FEATURES OF DEVELOPING PHYSICAL ACTIVITY PROGRAMS FOR THE ELDERLY

Olga Nikolaevna Vysogortseva,
PhD in Medicine, Associate Professor of the Department of Rehabilitation,
Folk Medicine and Physical Culture., Tashkent Medical Academy, Tashkent, Uzbekistan
e-mail: vyso-olga@yandex.ru
Guzal Naimovna Sobirova,
Doctor of Medical Sciences, Professor of the Department of Rehabilitation, Folk Medicine and
Physical Culture., Tashkent Medical Academy, Tashkent, Uzbekistan
e-mail: guzals@mail.ru
Shukhrat Kayumovich Adilov,
PhD in Medicine, Associate Professor of the Department of Rehabilitation, Folk Medicine and
Physical Culture., Tashkent Medical Academy, Tashkent, Uzbekistan
e-mail:shuxratkayumovich@gmail.com
Fazilat Mukhuddinovna Tulyaganova
PhD in Medicine, Assistant of the Department of Rehabilitation, Folk Medicine and Physical Culture.,
Tashkent Medical Academy, Tashkent, Uzbekistan
e-mail:tfmdiamond@gmail.com

Abstract. The article presents the results of a study on the development of a differentiated approach to the formation of a physical activity program for elderly women. Over three months of procedures, it was possible to reduce the body mass index, increase the duration of walking distance, improve the functional state of the respiratory system, and align the processes of excitation and inhibition in the autonomic nervous system in the surveyed cohort. A differentiated approach to the formation of a set of exercises for elderly women, taking into account polymorbidity, allows achieving better results in increasing physical and social activity and promotes their active longevity.

Keywords: elderly women, physical activity, health-improving physical culture, functional state.

Introduction. Over the past decades, life expectancy of the population has been increasing in Uzbekistan, as well as around the world [4, 5]. This is a good indicator of the development of the country's healthcare system. However, new problems arise related to maintaining health and promoting active longevity of elderly people. For this category of the population, retiring is typically accompanied by restrictions in physical and social activity, exacerbation of multiple chronic diseases, decreased psycho-emotional status, gradual loss of muscle mass (sarcopenia), development of osteoporosis, and appearance of cognitive disorders [3, 5, 6, 8]. All of these make the development of a complex of measures to promote active longevity of the elderly population an urgent issue. The most important direction in this regard is the formation of a healthy lifestyle, namely, the increase of physical activity in this group. There are numerous publications devoted to the problem of selecting physical activity for the elderly, but many questions remain unanswered and interesting for researchers [1, 2, 7, 9, 10].

The aim of the study was to develop a differentiated approach to designing a physical activity program for elderly women.

Methods and organization of the study. The study involved 95 women aged 55 to 74 years (mean age was 58.4±2.67 years). Health-promoting physical culture (HPPC) sessions were conducted at the sports complex of the Tashkent Medical Academy. Women without general contraindications to physical activity were allowed to participate in the sessions, for which all participants underwent initial medical examination and testing (complete blood and urine analysis, ECG, measurement of blood pressure, biochemical blood analysis with determination of liver enzymes, bilirubin, lipid

626

spectrum, and fasting glucose level). When enrolling in the health group, the motivation for starting HPPC sessions was determined for all participants.All participants underwent anthropometry (height, weight, body mass index (BMI), chest circumference, waist circumference, hand dynamometry, and leg strength) and functional tests (Stange and Genchi respiratory tests, six-minute walk test (SMWT), determination of the state of the autonomic nervous system according to the Kierdo-Cardieu index, which was calculated by the formula $VI=(1-SBP/HR)*100)$. Additionally, the Short International Physical Activity Questionnaire (IPAQ) was used to assess the level of physical activity before starting the sessions and in dynamics (according to www.ipaq.ki.se (http://www.ipaq.ki.se/)), (http://www.ipaq.ki.se/) and the SAN questionnaire (the method of diagnosing the operative assessment of well-being, activity, and mood) was used to assess the psychoemotional status [V.A. Doskin et al., 1973; V.I. Balandin et al., 1991]. The questionnaire consists of 30 pairs of opposite characteristics, for which the subject is asked to evaluate their own state. Each pair represents a scale on which the subject marks the degree of expression of a particular characteristic of their state. When calculating, the extreme degree of expression of the negative pole of the pair is evaluated as one point, and the extreme degree of expression of the positive pole of the pair is evaluated as seven points. The obtained scores are grouped according to the key into three categories, and the number of points for each category is calculated. The results for each category are divided by 10. Normal state ratings range from 5.0 to 5.5 points.

The obtained results were subjected to statistical processing using the "Statistica" software package version 7.0 (StatSoft Inc., USA), with the calculation of the Student's t-test.

When compiling the complex of HPPC exercises, the following tasks were set: weight reduction, maintenance and increase of muscle mass, improvement of external respiration function, increase in joint range of motion, and improvement of psychoemotional status.

The study lasted for 6 months and was divided into 2 stages. During the first three months (1st stage), all participants exercised in one group using the same methodology. The sessions were held 3 times a week for 30-40 minutes, each with different goals: one included cardio exercises, the other included overall strengthening exercises with a focus on the upper limbs, and the third focused on strengthening the lower limbs. The participants started exercising enthusiastically, but during the sessions, it became clear that the functional state of the participants varied significantly, which did not allow for a systematic increase in the load to achieve the set goals. Due to the lack of visible results, some participants lost motivation, started skipping sessions, or left the health group altogether.

It was decided to divide the participants into three groups based on their functional state and physical fitness level. The first group (n=32, mean age 56.9±1.4 years) included women with predominantly musculoskeletal problems (osteoarthritis of joints, osteochondrosis of the spine), the second group (n=32, mean age 58.6±2.7 years) included those with overweight, and the third group (n=31, mean age 62.8±2.6 years) included those with low physical working capacity (mostly ischemic heart disease, hypertension, chronic bronchitis). Each group was given a differentiated approach to developing a physical activity program. In the first group, most of the exercises were performed in a sitting or lying position to eliminate axial load on the joints and spine; in the second group, the proportion of exercises involving large muscle groups was increased; in the third group, the load was increased more gradually and slowly compared to the other groups, and the complexity and pace of the exercises were increased as the participants adapted to the load. Rhythmic plasticity exercises and elements of traditional Eastern gymnastics were used in all groups. The warm-up part of HPPC included Qigong elements, and the concluding part included elements of yoga and meditation.

The second stage of the study also lasted for three months but was more effective.

The results and their discussion. Prior to starting the HPPC sessions, all participants showed decreased levels of physical activity, physical working capacity, functional state of the respiratory system, and sympathetic tone of the autonomic nervous system, as well as increased body weight in 97% of the participants. Additionally, lower scores on the SAN questionnaire indicated decreased psychoemotional status. The group sessions resulted in some improvement in parameters for all

627

participants, but after 3 months, no significant differences were observed. The results of the first stage are presented in Table 1.

Table 1.
Dynamics of functional indicators of participants in the
general group at the first stage of the study.

Parameters	Before the start of classes HPPC, M±m	After 3 mouths (stage 1).M±m
Body mass index(BMI).kg/m^2	29,97±1,76	28, 63±1,82
Waist circumference(WC), sm.	92,32±3,94	90,12±3,65
Lung vital capacity (LVC), ml.	1836,4±267,5	1986,4±342,7
Stange test, s.	32,67±3,28	32,67±3,28
Six-minute walk test, m	280,6±4,68	299,4±4,72
VI %	24,13±3,25	19,76±2,98
Physical activity(PA) IPAQ, points	12,68±0,87	14,82±1,28
Well-being, points	1,46±0,05	2,43±0,25
Activity, points	2,02±0,06	2,97±1,04
Mood, points	2,01±0,09	2,93±1,19

After dividing the participants into groups and implementing a differentiated approach to selecting exercises and load, the results significantly improved. The first result of changing tactics and methods of training was an increase in participant motivation, as well as a sharp decrease in the frequency of missed sessions and no dropouts from the groups. Over the course of three months, all groups were able to reduce their body mass index, increase the duration of walking distance, improve the functional state of the respiratory system, and balance the processes of excitation and inhibition in the autonomic nervous system. The dynamics of the functional parameters of the participants are reflected in Table 2.

Table 2.
Dynamics of functional indicators of participants in different
groups at the second stage of the study.

	GroupI (n=32)	Group II(n=32)	Group III(n=31)
Body mass index(BMI), kg/m^2	28,23±1,72 24,62±1,27*	28,73±1,58 25,84±1,43*	27,96±1,94 25,52±1, 44*
Waist circumference(WC), sm	90,32±3,61 86,73±2,47*	91,17±3,15 85,42±2,16*	90,02±2,86 86,12±2,12*
Lung vital capacity (LVC), ml	1984,4±338,5 2646,7±333,9*	2192,4±312,2 2587,8±318,3*	1897,6±321,3 2635,2±313,7*
Stange test, s.	32,65±3,12 44,17±3,28*	33,61±3,48 42,62±3,09*	32,16±3,74 39,67±3,88*
Six-minute walk test(SMW), m	299,8±4,77 394,2±3,42*	298,4±4,32 379,6±3,22*	297,9±3,93 384,8±3,16*
VI, units	19,76±2,98 14,43±1,19*	18,97±2,19 13,66±2,12*	21,66±2,38 15,73±1,96*
Physical activity (PA) IPAQ, points	14,88±1,74 19,62±1,08*	14,72±1,23 20,38±1,44*	14,77±1,18 18,89±1,27*
Well-being, points	2,43±0,25 3,29±0,09**	2,49±0,21 3,43±0,25**	2,33±0,15 4,14±0,67**
Activity, points	2,97±1,02 4,41±0,11**	2,77±1,09 4,97±1,14**	2,82±1,14 4,85±1,29**
Mood, points	2,93±1,19 4,50±0,15**	2,88±1,72 4,93±1,13	2,79±1,49 4,68±1,37**

Note: the numerator shows the indicators before the start of the 2nd stage of the study, and the denominator shows the indicators at the end of the study; * - significance of differences in indicators before and after the 2nd stage, $p < 0.05$, ** - $p < 0.001$.

The more pronounced results of the differentiated HPPC led to an increase in the participants' psychoemotional status, their motivation to exercise, and an improvement in overall physical activity indicators. According to the participants' survey, they started moving more, visiting museums, exhibitions, communicating more, participating in family events, which overall increased their social activity and involvement.

Conclusion. Thus, the results of our study allow us to draw the following conclusions:

1. Elderly women exhibit decreased levels of physical activity, physical performance, respiratory system functional state, sympathetic tonus, and psychosocial status.

2. This group is characterized by polymorbidity, with the presence of several chronic diseases, most commonly cardiovascular, musculoskeletal, and metabolic disorders.

3. A differentiated approach to developing a physical activity program for elderly women, taking into account the listed factors, can lead to better results in increasing physical and social activity and promoting active longevity.

References:

1. Akopyan E.S., Chshmarityan M.V. /Adaptive capabilities of mature and elderly women engaged in recreational physical culture. //Science and Sport: Current Trends. 2019. Vol. 7, No. 2. pp. 106-113.

2. Bashkireva A.S., Bogdanova D.Yu., Bilyk A.Ya., Shishko A.V., Kachan E.Yu., Kulapina M.E. /Quality of life management opportunities in the elderly based on active longevity concepts. //Clinical Gerontology. 2019. No. 25. pp. 70-79.

3. Kandela M.V., Koysman L.A., Nazarova V.P. /Physiological and psychological changes in the elderly. //Bulletin of the Sholom-Aleikhem Amur State University. 2019. No. 2(35). pp. 106-116.

4. Mavlyanova Z.F., Vysogortseva O.N., Sobirova G.N. /Features of developing physical activity programs for the elderly. //Problems of Biology and Medicine. 2022. No. 5 (139). pp. 52-58.

5. Mamchits L.P. /Health status and quality of life of elderly people.// Health and Ecology Problems, 2014, pp. 116-120.

6. Noskov S.M., Zavodchikov A.A., Krasivina I.G., Evgenyeva A.V., Lutskova L.N. /Sarcopenia as a gerontological problem. //Clinical Gerontology. 2011. No. 3-4. pp. 48-52.

7. Shilko V.G., Guseva N.L., Kolpashnikova V.S. /Physical activity as a means of increasing the duration and quality of life of elderly people. //Theory and Practice of Physical Culture. 2020. No. 11. pp. 71-73.

8. Akhmedova, Durdona M.; Usmankhodjaeva, Adiba A.; Sharipov, Ulugbek A. (2021) /Assessment of the level of compliance of women of Uzbekistan with a healthy lifestyle.// Central Asian Journal of Medicine. 2021. Iss. 4, Article 5.

9. Ekelund U, Tarp J, Steene-Johannessen J, et al. /Dose-response associations between accelerometry measured physical activity and sedentary time and all-cause mortality: systematic review and harmonised meta-analysis. //BMJ. 2019; 366: l4570. https://doi.org/10.1136/bmj.l4570

10. Mendonca GV, Pezarat-Correia P, Vaz JR, Silva L, Almeida ID, Heffernan KS. /Impact of Exercise Training on Physiological Measures of Physical Fitness in the Elderly. //Curr Aging Sci. 2016;9(4): p. 240-259.