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OTORHINOLARYNGOLOGICAL CAUSES OF VOICE CHANGES IN SINGERS AND METHODS OF THEIR PREVENTION

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Topicality. Verbal signals are an integral part of the perception of the environment because the voice is the main tool of the second signaling system of a human. Abnormal changes in the voice are combined under the name "dysphonia" or "hoarseness". At the same time, the voice may sound breathy, hoarse, strained, or change in volume or pitch. Many singers experience significant vocal changes during their careers. Some of them are treatable, and some force people to change their favorite profession.

The purpose of the research is to study the received data on the causes of pathological changes in sounds reproduced by the human vocal apparatus and to identify the most effective ways to prevent dysphonia.

Research materials and methods. Research work was carried out using a questionnaire based on the "Google Forms" service, in which 50 singers of various experiences took part (43 of them women and 7 men). Their age range varied from 18 to 35 years. Then the obtained data were statistically processed and further comparative analysis was performed.

Results. Out of the total number of interviewees (50 people), 45 people (90%) faced dysphonia. Among them, the number of people who had 1-2 episodes of hoarseness was 5 (11.1%), 2-5 episodes — 18 (40%), 5-10 episodes — 14 (31.1%), more than 10 episodes — 8 (17.8%).

The main reasons for the development of this pathological condition identified by the interviewees can be divided into several groups: 1) voice misuse, stress, emotional overstrain, 2) inflammatory processes (infections, allergies, smoking), 3) structural changes of the vocal folds (nodes, cysts, polyps, bleeding). Three respondents (6.7%) who developed dysphonia named those belonging to the first group as the main factors; 6 (13.3%) — belonging to the second group, and the other 3 (6.7%) — belonging to the third group. The combined effect of the trigger factors described above was also noted: 22 interviewees (48.9%) — the first and the second groups, 7 interviewees



(15.6%) — the second and the third groups, 2 interviewees (4.4%) — the first and the third groups, the other 2 interviewees (4.4%) — all three groups. Moreover, out of all 45 people who had dysphonia, only 37 people (82.2%) were able to fully restore their voices.

Among the main and most effective preventive recommendations, the respondents identified the following: smoking cessation; avoiding the use of substances that dehydrate the body; exclusion of spicy dishes from the diet; trying not to use the voice too long or too loudly; professional voice training; avoiding using the voice when it is hoarse; severe acute respiratory diseases` prevention; reducing the level of stress.

Conclusion. Therefore, there are plenty of causes of developing dysphonia, and in order to avoid it, singers need to use their voice correctly and professionally, not overstrain it, stop in time if they feel certain changes in it, and follow preventive advice.

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**RELEVANCE OF THE ISSUE OF MATRIX DEVELOPMENT FOR
STIMULATION OF BONE TISSUE REGENERATION**

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In traumatology and orthopedics, today the problem of stimulating tissue regeneration is relevant, because the prevalence of bone diseases worldwide has increased dramatically, and it is expected to double by 2025, especially in populations where aging is accompanied by increased obesity and poor physical activity. A promising way to solve the problem is tissue engineering, which is considered as a potential alternative to the traditional use of bone grafts due to their unlimited supply and lack of disease transmission.

It includes the development of scaffolds - three-dimensional matrices that serve as the basis for cell proliferation and differentiation. Matrices have special properties that allow the formation of a full-fledged tissue, namely:

- optimal pore size and mechanical stability;
- the presence of an adhesive surface;