



# Evaluation of special physical training of female students with different temperaments in aerobics

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## Abstract

**Objective of the study** was to determination of differences in the parameters of special physical preparedness of female students with different types of temperament engaged in recreational aerobics.

**Methods and structure of the study.** The pedagogical experiment was carried out from September to May 2024 on the basis of the Department of Physical Culture and Sports of the National Research Tomsk State University in Tomsk. Educational and training sessions on health-improving aerobics for female students of each subgroup, depending on the type of temperament, were conducted according to the work program of the discipline «Physical Education». The content, intensity, and duration of educational and training sessions (twice a week for two academic hours) were the same for female students of all temperament types.

**Results and conclusions.** Differences in indicators of special physical preparedness of female students with different types of temperament were revealed. Significant intergroup differences ( $p \leq 0.05$ ) were established in tests assessing endurance and dynamic balance.

In the Karsh step test, which evaluates endurance, the best result was reliably ( $p \leq 0.05$ ) recorded in phlegmatic people in comparison with melancholic people, sanguine people and choleric people. In the test for determining dynamic balance, the best result was established by choleric people ( $p \leq 0.05$ ) in comparison with the group of sanguine and melancholic people.

The obtained results of the study can be used in the educational and training process in physical education in educational institutions in order to improve the special physical fitness of those involved. Accordingly, taking into account temperament during recreational aerobics classes will make it possible to more effectively build the educational and training process in physical education, helping the trainer-teacher expand the components of an individual approach and determine methods of working with each student.

**Keywords:** *special physical, preparedness, recreational aerobics, physical culture, temperament*

**Introduction.** Physical education classes at the university are one of the important components of a harmoniously developed personality. NI TSU is one of the few universities where students have the opportunity to choose selected types of physical education and health technologies in the educational process in physical education. One of such physical education and health technologies is health aerobics. Musical accompaniment in different styles, high emotionality, different choreogra-

phy of movements - all this allows to diversify classes with students and improves their effectiveness [2].

There is a need to build and implement the training process in aerobics not only on the basis of general psychological and pedagogical patterns, but also taking into account the methods of organizing the activities of those involved, adapted to the individual properties of the nervous system, namely, the temperament of female students [3].



The features and properties of a naturally given temperament can undergo various changes in the course of an individual's life, which are influenced by the surrounding reality. In our case, this is studying at a university. At the same time, the study of temperament characteristics belongs to the category of topics that have not yet been fully resolved in modern science.

**Objective of the study** was to determination of differences in the parameters of special physical preparedness of female students with different types of temperament engaged in recreational aerobics.

**Methods and structure of the study.** The study involved 147 second-year female students involved in health aerobics at the Department of Physical Education and Sports of the Physical Culture and Sports Department of the Tomsk National Research University. To determine the types of temperament of the respondents, a questionnaire was conducted using G. Eysenck's questionnaire [1], according to the results of which 26% were choleric, 33% were melancholic, 25% were sanguine and 16% were phlegmatic. Based on the results of the assessment of extroversion, introversion and neuroticism (according to G. Eysenck), 80 female students were classified as belonging to the pure type of temperament according to the classification of G.V. Sukhodolsky. Eighty selected female students underwent pedagogical testing in order to identify the level of development of special physical qualities (speed, general endurance, dynamic balance, strength endurance, flexibility), depending on their type of temperament. The educational and training sessions on health aerobics for female students of each subgroup, depending on their temperament

type, were conducted according to the work program of the discipline «Physical Education». The content, intensity, duration of classes (twice a week for two academic hours) were the same for female students of all temperament types.

**Results of the study and discussion.** The results of testing the special physical fitness of female students of four types of temperament before and after the pedagogical experiment are presented in the table.

According to the data presented in the table, it was found that the initial test results revealed differences depending on the types of temperament.

The best result in the Kersh step test (to determine general endurance) was demonstrated by phlegmatic students:  $116,1 \pm 18,4$  bpm. However, statistically significant ( $p \leq 0,05$ ) differences in this test were revealed only in comparison with the group of melancholic students, who showed the lowest level of development of general endurance.

When assessing dynamic balance, the best result was shown by choleric students:  $7,22 \pm 0,1$  s. However, in comparison with the group of sanguine students, no reliable differences were found ( $p > 0,05$ ). When compared with phlegmatic and melancholic students, reliable differences are observed. When assessing speed, strength endurance and flexibility in the indicators of special physical fitness of the four types of temperaments at the beginning of the experiment, no reliable differences ( $p > 0,05$ ) were found between the groups.

In terms of speed development, the best result was demonstrated by sanguine students:  $35,9 \pm 8,1$  times

Results of testing special physical fitness before and after the pedagogical experiment ( $n=80$ )

The meaning of the indicators		Tests				
		Running with high hip raises, number of times	Kersh step test, bpm.	Turns on a gymnastic bench, sec	A test to determine the strength endurance of the leg and abdominal muscles, sec	Test to determine the flexibility of the spine and mobility of the hip joints, cm
sanguine	Before	35,9±8,1	121,0±23,1	8,26±1,9	74,9±21,2	36,2±18,4
	After	37,0±8,6	112,0±26,3	7,28±0,9	99,4±25,1	50,4±21,3
choleric $\bar{X} \pm \sigma$	Before	33,3±8,0	129,3±17,4	7,22±0,1*	72,3±16,7	43,7±16,2
	After	34,7±8,4	116,0±15,3	6,21±0,1*	106,0±23,2	60,0±17,1
phlegmatic $\bar{X} \pm \sigma$	Before	35,0±6,3	116,1±18,4*	8,57±2,5	69,3±23,5	55,5±17,8
	After	35,9±7,1	97,4±20,2*	6,7±2,3	108,3±25,6	62,9±18,3
melancholics $\bar{X} \pm \sigma$	Before	35,0±8,6	133,6±26,6	8,41±1,7	84,5±17,3	37,5±21,7
	After	36,1±7,4	114,1±23,8	7,56±1,9	87,8±18,4	50,9±19,6

\* – Statistically significant differences between group indicators ( $p \leq 0,05$ ).



in 10 sec. The best result in the test to determine strength endurance was demonstrated by melancholics:  $84,5 \pm 17,3$  sec, the lowest result was demonstrated by phlegmatics –  $69,3 \pm 23,5$  sec. The best result in assessing the flexibility of the spine and mobility of the hip joints was demonstrated by the phlegmatic group:  $55,5 \pm 17,8$  cm.

After the pedagogical experiment, with a general tendency towards positive shifts in the indicators of physical fitness of female students in all four groups, patterns in the difference in indicators were preserved, depending on the type of temperament. Sanguine people showed the best result in the speed test, although the difference with other groups was not statistically significant ( $p > 0,05$ ). In the Kersh step test, the best result was recorded among phlegmatic people, a reliable difference ( $p \leq 0,05$ ) was observed in comparison with all other groups.

Melancholic people demonstrated a large increase in indicators in this control exercise from  $133,6 \pm 26,6$  beats / min to  $114,1 \pm 23,8$  beats / min.

Choleric people showed the best result in the dynamic balance test –  $6,21 \pm 0,1$  s, reliable differences ( $p \leq 0,05$ ) were observed in comparison with the group of sanguine and melancholic people.

Phlegmatic people in this test demonstrated a stable tendency to improve dynamic balance indicators from  $8,57 \pm 2,5$  s to  $6,7 \pm 2,3$  s. When comparing the results of testing strength endurance and flexibility of female students with different types of temperament, homogeneity of the groups was revealed.

However, the best result in the strength test was demonstrated by the phlegmatic group ( $108,3 \pm 25,6$  sec), and the leaders in the result before the experiment – the melancholics, on the contrary, turned out

to have the lowest indicator of  $87,8 \pm 18,4$  sec. In the test for flexibility of the spine and mobility of the hip joints, the best result was shown by the phlegmatics:  $62,9 \pm 18,3$  cm.

**Conclusions.** Thus, as a result of the conducted research, differences in the indicators of special physical fitness of female students with different types of temperament were revealed. Accordingly, taking into account temperament during health aerobics classes will allow more effective construction of the educational and training process in physical education, helping the trainer-teacher to expand the components of the individual approach and determine the methods of working with each student.

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