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EIGHT-WEEK ZUMBA TRAINING FOR WOMEN IN THE NEW NORMAL PERIOD

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Abstract Zumba shares similarities with other aerobic exercises such as dancing and cycling, as it enhances cardiovascular health and facilitates calorie burning. However, what distinguishes Zumba is its emphasis on enjoyment and the incorporation of dance movements from various music genres. This form of aerobic exercise involves sustained moderate to high-intensity activity without excessive fatigue. It strengthens the heart muscle and promotes efficient blood circulation. Furthermore, aerobics can effectively reduce blood pressure in individuals with hypertension. This positive effect is attributed to the improvement of blood vessel function, facilitating better blood flow and alleviating strain on the heart. Regular aerobic exercise also contributes to weight loss, which further aids in lowering blood pressure. Nevertheless, the impact of Zumba on VO_2max ability remains to be explored. In this study, a pre-experimental design was employed, involving one-hour Zumba sessions conducted over eight weeks, comprising approximately 12 tracks prepared by the instructor. The study sample consisted of 30 participants engaged in Zumba classes. Prior to Zumba, the Jackson non-exercise test formula was employed to assess VO_2max fitness. Post-Zumba, the 1-mile jog test formula was utilized to measure VO_2max fitness. The study findings indicate a significant increase in the mean VO_2max value after treatment, compared to the lower mean value observed before treatment. Specifically, the mean value of VO_2max increased from 38.46 ml/kg/minute before treatment to 47.83 ml/kg/minute after treatment. These results suggest that

Zumba exercise enhances aerobic fitness by positively impacting cardiovascular biological mechanisms in young women during the transition to the new normal period.

Key words: Zumba training, aerobic fitness, young adult women, COVID-19, the new normal period

Introduction

Sport plays a crucial role during the COVID-19 pandemic by helping to prevent mental disorders caused by quarantine, isolation, and physical distancing measures. Engaging in physical activities at home can enhance the immune and cardiovascular systems (Ahmadi Hekmatikar & Molanouri Shamsi, 2020). Furthermore, light exercises are generally safe and carry a low risk of injury. Zumba and high-impact aerobic activities are particularly popular among teenagers and adult women (Kusnanik et al., 2020), with Zumba being one of the favored sports in Singaraja City. Exercise activities have been recognized as a top priority for maintaining health during the pandemic. Notably, Zumba is recommended in various references due to its enjoyable nature and the physical and mental health benefits it provides (Domene et al., 2016). To ensure cardiovascular, metabolic, and musculoskeletal fitness, it is advisable to engage in Zumba dancing, audio-visual-directed gymnastics, and aerobic exercise training (Hammami et al., 2022).

The COVID-19 pandemic has significant and wide-ranging effects on humans and society, although many of the effects are still not fully understood. Consequently, people have to adapt their daily routines, and there has been a growing interest in understanding how COVID-19 affects the body's physiological systems (Alves et al., 2021). The virus responsible for COVID-19, known as SARS-CoV-2, belongs to the beta coronavirus group and shares similarities with SARS-CoV and MERS-CoV, but it is not identical to them (Wang et al., 2020). The virus has the potential to cause damage to multiple organs in the body. It primarily targets the lungs, entering respiratory cells and causing damage to lung tissue. This damage impairs the lungs' ability to oxygenate the blood, resulting in breathing difficulties or shortness of breath. Consequently, the respiratory system is the most affected by COVID-19, and patients face various complications once infected with SARS-CoV-2. The virus can also impact other organs, such as the heart. It may lead to inflammation of the heart muscle or heart failure. In severe cases, insufficient oxygen supply to the heart can even cause it to stop functioning properly. Additionally, COVID-19 can have a significant impact on the brain, potentially leading to severe brain infections. Inflammation caused by blood clots can result in neurological symptoms. Musculoskeletal symptoms, including joint and muscle pain, as well as fatigue, have also been reported in COVID-19 patients. Despite lacking a history of kidney disease, individuals with COVID-19 have exhibited signs of kidney damage. Moreover, the disease can affect the digestive system, with reported cases of diarrhea and infections in the lower digestive tract. COVID-19 has shown its ability to affect multiple physiological systems within the body, with the lungs, heart, brain, musculoskeletal system, kidneys, and digestive system all being susceptible to damage and complications.

Zumba is highly popular among communities in Indonesia, even during the COVID-19 pandemic. People are willing to invest money in this form of exercise. A study showed that Zumba is a suitable physical activity for women to improve their cardiovascular fitness without experiencing excessive strain on the heart (Delextrat et al., 2016). Zumba Tumbling, an aerobic exercise inspired by American dance movements used in physical therapy exercises, is particularly favored (Barranco-Ruiz & Villa-González, 2020). In a study where women engaged in Zumba workouts twice a week for eight weeks, it was found that their cardiovascular endurance increased by 21%

compared to the control group. Additionally, another study reported that women who followed a Zumba exercise regimen for 12 to 40 weeks, with 2 or 3 sessions per week, experienced a significant improvement in maximal oxygen utilization (VO_2max) relative to body mass, ranging from 4.7% to 6.9% (Delextrat et al., 2016).

The Zumba class is designed to provide a workout that incorporates a range of intensities, from low to high. This exercise format, known as a dance fitness party, not only aims to burn calories in an enjoyable manner but also offers mental health benefits. The Zumba movement draws inspiration from energetic exercise styles, which contribute to its impact on physical fitness. Despite its simplicity in terms of steps, it has a significant effect on overall physical fitness. By engaging in Zumba, individuals can activate their entire body through hip movements alone. Physical activity and exercise are essential for enhancing social functioning and daily productivity. The World Health Organization (WHO) recommends engaging in physical exercise at least three times per week, with each session lasting 60 minutes. The exercise should be of medium to high intensity, with a focus on aerobic activities. Moderate-intensity exercise is also a crucial component of cardiovascular training.

The fitness level of young women in the Zumba Kanaya club is currently at the low level. When Zumba was performed for a duration of 1 hour over eight weeks, it resulted in only a slight increase in VO_2max for inactive women with limited or no prior experience with Zumba exercises (Domene et al., 2016). Various factors can influence VO_2max levels, including gender, age, genetics, altitude, exercise, and nutrition (Indrayana & Yuliawan, 2019). The main focus of this study is to enhance cardiovascular capacity through Zumba and ultimately reduce mortality by promoting lifestyle changes.

Zumba is widely recognized as an effective form of aerobic exercise, as it involves moderate to high intensity movements performed for an extended duration without significant fatigue. However, the extent to which Zumba can improve VO_2max, a measure of aerobic endurance, is still unknown. While several studies have demonstrated the positive impact of Zumba on overall fitness when adhering to aerobic exercise principles, there remains a scarcity of research investigating its specific influence on VO_2max in young women. Thus, to expand knowledge in this field, the objective of this study was to evaluate the long-term effects of a Zumba physical activity program on the outdoor fitness of young women during the transition from the COVID-19 pandemic to the “new normal.” This research aimed to explore the cognitive benefits of Zumba as a positive avenue for enhancing academic performance, especially considering the mandatory periods of rest imposed on adolescents due to the COVID-19 restrictions (Latino et al., 2021).

Material and Method

This study employed a pre-experimental design and was conducted between May 2020 and July 2020, during the “new normal” situation. In this context, the fitness community in Kanaya engaged in their regular activities while implementing health protocols to prevent the transmission of COVID-19. The selection of respondents was based on age, height, weight, and body mass index. The respondent group consisted of individuals with prior experience in Zumba exercise and who were physically active. The Zumba sessions lasted for one hour and included approximately 12 tracks prepared by the instructor. Before commencing the study, an initial test was conducted to determine the initial fitness level of the sample. The population and sample of this study comprised 30 individuals who participated in Zumba at the Kanaya Club in Indonesia’s Bali Singaraja. The research spanned eight weeks, with three sessions held each week. The measurement of VO_2max fitness was carried out before the Zumba exercise using the Jackson non-exercise test formula, and after the Zumba exercise using the 1-mile jog

test formula. After the 60-minute Zumba session, the subjects jogged for one mile. All subjects were required to provide informed consent as evidence of their willingness to participate in the Zumba program, as recommended by the researcher.

Results

Data presented in Table 1 provides a distribution of pulse rates based on research conducted by the Kanaya Zumba Club. Statistical analysis revealed that the average pulse rate before engaging in Zumba exercise was 78.20 beats per minute. After completing the Zumba workout, the average pulse rate was measured and found to be 140.09 beats per minute.

Table 1. Characteristics of Subjects

	Value Range	Average
Age	20–22	21
height (cm)	157–174	159.20
weight (Pound)	30.15–45.89	33.40
IMT (kg/m2)	28.57–44.93	30.32

The age range observed in the study was 20–22 years, with an average age of 21 years. Body height ranged from 157–174 cm, with an average height of 159.20 cm. The participants' body weight varied from 30.15–45.89 pound, with an average weight of 33.40 pound. IMT ranged from 28.57–44.93 kg, and the average IMT was 30.32 kg. Significant correlations were found between changes in physical fitness and various anthropometric and psychological parameters over the eight-week intervention (Delextrat et al., 2016).

As Table 2 shows, the mean VO_2max value was initially lower, but after the treatment, there was a significant increase in the mean VO_2max value. Comparing the mean VO_2max values before treatment (38.46 ml/kg/minute) and after treatment (47.83 ml/kg/minute) reveals the positive impact of the intervention. The changes in VO_2max values are presented in Table 2 for further examination.

Table 2. Average value VO_2max

VO2max	Value Range	Average
Before	34.56–46.80	38.46
After	42.64–54.74	47.83

Discussion

Zumba fitness is a popular high-impact workout and is sometimes considered suitable for weight management (Vassilopoulou et al., 2017). Zumba exercises can improve aerobic fitness in natural settings due to the balanced interaction between the body's stress-responsive systems, including the hypothalamic-pituitary-adrenal (HPA) axis, autonomic nervous system, and immune system. An eight-week Zumba fitness program has been found to significantly reduce body fat percentage in young females (Haghjoo et al., 2016). Aerobic high-impact exercises, which include strength training and routine stretching, aim to enhance various aspects of fitness such as flexibility,

muscle strength, and cardiovascular health (Kusnanik et al., 2020). The results of this study demonstrated that a home-based Zumba intervention led to positive changes in maximal aerobic fitness and mental well-being, including improved self-perception of physical strength, muscle development, increased independence, and a sense of purpose in life (Delextrat et al., 2016). When performing Zumba exercises, the activation of the hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system depends on the intensity of the workout. Low-intensity workouts (at 50% of maximum capacity) result in minimal HPA axis activation, while moderate to high-intensity workouts (>70% of maximum capacity) activate both the HPA axis and sympathetic nerves simultaneously. The American College of Sports Medicine (ACSM) suggests that exercise intensity should range from 40–85% of VO_2max or 64–94% of maximum heart rate for optimal cardiovascular benefits (Luettgen et al., 2012).

Zumba workouts have been found to be associated with improved cardiovascular fitness, anthropometric profiles, and body composition in healthy women, making it a highly attractive and popular physical activity among women (Barranco-Ruiz & Villa-González, 2020). Zumba workouts have also been shown to reduce skinfold thickness more effectively than aerobic exercise alone (Suminar et al., 2018). Dance-based exercises, audio-visual-guided gymnastics, and high-impact aerobics are often recommended for maintaining cardiovascular, metabolic, and musculoskeletal fitness, as well as reducing the severity of symptoms of depression and anxiety (Teferi, 2020). A study by Barene et al. (2014) demonstrated that the increase in aerobic fitness in the Zumba group was more significant than that in the soccer group during a 40-week training period. This study recommends engaging in Zumba workouts 2–3 times per week, with an average exercise intensity of 75% of maximum heart rate, and a duration of 60 minutes. These findings support the results of this study, indicating that aerobic exercise brings about various benefits including weight management, improved health, and endurance. Therefore, engaging in regular aerobic exercise not only enhances overall fitness but also helps reduce subcutaneous fat deposits beneath the skin.

Zumba gymnastics can be performed at different intensities, ranging from low to moderate to high. If done for more than 30 minutes, it requires good aerobic endurance. A higher aerobic endurance capacity has a positive impact on the body's metabolism, facilitating the conversion of food into energy required for physical activity. Zumba serves as a beneficial exercise to enhance overall fitness. To achieve maximum aerobic fitness, it is recommended to engage in Zumba workouts for a minimum of 8 weeks. In a recent study, significant increases in VO_2max relative to body mass were observed after eight weeks of Zumba training, with a substantial effect size (Delextrat et al., 2016). Many women are motivated to exercise with the goal of losing body weight, and Zumba is an excellent choice for achieving this objective (Delextrat et al., 2016). Sports practice environments have existed for a long time and have become increasingly vibrant with the development of various types and forms of gymnastics. Zumba workouts are enjoyed by people of all ages, genders, and backgrounds, particularly among young women, making it highly popular (Vassilopoulou et al., 2017). The appeal of Zumba gymnastics lies in the fact that the movements are accompanied by music, bringing joy and excitement. The ease of performing various movements adds to the enjoyment and enthusiasm for Zumba gymnastics.

Zumba utilizes the fundamental principles of aerobic exercise to achieve calorie expenditure, improve the cardiovascular system, and enhance overall body strength. It has been found that Zumba can burn approximately 369 calories, which is around 9.5 kcal per minute (Kusnanik et al., 2020). Engaging in Zumba workouts significantly enhances health-related quality of life factors and improves cardiovascular and metabolic capacities. It has also been demonstrated that Zumba can contribute to reducing body fat in overweight and physically inactive women

(Domene et al., 2016). Similar to other forms of aerobic exercise, Zumba involves dynamic movements that stimulate muscle contractions. A 60-minute aerobic workout can help reduce subcutaneous fat and body mass (Mustedanagić et al., 2016). Additionally, maintaining moderate to high cardiorespiratory fitness has been shown to significantly reduce the risk of COVID-19 mortality, with higher cardiorespiratory fitness providing even greater risk reduction compared to moderate fitness levels, suggesting a dose-response relationship (Christensen et al., 2021). The energetic movements in Zumba also contribute to calorie and fat burning while promoting heart health. It is estimated that Zumba workouts can burn 500–800 calories per session. To ensure the effectiveness of a Zumba training program, it is essential to tailor it according to the appropriate level of exercise intensity. Aerobic exercise has a positive and significant impact on lifestyle, as suggested by this study (Latino et al., 2021).

The present study revealed that Zumba workouts conducted over an eight-week period can enhance cardiovascular fitness and physiological mechanisms related to aerobic endurance in young women during the new normal phase. The results indicated a significant increase in VO_2max, with values of 38.46 ml/kg/minute before the intervention and 47.83 ml/kg/minute after the treatment. These findings underscore the positive impact of Zumba on the fitness and well-being of healthy young women. Further investigations could extend the study duration to explore long-term effects on aerobic fitness. Additionally, future research could consider examining other variables associated with Zumba exercises. It is recommended that instructors or practitioners follow the prescribed Zumba program for eight weeks while carefully considering the recommended intensity levels.

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References

Ahmadi Hekmatikar, A. H., & Molanouri Shamsi, M. (2020). Effect of Exercise on Immunological Indicators during the COVID-19 Pandemic. *Journal of Arak University Medical Sciences*, *23*(5), 584–603. https://doi.org/10.32598/jams.23.cov.6277.1

Alves, N., Carrazoni, G. S., Soares, C. B., de Souza da Rosa, A. C., Soares, N. M., & Mello-Carpes, P. B. (2021). Relating human physiology content to COVID-19: a strategy to keep students in touch with physiology in times of social distance due to pandemic. *Advances in Physiology Education*, *45*(1), 129–133. https://doi.org/10.1152/ADVAN.00214.2020

Barene, S., Krustrup, P., Brekke, O. L., & Holtermann, A. (2014). Soccer and Zumba as health-promoting activities among female hospital employees: A 40-weeks cluster randomised intervention study. *Journal of Sports Sciences*, *32*(16), 1539–1549. https://doi.org/10.1080/02640414.2014.906043

Barranco-Ruiz, Y., & Villa-González, E. (2020). Health-related physical fitness benefits in sedentary women employees after an exercise intervention with zumba fitness®. *International Journal of Environmental Research and Public Health*, *17*(8), 1–16. https://doi.org/10.3390/ijerph17082632

Christensen, R. A. G., Arneja, J., Cyr, K. S., Sturrock, S. L., & Brooks, J. D. (2021). The association of estimated cardiorespiratory fitness with COVID-19 incidence and mortality: A cohort study. *PLoS ONE*, *16*(5 May), 1–10. https://doi.org/10.1371/journal.pone.0250508

Delextrat, A. A., Warner, S., Graham, S., & Neupert, E. (2016). An 8-week exercise intervention based on Zumba improves aerobic fitness and psychological well-being in healthy women. *Journal of Physical Activity and Health*, *13*(2), 131–139. https://doi.org/10.1123/jpah.2014-0535

Domene, P. A., Moir, H. J., Pummell, E., Knox, A., & Easton, C. (2016). The health-enhancing efficacy of Zumba® fitness: An 8-week randomised controlled study. *Journal of Sports Sciences*. https://doi.org/10.1080/02640414.2015.1112022

Haghjoo, M., Zar, A., & Hoseini, S. A. (2016). The Effect of 8 weeks Zumba Training on Women's Body Composition with Overweight. *Pars of Jahrom University of Medical Sciences*, *14*(2), 21–30. https://doi.org/10.29252/jmj.14.2.21

Hammami, A., Harrabi, B., Mohr, M., & Krustrup, P. (2022). Physical activity and coronavirus disease 2019 (COVID-19): specific recommendations for home-based physical training. *Managing Sport and Leisure*, *27*(1–2), 20–25. https://doi.org/10.1080/23750472.2020.1757494

Indrayana, B., & Yuliawan, E. (2019). Penyuluhan Pentingnya Peningkatan Vo2Max Guna Meningkatkan Kondisi Fisik Pemain Sepakbola Fortuna Fc Kecamatan Rantau Rasau. *Jurnal Ilmiah Sport Coaching and Education*, *3*(1), 41–50. https://doi.org/10.21009/jsce.03105

Kusnanik, N. W., Suminar, T. J., & Bird, S. P. (2020). The Effect of Zumba and High Impact Aerobic in Reducing Skinfold Thickness. *Advances in Social Science, Education and Humanities Research*, *390*(Icracos 2019), 165–168.

Latino, F., Candia, M. D. E., Morano, M., & Carvutto, R. (2021). *The impact of an extracurricular outdoor physical activity program on long-term memory in adolescent during COVID-19 pandemic*. *16*(March), 22–23. https://doi.org/10.14198/jhse.2021.16.Proc3.28

Luettgen, M., Foster, C., Doberstein, S., Mikat, R., & Porcari, J. (2012). Zumba ®: Is the "fitness-party" a good workout? *Journal of Sports Science and Medicine*, *11*(2), 357–358.

Mustedanagić, J., Bratić, M., Milanović, Z., & Pantelić, S. (2016). the Effect of Aerobic Exercise Program on the Cardiorespiratory Fitness and Body Composition of Female College Students. *Physical Education and Sport*, *14*(2), 145–158.

Okonkwo, N. M. (2012). Energy expenditure and physiological responses to 60 minute Zumba aerobic sessions (group class versus home) in healthy adult females. *University of Chester MSc Dissertation*, 1–5.

Suminar, T. J., Kusnanik, N. W., & Wiriawan, O. (2018). High-Impact Aerobic and Zumba Fitness on Increasing VO2MAX, Heart Rate Recovery and Skinfold Thickness. *Journal of Physics: Conference Series*, *947*(1), 0–5. https://doi.org/10.1088/1742-6596/947/1/012016

Teferi, G. (2020). Home Based Physical Exercise for Prevention and Management of COVID-19 Pandemic and for Its Associated Consequences. *European Journal of Preventive Medicine*, *8*(6), 97–105. https://doi.org/10.11648/j.ejpm.20200806.11

Wang, X., Fang, X., Cai, Z., Wu, X., Gao, X., Min, J., & Wang, F. (2020). Comorbid Chronic Diseases and Acute Organ Injuries Are Strongly Correlated with Disease Severity and Mortality among COVID-19 Patients: A Systemic Review and Meta-Analysis. *Research (Washington, D.C.)*, *2020*, 2402961. https://doi.org/10.34133/2020/2402961

Vassilopoulou, E., Piperari, G., & Christoforou, C. (2017). Is Zumba® Fitness Effective to Manage Overweight Without Dietary Intervention? *Arab Journal of Nutrition and Exercise (AJNE)*, *1*(3), 113. https://doi.org/10.18502/ajne.v1i3.1228

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