset of fatigue of musicians during performing activities

Fatigue onset time, min	Study period	
	Start (M+m)	End (M+m)
The appearance of pain in the lumbar region	20,2 ± 1,0	30.2± 1,9*
The appearance of general fatigue	35,1± 1,1	43,4±2,1*
Fatigue of the visual analyzer	35,2± 1,0	35,2± 1,0
The need for maximum concentration	40,0±2,1	60,3±1,4*

*Note: differences are significant at * p<0.05.*

dicators of well-being and well-being increased by an average of 5 points, which proves the positive effect of the complex of exercises on the health of musicians.

Conclusions. Integration of complexes of universal physical exercises into the working rehearsal process in an accessible and compressed form in terms of time parameters is necessary for the prevention of occupational diseases or the weakening of their manifestations, which is the basis of a long and successful musical career.

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