



The Impact of Physical Activity on the Quality of Life of Older Women in Montenegro

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Abstract

Physical activity is an exceptionally powerful factor for improving the quality of life in older age, and engaging in it is a necessary condition for a healthy and normal life. In light of this, the primary goal was to determine the benefits that organized physical activity has on the quality of life of older women in Montenegro. The sample consisted of 37 women (aged 55-70) divided into two groups (experimental and control). An experimental treatment (organized exercise) was conducted, and the assessment of initial and final states was performed using the Positive Health Behavior Scale. The results showed that a statistically significant difference between the experimental and control groups occurred in one variable at both the initial and final measurements in favor of the control group. There were no statistically significant differences within the groups at both measurements. Despite the obtained results, physical activity and exercise must be essential links in the functioning model that should promote and encourage a healthy and active lifestyle for older individuals. Further research should also be conducted on a larger sample and potential changes in the exercise program to achieve more accurate and reliable results.

Keywords: *physical activity, quality of life, older women, Montenegro*

Introduction

Aging is a process defined through a series of bio-psycho-social processes. Many individual abilities develop throughout life, peak, and then begin to decline after some time. The basis of this process is conditioned by genetically programmed weakening and failure of the homeostasis maintenance system, that is, the maintenance of the body's functional abilities by balancing them with the ever-changing environmental conditions. Aging as a natural process cannot be stopped, but it can be influenced to affect human health and maintain the body in balance for as long as possible. Extending lifespan through modern technology and the ability to postpone death without real healing or improvement is a gain, but the more significant concern is the quality of life of individuals during those extended years (Nikolić, 2002). The use of technology decreases the need for movement, leading to increased passivity and accelerated degenerative changes (Maček et al., 2016). Active aging is a process that enables physical, social, and mental well-being throughout life in order to maintain a

healthy life and quality of life in old age, representing each individual's perception of their position in life concerning their culture and value system concerning their goals, expectations, models, and interests (Nikolić, 2002; Jašić & Kaluđerović, 2015).

Various authors indicate the impact of physical activity on the quality of life from psychological, physiological, and sociological aspects. Physical activity represents an effective way to prevent and treat various diseases while contributing to the preservation and enhancement of health. In adulthood, engaging in physical activities helps maintain acquired motor abilities to preserve the body's vital functions. Furthermore, moderate physical activity stimulates the functioning of the human immune system. Sports-recreational activities positively affect both the cognitive and affective domains of personality. Physical activities have also been shown to be a significant factor in the socialization of individuals in adulthood, and engaging in them during leisure time positively influences the prevention of destructive behavior (Mačić & Jurišin, 2018). Regular

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physical activity can improve health and reduce the risk of premature death in older age by minimizing the risk of developing chronic heart diseases and related mortality, reducing the risk of stroke and heart attack, lowering blood cholesterol and increasing positive lipoproteins, decreasing the risk of high blood pressure, reducing the risk of diabetes, lowering the risk of developing colon cancer, achieving and maintaining a healthy body weight, reducing feelings of depression and anxiety, improving psychological stability, and maintaining healthy bones, muscles, and joints (Bungić & Barić, 2009; Šilić et al., 2011). Muscle strength can be successfully increased in moderately or highly physically active individuals (Jorgić & Radovanović, 2011). In addition to maintaining health and reducing the risk of chronic diseases, physical activity is also an important factor that can help older adults integrate into society. Joint physical activity provides opportunities to meet others and expand their social network (Popović & Bjelica, 2017). Research has also shown that older people engaging in physical activity feel less lonely than those who do not, and they report a higher level of satisfaction with their quality of life (Hašpl Jurišić, 2007; Lepan & Leutar, 2012). Many authors believe that organized sports activities can positively influence all these dimensions (Masanović et al., 2018; Masanović et al., 2019; Popović et al., 2019).

Considering the aforementioned facts, it can be noted that various studies show that physical activity is an exceptionally powerful factor for improving the quality of life in older age, and that engagement in it is a necessary condition for a healthy and normal life. Accordingly, a study was conducted with the primary aim of determining the benefits that organized physical activity has on the quality of life of older women in Montenegro.

Method

Sample of Participants

In nature, this research is experimental. The study involved 37 female participants aged 55 to 70 from Nikšić, divided into two groups – the experimental group (22 subjects) and the control group (14 subjects). The criterion for participation in the experiment was that the participants had no health problems and that they did not engage in organized exercise and sports-recreational activities. All participants signed a consent form to voluntarily participate in the project and chose the

group they wished to join. Participants could withdraw from the project at any time, but no one did so.

Research Process

Initial measurement was conducted in February 2022 by having both groups fill out the Positive Health Behavior Scale (Woynarowska Soldam & Weziak-Białowolska, 2012). Following this, an experimental treatment was implemented that involved the participants from the experimental group. For two months, the participants engaged in an exercise program twice a week for 45 minutes each session. The exercise program was tailored to the age and capabilities of the participants. The control group participants only engaged in regular physical activities. In April 2022, final testing was conducted, where all participants filled out the aforementioned scale again.

Measurement Instruments

To assess the quality of life, the Positive Health Behavior Scale was used for both groups of participants (Woynarowska Soldam & Weziak-Białowolska, 2012). This scale consists of 31 questions divided into 5 chapters, and it contains 5 subscales used to evaluate diet quality, physical health, mental health, safety and security, and physical activity. The scale is of the Likert type, with participants choosing one of 4 offered options (0 – never or almost never; 1 – sometimes; 2 – often; 3 – always or almost always).

Statistical Data Processing

The data was processed using the SPSS 20.0 statistical package. Basic descriptive parameters (mean, standard deviation) were utilized for data processing. For determining statistically significant differences between the initial and final states of the groups, the t-test for small dependent samples ($p \leq .05$) was used. For determining statistically significant differences among groups, the t-test for small independent samples ($p \leq .05$) was employed.

Results

Table 1 shows the basic descriptive parameters (mean, standard deviation) obtained using the Positive Health Behavior Scale concerning the initial and final measurements for both groups of participants.

Table 1. Basic descriptive parameters (mean, standard deviation) obtained from the Positive Health Behavior Scale

Variables	EG		CG	
	AM1	SD1	AM2	SD2
I have at least 3 meals a day at the same time	2.09	.92	2.07	1.07
I have breakfast at home every morning	1.68	1.17	2.07	1.27
I eat fruit at least once a day, sometimes even more	2.23	.81	2.00	.96
I eat vegetables at least once a day, sometimes even more	2.14	.64	2.21	.70
I drink at least two glasses of milk, kefir, or yogurt every day	1.23	1.02	2.00	1.04
I limit the intake of animal fats to small amounts	1.68	.57	1.36	.84
I limit salt intake to small amounts	1.64	.90	1.43	.85
I limit the consumption of sweets	1.59	.91	1.36	.84
I avoid snacking between meals	1.82	.85	1.57	1.16
I dress appropriately for the weather (not exposing myself to too much cold or heat)	2.64	.66	2.79	.80
I avoid excessive sun exposure	2.27	.94	2.57	.94
I brush my teeth at least twice a day	2.77	.43	2.86	.36

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Table 1. Basic descriptive parameters (mean, standard deviation) obtained from the Positive Health Behavior Scale

Variables	EG		CG	
	AM1	SD1	AM2	SD2
I visit the dentist once every 6 months	1.50	1.06	1.57	1.16
I check my blood pressure once a year	1.95	1.09	1.93	1.14
I go for preventive check-ups as recommended by my doctor	2.09	.92	1.86	1.17
If I am sick and visit a doctor, I always follow their recommendations	2.45	.74	2.50	.65
I perform a self-examination of my breasts (for men, testicles) once a month	1.18	1.05	1.29	.99
I sleep at least 6-7 hours every night	2.32	.72	2.79	.58
I go to bed at around the same time	2.23	.75	2.43	.94
I spend at least 20-30 minutes resting and relaxing every day	2.18	.85	2.43	.76
I cope well with excessive stress	2.14	.77	2.36	.74
I think positively about myself and the world	2.82	.39	3.00	.00
I seek help from others in difficult situations	1.95	.95	2.29	.83
At least once a month, I spend time with friends	2.68	.57	2.86	.36
I wear a seatbelt in the car	2.55	.86	2.79	.43
I wear a helmet when riding a bike	.83	1.33	.60	.89
I follow traffic regulations when I walk, cycle, or drive	2.86	.47	3.00	.00
I follow safe behavior rules when at the sea, lake, or river	2.82	.50	2.93	.27
I respect safety rules when using electrical equipment, machinery, chemicals, and flammable materials	2.86	.35	3.00	.00
I increase the amount of activity and physical effort in everyday life	2.32	.84	2.21	1.05
I do not watch television for more than 2 to 3 hours a day	1.32	.84	1.86	.95

Legend: EG – experimental group; CG – control group; AM1 – mean scores obtained at the initial measurement; AM2 – mean scores obtained at the final measurement; SD1 – standard deviation of results from the initial measurement; SD2 – standard deviation of results from the final measurement

Table 1 indicates that regarding diet, both groups showed the best results in both measurements for the variable related to eating fruit (EG1 – 2.23; EG2 – 2.32) and consuming vegetables daily (KG1 – 2.21; KG2 – 2.29). In terms of health assessment, participants achieved good results in both measurements concerning dressing according to weather conditions (EG1 – 2.54; EG2 – 2.73; KG1 – 2.79; KG2 – 2.93) and avoiding excessive sun exposure (EG1 – 2.27; EG2 – 2.68; KG1 – 2.57; KG2 – 2.71). On the other hand, poorer results were noted in variables related to visiting the dentist once every six months (EG1 – 1.50; EG2 – 1.77; KG1 – 1.57; KG2 – 1.71) and monthly breast examinations (EG1 – 1.18; EG2 – 1.32; KG1 – 1.29;

KG2 – 1.43), though an improvement in results was observed during the final measurement. Both groups demonstrated excellent results in most variables regarding mental health, safety, and security during both measurements. Additionally, both groups gradually increased their physical activities and efforts in daily life while reducing television watching time.

Table 2 presents the results of the t-test for small dependent samples ($p \leq .05$), which assessed any differences between the initial and final measurements in both groups, as well as results from the t-test for small independent samples ($p \leq .05$) that assessed differences between groups at the initial measurement and differences at the final measurement ($p \leq .05$).

Table 2. Results of the t-test for paired samples (differences between initial and final states of groups) and the t-test for independent samples (differences between groups in the initial and final measurements)

Variables	EG1 – EG2	KG1 – KG2	EG1 – KG1	EG2 – KG2
	t1	Sig 1	t2	Sig 2
I have at least 3 meals a day at the same time	.00	1.000	.56	.583
I have breakfast at home every morning	-1.19	.246	-1.47	.165
I eat fruit at least once a day	-.57	.576	-	-
I eat vegetables at least once a day	-1.56	.135	-1.00	.336
I drink at least two glasses of milk, kefir, or yogurt every day	-1.16	.261	.56	.583
I limit the intake of animal fats	.37	.715	-2.11	.055
I limit salt intake	-1.10	.283	.00	1.00
I limit the consumption of sweets	-.25	.803	-.56	.583
I avoid snacking between meals	.22	.825	1.30	.218

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Table 2. Results of the t-test for paired samples (differences between initial and final states of groups) and the t-test for independent samples (differences between groups in the initial and final measurements)

Variables	EG1 – EG2	KG1 – KG2	EG1 – KG1	EG2 – KG2
	t1	Sig 1	t2	Sig 2
I dress appropriately for the weather	-.70	.492	-.62	.547
I avoid excessive sun exposure	-2.11	.047	-1.00	.336
I brush my teeth at least twice a day	-1.45	.162	-	-
I visit the dentist once every 6 months	-1.37	.186	-.69	.500
I check my blood pressure once a year	-.37	.715	-1.15	.272
I go for preventive check-ups as recommended	.25	.803	.00	1.00
In case of illness and visiting a doctor, I always follow their recommendations	-.83	.418	.43	.671
I self-examine my breasts (for men, testicles) once a month	-.68	.504	-.81	.435
I sleep at least 6-7 hours every night	-.30	.771	-	-
I go to bed at around the same time	-.33	.747	-1.00	.336
I spend at least 20-30 minutes resting and relaxing daily	-.49	.628	-1.47	.165
I cope well with excessive stress	-.72	.480	.00	1.00
I think positively about myself and the world	1.82	.083	1.88	.082
I seek help from others during difficulties	-.49	.628	2.28	.040
At least once a month, I spend time with friends	.62	.540	1.00	.336
I wear a seatbelt in the car	.57	.576	-	-
I wear a helmet when riding a bike	-.42	.695	-	-
I follow traffic regulations	.00	1.000	-	-
I adhere to safe behavior rules	-1.45	.162	-1.00	.336
I respect safety rules with electrical equipment	-1.82	.083	-	-
I increase physical activity in daily life	-.30	.771	-.62	.547
I do not watch television for more than 2 to 3 hours	.59	.561	-.52	.612

Legend: EG1-EG2 – differences between initial and final states of the experimental group; KG1-KG2 – differences between initial and final states of the control group; EG1-KG1 – differences between experimental and control groups at initial measurement; EG2-KG2 – differences between experimental and control groups at final measurement

From Table 2, it can be observed that neither the experimental nor the control group exhibited statistically significant differences between the initial and final measurements. For differences between groups at the initial measurement, a statistically significant difference appeared in the variable “I drink 2 glasses of milk, kefir, or yogurt every day” in favor of the control group. At the final measurement, a difference between groups was observed in the variable “I sleep at least 6-7 hours every night,” also favoring the control group (Table 2).

Discussion

Modern society has faced a significant increase in the proportion of individuals over the age of 65 in the overall population in recent decades, a result of prolonged lifespan, advancements in medicine and science, and improvements in quality of life (Egeljić Mihailović et al., 2021). The position of older adults is influenced by social, economic, and cultural factors within a society. Quality of life signifies an individual's general well-being. Quality of life indicators can be various and bear different individual significance across different populations. Given the demographic changes leading to an aging population and longer lifespan, more attention is focused on the quality of life for this demographic. As significant factors impacting the quality of life for older individuals, demographic, socio-economic, and health factors, lifestyle,

physical activity, stress, and social support are often cited (Despotović et al., 2019).

Previous research has shown that physically active individuals enjoy a significantly higher quality of life than their sedentary peers, with results indicating a statistically significant relationship with anxiety and depression (Vieira et al., 2014; Sampaio & Ito, 2013). Physical activity significantly contributes to independent functioning and better health for older adults (Bhamani et al., 2015). Collective physical activity enhances mental health and life satisfaction, along with improved socialization and societal integration for older adults (Yi & Hwang, 2015; Lang & Vogel, 2013). Regular physical activity reduces depression and anxiety levels among older individuals, enhances self-esteem, and promotes psycho-social development and emotional balance (Souza et al., 2015; Lang & Vogel, 2013).

Regarding the quality of life of older women in Montenegro, it can be noted that above-average results were achieved in variables related to mental health assessment, safety, security, and daily physical activity in both measurements for both groups. In diet evaluation, results fluctuate from average to above-average. Participants displayed a relatively good level of concern for their physical health; however, poorer results were recorded regarding dentist visits and breast examinations, with most participants not visiting the dentist every six months or

attending monthly breast examinations. In the initial testing, a statistically significant difference between groups occurred only in one variable ("I drink 2 glasses of milk, kefir, or yogurt every day"), favoring the control group, indicating that the groups were relatively homogeneous. In the final measurement, a statistically significant difference also appeared in one variable ("I sleep at least 6-7 hours every night"), again favoring the control group. In comparing results within groups, the experimental group had better results in nearly all variables at the final measurement compared to the initial measurement, whereas the control group reduced results in nearly half of the variables. Nevertheless, no statistically significant differences emerged within any variables between the initial and final measurements in either group.

Based on the aforementioned, it can be observed that organized physical activity did not have a statistically significant effect on the quality of life of older women in Montenegro. Other studies related to the connection between physical activity and aspects of quality of life in older and younger individuals in Montenegro have yielded similar conclusions (Masanović, 2019; Masanović, 2019a; Corluka et al., 2019). Some studies suggest that any form of organized activity positively affects individual quality of life aspects, irrespective of whether it is sports or other social engagements (Perkins, 2010). Certain authors cite cultural and recreational activities, dancing classes, intellectually stimulating activities, craft activities, and group interaction as positive influences on quality of life and active aging (Souza et al., 2015). A larger number of studies clearly indicate the positive impact of physical activity on life quality, but do not provide exact data on the statistical significance of the results (Kelly, 2011; Bjelica et al., 2019; Popović & Masanović, 2019), thus, these data must be interpreted cautiously. Additionally, it should not be disregarded that uncontrolled factors may have influenced the research implementation.

Despite the obtained results, physical activity and exercise must be essential components in the functioning model intended to promote and support a healthy and active lifestyle among older individuals. Education and advocacy for a healthy and active lifestyle should not only target older adults, but the adoption of healthy habits should begin from an early age. Developing awareness about active and healthy aging also requires positive socio-cultural attributes of society towards a healthy lifestyle (Maček et al., 2016).

Conclusion

The primary goal of this research was to determine the benefits that organized physical activity has on the quality of life of older women in Montenegro. An experimental treatment (organized physical exercise) was conducted, and the assessment of initial and final states was performed using the Positive Health Behavior Scale. The results showed that a statistically significant difference between the experimental and control groups occurred in one variable at both the initial and final measurements in favor of the control group. No statistically significant results emerged within the groups at both measurements, though the experimental group significantly improved its results compared to the initial measurement. Previous research on this subject in Montenegro reached similar conclusions. However, it should be noted that these studies were conducted on small sample sizes, and generalizations cannot be made to the broader population. Attention should also be devoted to preparing exercise programs, as there is a

possibility that 2 sessions a week for 2 months may not suffice to impact life quality. There is a strong need for further research with a larger sample of participants to achieve more precise and reliable data. Nevertheless, all of this does not diminish the contribution of this preliminary study.

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Conflict of Interest

The authors declare that there is no conflicts of interest.

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