

TRANSFORMATIONAL CHANGES IN INACTIVE WOMEN INDUCED BY VARIOUS WELLNESS PROGRAMS

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Abstract. Hypokinesia has reached pandemic levels globally. In response, numerous wellness programs have been developed as potential solutions to this issue. This study aimed to evaluate the effects of two different three-month experimental wellness programs. The sample consisted of 56 inactive women (aged 30-40), divided into two experimental groups (E_1 , $N=28$; E_2 , $N=28$). Group E_1 participated in an aqua aerobics program (3 sessions per week, 45 minutes each), for 12 weeks. Group E_2 followed a workplace wellness program that included Fit ball exercises (3 sessions per week, 15 minutes each), along with relaxation massages (3 sessions per week, 10 minutes each) for 12 weeks. The results of the t -test for the experimental group E_1 (aqua aerobics) showed a significant difference between the initial and final measurements for all tested variables (vital capacity, systolic arterial blood pressure, diastolic arterial blood pressure, heart rate at rest, working pulse, Romberg's test, Stanga's test, and relative oxygen consumption). The t -test results of the experimental group E_2 (fit-ball with relaxation massage) show a significant difference in all tested variables, with the exception of systolic and diastolic blood pressure. The analysis of the differences between the experimental groups (E_1 and E_2) showed a significant difference in favour of group E_1 at the final test, except for systolic and diastolic blood pressure and relative oxygen consumption. Applied experimental models of wellness programs represent a good instrument for optimizing the functional abilities of inactive women aged 30-40.

Keywords: health; aqua aerobics; fit ball; relaxation massage; functional abilities.

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Introduction

In recent years, various wellness programs have been introduced to enhance modern health. Wellness has recently emerged not only as an industry sector but also as a multidimensional academic discipline, encompassing psychological, physiological, social, demographic, and ecological aspects (Lazarević & Lukić, 2021). The implementation of appropriate wellness programs with a holistic focus contributes to the effective rest and recovery of the human body (Lowensteyn et al., 2018), increasing working and functional capacity (Karatrantou & Gerodimos, 2023), preserving and improving overall health (Oliver et al., 2018). Wellness culture promotes values related to healthy lifestyle habits, healthy meals, encouraging physical activity during the workday, and encouraging the application of various stress management techniques (Lazarević & Lukić, 2021).

The use of holistic instruments enables the identification of methodologically sound, practically effective, and socially responsible changes (Owen & Çelik, 2018). In order to reduce the negative effects of stress, and the consequences of burnout syndrome at work, health insurance costs, absenteeism, and employee turnover, organizations are increasingly taking a systematic approach to employee health protection (Lukić & Lazarević, 2019). Wellness programs have been shown to reduce stress among employees, with stress being one of the key factors of disengagement, absenteeism, turnover, and poor performance of employees (Lazarević & Lukić, 2021).

According to research (Fernandez-Lasa et al., 2024), one-quarter of women are physically inactive during their free time, and more than half of the women surveyed report sedentary behaviour at work, which can negatively impact their health.

Physical activity (PA) is a well-known predictive factor for chronic diseases and functional decline (Bull et al., 2020). Recent studies have reported that higher PA in the transition from middle to older age reduces the risk of adverse health outcomes later in life (Mok et al., 2019; Ahmaidi et al., 2023; Gomes et al., 2020).

Mair et al., (2019) conducted a research to determine the effects of a wellness program with a kinesiological orientation, which involved small-scale step exercises, on muscle mass and functional abilities in inactive older women. Eleven elderly women participated in a six-week exercise program while wearing a weight-bearing vest. Variables such as lower limb strength and functional capacity - including heart rate and systolic/diastolic blood pressure were monitored. The research results indicated that the program was effective in improving the strength of the lower extremities by 10-11 %, as well as enhanced functional abilities.

For women aged 30-40, the functional capabilities of the cardiovascular, respiratory and regulatory systems tend to decrease. According to Kendel and Fairman (2014) the aging in women is associated with physiological declines, notably a decrease in bone mineral density (BMD) and lean body mass, with a concurrent increase in body fat and central adiposity. Between the ages of 25 and 80, heart function weakens by about 30%, the myocardium hypertrophy occurs, and cardiac output decreases by 55-60% on average when under a load of 25-30% of maximum capacity. With decreasing elasticity of blood vessels, the peripheral resistance to blood flow increases, the arterial blood pressure increases, and the diastolic pressure increases to a greater extent. After the age of 35-40, cholesterol begins to accumulate on the walls of blood vessels, which can cause the development of arteriosclerotic changes (Fedorova & Chepakob, 2012). Additionally, between the ages of 30 and 40, pulmonary ventilation decreases, gas exchange becomes impaired, and breathing difficulties, especially during physical exertion, become more common. Lung capacity decreases annually by an average of 7.5ml/m² of body surface area. These possibilities do not necessarily limit the aerobic abilities of the body, but lead to a reduction of the so-called life index, which can be predicted over time (American College of Sport Medicine, 1998; Volkov, 2000).

The aging process undeniably contributes to a decrease of the body's functional reserve and affects exercise tolerance (Sobczak et al., 2021). The action of the kinesiology-oriented wellness programs, such as those focusing on aerobic activity leads to an increase in the cortisol response following physical activity in adult women (Stanojević & Seman, 2020).

The research examines changes in the functional status of inactive women as a result of different wellness programs (aqua aerobics, fit-ball with relaxation massage) carried out in different outdoor environments.

Aqua aerobics influences many characteristics of the body, including improving posture, the function of internal organs, and strengthening of the skeletal, joint and cardiovascular systems (Petrushevich et al., 2020).

Water-based exercises (aqua aerobics), have a beneficial effect on the vegetative nervous system and activate the action of the parasympathetic system. This leads to the normalization of the cardiovascular function (Kashuba et al., 2021), reduced peripheral resistance blood vessel resistance, a stabilized heart rate, and decreased blood pressure. Additionally, aqua aerobics benefits the respiratory system. The activity of the respiratory centre that contributes to deep breathing increases, the circulation of the respiratory system is improved, the blood is enriched with oxygen. Consequently, safe conditions are created for the implementation of wellness and spa programs suitable for women of different ages and health conditions. Water activities are especially recommended for untrained and obese individuals with impaired locomotor apparatus (Oral et al., 2021). Tsourlou et al. (2006) conducted a study with the aim of determining the effects of water-based training, which included aerobic exercises with loads, on muscle strength, flexibility and functional mobility in healthy women. When it comes to muscle strength, the research results showed that the water-based training program led to a statistically significant increase in the isometric strength. The authors concluded that aquatic exercise programs can successfully improve functional fitness in healthy older women.

Kantyka et al. (2017) observed significant changes in selected somatic, morphological, and aerobic capacity parameters in postmenopausal women, after 14 weeks of aqua aerobics, though changes in lipid profiles were insignificant.

Similarly, Verbina (2010) noted that regular water-based exercise reduces excessive excitement and irritability, optimizes the nervous system, stimulates metabolism, and strengthens the immune system against colds, leading to greater energy expenditure in water than on land and thus, a reduction in body fat.

It has been scientifically shown that aqua aerobics has a beneficial effect on the optimization of the cardiovascular and respiratory systems, and contributes to the correction of the figure in women (Burhanova et al., 2020).

Furthermore, positive effects were also documented in elderly women with hypertension (Kim et al., 2016), and exercises like aquatic aerobics and deep water running significantly reduced fall rates in older adults (Chintamani et al., 2020).

Blagajac et al. (1999) emphasized that sitting on large balls during activities like writing or working on the computer optimizes the psychosomatic state. There are many advantages of using the fit-ball. Active sitting on a fit-ball promotes dynamic posture, improves spinal mobility, prevents static strain on the back and neck, engages the muscles of the back, abdomen, and legs, enhances blood circulation in legs and hips, contributes to the removal, prevention and relief of spinal issues, reduces stress in the so-called 'managerial diseases'. The managerial jobs are increasingly characterized as highly stressful, and various psychosomatic manifestations may appear (Panić, 2016).

Relaxation massage is aimed at relaxing the body; it is characterized by light, gentle movements. It is a mild, pleasant manual massage that achieves relaxation and relief of chronic ailments of the human body. It provides benefits such as improved blood flow, reduced muscle tension, and decreased neurological excitability, all contributing to a greater sense of well-being. Massage also promotes increased muscle mass, compliance, resulting in increased joint motion, reduced unaggressive stiffness, and decreased energetic stiffness, known as biomechanical mechanisms. Mechanised pressure might help to improve blood circulation by increasing the arteriolar pressure, and raising muscle temperature through friction.

Regarding the massage technique, mechanical pressure on the muscle is likely to increase or decrease nerve excitability, as measured by the H-reflex, which is known as neurological mechanism. This is seen in parasympathetic activity (as assessed by heart rate, blood pressure, and heart rate variability) and junk levels (as simply measured by cortisol levels following therapeutic massage, causing a relaxation response), known as physiological mechanisms. A reduction in anxiety and an improvement in mood also cause relaxation, which is referred to as psychological mechanism, after the massage. Additionally, therapeutic massage post-exercise reduces the severity of muscle soreness (Gasibat & Suwehli, 2017).

Given the theoretical differences between the two wellness programs, a direct comparison is warranted to determine which program best suits individual women or employers aiming to boost productivity and employee wellbeing. This article explores the assumption that a combination of aqua aerobics, fitness ball exercises, and workplace massage during breaks can address the health issues faced by middle-aged women.

In addition to the activities, which are also represented in some work environments, fitness and wellness programs are rarely personalized to the individual. However, modern diagnostic methods allow for quick and easy assessments, which could enhance program effectiveness through personalized records, monitoring, and expert-driven adjustments.

Explanation of the causes and consequences of ailments as well as the potential benefits of treatments are often skipped in the relationship between healthcare professionals and patients or users of the treatment and the therapist.

Providing clear information about the effects of a particular method could help clients make more informed choices in spa centres as well as in centres where wide service packages are offered, so users can choose a method, treatment or package with short-term proven benefits in addition to the therapist's advice. This fact is often overlooked when offering treatment to a customer, although the solution is easy in terms of creating appropriate informational posters.

This assessment is also relevant in health tourism, where both methods are commonly included in the programs of health centres. It is important to clearly explain the benefits of short- or medium-term periodic exercise. This is particularly true in settings like spas, cruise ships, and similar health centres, where, despite the recommendations of the attending doctor who reviews each patient's analysis and results, the user ultimately selects from the available programs. Without sufficient information, the user may make an uninformed choice, which could lead to a less favourable experience after exercise.

Alternating between different methods is particularly effective in spas, where patients or clients often choose multiple treatments per day. A successful combination of active and passive methods, applied in sequence, allows for both effective exercise and necessary passive recovery.

As the state has withdrawn from this sector, it has created opportunities for private entrepreneurs. This trend is evident in Serbia, where the fitness and wellness industry has grown significantly over the past decade (Kontic et al., 2023). However, Serbia remains about 20 years behind Western countries in offering free fitness and wellness programs within large state and private companies (Gebhardt & Crump, 1990), despite evidence showing that every dollar invested in physical exercise can save between three and four dollars in treatment costs (Baicker et al., 2010).

In contrast, up to 83% of U.S. businesses surveyed offer incentives for employees to participate in wellness programs, though 58% reported plans to implement penalties in the coming years for employees who “did not take appropriate actions” to improve their health (Kirkland, 2014).

All of the above reminds us that these researched phenomena have been well-known for a long time (Gamby et al., 2021). What is missing is the large-scale implementation for the general population. During periods of long and difficult transition, such as in Serbia, people have rushed headlong into an uncertain future that currently offers little promise, while the values of not so long ago have been forgotten. This includes organized activities in former Yugoslavia, such as physical exercise during school and work breaks, competitions between labour organizations, winter and summer vacations, recovery programs for high-risk professions, free stays in resorts and spas, and mass exercise initiatives. In the past, all of this contributed to a broader concern for the nation's health.

One of the absurdities of modern society, particularly in Serbia, is the sight of empty schools and colleges outside of class hours, as well as unused state sports centres, stadiums, and clubs, which lack programs to address the fact that only 4% of Serbia's population regularly exercises. The system, painstakingly built over 50 years after World War II – especially in Eastern Europe – has been completely dismantled. States abandoned their populations long ago, leaving individuals to fend for themselves. In this process, sport has become merely an indicator and early warning sign of larger societal shifts. People are increasingly left to rely on themselves, with less and less support from their governments. It is alarming that this trend has, in various ways, spread across much of the world.

In other words, the boundaries between socialism and capitalism can be quite thin and fluid. When considering the production and functioning of society, the focus shifts to optimizing the workload and maintaining the workforce. Many professions now require lengthy and complex education, along with extended periods of training, making the employer's losses due to the lack of a culture of regular exercise among employees increasingly unacceptable in modern society.

It is unfortunate that the benefits of scientific research are reaching fewer and fewer people, particularly those outside the production system, or only those who can afford it or have the time to independently study and apply it. During the downward path of the sinusoid into the circular theory of civilization (Susato, 2006), it may be enough simply to preserve and document this knowledge for future generations.

Methodology

Participants and Procedure

The research was set up as an experiment with parallel groups. The research sample consisted of 56 women aged 30 to 40, who were divided into two experimental groups: E₁ (aqua aerobics, N = 28) and E₂ (fit ball with relaxation massage, N = 28). Prior to starting the experimental program, it was confirmed that all participants were healthy, worked in sedentary positions, and had not been physically active for a long time. They voluntarily accepted to participate in the experiment and attended the sessions regularly. The experimental groups were similar in terms of age, with homogenous variances between the examined groups.

The experimental factor was applied within two wellness program models. In the experimental group E₁, aqua aerobics was applied, consisting of specially selected water exercises (3 times per week for 45 minutes, over a 12-week period). The program took place in a pool with a water temperature of 28°C and a depth of 1.30 meters. The load during the implementation of the program was in the range of 50% to 80% of the participant's maximum heart rate. In experimental group E₂, a wellness package program was applied at the workplace - fit ball (3 times per week for 15 minutes) with relaxation massage (3 times per week for 10 minutes) over a 12-week period. The loads applied during the fit-ball program were in the zone of active rest, they did not exceed 50% of the maximum heart rate.

Measures

Functional ability testing (initial and final measurement) was conducted by sports medicine doctors at the functional diagnostics office of the National Sports Academy in Sofia during the morning hours. The facility met basic hygiene standards, with adequate lighting, and air temperature of 18-20°C).

The following variables were measured, selected based on theoretical sources highlighting their importance (Shiffrin, 2004; Kandil et al., 2023; Gregoire et al., 1996; Çiçek et al., 2018; Cornelissen et al., 2010): Vital capacity (VC-cm³) – spirometry (spirometer); Systolic arterial blood pressure (SABP-mmHg), (measured with a blood pressure monitor - MAS in mm/Hg); Diastolic arterial blood pressure (DABP-mmHg), (measured with the same blood pressure monitor machine – MAS, in mm/Hg); Heart rate at rest (HRAR-beats/min) - pulsometry (Sport pulsmeter PE3000); Working pulse (WP-beats/min) – pulsometry (Sport pulsmeter PE3000); Romberg's test (RT-s) – a test for examining the coordination functions of the nervous system and the functional state of the vestibular apparatus (Dubrovskij, 2009); Stanga's test (ST-s) – a test for assessing hypoxic possibilities (Dubrovskij, 2009); and Relative oxygen consumption (VO₂ max-mm/kg/min) – indirect method (Jovanović & Radovanović, 2003).

Statistical analysis

The data was processed using SPSS 20 software. A t-test for dependent samples was employed to compare the initial and final measurements within both experimental groups. To

assess the impact of the two experimental factors on the status of the participants, a t-test for independent samples was used to compare the final measurements.

Results

The results of the final measurement indicate that both experimental factors led to statistically significant improvements in the functional status of the test subjects (Table 1), except for SABP and DABP in E₂. Statistically significantly better results were achieved with aqua aerobics compared to treatments with a fit ball and relaxation massage in three out of the total of eight variables measured (Table 2).

Table 1. *Descriptive and comparative statistical indicators of the functional status of the subjects in groups E₁ and E₂ at the initial and final measurement*

Variables		X	Min	Max	R	SD	V%	t	p
Vital capacity									
E ₁	initial	3358,93	3233	3502	269	76,21	2,27	-411,9	0,000
	final	3885,68	3759	4018	259	74,44	1,92		
E ₂	initial	3368,46	3020	4012	992	219,86	6,53	-6,822	0,000
	final	3424,64	3123	4015	892	203,65	5,95		
Systolic arterial blood pressure									
E ₁	initial	130,50	115	148	33	9,60	7,36	5,508	0,000
	final	127,25	115	138	23	7,37	5,79		
E ₂	initial	126,04	116	149	33	8,99	7,13	1,104	0,279
	final	125,71	117	149	31	8,44	6,48		
Diastolic arterial blood pressure									
E ₁	initial	83,68	78	92	14	3,69	4,41	14,819	0,000
	final	79,50	74	85	11	2,91	3,66		
E ₂	initial	79,07	68	90	22	6,12	7,74	1,331	0,194
	final	78,71	69	89	20	5,20	6,61		
Heart rate at rest									
E ₁	initial	75,64	67	86	19	4,55	6,02	18,158	0,000
	final	72,00	65	82	17	4,05	5,63		
E ₂	initial	74,57	69	87	18	4,73	6,34	7,55	0,000
	final	73,89	68	86	18	4,72	6,39		
Working pulse									
E ₁	initial	164,21	156	174	18	4,79	2,92	9,053	0,000
	final	161,56	155	171	16	4,33	2,68		
E ₂	initial	163,96	154	178	24	5,92	3,61	4,258	0,000
	final	162,89	153	179	26	6,05	3,71		
Romberg's test									
E ₁	initial	10,55	7,28	12,56	5,28	1,57	14,88	-27,06	0,000
	final	15,03	12,56	18,96	6,40	1,60	10,65		
E ₂	initial	10,28	5,56	13,56	8,00	2,27	21,29	-3,311	0,000
	final	10,92	5,49	14,21	8,72	2,32	21,75		
Stanga's test									
E ₁	initial	41,62	37,12	46,21	9,09	2,31	5,55	-77,7	0,000
	final	56,90	52,28	61,18	8,90	2,44	4,29		
E ₂	initial	42,54	38,25	46,21	7,96	2,01	4,72	-10,44	0,000
	final	44,36	41,18	47,28	6,10	1,78	4,01		
Relative oxygen consumption									
E ₁	initial	29,81	13,42	45,84	32,42	8,10	27,17	-51,2	0,000
	final	38,47	21,21	54,59	33,38	8,01	20,82		
E ₂	initial	33,05	16,12	45,71	29,59	8,11	24,54	-6	0,000
	final	34,55	16,04	46,67	30,63	8,22	23,79		

The aqua aerobics program improved VC results by 526.75cm³ (Table 1), a significantly larger improvement compared to the fit-ball and relaxation massage program (56.18cm³). This difference is statistically significant with $p = 0.000$ (Table 2).

Table 2. *Statistical significance of differences between experimental groups (E₁ and E₂) at the final measurement*

Independent Samples Test		Levene's Test		t-test		
		F	Sig.		df	Sig.
Vital capacity	= Var assumed	14,436	0,000	11,251	54	0,000
E ₁ fin - E ₂ fin	= Var not assumed			11,251	34,088	0,000
Systolic arterial blood pressure	= Var assumed	0,057	0,813	0,725	54	0,472
E ₁ fin - E ₂ fin	= Var not assumed			0,725	53,039	0,472
Diastolic arterial blood pressure	= Var assumed	6,143	0,016	0,698	54	0,488
E ₁ fin - E ₂ fin	= Var not assumed			0,698	42,427	0,489
Heart rate at rest	= Var assumed	1,122	0,294	-1,612	54	0,113
E ₁ fin - E ₂ fin	= Var not assumed			-1,612	52,778	0,113
Working pulse	= Var assumed	1,489	0,228	-0,940	54	0,352
E ₁ fin - E ₂ fin	= Var not assumed			-0,940	48,922	0,352
Romberg's test	= Var assumed	2,305	0,135	7,703	54	0,000
E ₁ fin - E ₂ fin	= Var not assumed			7,703	47,935	0,000
Stanga's test	= Var assumed	2,072	0,156	21,936	54	0,000
E ₁ fin - E ₂ fin	= Var not assumed			21,936	49,372	0,000
Relative oxygen consumption	= Var assumed	0,002	0,965	1,807	54	0,076
E ₁ fin - E ₂ fin	= Var not assumed			1,807	53,965	0,076

Aqua aerobics led to a greater reduction in SABP (3.25 mmHg) compared to the fit-ball and relaxation massage program (0.33 mmHg), although the difference was not statistically significant ($p = 0.472$, Table 2).

For DABP, aqua aerobics reduced the value by 4.18 mmHg, while the fit-ball and massage program contributed only 0.36 mmHg to the reduction, with no statistically significant difference ($p = 0.489$, Table 2).

When it comes to HRAR, aqua aerobics lowered the rate by 2.39 beats per minute (Table 1) compared to the contribution to the reduction by ball treatment and relaxation massage (0.68 beats per minute), though the difference was not statistically significant ($p = 0.113$, Table 2).

In terms of WP values, aqua aerobics reduced the rate by 2.64 beats per minute (Table 1), compared to a 1.07 beats per minute reduction from the fit-ball and massage program, without a statistically significant difference ($p = 0.352$, Table 2).

The values of RT recorded a greater increase, by 4.48s, influenced by aqua aerobics (Table 1), compared to the contribution of fitness ball and relaxation massage treatment (0.25s), with a statistically significant difference $p = 0.000$ (Table 2).

The values of ST recorded a greater increase by 15.28s due to aqua aerobics (Table 1), compared to the contribution of ball and relaxation massage (1.22s), also with a statistically significant difference $p = 0.000$ (Table 2).

The values of VO₂max recorded a greater increase by 8.66 ml/kg/min influenced by aqua aerobics (Table 1), while the contribution of the ball and relaxation massage treatment led to an increase of 1.5 ml/kg/min, which is close to the limit of statistical significance of differences $p = 0.076$ (Table 2).

Discussions

At the beginning of the discussion, one might ask a hypothetical question about the similarities and differences between two phenomena such as fitness and wellness, as well as where wellness ends and fitness begins, and vice versa. When considering exercise and different treatments in relation to health outcomes, questions may also arise about the cause-and-effect relationship, or at what levels transformational changes can be observed. In this research, representatives of both abstract categories were contrasted.

Such seemingly unusual or redundant research or comparisons of two exercise methods that initially differ significantly in type, duration and intensity are significant precisely because of the assessment of their values, their further orientation towards application for women of different ages, abilities and affinities. In the long-term planning of wellness programs for employees, a manager must account for biological changes that occur due to maturation, graduation, and later, aging. Thus, both methods have their place in organized wellness within the workplace or in the organization of the company. Aqua aerobics requires a special facility, and is typically done after working hours, but it provides greater intensity, and a broader range of effects on the body, making it suitable for a relatively younger population. However, some employees may be reluctant to engage in such active activities, so more passive options like massage or independent exercise with a fitness ball may be better suited for them. The use of a fitness ball and massage may be suitable for those who find aqua aerobics too intense, for those who do not exercise at all, as a preparation for aqua aerobics, or for those with health conditions that contraindicate aqua aerobics. Similarly, exercises with a fitness ball and massage may also appeal to older population. Thus, both methods can be used selectively. Additionally, it is worth considering using both methods simultaneously, with both programs equally distributed during the workweek, which could result in a compounded effect of both methods. When selecting activities, it is crucial to consider not only the users' health history and personal preferences but also their specific psychological and sociological statuses. To optimize the benefits of such programs, it is advisable to hire an expert with multidisciplinary knowledge, who can help maximize the potential of the various programs offered. Besides generating significant cost savings, such programs can enhance the company's reputation and prestige.

On the other hand, it is difficult to compare the costs of the two programs. Aqua aerobics can be organized in an in-house swimming pool, which is very expensive to build and maintain, but may eventually become an independent source of income, while aqua aerobics sessions can be paid for, or arranged for employees at a nearby aqua centre, after working hours. Acquiring fitness balls requires a minimal investment, while massage services can be relatively expensive if done by professionals, but costs can be reduced due to the large number of people and the long-term contracted service package, especially if contracted during off-peak hours like mornings.

Changes in the functional status variables measured before and after the treatments demonstrate evident improvements following the application of the two different wellness programs. The analysis of initial and final measurements reveals greater optimization of the functional status in group E₁ (aqua aerobics) compared to group E₂ (fit-ball with relaxation massage).

The increase in VC in E₁ is higher than in E₂, which is statistically significant. The most likely cause is the fact that the intensity of E₁ was at a slightly higher level (aerobic work zone) in contrast to E₂, where the program had a relaxation character. Among other things, according to Çiçek et al. (2018), the size of vital capacity depends on physical activity, (age, body height, body position). It is clear that group E₁ achieved better optimization of pulmonary ventilation mechanics, better development of respiratory muscles and diaphragm, and improved rib mobility. These findings are in accordance with the research findings of Çiçek et al. (2018), and they indicate the fact that regular practice of aerobic activities help develop the respiratory muscles and enhance lung capacity.

Systolic arterial blood pressure (SABP) reduction was greater in E₁ than in E₂, which is not statistically significant. Scientific research on blood pressure suggest it is influenced by numerous factors, including age, body position, emotions, time of day, digestion, workload (Schiffirin, 2004). A possible explanation for the variation in SABP might be due to these factors having a stronger impact than the experimental factor itself. Achieving better results in SABP may require either a higher volume or intensity of physical activity, or both.

The reduction in diastolic arterial blood pressure (DABP) was greater in E₁ than in E₂, which is not statistically significant. The diastolic blood pressure values decrease to the recommended values (80 mmHg) for that age group studied (30-40 years), which aligns with other research findings (Kandil et al., 2023). A further decrease in diastolic pressure could potentially have negative health implications for the subjects.

The decrease in resting heart rate (HRAR) was also greater in E₁ than in E₂, which is not statistically significant. According to Gregoire et al. (1996), pulse frequency at rest is a key indicator of physical fitness. Trained individuals tend to have lower resting heart rates, with athletes sometimes reaching as low as 30 beats per minute. The reduction in HRAR due to the two experimental treatments allowed for greater relaxation of the heart muscle between beats and optimized blood flow through the heart chambers. A further decrease in heart rate at rest could be expected with longer and more frequent physical activity than the duration of the experiment.

The decrease in working pulse (WP) was more pronounced in E₁ than in E₂, which is not statistically significant. The observed results of mean arithmetic values align with the general rule that the effect of exercise on HR at rest, during activity and during recovery becomes more noticeable with higher intensity (Cornelissen et al., 2010). The mean values of the working pulse are slightly higher than expected. This might be explained by the fact that when participating in the program, the respondents had a great desire to achieve good results, or some of the respondents overestimated their capabilities during the program.

The increase in RT results in E₁ was higher than in E₂, which is statistically significant. Comparing these results with the recommended values of the Romberg test (Dubrovskij, 2009), group E₁ achieved better outcomes. During the test, the subjects of this group achieved, and maintained a stable state for more than 15s without the presence of tremors in their fingers, hands and eyelids, and this state is evaluated as "good". It is assumed that the cause of lower results in group E₂ could be attributed to static treatment, fatigue and high effort. Based on the results of the Romberg trial test, it can be confirmed that the wellness program applied to E₁ was effective due to its focus on balance development, where deliberate destabilization and re-establishment of balance were key.

The increase in ST results in E₁ was higher than in E₂, which is statistically significant. The better adaptability of E₁ to hypoxia could be explained by higher intensity of the respiratory activities in aqua aerobics, and the specific influence of the water environment. The results are within the arithmetic means of the same test applied in previous research (Fedorova & Chepakob, 2012) on the impact of aqua aerobics and Pilates programs on the functional status of middle-aged women. The dynamics of the results indicate that the wellness program applied in E₁ effectively improved the indicators of the hypoxemic capabilities of the test subjects.

The increase in VO₂max results in E₁ was greater than in E₂, with a difference at the limit of statistical significance. The better results in E₁ can be explained by the fact that aqua aerobics is a wellness program conducted in a water environment, and its physical, mechanical and thermal properties of water provoke greater physiological responses and stimulate the functional development of all body systems. When performing various exercises in the water, the resistance of the water is overcome, and this leads to the activation of various biochemical reactions of the organism. The intercostal muscles are activated, and the flexibility of the chest is improved, lung capacity and overall functional capabilities are improved. When comparing the results of VO₂ max with the recommended values of the World Health Organization (2010), (28-30ml/kg/min), the initial testing results were average or insufficient, but the applied treatment led to an optimization of the maximum oxygen consumption (VO₂ max).

According to the research of some authors (Kashuba et al., 2021) on the impact of aqua fitness on the functional ability of the respiratory system in women in early adulthood, the results of the Shtange test, and Hench test confirm this. Namely, after the application of the appropriate program of aqua fitness in women, there was an improvement in the functions of the respiratory system. According to the same authors, aqua fitness training stabilized the values of the functional indicators of the cardiovascular system in women in early adulthood. The implemented program can contribute to improving health and weight management in women in early adulthood.

According to research by Kantyka et al., (2017), which applied an aqua aerobics program to women over 14 weeks, the following changes were observed: a higher level of hemoglobin concentration in the blood, hematocrit and the number of red blood cells, significantly greater muscle mass, less BMI and body fat percentage, insignificant differences between lipid profiles recorded at baseline and after intervention, - significantly higher WRmax shown by the second ramp test data.

The results of this study are significant, given that the participants in both groups were completely inactive before the experiment—an experience common to many women globally. Despite this, a substantial improvement in their health parameters was recorded after just 12 weeks of regular activity. The lingering question is what will and could happen after the 12-week program. Further improvements in fitness require free time, financial investment, as well as willingness to make lifestyle changes and adjustments of daily routines (Owen & Çelik, 2018).

Private entrepreneurs or managers of state institutions looking to improve their employees' working conditions may consider permanently implementing one or both of the wellness programs discussed. Although both programs seem to represent two extremes of the spectrum between wellness and fitness, they deserve attention when choosing activities for wellness and

fitness facilities, spa tourism, or work organizations aiming to save money on employee sick leaves by actively investing in their health (Baicker et al., 2010).

In research involving two groups of 15 women aged 25-45 who participated in an aqua aerobics program twice a week for 45 minutes over 10 months, Stanga's test results improved from 36 seconds at the initial test to 51 seconds at the final test, which is statistically significant (Petrushevich et al., 2020). In addition, the experimental factor led to a statistically significant reduction in resting heart rate, with both results in accordance with our research.

In other experiment (Sobczak et al., 2021), the impact of a 12-week program (twice a week) of aqua aerobics on the respiratory system of 30 post-menopausal women with specific chronic complaints was measured. No significant statistical difference was found in spirometry indicators, which is not in accordance with our research. This discrepancy may be attributed to the older age of the women in that study compared to the participants in our experiment, as vital capacity tends to decrease with age, along with the influence of various chronic ailments.

In the research of Kim et al., (2016) a statistically significant difference was found in heart rate, systolic and diastolic pressure among elderly women with hypertension participating in an aqua aerobics program. The experiment involved 50 women aged 65-75, and was conducted three times a week for 50 minutes over a period of 12 weeks. The research findings align with our findings. A meta-analysis of 32 selected studies related to water exercise found strong evidence (as measured by Romberg's test) that water exercise reduces fear of movement and the risk of falling, which is consistent with our measurements. This water exercise therapy can be considered effective for the elderly population (Chintamani et al., 2020).

The findings from this experiment regarding the effects of massage and sitting on the fitness ball are consistent with previous research (Blagajac et al., 1999; Gasibat & Suwehli, 2017).

Conclusion

Following the 12-week experimental treatment involving wellness programs, significant changes were observed in the examined variables related to the functional status of women aged 30-40. The applied wellness program models had a positive impact on the quantitative changes in the participants' functional abilities. At the initial testing, the mean level and variability of functional status in both experimental programs (E1: aqua aerobics, E2: Fit-ball with relaxation massage) were similar. However, at the final testing, higher average values were recorded in the experimental group E1 (aqua aerobics). Both experimental groups were homogeneous at both the initial and final testing stages. Based on the insight into the obtained results of the experimental treatment of the applied wellness programs (E1: aqua aerobics, E2: fit ball with relaxation massage) clearly demonstrate that there were positive transformational changes in the functional status of the test subjects, supporting the practical application of these wellness programs for inactive women aged 30-40.

Looking to the future, there is hope that advanced social systems, prioritizing health over sports seen just as business, will implement these and similar programs, making them freely available to all sections of the population. Such programs should be initiated, organized, and led by experts, ensuring appropriate selection, dosage, and intensity levels, with regular progress monitoring. State institutions, maximizing their capacities, would ideally oversee these efforts.

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