

UDC 618.19-089.87

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Technology of wellness aerobics in the structure of personality-oriented program of physical rehabilitation of women with postmastectomy syndrome

Abstract. Purpose: to develop and substantiate technology of wellness aerobics in the structure of personality-oriented program of physical rehabilitation of women with postmastectomy syndrome on the dispensary stage of rehabilitation. **Material and methods:** theoretical analysis and compilation of scientific and methodical literature and internet providers; induction and comparison. The study involved 115 women with postmastectomy syndrome on the dispensary stage of rehabilitation. **Results:** the developed program of wellness aerobics includes elements of basic aerobics, fitball aerobics, step-aerobics, strength training and stretching and their rational combination, which was implemented in accordance with the adaptation and training period of follow steps. Customization means of wellness aerobics depended on cardiorespiratory disorders, autonomic systems, limiting range of motion of the shoulder joint, degree of lymphostasis of women with postmastectomy syndrome.

Keywords: wellness aerobics, program, rehabilitation, women postmastectomy syndrome.

Introduction. Leading literary sources [4, 6] indicate that breast cancer takes a leading place among the female population. The most common consequence of breast cancer is postmastectomy syndrome (PMES), which includes the manifestation of symptoms such as upper limb lymphostasis, limiting range of motion in the shoulder joint, sensory disturbances, cardiovascular and respiratory systems, quality of life, negative psycho-emotional effects, etc. [2, 3, 4].

In most developed countries the use of physical rehabilitation is an integral component of restoring functional and emotional state of women with postmastectomy syndrome at all stages of treatment [5, 7, 8].

Analysis and synthesis of scientific sources suggests that the use of aerobic [7, 8] and power [5] burden contribute to the improvement of some biomarkers related to cancer prognosis, quality of life, decrease of arthralgia, fatigue, lymphostasis, neuropathy, osteoporosis in women with PMES.

However, the theoretical analysis of scientific papers showed that the problem of physical rehabilitation of women with postmastectomy syndrome almost solved, and existing programs of physical rehabilitation of this group do not include the functionality of the cardiovascular system of women, individual preferences for choosing personality-oriented programs, differentiation of modes of physical activity that requires the development and scientific substantiation.

Relationship with the academic programs, plans, themes. The selected research direction corresponds to the research topic of Zaporizhzhya National University "The development, experimental testing and implementation in practice the measures of physical rehabilitation to improve the health status of different categories of people" (state registration 0114U002653).

Objective: to develop and substantiate technology of wellness aerobics in the structure of personality-oriented program of physical rehabilitation of women with postmastectomy syndrome on the dispensary stage of rehabilitation.

Material and methods: theoretical analysis and synthesis of scientific literature and global information of the Internet; induction and comparison. The study was conducted at the Zaporozhye Regional Oncology Center and Sports Complex "Spartac". The experiment involved 115 women with postmastectomy syndrome, the average age of the studied was $60,27 \pm 0,79$ years. These women underwent modified radical mastectomy for Madden and had 1st-2nd stages of tumor development. In the clinical stage of rehabilitation of women according to their own desires and rewards was offered to choose the program of physical rehabilitation under which they will work during the year. Previously women were interviewed in the course of which were given a clear explanation of the features of each of these classes.

Results and discussion. The developed personality-oriented program of physical rehabilitation takes into account the preferences of women and included: akvafitnes, conditioned swimming, basic elements of aerobics, fitball, gymnastics, step aerobics. Overall clinical rehabilitation stage consisted of two periods: adaptation (3 months) and training (9 months).

Implementation of personality-oriented program included classes in the gym and the pool three times a week. Within each class women engaged in the gym and in the pool for one hour. The content of program, intensity and duration of the training depended on the level of the functional state of the cardiovascular system (LFS) of women and regularly adjusted according to the results of the current control its level. For the convenience of the program the women were divided into subgroups according to their level of physical condition (low, average and below average).

The application of personality-oriented program of physical rehabilitation includes the integration of the basic provisions to get a positive effect of lessons: rational combination of various direction exercises; compliance with optimal intensity and duration of exercise; account comorbidities, the dosage of exercises, individualization of exercises depending on the physical condition; variation in the content of the complex.

Diagram of the structure and contents of wellness aerobics for women with different levels of physical condition shown in Fig. 1.

According to each stage of rehabilitation and functional status, biomechanical structure of movements and their especially effects, aerobic exercise were divided into exercises with unstressed, low, medium and high impact load.

The program of physical rehabilitation of women with low LFS. To improve the functionality of female health program was developed in accordance with the LFS, individual manifestations of postmastectomy syndrome. The main structural elements of wellness aerobics for women with postmastectomy syndrome were: Duration, intensity of load, the level of shock effects, use of items (Fig. 1).

For patients of this level were doing exercises of low coordination complexity and unstressed load. During aerobic

exercise focused on character of limit movements of hands (not above the shoulder girdle), because greater amplitude requires an additional load on the cardiovascular system.

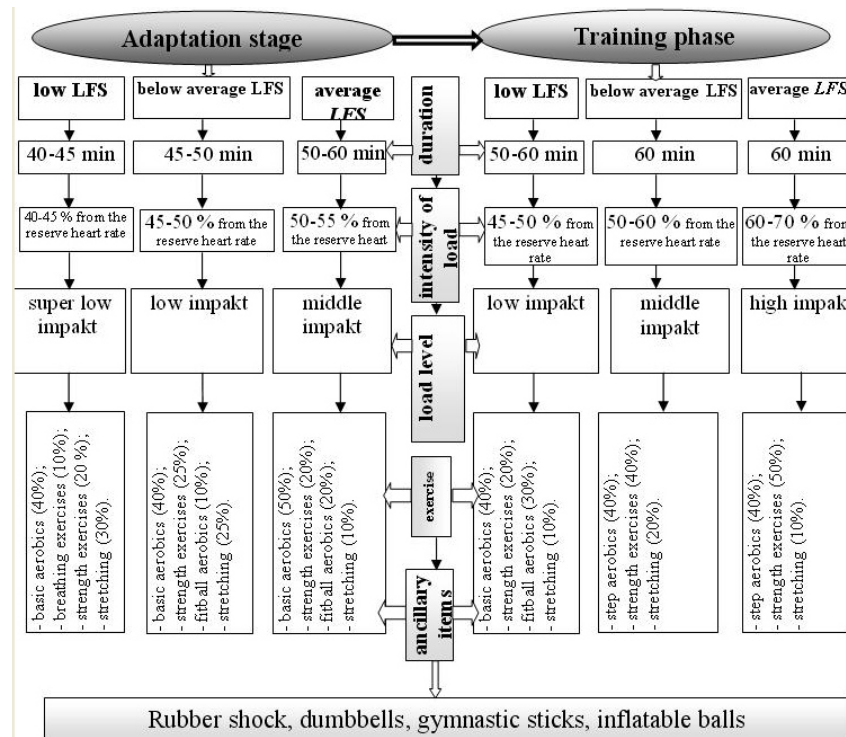


Fig. 1. Diagram of the structure and contents of wellness aerobics for women with different levels of physical condition on the dispensary stage of rehabilitation

Aerobic part of simple basic exercises included: march, step touch, step line, V-step, open step, pivot turn, toe touch, heel touch, mambo, cross step, grape vine, knee up, which were learning in the following sequence, because they related to a low impact load. The choice of these exercises was due, above all, a broad ability to modify their biomechanical structure for optimal load on the body.

Variability of load adjusted through the work of hand movements, changes of its amplitude, level of shock impact, that allowed not to change the overall appearance of choreographic picture blocks and communication. However, the women with low physical condition were doing aerobic exercises with mainly low and medium (limited) amplitude of hands movements.

Low amplitude of hands movements included: biceps curl, low row, low pinch; triceps press back, side lateral rises, front shoulder rises, shoulder punch, double side out, L-side.

Learning of all the basic steps performed in sequence: the repetition of a single exercise, series connection of different exercises, combining multiple series in combination, a combination of complex combinations. During training exercises and individual batches used combinations of the following methods: linear progression, from "head to tail", "zigzag" and block method [1].

For the facilitate the mastering certain combinations used active pauses between them lasting 15-20 seconds, which included performance light vibrational motions of the upper extremity in conjunction with the march in place, which also contributed to the further outflow of lymph and relieve tension. Pursuant to the basic steps series combination was given to 40% of the total time of training for women with low physical condition. Most of the exercises of power type (20%) carried out in the parterre part of aerobic classes after that allowed the most isolated muscle groups that were not participating in the work and focused on working.

Among patients of this level strength training exercises were widely used to overcoming the weight of their own body and external resistance – with dumbbells.

The program of physical rehabilitation of women with below average LFS. The program of aerobics for women with below average physical condition on adaptation phase included: basic aerobics – 40%, strength exercises with weights – 25%, fitball aerobics – 10%, stretching – 25%; training phase included step aerobics – 40%, strength exercises with weighting – 40% and stretching – 20% of the total lesson time.

The distribution of funds provided differentiated use of low (low impact) on adaptation and middle (middle impact) loads – at the training stage, the intensity of training – 45-50% and 50-60% of heart rate reserve to respective stages.

The section of exercises with low load included: steps (march, walking, step touch, basic Step, V-step, mambo, cross), exercise with a change of direction (step line, grape wine, cha-cha-cha), that were based on turns (turn, pivot turn, rivers); with an average load – exercises, that were based on downs legs in different directions (kick-front, kick-side, kick-back); bending the legs at the hip and knee joints (knee up, leg curl, squat, lunge, skip, low kick), accompanied by hand movements of middle and high amplitude.

There was a fitball gymnastics in the parterre part of training. During the fitball gymnastics we trained women to

maintain balance in different initial positions on the ball: sitting, lying down, lying on their back and then moved to the exercise of these positions.

Exercises using fitball as support contributed to improving the effective power capacity by unstable initial position, which required maximum mobilization of different muscle groups. Stretching included extension of certain muscle groups, did not allow any sudden movements and minimize the power load on the parts of the body, that participated in the maintenance of posture by moving the common center of mass.

The program of physical rehabilitation of women with an average LFS. The program of aerobics for women with an average LFS consisted of: basic aerobics – 50%, strength training with weighting – 20%, fitball gymnastics – 20%, stretching – 10% of the total lesson time, the intensity of load – 50-55% of heart rate reserve, duration – 50-60 minutes. The training sessions included the following components: step aerobics – 40%, strength exercises with weighting – 50%, stretching – 10%, the intensity of load – 60-70% of heart rate reserve, duration – 60 minutes.

Basic aerobics included using of different exercises of medium and high intensity (running with movements, lunges, skips, jumps with the change of position of the feet), which necessarily accompanied by active rest between series.

The duration of the sessions of step aerobics in the training phase was about 25 minutes, after that woman did strength exercises using dumbbells about 30 minutes, stretching was performed in the end of the session for five minutes. Started lessons with step height of no more than 10 cm, and then as adapting gradually increased to 20 cm. Step-platform applied not only to increase the reserve cardiorespiratory system, but for strength training.

Load of step aerobics classes varied depending on the chosen platform height, pace and complexity of movements, number of hops, using of weights.

Conclusions. The developed technology of wellness aerobics on clinical stage of rehabilitation for women with postmastectomy syndrome based on the peculiarities of physical, functional and emotional state, personality orientations of patient and contained the following components: the duration and intensity of exercises, number of repetitions of exercises, level of the functional state, individual characteristics of manifestations of postmastectomy syndrome.

Prospects for further research include the development of yoga therapy program in the structure of personality-oriented program of physical rehabilitation of women with postmastectomy syndrome.

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Received: 09.09.2015.

Published: 31.10.2015.

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