

ВЛИЯНИЕТО НА ФИЗИЧЕСКИТЕ УПРАЖНЕНИЯ ВЪРХУ КАЧЕСТВОТО НА ЖИВОТ СЛЕД COVID-19

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РЕЗЮМЕ

Физическата активност по време на пандемията от COVID е в тясна връзка с общото здравословно състояние, като по-високите нива на физическа активност съответстват на по-високи нива на качество на живот. Целта на това проучване е да се оцени влиянието на физическите упражнения върху качеството на живот след заболяване от COVID-19. Предмет на изследването е влиянието на физическите упражнения върху качеството на живот след COVID-19. Обект на изследване е ефективността на физическите упражнения. 56 души на възраст между 25 и 65 години (27 в експерименталната група и 29 в контролната група) са наблюдавани и изследвани с въпросник SF-8. Всеки индивид е изследван в продължение на 30 дни. Те бяха инструктирани да попълнят въпросника лично или като онлайн формуляр. Математико-статистическите резултати са обработени с MS Excel. Резултатите показват, че средните стойности от първата до четвъртата дата нарастват постепенно и в двете групи, но в експерименталната група те очевидно се увеличават повече, като резултатите са по-високи на всяка дата. Изглежда, във всяка една дата оценките на експерименталната група са по-високи. Данните от сравнените резултати на двете групи ясно показват, че физическото здраве и психичното здраве са се подобрили вследствие на благоприятния ефект от упражненията, което потвърждава ползите за здравето от физическата активност. Като се има предвид, че пандемията от COVID-19 е засегнала различни аспекти на начина на живот, здравето, физическата активност и качеството на живот, те се смятат за тясно свързани. Можем да потвърдим, че физическите упражнения оказват влияние върху качеството на живот, тъй като психическото и физическото здраве са взаимосвързани и влияят върху качеството на живот, освен това се постигат положителни резултати от провеждането на методологията на упражненията в рамките на един месец и спазването на насоките за по-добра физическа активност. В заключение, резултатите от проучването обобщават, че физическите упражнения са подходящи за повишаване на качеството на живот, когато се прилагат методично, те подобряват и увеличават цялостното физическо и психическо състояние след заболяване от COVID-19.

Ключови думи: физическа активност, качество на живот, здраве, упражнения, COVID-19

INTRODUCTION

The first Director-General of the World Health Organization (WHO) Dr. Brock Chisholm was a psychiatrist and shepherded the notion that mental and physical health were intimately linked. He famously stated that, “without mental health there can be no true physical health” (Brock, 1951). WHO stated clearly that, “There is no health without mental health.” (WHO, 2022).

As mental health and physical health are interlinked and have a mutual relationship when seen from the perspective of chronic and even acute diseases, they affect the quality of life (Ohrnberger et al., 2017). The Working Group in WHO defines QOL as "perceiving individuals for their own position in life in the context of the cultural and value systems in which they live and in relation to their goals, expectations, standards, and care (WHOQOL, 2012).

Studies have observed that there is a significant and moderately strong positive relationship between level of physical activity and quality of life in adults (Motl & McAuley, 2009), as it has been proven that it even helps people with diseases of the nervous system (Hills et al., 2015). Health, physical activity, and quality of life are all strongly related. Because the human body is meant to move, it requires regular physical activity to function at its best and to prevent disease (COM, 2008).

The new studies made comparisons between people using different volumes of physical activity, those with higher volumes showed better results (Stevinson et al., 2007). Specifically, participants who performed a minimum of 60–150 min per week of physical activity reported significantly better quality of life than those who did not meet the guidelines and did not even feel as tired (Izutsu et al., 2017; Zade et al., 2015; D'Silva et al., 2018).

Physical activity is a complex behavior with multiple determinants. Effective promotion at the community level requires the implementation of culturally sensitive, multi-component interventions that make it easier for people to stay active (PAP, 2021). As physical activity has numerous benefits, evidence-based interventions have grown. Several systematic reviews have been conducted (Kahn et al., 2002), and there are also textbooks on the public health approach to promoting physical activity (Brown et al., 2010).

Everyone can experience the health benefits of physical activity. Age, abilities, ethnicity, shape, or size do not matter (CDC, 2022). According to the available data, between 40 and 60 percent of the EU population lead a sedentary lifestyle (COM, 2007).

As our world is facing a COVID-19 pandemic, which has affected various aspects of lifestyle, including physical activity. Some studies have shown that physical activity has decreased significantly during this pandemic (Amini et al., 2021). Physical activity during the COVID pandemic is regarded as being connected, with higher levels of physical activity corresponding to higher levels of quality of life (Zhang X. et al., 2020).

This manuscript aims to study the effectiveness and influence of physical exercises on Quality of life after COVID-19 disease.

METHODS

Research methods it was requested that each person assess their survey, either in person or by reviewing the responses on the SF-8 survey's online form. The SF-8 is an abbreviated version of an original 36-item health survey (SF-36 Health Survey). It contains psychometrically based physical and mental state summary measures. The reporting dates were the first day (x1), the tenth day (x2), the twentieth day (x3), and the thirty-first day (x4), therefore each person was investigated for 30 days. Each participant provided informed consent prior to participating in the study.

Subject of the influence of physical exercises on quality of life post COVID-19.

Object of study is the influence of physical exercises.

Individuals examined were 56 people aged between 25 and 65 years old (27 in the experimental group and 29 in the control group), who were observed and examined with the SF-8 health survey.

Mathematical-statistical methods; the data from the received answers were organized and analyzed in Microsoft Excel using analysis of variance.

The methodology of exercises

The methodology of exercises was applied to the experimental group for 10 days, followed by 10 days of rest and repetition of the method for 10 days. The scale was used to evaluate each person at the start and finish of the performed methodology (experimental group). The methodology is based on coordinating the static tension combined with the dynamic tension, which covers the same region of the spinal column with including the rhythmic breathing. Gym mats, fit balls, and foam rollers, or substitutes, could be used. As follows:

Table 2. *Training program over review*

Methodology duration	10 days
Performances per day	5
Number of exercises	5
Phases	4 (3 reps)
Phase duration	5-6 sec
Exercise duration	1 min (3x20 sec)
Duration of series	7-8 min
Breaks duration	20-40 sec
Execution	Slow pace
Load type	Isotonic and isometric
Breathing rhythm	Inhale at first phase - exhale at fourth phase



Figure 10. Exercises that were used in the author's methodology after COVID

Figure 1 show how the methodology is broken down into five exercises. The first exercise is done standing up, the second and third exercise is done sitting down, and the fourth and fifth exercise is done with your legs straight out in front of you. Every exercise emphasizes the back muscles.

RESULTS

Tables 2-3 and Figures 2-3 present the data on the frequency analysis results for processing the SF-8 Survey.

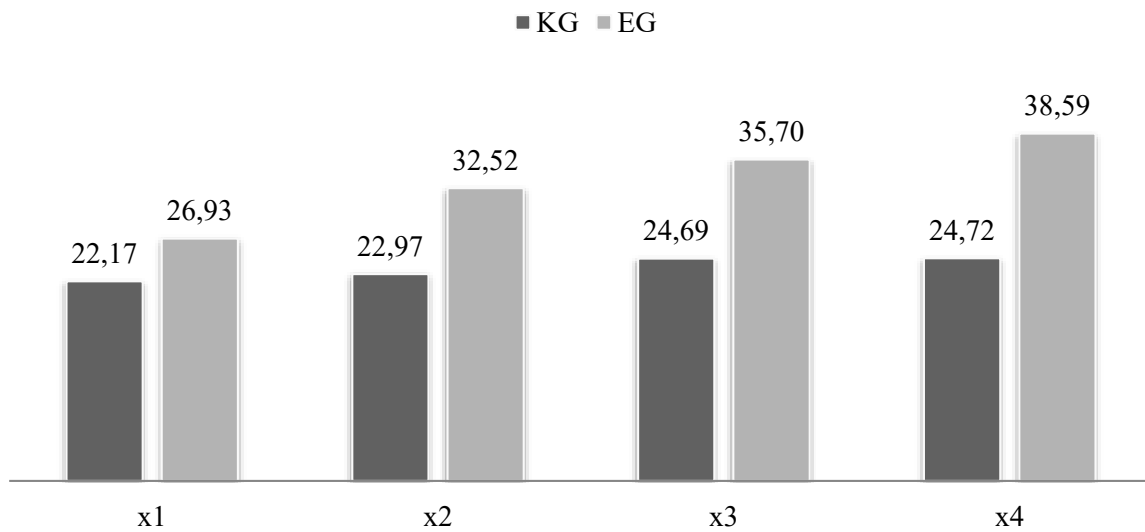


Figure 11. Data for mean values of SF-8 total score, EG = experimental group; CG = control group

The results presented in Figure 2 for the mean values of the SF-8 total score show that the mean values from the first to the fourth date increased gradually in both groups, but in the experimental group they obviously increased more, with scores higher on each date. The average value on the first date for the control group was 22.17, and for the experimental group, it was 26.93 (a difference of 4.76), but on the fourth date, the values had a greater difference (from 13.87), and for the control group, it was 24, 72, and in the experimental one, it was 38.59.

Table 3. Mean values, standard deviation, and coefficient of variation of CG, PS =physical state; MS = mental state

CG		\bar{X}	S	V
PS	x1	11,38	2,98	26,20
	x2	11,72	2,39	20,38
	x3	12,55	2,01	16,02
	x4	12,66	1,93	15,27
MS	x1	10,79	2,54	23,54
	x2	11,24	2,08	18,52
	x3	12,14	1,94	15,99
	x4	12,07	1,89	15,65

The data shown in Table 2 for the control group's mean values, standard deviation, and coefficient of variation demonstrate that from the first to the fourth date, the mental state mean decreased, but the physical state mean increased by a small margin. As in all dates, the dispersion of the values of the two indicators is average ($V < 30\%$), the highest value of the physical state is 26.20, and that of the mental state is 23.54. The deviations in the two indicators in the last date are approximately the same, 1.93/1.89.

Table 4. Mean values, standard deviation, and coefficient of variation of EG, PS =physical state; MS = mental state

EG		\bar{X}	S	V
PS	x1	13,78	2,29	16,64
	x2	16,89	1,80	10,68
	x3	18,52	1,37	7,39
	x4	20,30	1,46	7,21
MS	x1	13,15	1,99	15,17
	x2	15,63	1,60	10,22
	x3	17,19	1,59	9,28
	x4	18,30	1,71	9,32

The experimental group's mean values from the first to the fourth date in both indicators increased by a large margin. As in the first two dates, the dispersion of the values of the two indicators is average ($V < 30\%$), the highest value of the physical state is 16.64, and that of the mental state is 15.17. On the second two dates, the dispersion of the values of both indicators is small ($V < 10\%$).

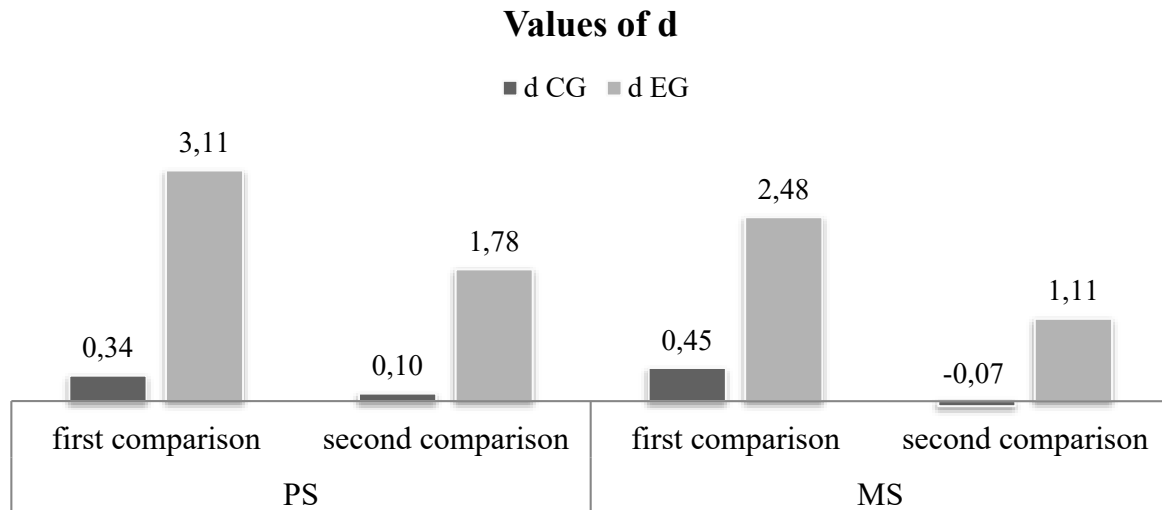


Figure 3. Comparisons of the difference in the values of *d*

The data presented in Figure 3 for the comparison of the difference in the values of the absolute increase *d* for the indicators of the two groups show that the increase of the experimental group in the first and second comparisons for the physical condition is large ($d > 0.8$) with a value of 3.11, in contrast to the control, where it is moderate in the first comparison ($d < 0.5$) and weak in the second comparison ($d < 0.2$). Similar ratios are also observed for the mental state, with a large increase in *d* for the experimental group in the first comparison at 2.48 ($d > 0.8$) in contrast to the control group, where it is moderate in the first ($d < 0.5$) and weak in the second ($d < 0.2$).

DISCUSSION

Data from the compared results of the two groups clearly suggests that the PH and MS have increased due to the beneficial effect of exercise, which confirms the health benefits of physical activity (CDC, 2022). Given that the COVID-19 pandemic has affected various aspects of lifestyle (Amini et al., 2021), health, physical activity, and quality of life are all thought to be strongly related (COM, 2008). We can confirm that physical exercises have an influence on quality of life, as mental and physical health are interlinked and they affect the quality of life (Ohrnberger et al., 2017), furthermore, positive results are achieved from conducting exercise methodology within a month and meeting better physical activity guidelines (Izutsu et al., 2017). Therefore, this study confirms that quality of life can be influenced and improved post-COVID and suggests that people should be encouraged to exercise and be more active after suffering from COVID-19 disease to have an impact on quality of life.

CONCLUSION

In conclusion, the results of this study demonstrated that the physical exercises were able to increase the quality of life when applied methodically, and will improve and increase overall the physical and mental state after COVID-19 disease. Therefore, achieving these results gives us better clarity in dealing with problems after the pandemic. This will be useful for medical and sports science.

REFERENCE

- Amini, H., Habibi, S., Islamoglu, A. H., Isanejad, E., Uz, C., & Daniyari, H. (2021). COVID-19 pandemic-induced physical inactivity: the necessity of updating the Global Action Plan on Physical Activity 2018-2030. *Environmental Health and Preventive Medicine*, 26(1), 32. doi:10.1186/s12199-021-00955-z
- Brock, C. (1951). *Outline for a study group on World Health and the survival of the human race: material drawn from articles and speeches*. World Health Organization. Retrieved September 14, 2022, from <https://apps.who.int/iris/handle/10665/330666>
- Brown, D. R., Heath, G. W., & Martin, S. L. (2010). *Promoting physical activity: a guide to community action*. Human Kinetics.
- CDC. (2022). Benefits of physical activity. Retrieved July 01 2022, from Centers for Disease Control and Prevention website: <https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm>
- COM 279. (2007). White Paper On A Strategy For Europe On Nutrition, Overweight And Obesity Related Health Issues. Retrieved July 01 2022, from Europa.eu website: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0279:FIN:EN:PDF>
- COM. (2008). Preporchitelni politicheski dejstvia v pomosht na fizicheskata aktivnost za ukrepane na zdraveto. Retrieved June 15, 2021, from Europa.eu website: http://ec.europa.eu/assets/eac/sport/library/policy_documents/eu-physical-activity-guidelines-2008_bg.pdf
- D'Silva, A., Gardiner, P. A., Boyle, T., Bebb, D. G., Johnson, S. T., & Vallance, J. K. (2018). Associations of objectively assessed physical activity and sedentary time with health-related quality of life among lung cancer survivors: A quantile regression approach. *Lung Cancer*, 78–84. <https://doi.org/10.1016/j.lungcan.2018.03.010>
- Hills, A. P., Street, S. J., & Byrne, N. M. (2015). Physical activity and health. In *Advances in Food and Nutrition Research* (pp. 77–95). Elsevier.
- Izutsu, K., Arima, K., Abe, Y., Okabe, T., Tomita, Y., Mizukami, S., Kanagae, M., Nishimura, T., & Aoyagi, K. (2017). Exercise intervention implemented by trained volunteers improves health-related quality of life among Japanese community-dwelling older females: an intervention study. *Journal of Physical Therapy Science*, 12, 2126–2132. <https://doi.org/10.1589/jpts.29.2126>

Kahn, E. B., Ramsey, L. T., & Brownson, R. C. (2002). The effectiveness of interventions to increase physical activity: a systematic review. *Am J Prev Med*, 22(4), 73–107. [https://doi.org/10.1016/s0749-3797\(02\)00434-8](https://doi.org/10.1016/s0749-3797(02)00434-8)

Motl, R. W., & McAuley, E. (2009). Pathways between physical activity and quality of life in adults with multiple sclerosis. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, 28(6), 682–689. doi:10.1037/a0015985

Ohrnberger, J., Fichera, E., & Sutton, M. (2017). The relationship between physical and mental health: A mediation analysis. *Social Science & Medicine (1982)*, 195, 42–49. doi:10.1016/j.socscimed.2017.11.008

Physical Activity Promotion in the Community (PAP). (2021). Physiopedia, Retrieved July 20, 2022 from https://www.physio-pedia.com/index.php?title=Physical_Activity_Promotion_in_the_Community&oldid=277431.

Stevinson, C., Faught, W., Steed, H., Tonkin, K., Ladha, A. B., Vallance, J. K., Capstick, V., Schepansky, A., & Courneya, K. S. (2007). Associations between physical activity and quality of life in ovarian cancer survivors. *Gynecologic Oncology*, 1, 244–250. <https://doi.org/10.1016/j.ygyno.2007.03.033>

The world health organization quality of life (WHOQOL). (2012). Retrieved September 14, 2022, from Who.int website: <https://www.who.int/publications/i/item/WHO-HIS-HSI-Rev.2012.03>

World mental health report: Transforming mental health for all - executive summary. (2022). Retrieved September 14, 2022, from Who.int website: <https://www.who.int/publications/i/item/9789240050860>

Zade, Tayyeb & Mahmoodi, Mitra & Hashemi, Ladan. (2015). STUDY OF THE EFFECTIVENESS OF EXERCISE ON THE SELF-ESTEEM, HAPPINESS AND QUALITY OF LIFE OF YOUNG. *Trends in life science*. ISSN. 2319-4731. Volume- 4 Issue- 1, (p); 2319–5037.

Zhang, X., Zhu, W., Kang, S., Qiu, L., Lu, Z., & Sun, Y. (2020). Association between physical activity and Mood States of children and adolescents in social isolation during the COVID-19 epidemic. *International Journal of Environmental Research and Public Health*, 17(20), 7666. doi:10.3390/ijerph17207666

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