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Evaluating the Effects of an 8-Week Zumba Exercise Program on Physical Fitness in Sedentary Women: A Randomized Controlled Trial

Prashant Kumar Choudhary[1ABCD] and Suchishrava Dubey[1ABCD]

[1]Lakshmibai National Institute of Physical Education

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Corresponding Author: Prashant Kumar Choudhary, E-mail: prashantlnipe2014@gmail.com
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Abstract

Objectives. This study aimed to evaluate the impact of an 8-week Zumba exercise program on physical fitness and body composition among sedentary women. The primary goals were to assess changes in muscle mass, flexibility, back strength, cardiovascular fitness, body weight, and body fat percentage.

Materials and methods. Twenty-four female volunteers (mean age: 22.30 ± 2.10 years, height: 162.80 ± 4.00 cm) from North India were randomly assigned to either an experimental group, participating in a structured Zumba program (60-minute sessions, thrice weekly), or a control group, maintaining their usual activities. The initial and follow-up assessments comprised the measurement of height, weight, Body Fat Percentage (BFP), Body Muscle Mass (BMM), grip strength, back strength, flexibility, and Maximal Oxygen Consumption (VO_2max).

Results. The statistical analysis conducted using the SPSS 26 software and the Wilcoxon Signed-Rank Test revealed significant improvements in the experimental group. Body weight decreased from 58.20 ± 5.10 kg to 56.80 ± 5.00 kg ($p = 0.002$), body fat percentage dropped from 25.10 ± 5.80 % to 23.80 ± 6.00 % ($p = 0.03$), and body muscle mass increased from 20.40 ± 3.20 kg to 21.00 ± 3.30 kg ($p = 0.04$). Grip strength improved from 32.50 ± 5.00 kg to 33.20 ± 4.80 kg ($p = 0.05$), back strength rose from 85.00 ± 22.00 kg to 105.00 ± 25.00 kg ($p = 0.001$), flexibility increased from 31.00 ± 2.80 cm to 34.00 ± 2.50 cm ($p = 0.002$), and VO_2max increased from 41.00 ± 5.00 ml/kg/min to 44.00 ± 4.50 ml/kg/min ($p = 0.001$). No significant changes were observed in the control group.

Conclusions. The 8-week Zumba program significantly enhanced physical fitness and body composition in sedentary women, improving muscle mass, flexibility, back strength, and cardiovascular fitness. These findings support Zumba as an effective and enjoyable exercise option, promoting an active lifestyle and better health outcomes, reinforcing its role as a comprehensive fitness solution suitable for encouraging sustained physical activity.

Keywords: zumba exercise, sedentary women, physical fitness, body composition, strength.

Introduction

A sedentary lifestyle, characterized by extended periods of sitting or inactivity, minimal physical activity, and insufficient exercise, has become increasingly prevalent in modern society, with a growing body of research highlighting its detrimental impact on health and well-being. The adverse effects of a sedentary lifestyle are well-documented. As Mario and Das (2022) emphasize, physical activity is essential to daily life, and physical education aims to foster a lifelong engagement with physical activity beyond the school environment. Numerous studies have shown that prolonged sitting and physical inactivity are associated with an increased risk of cardiovascular disease, type 2 diabetes, obesity, and other chronic health conditions (Hamilton et al., 2008, Park et al., 2020, Young et al., 2016). According to a science advisory from the American Heart Association, insufficient physical activity and sedentary behavior can predict premature cardiovascular disease mortality and disease burden (Young et al., 2016). A sedentary lifestyle is characterized by prolonged sitting or inactivity, low energy expenditure, and inadequate exercise capacity (Kilinç & Kartal, 2022; Yılmaz, 2019). Researchers have warned of the damaging effects of sitting, and the topic has started to gain traction in mainstream media, highlighting the need for increased awareness and intervention (D'Abundo et al., 2015). The global prevalence of physical inactivity has reached alarming levels, with

approximately 60 % of the adult population and two-thirds of the young population failing to engage in sufficient physical activity (Rezende et al., 2016; Kohl et al., 2012). In modern societies, the prevalence of sedentary lifestyles has become a significant public health concern, particularly among women. Research has shown that women may be more susceptible to the adverse effects of a sedentary lifestyle compared to their male counterparts (Park et al., 2020), which is why Women, in particular, may be more vulnerable to the negative impacts of a sedentary lifestyle. Sedentary women often exhibit low levels of physical activity, resulting in poor physical fitness (Yüksel & Ersoy, 2022). Sedentary lifestyles have become increasingly prevalent in modern societies, posing significant health risks (Thyfault et al., 2015). In addition, a lack of physical activity may lead to a range of health problems including muscular atrophy, osteoporosis, and decreased stamina (Çiçek et al., 2017; Rezende et al., 2015). Nevertheless, it has been emphasized that to alleviate these adverse consequences and maintain a healthy lifestyle, consistent engagement in physical exercise has been shown to induce favorable alterations in body composition and Have a beneficial effect on everyday life (Vural et al., 2010). Beyond the physical realm, the positive impact of physical activity extends to mental and psychosocial domains. Exercise is associated with a substantial reduction in the risk of mental illnesses and conditions such as anxiety and depression (Keeley & Fox, 2009). Research has demonstrated the positive effects of regular physical activity on mental health, stress reduction, and strengthening the immune system (Lu & Buchanan, 2014; Callow et al., 2020). Physical activity has long been considered beneficial to health, and regular exercise is purported to relieve stress (Childs & Wit, 2014). Substantial research links the effects of physical activity to positive physiological and psychological health outcomes (Lackman et al., 2015). Moreover, studies have shown that consistent physical exercise has beneficial impacts on mental health, stress reduction, and bolstering the immune system (Öztürk, 2021). Consistent physical exercise has been shown to have numerous benefits on various aspects of human well-being (Hackney, 2006; Gerber & Pühse, 2009; Archer & Rapp-Ricciardi, 2017; Mikkelsen et al., 2017). Additionally, it is linked to heightened psychological and social well-being (Akyurek et al., 2018). To encourage physical activity among women and improve health outcomes, it is crucial to implement methods that include new and engaging activities, such as dancing, as suggested in these guidelines and efficiency. The present analysis has shown the physiological, endocrine, cognitive, and psychological advantages associated with engaging in Zumba dancing activities (Coubard et al., 2011; Duberg et al., 2013; Kattenstroth et al., 2013). Physical freshness refers to an individual's capacity to engage in physical activities that demand strength, stamina, and flexibility (Puspodari et al., 2022). Regular Zumba workouts have a significant impact on psychological and social outcomes, body weight reduction, and increased movement strength and blood flow to muscles, making them very beneficial for students (Puspodari, Wiriawan et al., 2022). It can improve balance, strength, flexibility, and cardiovascular function, which is why it is considered an aerobic workout (Belardinelli et al., 2008). Zumba, a dynamic and exhilarating dance-fitness program, has captivated the global fitness community since its inception in the 1990s. Originating in Colombia, Zumba has transcended its roots to become a ubiquitous presence in health clubs, community centers, and living rooms around the world, attracting millions of devotees who seek an engaging and effective way to stay fit (Vendramin et al., 2016). Zumba's infectious energy and ability to engage large segments of the population have made it a subject of increasing academic interest, with researchers exploring its potential health benefits and efficacy as a fitness intervention (Domene et al., 2015). To continue effective exercise, physical activity must include more than just static muscular activation. It necessitates the preservation of a certain rhythm and movement pattern, which are essential for sustaining rhythmic motions (Civan et al., 2022). A study conducted by Barranco-Ruiz and Villa-González (2020) has shown that Zumba Fitness has several advantages for women's body composition and overall physical fitness. It has been proven to be an excellent program for increasing physical activity levels in women who are typically not very active. An examination of the research indicates that Zumba Fitness has a somewhat favorable effect on body composition, muscular strength, balance, and general quality of life. Zumba offers a gateway to cultural exploration and personal growth. It's an opportunity to transcend the boundaries of routine and embrace the full spectrum of human expression Choudhary and Dubey (2024). Zumba Fitness has emerged as a popular group exercise program that offers a unique blend of cardiovascular, strength, and dance-inspired movements. Recent research suggests that this dynamic workout modality may provide significant benefits for women's physical fitness and body composition (Donath et al., 2013). Moreover, research examining the impact of Zumba workouts on physical measurements discovered that a 12-week Zumba program had a positive influence on body metrics in women. This suggests that Zumba may help enhance body composition and facilitate weight control (Bayrakdar et al., 2020). Consistent with previous research, the findings of this study suggest that Zumba fitness can be an effective and enjoyable exercise modality for promoting physical and psychological health among overweight and obese individuals, The results demonstrated significant improvements in the participants' body composition, with reductions in body weight, body mass index, and body fat percentage (Domene et al., 2016, Ljubojević et al., 2014). Moreover, there is empirical evidence suggesting that engaging in Zumba dancing significantly improves the physical fitness of women. According to Micallef (2015), Zumba dancing, being a high-energy dance exercise, may be maintained and lead to a general improvement in fitness levels. It is worth mentioning that while current data suggests that Zumba Fitness has beneficial impacts on body composition, mental health, and cardiovascular health, there is a dearth of direct studies explicitly examining the influence of Zumba Fitness on physical fitness.

This study aims to critically assess the impact of an 8-week Zumba Fitness program on a range of physical fitness parameters in sedentary women in the northern part of India. Specifically, it will evaluate changes in weight, body fat percentage (BF%), body muscle mass (BMM), grip strength, back strength, flexibility, and maximal oxygen uptake (VO_2max). Given the increasing popularity of Zumba as a fitness modality, there is a pressing need to rigorously investigate its efficacy in improving these diverse fitness metrics. By conducting this research, the study seeks

to provide evidence-based recommendations for fitness-oriented exercise programs tailored to sedentary women, potentially enhancing overall fitness outcomes and offering valuable insights for future exercise interventions. The study hypothesizes that an 8-week Zumba exercise program will have a positive impact on various fitness parameters in sedentary women. Specifically, it posits that Zumba will significantly improve weight, body fat percentage (BF%), body muscle mass (BMM), grip strength, back strength, flexibility, and maximal oxygen uptake (VO_2 max). Each hypothesis targets a distinct aspect of physical fitness, suggesting that Zumba can enhance overall fitness outcomes by addressing these different areas.

Materials and Methods

Study Participants

Prior to the commencement of the 8-week Zumba exercise program, initial assessments were conducted to record participants' height, weight, Body Fat Percentage (BFP), Body Muscle Mass (BMM), grip strength, back strength, flexibility, and Maximal Oxygen Consumption (VO_2 max). The study then implemented an 8-week Zumba regimen, involving 60-minute sessions held three times per week. At the conclusion of this intervention, follow-up measurements were taken to evaluate any changes in height, weight, BFP, BMM, grip strength, back strength, flexibility, and VO_2 max (Table 1).

This study involved 24 female volunteers 22.30 ± 2.10 years and an average height of 162.80 ± 4.00 cm residing in the North Indian region. They were recruited from local community centres and were non-athletes with no history of diseases or sports-related injuries. Participants were randomly assigned to either the experimental group (12 participants) or the control group (12 participants). The study did not include any dietary interventions, and participants were instructed to maintain their usual eating habits throughout the study. The participants in the control

Table 1. Data Collection Tools and Procedures

Measurement Type	Description
Height, Weight, and Body Composition Measurements	Body composition values were assessed using the InBody 230 bioelectrical impedance analyzer (BioSpace, Seoul, South Korea) with a sensitivity of 0.01 kg. This analyzer provides accurate measurements of bone mass, body water, muscle mass, and segmental fat content via low electrical currents through electrodes on the hands and feet. Height was measured in centimeters with participants standing barefoot on a level, stable surface.
Hand Grip and Back Strength Measurements	Hand grip strength was assessed using the ErgoForce hand dynamometer (ErgoTech, Mumbai, India). Back strength was measured using the ErgoForce back and leg dynamometer.
Flexibility Measurement	Flexibility was evaluated using the FlexiReach test. Participants sat on the FlexiReach box and, with their hands extended forward, bent their bodies forward without bending their knees. The farthest point reached was recorded after holding for 1-2 seconds.
VO_2 max Measurement	Maximal oxygen consumption was measured using the Bruce Treadmill Protocol with modifications for local altitude conditions. The test started at 3.0 km/h with a 12 % incline, increasing every 3 minutes. Termination criteria included reaching maximal heart rate (220-age), a respiratory exchange ratio above 1.1, or exhaustion. Oxygen consumption was monitored using a Cosmed Quark CPET system, and data was collected with an integrated software program.
Zumba Exercise Program	The intervention group participated in a Zumba program consisting of a diverse choreography with various dance styles, performed three times a week at 55 % to 65 % of the target heart rate. Each session lasted 60 minutes, including 10 minutes for warm-up and cool-down exercises. The core workout included 45 minutes of Zumba steps (e.g., Bhangra, reggaeton, Hip-hop), with original Zumba music played for 4-5 minutes and 20-30 seconds rest between tracks.

Table 2. Description of the Zumba Exercise Program Components

Zumba Exercise Program	Details
Warm-Up (10 minutes)	Exercises: Dynamic stretches (e.g., shoulder rolls, hip circles) and light aerobic movements (e.g., marching in place, step-touch variations). Dance Rhythm: Slow to medium-paced Punjabi beats (90-100 BPM). Focus: Gentle muscle activation, gradually increasing heart rate.
Main Workout (45 minutes)	Number of sets: 6 sets. Duration per set: 7 minutes per set. Step Frequency: 120-135 BPM depending on dance style. Dance Styles: Hip-hop (120-125 BPM), Reggaeton (130-135 BPM), Cumbia (115-120 BPM), Bhangra (110-115 BPM). Rest between Sets: 1 minute. Music: Original Zumba tracks (4-5 minutes per track, with 20-30 seconds rest between tracks). Dance Learning Time: 1-2 minutes per set, dedicated to teaching/practicing steps.
Cool-Down (5 minutes)	Exercises: Static stretches for major muscle groups (hamstrings, quadriceps, shoulders, and back). Dance Music: Slow-paced Zumba tracks (80-90 BPM). Focus: Stretching and relaxation, holding each stretch for 20-30 seconds.

group (CG) were instructed to maintain their usual daily routines and refrain from engaging in any additional physical activities beyond their typical lifestyle. They did not follow any structured exercise or motor activity program during the 8-week period. This allowed for a clear comparison between the Zumba program's effects on the experimental group (EG) and the natural variation in fitness and body composition in the control group, ensuring that any observed changes in the EG could be attributed to the Zumba intervention. Overview of the structured Zumba exercise program, including warm-up, main workout, and cool-down details presented in Table 2.

Both groups were encouraged to maintain their normal dietary habits, and no additional instructions regarding nutrition or lifestyle modifications were provided to either group. Informed consent was obtained from all participants, with detailed explanations of the study's risks and benefits. The study adhered to ethical guidelines consistent with the Helsinki Declaration.

Statistical Analysis

Analysis of the data was conducted utilizing the Statistical Package for Social Science (SPSS) version 26 software. The Shapiro-Wilk test was employed to assess the normality of the data distribution, revealing a non-normal distribution. Consequently, the Wilcoxon Signed-Rank Test was applied to compare pre-test and post-test results within the same group. Statistical significance was determined with a threshold of $p < 0.05$.

Results

The anthropometric characteristics, grip strength, back strength, flexibility, and VO_2 max values of the sedentary women participating in the study were analyzed based on pre-test and post-test measurements.

Table 3 presents the demographic characteristics of the study participants, including mean age and mean height for both the experimental and control groups, as well as the combined data for all participants. The experimental group, consisting of 12 women, has a mean age of 22.10 ± 2.25 years and a mean height of 162.50 ± 4.25 cm. The control group, also with 12 women, has a slightly lower mean age of 22.00 ± 1.55 years and a slightly higher mean height of 164.30 ± 4.40 cm. When combined, the total sample of 24 women shows an average age of 22.05 ± 1.90 years and an average height of 163.40 ± 4.32 cm. This table provides a baseline demographic overview, ensuring that both groups are comparable in terms of age and height before the intervention.

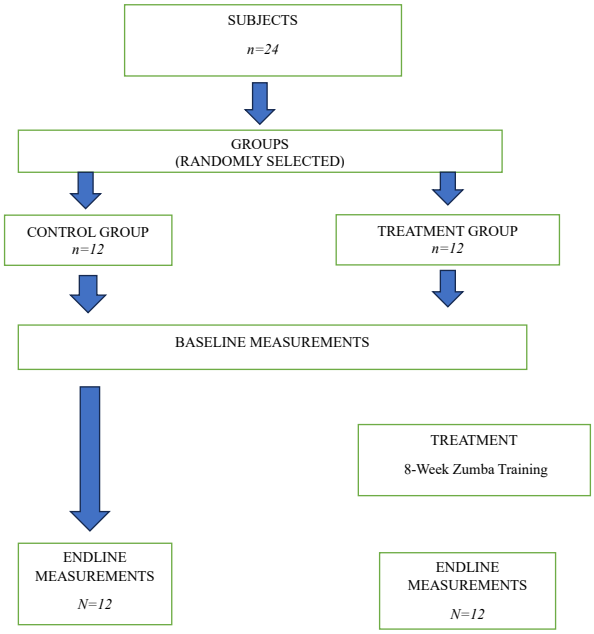

Fig. 1. Flow Chart

Table 3. Age and Height Values of the Participants

Group	Mean Age (years)	Mean Height (cm)
Experimental (n = 12)	22.10 ± 2.25	162.50 ± 4.25
Control (n = 12)	22.00 ± 1.55	164.30 ± 4.40
Combined (n = 24)	22.05 ± 1.90	163.40 ± 4.32

Table 4 displays the pre-test and post-test measurements for weight, body fat percentage (BFP), and body muscle mass (BMM) for both the experimental and control groups. The experimental group, which participated in the Zumba program, showed significant changes: their weight decreased from 58.20 ± 5.10 kg to 56.80 ± 5.00 kg ($Z = -3.15$, $p = 0.002$), BFP decreased from 25.10 ± 5.80 % to 23.80 ± 6.0 % ($Z = -2.30$, $p = 0.03$), and BMM increased from 20.40 ± 3.20 kg to 21.00 ± 3.30 kg ($Z = 2.05$, $p = 0.04$). In contrast, the control group showed no statistically significant changes in any of these measures: weight ($p = 0.65$), BFP ($p = 0.80$), and BMM ($p = 0.76$). This table highlights the effectiveness of the Zumba intervention in improving weight, body fat percentage, and muscle mass compared to the control group.

Table 4. Weight, Body Fat Percentage (BFP), and Body Muscle Mass (BMM) Values of the Participants

Measurement	Group	Pre-Test (Mean ± SD)	Post-Test (Mean ± SD)	Z-Score	p-Value
Weight (kg)	Experimental	58.20 ± 5.10	56.80 ± 5.00	-3.15	0.002*
	Control	59.00 ± 4.50	59.20 ± 4.60	-0.45	0.65
BFP (%)	Experimental	25.10 ± 5.80	23.80 ± 6.00	-2.30	0.03*
	Control	24.90 ± 6.10	24.80 ± 6.20	-0.25	0.80
BMM (kg)	Experimental	20.40 ± 3.20	21.00 ± 3.30	2.05	0.04*
	Control	21.00 ± 3.50	21.10 ± 3.40	0.30	0.76

* $p < 0.05$

Table 5. Grip Strength, Back Strength, Flexibility, and VO_2 max Values of the Participants

Measurement	Group	Pre-Test (Mean ± SD)	Post-Test (Mean ± SD)	Z-Score	p-Value
Grip Strength (kg)	Experimental	32.50 ± 5.00	33.20 ± 4.80	1.95	0.05
	Control	31.80 ± 4.60	32.00 ± 4.70	0.45	0.65
Back Strength (kg)	Experimental	85.00 ± 22.00	105.00 ± 25.00	-3.25	0.001*
	Control	84.50 ± 23.50	87.00 ± 21.00	-1.10	0.27
Flexibility (cm)	Experimental	31.00 ± 2.80	34.00 ± 2.50	-3.10	0.002*
	Control	30.80 ± 3.00	30.70 ± 3.10	-0.15	0.88
VO_2 max (ml/kg/min)	Experimental	41.00 ± 5.00	44.00 ± 4.50	-3.15	0.001*
	Control	40.50 ± 4.80	41.00 ± 4.90	-0.55	0.58

* $p < 0.05$

Table 5 shows the results for grip strength, back strength, flexibility, and VO_2 max before and after the 8-week Zumba intervention. For the experimental group, there was a statistically significant increase in back strength from 85.00 ± 22.00 kg to 105.00 ± 25.00 kg (Z = -3.25, p = 0.001), flexibility from 31.00 ± 2.80 cm to 34.00 ± 2.50 cm (Z = -3.10, p = 0.002), and VO_2 max from 41.00 ± 5.00 ml/kg/min to 44.00 ± 4.50 ml/kg/min (Z = -3.15, p = 0.001). Grip strength showed a marginal increase from 32.50 ± 5.00 kg to 33.20 ± 4.80 kg (Z = 1.95, p = 0.05). In contrast, the control group showed no significant changes in any of these parameters: grip strength (p = 0.65), back strength (p = 0.27), flexibility (p = 0.88), and VO_2 max (p = 0.58). This indicates that the Zumba exercise program was effective in improving physical fitness parameters compared to the control group.

Discussion

In reviewing similar studies, it has been consistently found that Zumba exercise programs positively impact body composition and physical fitness in women. A randomized controlled study demonstrated the health-enhancing efficacy of Zumba, with participants exhibiting improvements in aerobic fitness, muscular endurance, and body composition (Domene et al., 2015). Further, an investigation on the effects of an 8-week Zumba fitness program revealed significant reductions in body fat percentage and increases in lean muscle mass among female participants (Ljubojević et al., 2014). These findings suggest that Zumba represents an effective approach to improving physical fitness and body composition in women. This form of exercise has been shown to enhance the physical activity levels of sedentary women, making it a successful intervention (Barranco-Ruiz & Villa-González, 2020). In our study, Table 2 highlights the significant changes observed in weight, Body Fat Percentage (BFP), and Body Muscle Mass (BMM) among participants. Specifically, the experimental group showed a significant reduction in weight from pretest (58.20 ± 5.10 kg) to posttest (56.80 ± 5.00 kg) with a Z-score of -3.15 (p = 0.002), while the control group did not exhibit a significant change. Similarly, BFP decreased significantly in the experimental group from pretest (25.10 ± 5.80 %) to posttest (23.80 ± 6.00 %) with a Z-score of -2.30 (p = 0.03), contrasting with the control group's non-significant change. Moreover, BMM significantly increased in the experimental group from pretest (20.40 ± 3.20 kg) to post-test (21.00 ± 3.30 kg) with a Z-score of 2.05 (p = 0.04), while the control group showed no significant change. These findings align with literature reports that Zumba Fitness positively affects body composition, muscle strength, balance, and overall quality of life (Barranco-Ruiz & Villa-González, 2020). Studies have demonstrated that regular Zumba exercises can significantly improve anthropometric features in women (Bayrakdar et al., 2020). For instance, an 8-week Zumba program conducted with overweight and obese women in Malta showed effective weight loss (Micallef, 2015), similar to the significant reductions in weight and body fat percentages observed in our study (Oktay, 2015; Ljubojević et al., 2014). Regarding handgrip strength, our study found no significant differences between pretest and post-test values for both the experimental and control groups. This is consistent with previous studies that reported no significant changes in handgrip strength following Zumba exercise programs (Cugusi et al., 2015; Oktay, 2018). Conversely, significant improvements were noted in back strength, flexibility, and VO_2 max within the experimental group, as detailed in Table 3. These findings are in agreement with earlier studies that documented significant increases in maximal oxygen consumption, flexibility, and back strength following Zumba exercise programs (Oktay, 2018; Suminar et al., 2018). Luettgen et al. (2012) also reported a significant increase in VO_2 max due to Zumba exercises. Additionally, Krishnan et al. (2015) observed a 7.1 % improvement in VO_2 max after a 16-week Zumba program, and Donath et al. (2014) reported a 21 % increase in VO_2 max in the 6-minute walk test following Zumba exercise. The high-intensity, dance-based nature of Zumba likely contributes to these cardiovascular improvements, as participants engage in continuous, full-body movements that elevate heart rate and oxygen consumption (Luettgen et al., 2012). Furthermore, a randomized controlled study found that Zumba was an efficacious health-enhancing activity, with participants demonstrating significant increases in leisure-time physical activity and overall physical function (Domene et al., 2015). Together, the existing evidence suggests that Zumba represents a promising approach for improving cardiorespiratory fitness and VO_2 max among adults. Overall, our study's findings corroborate the literature, underscoring Zumba's efficacy in enhancing physical fitness parameters among sedentary women, particularly in the North Indian population. This supports the notion that Zumba dance, as a high-energy physical activity, can substantially improve general fitness levels and contribute

to better health outcomes (Micallef, 2015). Our study's results align with those of Choudhary and Dubey (2024), who found significant improvements in fitness parameters following an eight-week Zumba program. While their study focused on male college students, our research extends these findings to sedentary women in North India, demonstrating similar benefits in weight reduction, body fat percentage, muscle mass, back strength, flexibility, and VO_2 max. Specifically, the improvements in VO_2 max (from 40.44 ± 4.62 to 42.44 ± 3.12 ml/kg/min) in our study corroborate the cardiovascular benefits. The development of strategies to enhance physical activity diffusion, through effective interventions, is crucial for public health. This objective necessitates targeted health policies, shared goals, and clearly defined responsibilities. The findings from our study align with those reported by Şahin et al. (2023), who investigated the effects of an 8-week Zumba exercise program on various physical fitness components in sedentary women. Their study demonstrated significant improvements in weight, body fat percentage (BFP), body muscle mass (BMM), flexibility, back strength, and VO_2 max, similar to our findings. Notably, both studies observed significant reductions in body weight and BFP, alongside increases in BMM, flexibility, back strength, and VO_2 max in the experimental group, thereby supporting the efficacy of Zumba as a comprehensive exercise program for enhancing physical fitness in sedentary women. According to Moscatelli et al. (2023), understanding and addressing the differences in physical activity levels between male and female university students is essential for designing these strategies. The study highlights that successful public health strategies should be supported by well-planned health policies and a collaborative approach to improve physical activity among diverse populations.

Conclusions

The 8-week Zumba exercise program demonstrated significant improvements in the physical fitness and body composition of sedentary women, highlighting its effectiveness as an intervention for enhancing overall health. The study found that participants experienced notable enhancements in muscle mass, flexibility, back strength, and cardiovascular fitness, while also achieving reductions in body weight and fat percentage. These findings align with existing research on the benefits of Zumba, reinforcing its role as a beneficial, accessible, and enjoyable form of exercise that can lead to substantial health improvements. The program's success in promoting an active lifestyle among sedentary women underscores the value of incorporating Zumba into regular physical activity routines to foster better health outcomes. This study contributes to the growing body of evidence supporting Zumba as a holistic fitness solution that not only addresses various aspects of physical health but also encourages sustained engagement in physical activity due to its fun and dynamic nature. By enhancing both physical and mental well-being, Zumba proves to be a versatile exercise option suitable for a wide range of individuals, particularly those who may struggle with traditional forms of exercise. The incorporation of Zumba into fitness programs can therefore play a crucial role in public health strategies aimed at reducing sedentary lifestyles and improving quality of life.

Conflict of interest

No conflict of interest.

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Оцінка впливу 8-тижневої програми занять зумбою на рівень фізичної підготовленості жінок, які ведуть малорухливий спосіб життя: Рандомізоване контрольоване дослідження

Прашант Кумар Чоудхарі[1ABCD], Сучішрава Дубей[2ABCD]

[1]Прекрасний професійний університет
[2]Національний інститут фізичного виховання імені Лакшмі Бай

Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 9 с., 5 табл., 1 рис., 52 джерел.

Мета дослідження. Мета дослідження полягала в оцінці впливу 8-тижневої програми занять зумбою на рівень фізичної підготовленості та композицію тіла серед жінок, які ведуть малорухливий спосіб життя. Головними завданнями було визначити зміни в показниках м'язової маси, гнучкості, сили м'язів спини, функціонального стану серцево-судинної системи, маси тіла та відсоткового вмісту жиру в організмі.

Матеріали та методи. У дослідженні взяли участь 24 жінки-добровольці (середній вік 22,30 ± 2,10 років, зріст 162,80 ± 4,00 см) з Північної Індії, яких було розподілено методом рандомізації до експериментальної групи, що займалася структурованою програмою із зумби (60-хвилинні заняття тричі на тиждень), або до контрольної групи, яка дотримувалася своєї стандартної активності. Початковий і подальший аналіз включав вимірювання зросту, ваги, відсоткового вмісту жиру в організмі (ВВЖО), м'язової маси тіла (ММТ), сили хвату, сили м'язів спини, гнучкості та рівня максимального споживання кисню (VO_2max).

Результати. За допомогою статистичного аналізу, проведеного із застосуванням програмного забезпечення SPSS 26 та критерію знакових рангів Вілкоксона, було встановлено значні покращення показників в експериментальній групі. Маса

тіла зменшилася з 58,20 ± 5,10 кг до 56,80 ± 5,00 кг (p = 0,002), відсотковий вміст жиру в організмі знизився з 25,10 ± 5,80 % до 23,80 ± 6,00 % (p = 0,03), рівень м'язової маси тіла підвищився з 20,40 ± 3,20 кг до 21,00 ± 3,30 кг (p = 0,04). Показник сили хвату також покращився з 32,50 ± 5,00 кг до 33,20 ± 4,80 кг (p = 0,05), сила м'язів спини зросла з 85,00 ± 22,00 кг до 105,00 ± 25,00 кг (p = 0,001), гнучкість збільшилася з 31,00 ± 2,80 см до 34,00 ± 2,50 см (p = 0,002), показник VO_2max також підвищився з 41,00 ± 5,00 мл/кг/хв. до 44,00 ± 4,50 мл/кг/хв (p = 0,001). У контрольній групі достовірних змін не спостерігалося.

Висновки. Застосування програми занять з зумби впродовж 8 тижнів сприяло значному покращенню рівня фізичної підготовленості та композиції тіла у жінок, які ведуть малорухливий спосіб життя, шляхом поліпшення показників м'язової маси, гнучкості, сили м'язів спини та функціонального стану серцево-судинної системи. Отримані результати підтверджують переваги зумби як ефективного та захоплюючого виду фізичних вправ, що сприяє активному способу життя та покращенню стану здоров'я, зміцнюючи її роль як комплексного фітнес-рішення, спрямованого на стимулювання до регулярної фізичної активності.

Ключові слова: вправи з зумби, жінки з малорухливим способом життя, фізична підготовленість, композиція тіла, сила.

Information about the authors:

Choudhary, Prashant Kumar: prashantlnipe2014@gmail.com; https://orcid.org/0000-0001-6163-8065; Department of Physical Education Pedagogy, Lakshmibai National Institute of Physical Education, Shakti Nagar, Mela Road, Gwalior, 474002, India.

Dubey, Suchishrava: suchishrava05@gmail.com; https://orcid.org/0000-0001-7491-5404; Department of Sports Management and Coaching, Lakshmibai National Institute of Physical Education, Shakti Nagar, Mela Road, Gwalior, 474002, India.

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