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**DEVELOPMENT OF TECHNOLOGY OF HEALTH-IMPROVING
CLASSES TAKING INTO ACCOUNT THE INDIVIDUAL AND
TYPOLOGICAL SPECIAL FEATURES OF MATURE WOMEN**

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Abstract. The article shows the feasibility of developing a technology of health-improving activities for women of the second mature age based on the typological features of autonomic regulation. It has been proved that a necessary component in the development of the technology of health-improving classes is an integrated approach to studying the level of health and functional indicators of the organism of women of mature age. The choice of measures and methods of pedagogical influence, depending on the individual and typological special features of the trainees, will increase the effectiveness of health-improving classes with mature people.

Introduction. The modern rhythm of life is characterized by an increase of psychoemotional tension and low level of motor activity, which cause a decrease in the level of health and quality of life of mature women [1-3]. An influence and age-related changes happening in women's organism have an effect on the level of health. Age-related changes connected with a slow-down of metabolism, a decrease of functional capabilities of organism systems lead to the depletion of spare capabilities of the organism, which undoubtedly reflects on the health state [4]. With age, women experience a disturbance in the work of musculoskeletal apparatus, cardiovascular system, vegetative nervous system, which manifests itself in the form of an increase in anxiety level, humoral changes, a disturbance of peripheral blood flow and a change in the state of muscular systems in a form of muscular spasms.

The use of measures of health-improving physical culture in everyday life could contribute to the preservation of health of a population on a modern stage of society's development. According to experts' opinion, it is necessary to use evidence-based methodological approaches to the development of technology of

health-improving physical culture classes with mature people, including an integrated approach not only to the implementation of health-improving trainings, but also to the detection of physical fitness and the level of health of trainees, taking their age-relates and typological special features into account [5].

The vegetative nervous system (VNS) with its multilevel organization could act as an indicator of the state of cardiovascular and other organism systems and the level of health in whole [6]. According to the opinion of V.P. Kaznacheev, in human population there are people with various activity of VNS divisions, which is manifested not only through differences in the state of cardiovascular homeostasis, but also through mechanisms of adaptation to environmental factors [4].

We think that taking individual and typological special features of mature women into account would contribute to an increase of effectiveness of health-improving classes and an increase of health level. The differentiated approach allows broadening a methodological development of such contents of health-improving classes as the detection of volume and intensity of loads, the choice of pedagogical measures and their technical difficulty, the choice of amplitude of motor exercises, the choice of tempo of background music.

The purpose of the study is to substantiate theoretically and experimentally main methodological ways during the development of the technology of health-improving classes for mature women considering the type of vegetative regulation.

Methods and organization. Women aged $40,55 \pm 6,15$ years ($n=48$) participated in the study. Among trainees, groups were formed based on prevailing activity of VNS divisions: 1 group ($n=16$) – sympathicotonia, $SI \geq 200$ s.u.; 2 group ($n=16$) – parasympathicotonia, $SI < 50$ s.u.; 3 group ($n=16$) – eutonia, $SI = 51-199$ s.u.

In order to evaluate vestibular tolerance, the “Mera ST-150” (Moscow) force plate was used. The state of peripheral blood flow was examined using the rheovasography (RVG) method with the “Reo-Spectre – 3” rheographic complex (Ivanovo). The Martine-Kushelevskij test was used as a functional test to evaluate the state of cardiovascular system. Generally accepted anthropometry methods were used to evaluate the physical development [7].

The experimental data obtained during the study was processed using the Statistica 6.0 software. In order to reveal differences in examined indicators between typological groups the non-parametrical Mann-Whitney U-criteria was used. The differences were considered as statistically significant if $p < 0,05$.

Results and discussion. In order to substantiate main methodological ways during the development of the technology of health-improving classes for mature women a substantive evaluation of the level of health of women was conducted according to the combination of morphological and functional indicators of women

with various initial type of vegetative regulation. During the study, such parameters as indicators of physical development, strength endurance of muscles, spine mobility, constitutional types, the state of vestibular apparatus, the state of peripheral division of blood flow, type of response of cardiovascular system to loads were analyzed.

As a result of the substantive evaluation of health of mature women with various types of vegetative regulation, their typological special features were revealed, which could be used for the implementation of the differentiated approach during organizing and conducting health-improving classes.

Women with the adrenergic type of vegetative regulation (1st group) have a hypersthenic constitutional type, which is characterized by slow metabolism, tendency to corpulence, low level of vestibular tolerance and strength endurance of muscles, a significant decrease in spine mobility and disturbance of peripheral blood flow. The activity of the sympathetic segment of VNS determines an increase in pulse and arterial pressure at rest and a significant increase of such indicators during physical loads. Adaptation reserves are also decreased. During health-improving classes, it is necessary to use aerobic exercises, excluding exercises with straining, for this group of women. Inclusion into the set of dynamic breathing exercises allows activating recurrent blood flow. In the end part of classes, it is needed to use stretching exercises, which would contribute to the relaxation of spasmodic muscles. The movement amplitude is average; the movement tempo is slow and average.

Women of the 2nd group (parasympathicotonia) belong to normosthenic (73%) and asthenic (47%) constitutional types, have normal ratio of fat and muscle tissues, proportionally developed body parts, high speed of metabolism. Nonetheless, among women of the 2nd group a decrease in ability to maintain balance, endurance of spine muscles and abdominal muscles, peripheral blood flow was registered, though it was less profound than the decrease in the 1st group. The predominance of cholinergic regulation in the work of cardiovascular system decreases functional capabilities of organism during adaptation to physical loads. Exercises aimed at the increase of muscle mass: anaerobic strength building exercises are suitable for this group. During classes, it is necessary to use isometric exercises to strengthen vein walls: different types of walking, callisthenic exercises, exercises for lower extremities with an effort for calf and hip muscles. The amplitude of movement is full. The movement tempo is slow to fast.

Women of the 3rd group (eutonia) have a normosthenic constitutional type, which is characterized by the developed musculature and proportional body structure. As shown by results of the study, members of this typological group revealed the smallest deviations from aging norms in all examined indicators. The optimal ratio of adrenergic and cholinergic regulation in the work of cardiovascular

system contributes to adequate responses from the blood flow apparatus during physical loads, which is why in order to form a muscular core it is recommended for women of the 3rd group to use power exercises with their own body mass, dumbbells, power training devices, and exercises with the ball. It is also allowed to include both aerobic and anaerobic exercises in sets of exercises. The amplitude of movement is full. The movement tempo is slow to fast.

For women of all typological groups it is recommended to use exercises for coordination development, which are performed with their eyes open and closed to increase vestibular tolerance.

Revealed typological special features of the level of health of women with various types of vegetative regulation allowed to determine the structure of the technology of health-improving classes, which includes the substantive evaluation of the state of health, the development of specific tasks taking revealed typological special features into account, the choice of main measures and dosing of loads, and also the benchmark evaluation of the state of health (Fig.1).

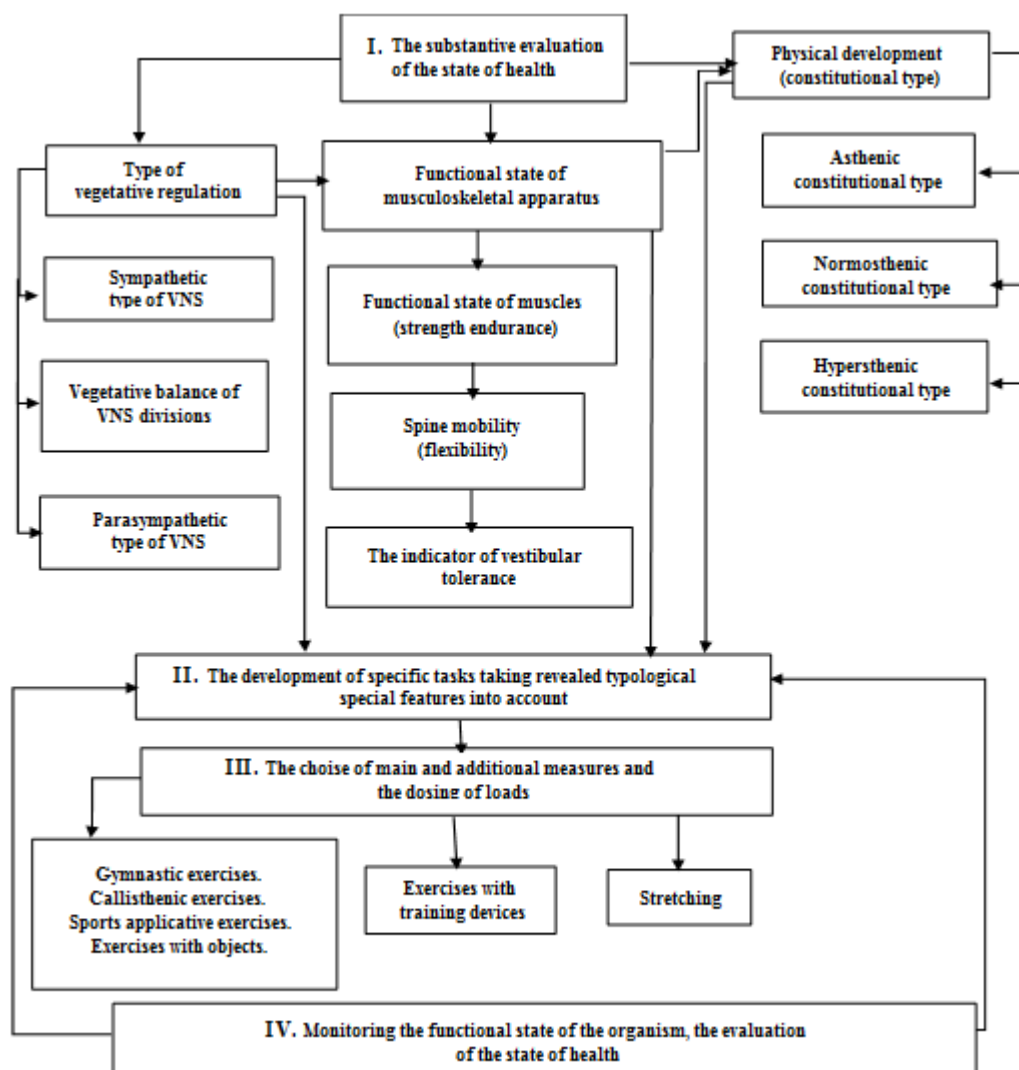


Fig. 1. The differentiated algorithm of the technology of health-improving classes for mature women of the 2nd period taking the type of vegetative regulation into account

Conclusion. In our opinion, during the development of the technology of health-improving classes with mature people, it is important to take into account not only age-related, but also typological special features of trainees. The use of substantive approach to evaluate the level of health of trainees allowed revealing typological special features of women with various initial vegetative tonus. The differences were revealed according to the level of physical development, indicators of muscle endurance, state of spine, vestibular apparatus and functional capabilities of cardiovascular system. The biggest age-related abnormality in the examined indicators were noted in women with the adrenergic type of vegetative regulation (1st group), those abnormalities are less profound in women of the 2nd (parasympathicotonia) and 3rd groups (vegetative balance).

Results of this study allowed to substantiate guidelines for choosing the volume and intensity of loads, manner of physical loads, tempo and amplitude of performance of exercises, which are important to take into account during the development of the technology of health-improving classes for mature women with various types of vegetative regulation.

The differentiated approach to the development of the technology of health-improving classes for mature women with various types of vegetative regulation would allow to increase the effectiveness of training and the level of health of trainees.

References

1. Gorshkova A.N. The influence of water aerobics on the complex indicators of the subjective and objective health of 36-45 years old women /A.N. Gorshkova // Theory and Practice of Physical Culture. – 2011. – № 12. – P. 11-15.
2. Zarodnyuk G.V. Methodology of physical culture and health-improving classes for women of mature age / G.V. Zarodnyuk, V.F. Kostyuchenko, S.S. Kozlov // Theory and Practice of Physical Culture – 2014. - № 2. – P. 41-44.
3. Seluyanov V.N. Technology of health-improving physical culture. / Seluyanov V.N. // M.: TVT Division. – 2009. – 192 p.
4. Treasurer V.P. Donozological diagnostics in the practice of mass population surveys/ V.P. Treasurer, P.M. Baevsky, D.P. Berseneva // JL: Medicine. – 1980. – 208 p.
5. Selevko G.K. Modern educational technologies / G.K. Selevko // M.: Public Education. –1998. – 256 p.

6. Thayer J.F. A meta-analysis of heart rate variability and neuroimaging studies: Implications for heart rate variability as a marker of stress and health / J.F. Thayer, F. Ahs, M. Fredrikson, J.J. Sollers, T.D. Wager // *Neuroscience and Biobehavioral Reviews*. – 2012. – Vol. 36(2) – P. 747–756

7. Martirosov E.G. Technologies and methods for determining the composition of the human body / E.G. Martirosov, D.V. Nikolaev, S.G. Rudnev // *M.: Science*. – 2006. – 248 p.

Spisok literatury

1. Gorshkova A.N. Vliyaniye zanyatij akvaerobiki na kompleksnye pokazateli sub'ektivnogo i ob'ektivnogo zdorovya zhenchscin 36-45 let /A.N. Gorshkova// *Teoriya i praktika fizicheskoy kul'tury*. – 2011. – № 12. – S. 11-15.

2. Zarodnyuk G.V. Metodika fizkul'turno-ozdorovitel'nykh zanyatij dlya zhenchshin zrelogo vozrasta / G.V. Zarodnyuk, V.F. Kostyuchenko, S.S. Kozlov // *Teoriya i praktika fizicheskoy kul'tury*. – 2014. - № 2. – S. 41-44.

3. Seluyanov V.N. Tekhnologiya ozdorovitel'noj fizicheskoy kul'tury / Seluyanov V.N. // *M.: TVT Divizion*. – 2009. – 192 s.

4. Kaznacheev V.P. Dozologicheskaya diagnostika v praktike massovykh obsledovaniy naseleniya/ V.P. Kaznacheev, P.M. Baevsky, D.P. Berseneva // *JL: Meditsina*. – 1980. – 208 s.

5. Selevko G.K. Sovremennye obrazovatel'nye tekhnologii / G.K. Selevko // *M.: Narodnoye obrazovaniye*. – 1998. – 256 s.

6. Thayer J.F. A meta-analysis of heart rate variability and neuroimaging studies: Implications for heart rate variability as a marker of stress and health / J.F. Thayer, F. Ahs, M. Fredrikson, J.J. Sollers, T.D. Wager // *Neuroscience and Biobehavioral Reviews*. – 2012. – T. 36(2) – S. 747–756.

7. Martirosov E.G. Tekhnologii i metody opredeleniya sostava tela cheloveka / E.G. Martirosov, D.V. Nikolaev, S.G. Rudnev // *M.: Nauka*. – 2006. – 248 s.

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