International Journal of Pediatrics and Genetics
Vol. 4 No. 06 (2026)
ISSN: 2995-5483

# Effects of Aerobic/Zumba Dance Exercise Programme on Spine Flexibility and Body Weight among Retired Older Adults in Akwa Ibom State

**Esitime Peter Akpan**
Department of Human Kinetics and Health Education,
Faculty of Education, University of Uyo

**Udobong Henry Morrison**
Department of Human Kinetics and Health Education,
Faculty of Education, University of Uyo

**Afia Uduakobong Udeme**
Department of Human Kinetics and Health Education,
Faculty of Education, University of Uyo

**Abstrak.** This study examined the effects of an Aerobic/Zumba dance exercise programme on spine flexibility and body weight among retired older adults in Akwa Ibom State. The study adopted a pre-test and post-test experimental research design. The quasi-experimental (Interrupted Time-Series) design was used for the study. The area of the study is AkwaIbom State. The area of the study is AkwaIbom State. The population of the participants who volunteered for the study, and identified as older adults, was initially 150 retired older adults (these included12women; aged between 65 years and above); who took part in the study. A population of 150 retired older adult began the programme in Uyo with 68 participant, Eket, 47 participants and IkotEkpene, 35 participants. The instruments for the study are already standardized instruments, invented for the purpose they were made for. To ensure reliability of the weighing scale, a standard weight lifting barbell of 1 kg was always placed to set a scale-pointer correctly at 1kg. After the posttest measurement, the data sorted out were treated with the Descriptive Statistics to answer the research questions. . The Paired sample t-test statistical (PTS) was used to test the hypotheses, set at probability alpha significant level of .05. The study showed that there is significant difference between the pretest and post test means of spine flexibility fitness (SFLF) levelof the retired older adults in Akwa Ibom State and also that there is a significant difference between the pretest and post test means of body weight (BWT) of the retired older adults in Akwa Ibom State; showing significant improvement in the body weight (BWT). The study concluded that Aerobic/Zumba dance exercise is an effective, engaging, and accessible form of physical activity for improving spine flexibility and reducing body weight in older populations. It was therefore recommended that for weight management a consistent schedule (e.g. 3 times per week for 45-60 minutes) of Zumba exerciseshould be promoted as an enjoyable component of a holistic weight and BMI management strategy for olderadults, alongside nutritional guidance.

**Keywords**: Aerobic/Zumba Dance Exercise, Spine Flexibility, Body Weight, Retired Older Adults, Akwa Ibom State

## Introduction

The hypokinesea, being diseases resulting from continued physical inactivity [1]; are among the serious public health problems associated with sedentary behaviours that have continuously attracted the attention of the World Health Organization for some years now [2][3]. As health challenges, hypokinesea would hinder an individual from achieving a healthy lifestyle and carrying out effective

physical, mental, social, emotional and motor tasks; in which Feng-Tzu [4] used the term executive function (EF) to describe a qualitative behaviour of physical exercises.

In the context of the present study, according to the World Health Organization, an older adult is typically defined as a person aged 60 years orolder. This is the primary threshold used in WHO's major reports and during its coordination of global initiatives likethe UN Decade of Healthy Ageing (2021-2030). However, this definition is often applied contextually, especially when comparing global and regional data. Othermajor organizations may use slightly different benchmarks. The term "older adult" is understood as focusing on function, not just age. The WHO (2020a) emphasizes that ageing is not defined by years alone. The core goal of "healthy ageing" is to develop and maintain the functional ability that enables well-being in later life. This means two 70-year-olds can have vastly different health capacities. Countries may set different official ages based on local life expectancy and social policies. Moderately impaired individuals should benefit from chronic disease management programmes like aerobic/Zumba dance programme. In Nigeria, an older person is commonly known as “an Elderly Person”; and being “Elderly” is defined differently according to the cultures of the people, hence it is necessary to state that there are different definitive ages for the term 'elderly' or “older adult” for each society and culture. In developed countries, 65 to 70-year-old are considered elderly while in developing countries, of which Nigeria is a part, people are considered elderly when they retire and start receiving pensions [5]. For instance, in North America, a person must be 75 years of age and above to be considered an elderly person; and there is an attempt on redefining the age considered as elderly.

The importance of this study on an Aerobic Zumba dance exercise programme for retired older adultsin Akwa Ibom State lies in its potential to offer a practical, enjoyable and effective public health solution. It directly targets age-related physiologicaldecline (such as loss of cardiovascular fitness, muscular strength and balance) by promoting a form of exercisethat is both accessible and socially engaging. By demonstrating that a programme like Zumba can lead to measurableimprovements in key health metrics (e.g. blood pressure, body composition, aerobic capacity, and functionalmobility), the study provided valuable evidence for community centers, retirement organizations, and healthcareproviders. This evidence supports the implementation of similar group-based, rhythmic activities as sustainablestrategies to enhance functional independence, reduce the risk of hypokinetic diseases (like heart disease and type2 diabetes), and improve the overall quality of life in a growing aging population, ultimately contributing to the goalsof healthy ageing.

The prolonged serious inactivity is a type of hypokinetic or sedentary behaviour that would cause long term overweight leading to obesity (of physiological and metabolic health issues); these include cardiovascular health challenges (like noisy sleep apnea called snoring, heart attack, short breathing rate called tracycardia) and low back pains(lumbago). These obesity-related morbidities called hypokinesea (hypokinetic diseases) are becoming problems of increasing importance on older adults in many developing countries [6]. This prevalence of obesity being a form of hypokinesea has been attributed more to urbanization and a nutritional transition characterized by a shift to diets of higher energy contents and above all, a marked reduction of physical activity resulting in changes in individuals’ body composition [7]. Medically, hypokinesea comprise metabolic health challenges; and overweight and obesity are major risk factors for hypokinesea, whereby resulting in cardiovascular diseases and metabolic disorders; and the prevalence of obesity in aged individuals including retired athletes continues to rise over time.

**Statement of the Problem**

Ekpu in an inaugural lecture posited that older adults' health status exists on a spectrum from healthy ageing (minimal chronic conditions and high functionality) to frailty and multi-morbidity (multiple chronic illnesses and disability); and the environment plays a major role in obtaining good health. The author stressed proper health care by individuals and the role of employers. The continuum helps researchers and policymakers tailor interventions based on where individuals fall in. The relevance to the study is that healthy older adults would need preventive care (e.g. vaccinations and mobility exercises).

The list of the dead ones cannot be hidden again as Mr. Christian Chukwu (MON, and National Green Eagles team captain) and Charles Bassey (MON) who was with him in the 1980 African cup of Nations are gone. Bassey’s team mates at home like Uwem Ekarika, Aniefiok Ekarika and Honourable Isang Isong , Emmanuel Udoh, including a number of retired Akwa Ibom Sports Ministry Sports

Coaches have gone too early while others are bed-ridden with strokeand other metabolic illnesses. These older adults are readily known to the researcher. They are many who were not in sports that are affected by the metabolic health challenges. However those who are underweight need to be given dietary information to increase weight and maintained with weight-increase programmed-exercises and programmed dietary patterns as they are prone more to indigestion problems and kyphotic mal-postural problem of forward-bending posture [8].

**Purpose of the Study**

The main purpose of this study is to examine the effects of aerobic Zumba dance exercise on selected physiological parameters of retired older adults in AkwaIbom State.

Specifically, the study aims to:

1. The difference between the mean of spine flexibility fitness (SFLF) levelat pre Aerobic/Zumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State.
2. The difference between the mean of Body Weight (BWT) at pre Aerobic Zumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State.

**Research Questions**

1. What is the difference between the mean of spine flexibility fitness (SFLF) level at pre Aerobic/Zumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State?
2. What is the difference between the mean of Body Weight (BWT) at pre AerobicZumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State?

**Hypotheses**

1. There is no significant difference between the mean of spine flexibility fitness (SFLF) level at pre Aerobic Zumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State.
2. There is no significant difference between the mean of Body Weight (BWT) at pre Aerobic Zumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State.

**Conceptual Review**

**Physiological Characteristics and the retired older adults**

Amit [9] in listing the vital signs measurements defines the heart rate (HR) or pulse rate as the number of times the heart beats per minute. One of the measures of body fitness is the efficient working of the heart. The heart is a pumping organ that pushes the blood as it beats into the vessels and veins of the blood circulatory system. The Pulse Rate (PR) measures the number of heartbeat per minute (bpm) as it records the frequency of blood flow through arteries. The normal range is 60-100 bpm for an average adult. The Respiratory Rate (RR) measures the number of breaths per minute (bpm) as it records the frequency of inhalation and exhalation of air. The normal range is 12-20 bpm for an average adult. The recording methods for the Pulse Rate are:

Using the Radial pulse by feeling of the pulse at the wrist (radial artery) with the index and middle fingers.

Using the Carotid pulse by feeling the pulse at the neck (carotid artery) with the index and middle fingers.

Using the Pulse oximeter by using a sensor on the finger or earlobe to measure pulse rate and oxygen saturation.

The recording methods for the Respiratory Rate are:

Using the Visual inspection by counting the number of breaths while observing the rise and fall of the chest or abdomen.

Using the Stethoscope by listening to the breath sounds with a stethoscope placed on the chest.

Using the Respiratory rate monitor by using the sensors on the chest or abdomen to measure breathing rate.

It is important to record pulse rate and respiratory rate simultaneously to ensure accurate measurements; taking multiple readings to ensure consistency and accuracy and noting any irregularities or abnormalities in pulse or breathing patterns. The pulse rate and respiratory rate are vital signs that provide essential information about a person's cardiovascular and respiratory health. There are three general ways to classify heart rate for diagnostic purposes; these are slow, normal and fast heart rates.
A resting heart rate is normal between 60 – 100 beats per minute (bpm).
A resting heart rate is fast at greater than 100 bpm and is called Tachycardiac rate.
A resting heart rate is slow when it is below 60 bpm and is referred to as Bradycardiac rate.

The first section of the physiological characteristics of this study, also called the vital signs consists of the body temperature; pulse rate; systolic blood pressure; diastolic blood pressure; and the respiratory rate. A number of experts in this area, Akinyemi and American College of Sports Medicine [10] submitted that blood pressure is the force by blood due to its movement against the wall of the blood vessels and is measured in milliliters mercury (mm. Hg.). It is a condition in which the force of the blood against the artery walls is too high.

Usually hypertension is medically defined as blood pressure above 140/90 mm. Hg, and is considered severe if the pressure is above 180/120 mm. Hg. High blood pressure often has no symptoms. Over time, if untreated, it can cause risky health conditions, such as heart disease and stroke. When blood pressure is measured by a sphygmomanometer, the top number is the systolic and the bottom number is the diastolic blood pressure numbers when the heart beats (contracts), as it squeezes and pushes blood through the arteries to the rest of the body. The force that creates pressure on the wall of the blood vessels is the systolic blood pressure.

A normal blood pressure (also called monotension**)** is below 120/80 mm.Hg. A reading of systolic 120 to 129 is elevated. From 130 to 139 is a stage of high blood pressure also known as hypertension stage 1). From 140 to 120 is hypertensionstage2, and 180 or more would be critical for immediate hospitalization, or calling for the hospital service.

The diastolic blood pressure reading or the bottom number is the pressure in the arteries when the heart rests between the beats. From the beginning to the end of one beat is the Cardiac cycle. In between the two beats is a resting period for the heart. When the heart rests (diastolic) between the beats, the heart is filled with blood and gets oxygen to function.

A normal diastolic blood pressure is lower than 80. One can still have an elevated blood pressure if systolic reading is 120-129. Hence, for the diastolic values 80-89 is stage I hypertension, 89 or more is stage2 hypertension and from 120 up would also need hospitalization or calling the hospital service.The second section of the physiological characteristics is the motor quality of the cardiovascular and musculo-skeletal systems and their organs. These are Physical fitness parameters, also called executive function:

**Strength**: ability to exert force against on an object or resist the object's force
**Endurance**: ability to maintain work rate over a long duration
**Flexibility**: ability to exert muscle elasticity (stretching property) over a distance
**Power**: the rate at which amount of strength is used over a time
**Agility:** ability to move and change directions timely and correctly.
**Coordination**: ability to synchronize actions of two or more parts of the body fluently.
**Speed**:The rate at which a body moves in time sequence
**Reaction time:** the ability to move into action in time upon the presence of a signal.

Body temperature is a physiological factor in the human body and is regulated by hypothalamus and affected by factors such as activity, environment and health status. Normal range is 36.5°C to 37.5°C (97.7°F to 99.5°F) . Maintaining this range of body temperature is important to retired athletes.

For the purpose of the study, the effects of Aerobic/Zumba Dance exercise programme on the systolic and diastolic blood pressures, heart rate are considered among other vital signs while parameters of the executivefunctions also provide the motor signs of the capacity to move and work. Exercise Physiologistshave continued to press for the need to examine the heart rate and blood pressure of the sedentary people through Stress tests as a test of their cardiovascular fitness component as one of the vital fitness components of an individual. Providing such information on the older adults of the study considered to be sedentary persons is needful to them to face their sedentary health challenges.

**Zumba Exercise Programme and Hypokinetic Disorders**

According to Chavarrias*et* [11] hypokinetic lifestyle disorders, such as obesity, diabetes, and cardiovascular disease, can be prevented or managed through regular physical activity like Zumba exercise programme. The Zumba exercise programme addresses hypokinetic lifestyle as it increases physical activity levels as Zumba encourages regular exercise, helping to transition from a sedentary to an active lifestyle. It improves insulin sensitivity; enhances cardiovascular health; supports weight loss. Zumba's calorie-burning potential aids in weight management, reducing the risk of obesity-related health issues while reducing sedentary behavior and improving mental health and well-being. Zumba's dance-based movements require coordination and balance, helping to improve overall balance and reduce the risk of falls. Zumba's dynamic movements help improve joint mobility, reduce stiffness, and enhance flexibility.

Zumba's upbeat music and social atmosphere help reduce stress and improve mood. Zumba's complex movements and rhythms challenge the brain, improving cognitive function and memory. Zumba's group fitness format provides opportunities for social interaction, reducing feelings of loneliness and isolation. Zumba's fun and engaging nature can motivate individuals to adopt a more active lifestyle.

There are varieties of Zumba dances [12], namely:

i. Zumba Fitness (original) ii. Zumba Gold (seniors) iii.Zumba Toning (strength training)
iv. Zumba Kids (children) v. Aqua Zumba (water-based) vi. Zumba Step (step aerobics)

The tips for starting Zumba Programme include:

Finding a local class or instructor.
Starting slow and gradually increasing intensity.
Wearing comfortable clothing and shoes.
Bringing water and a towel by the participants.
Focusing on fun and social interaction.
Modifying the movements to accommodate physical limitations.
Focusing on proper technique and alignment.
Incorporating Zumba into a comprehensive treatment plan, including medical care and other therapies as needed.

However it is necessary to avoid contraindications in the programme by consulting a doctor before starting Zumba Programme, especially if the patient has painful heart conditions; joint problems; chronic illnesses and pregnancy or postpartum problems. In conclusion Zumba is an enjoyable and effective way to combat hypokinetic lifestyle disorders. Its benefits extend beyond physical health to mental well-being and social connections. Incorporating Zumba into hypokinetic retired athletes' lifestyle can lead to a healthier and happier well-being.

**Emperical Framework**

**Aerobic Zumba Dance Programme and spine flexibility (sit and reach)**

Şahin investigated the effects of an 8-week Zumba exercise programme on physical fitness components in sedentary women that aimed to investigate the effects on weight, body fat percentage (BFP), body muscle mass (BMM), grip strength, back strength, flexibility, and $MaxVO^2$ parameters in sedentary women. Twenty-four women (age: 21.54±1.84, height: 163.75±4.15) who did not engage in regular physical activity and had no history of illness or sports injuries volunteered to participate in the study. The participants were randomly divided into two groups: an experimental group (12 participants) and a control group (12 participants).

The experimental group underwent 60-minute Zumba exercises three days a week. Weight, height, BFP, BMM, grip strength (right and left), flexibility, and $MaxVO^2$ were measured. The data were analyzed using SPSS 25 statistical software package. Wilcoxon Test was used for intra-group pre-test and post-test comparisons, and a significance level of $p< 0.05$ was accepted. In the experimental group, significant differences were observed in weight, BFP, BMM, flexibility, back strength, and $MaxVO^2$ values between the pre-test and post-test, while there was no statistically significant difference in grip strength (right and left) with $p< 0.05$. In the control group, a significant difference was observed in BFP. However, no statistically significant differences were found in weight, BMM, flexibility, grip strength (right and left), back strength, and $MaxVO^2$ with $p< 0.05$.

**Aerobic Zumba Dance Programme and body weight**

Kutac [13] studied the effect of regular running on body weight and fat tissue of individuals aged 18 to 65. And noted that age and reduction in performed physical activity cause physiological changes that include an increase in body fat (BF) and visceral fat (VF) during aging. These parameters, together with increased body mass (BM), are some of the risk factors of several non-infectious diseases. However, changes in body composition can be influenced by regular physical activity. Running is a suitable, accessible, and the most effective physical activity cultivating people.

The objective of the study was to investigate the effects of long-term, regular physical activity (PA), specifically recreational running, on changes in body composition among recreational adult runners covering a weekly distance of at least 10 km, compared with inactive adult individuals within the same age bracket. In the methods of the study included 1296 runners and inactive individuals (691 male and 605 female), divided into 5 age groups: 18–25, 26–35, 36–45, 46–55, and 56–65 years. Runners are as follows: ran ≥ 10 km/week, and inactive is as follows: did not follow the WHO 2020 physical activity recommendations. The measured parameters included BM, BF, and VF. To check statistical significance, the Mann–Whitney *U*-test was used. Practical significance was assessed using the effect of size.

The results were that all age groups of runners were selected to include individuals who run at least 10 km per week. , They ran, on average, from 21.6 to 31.4 km per week in relation to age and showed significantly lower values of BM, BMI, BF, and VF ($p < 0.05$) than inactive individuals. Exceptions included insignificant differences ($p > 0.05$) in BM and BMI in males in the age category of 18–25 and in females in the age category of 18–25 and 26–35.

Berliana [14] assessed effects of 12-week Zumba Dance training on weight reduction and body fat percentage in overweight women. The paper embarked from the modern technological advancements that have negative impacts on society, that is, the lack of physical activity which is resulting in high obesity rates and poor health. Studies have shown that Zumba dance and high impact aerobics are ways to reduce weight and body fat. The purpose of the study was to determine the effect of Zumba dance exercise and high impact aerobics to reduce weight and body fat. In addition, the study also aimed to evaluate differences in the effect of both forms of exercise on the percentage of body weight and fat. The population of the study was IBAF SMEs and SME woman gymnastics at UPI Bandung while the sample was 10 women from each group. The research method used was experimentation with pre-test and post-test group design. Data were analyzed by paired t-test using SPSS.

The results indicated that differences in the Zumba dance workout in weight loss was significant at $P < 0.05$, ($P = 0.010$) as well as fat content ($P = 0.007$). Differences of high impact aerobic exercise on weight loss were also significant at $P < 0.05$, (0.00) and fat content (0.00). While, the differences of both groups in reducing body weight were not significant (0.334) and fat content (0,146) at $P < 0,05$. The study concluded a significant difference from Zumba dance training and high impact aerobics in weight loss and there were no significant differences of both groups in improving results. In other words, both methods equally produced significant reductions.

**Methodology**

The quasi-experimental (Interrupted Time-Series) design was used for the study. The area of the study is AkwaIbom State. The area of the study is AkwaIbom State. The population of the participants who volunteered for the study, and identified as older adults, was initially 150 retired older adults (these included12women; aged between 65 years and above); who took part in the study. A population of 150 retired older adult began the programme in Uyo with 68 participant, Eket, 47 participants and IkotEkpene, 35 participants. The instruments for the study are already standardized instruments, invented for the purpose they were made for. To ensure reliability of the weighing scale, a standard weight lifting barbell of 1 kg was always placed to set a scale-pointer correctly at 1kg. After the posttest measurement, the data sorted out were treated with the Descriptive Statistics to answer the research questions. . The Paired sample t-test statistical (PTS) was used to test the hypotheses, set at probability alpha significant level of .05.

**Results and Discussion**

**Table 1: Descriptive Statistical Analysis of pre and post meansof spine flexibility fitness (SFLF) level**

| Gender | N | $\bar{X}$ | SD | Results |
|---|---|---|---|---|
| Pre-test | 72 | 10 cm | 1.6 cm | A difference of 3cm is obtained. |
| Post tests | 72 | 13 cm | 1.5 cm | |

Source: Appendix IV

Result: In Table 1, the descriptive statistical analysis showed that the pretest score spine flexibility fitness (SFLF) level has a mean 10 cm while the post test score has a mean of 13 cm. The result is that a difference of 3 cm is obtained showing an increase(improvement) in spine flexibility fitness (SFLF) level of the retired older adults

**Research Question 2:** What is the difference between the mean of body weight (BWT) at pre Aerobic Zumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State, Nigeria?

**Table 2: Descriptive Statistical Analysis of pre and post means of body weight (BWT).**

| Gender | N | $\bar{X}$ | SD | Results |
|---|---|---|---|---|
| Pre-test | 72 | 81kg. | 2.1 kg | A difference of 5.7 kg is obtained. |
| Post tests | 72 | 75.3kg. | 1.8kg. | |

Source: Field Data in Appendix IV

Result: in Table 2 the descriptive statistical analysis showed that the pretest score for body weight (BWT) has a mean 81 kg while the post test score has a mean of 75.3 kg. The result is that a difference of 5.7 kg is obtained showing a reduction (improvement) in the body weight (BWT) of the retired older adults.

**Hypothesis Testing**

**Hypothesis 1:** There is no significant difference between the mean of spine flexibility fitness (SFLF) level at pre Aerobic Zumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State, Nigeria.[15]

**Table 3: Summary of t-test statistical analysis of no significant difference between pre and post test means ofspine flexibility fitness (SFLF) level of the retired older adults in Akwa Ibom State.**

| Tests | N | $\bar{X}$ | SD | Df | SE | t-cal | Decision |
|---|---|---|---|---|---|---|---|
| Pre-test | 72 | 10 cm | 1.6 cm | 71 | 0.177 | *16.95 | $H_o$rejected |
| Post tests | 72 | 13 cm | 1.5 cm | | | | |

*Significant at $P \leq .05$, df. 71 = 1.994 t-critical value.

Source: Field Data Appendix IV

Result: In Table 3, the t-calculated value of 16.95 is greater than the t-critical value of 1.994. Therefore the hypothesis of no significant difference between pretest and post test means of spine flexibility fitness (SFLF) level of the retired older adults in Akwa Ibom State is rejected. The finding is there is significant difference between the pretest and post test means of spine flexibility fitness (SFLF) levelof the retired older adults in Akwa Ibom State; showing significant improvement in the spine flexibility fitness (SFLF) level.

**Hypothesis 2:** There is no significant difference between the mean of body weight (BWT) at pre Aerobic Zumba Dance exercise programme and mean after the programme on the retired older adults in Akwa Ibom State, Nigeria.

**Table 4: Summary of t-test statistical analysis of no significant difference between pre and post means ofbody weight (BWT) of the retired older adults in Akwa Ibom State.**

| Tests | N | $\bar{X}$ | SD | Df | SE | t-cal | Decision |
|---|---|---|---|---|---|---|---|
| Pre-test | 72 | 81kg. | 2.1 kg | 71 | 0.326 | *23.8 | $H_o$rejected |
| Post tests | 72 | 75.3kg. | 1.8kg. | | | | |

*Significant at $P \leq .05$, df. 71 = 1.994 t-critical value

Source: Field Data Appendix IV

Result: In Table 4, the t-calculated value of 23.8 is greater than the t-critical value of 1.994. Therefore the hypothesis of no significant difference between pretest and post test means of body weight (BWT) of the retired older adults in Akwa Ibom State is rejected. The finding is there is significant difference between the pretest and post test means of body weight (BWT) of the retired older adults in Akwa Ibom

State; showing significant improvement in the body weight (BWT).

**Conclusion**

The study concludes that the Aerobic/Zumba dance exercise programme significantly improved spine flexibility among retired older adults in Akwa Ibom State. It also contributed to reduction in body weight, indicating its effectiveness for weight management. The programme proved to be a practical and engaging form of physical activity for older individuals. Regular participation can enhance overall physical fitness and functional ability in later life. The study showed that there is significant difference between the pretest and post test means of spine flexibility fitness (SFLF) levelof the retired older adults in Akwa Ibom State and also that there is a significant difference between the pretest and post test means of body weight (BWT) of the retired older adults in Akwa Ibom State; showing significant improvement in the body weight (BWT).

**Recommendation**

1. For weight management a consistent schedule (e.g. 3 times per week for 45-60 minutes) of Zumba exerciseshould be promoted as an enjoyable component of a holistic weight and BMI management strategy for olderadults, alongside nutritional guidance.
2. For programmedesign andadherence: Fitness professionals should create and certify specialized "Zumba Gold" or"Senior Zumba" programmes that modify intensity and impact while maintaining the music, dance variety, and socialenergy that drive long-term participation.

**References**

[1] J. Berge, “Effect of aerobic exercise intensity on health-related quality of life in severe obesity,” *J. Exercise Sci. Fitness*, vol. 17, no. 2, pp. 51–57, 2022.
[2] World Health Organization, “Healthy ageing and functional ability,” 2020. [Online]. Available: https://www.who.int/news-room/questions-and-answers/item/healthy-ageing-and-functional-ability
[3] World Health Organization, “Global prevalence of obesity,” WHO Report, 2022. [Online]. Available: https://www.who.int/news/item/01-03-2024-one-in-eight-people-are-now-living-with-obesity
[4] F.-T. Chen, J. L. Etnier, K. Chan, K. P. Chiu, T. Hung, and Y. Chang, “Effects of exercise training interventions on executive function in older adults: A systematic review and meta-analysis,” *Sports Medicine*, vol. 50, pp. 1451–1467, 2020.
[5] A. Sinykin, “At what point is someone considered elderly?” Devoted Guardians, 2021. [Online]. Available: https://devotedguardians.com/at-what-point-is-someone-considered-elderly/
[6] H. Al-Hourani, “Comprehensive health assessment of retired martial arts athletes: Bone density, dietary intake, physical activity and wellbeing,” *Frontiers in Aging*, vol. 6, Art. no. 1513936, 2025.
[7] P. Wittels and L. Mansfield, “Weight stigma, fat pedagogy and rediscovering the pleasures of movement: Experiencing physical activity and fatness in a public health weight management programme,” *Qualitative Research in Sport, Exercise and Health*, vol. 13, no. 2, pp. 342–359, 2021.
[8] M. Udobong, “Body types, fitness components and health challenges among staff members of the Faculty of Education, University of Uyo, Uyo,” M.S. dissertation, Univ. of Uyo, Uyo, Nigeria, 2023.
[9] S. Amit, A. Malik, and P. I. Bhandar, “Vital Sign Assessment,” in *StatPearls*. Treasure Island, FL, USA: StatPearls Publishing, 2023. [Online]. Available: National Center for Biotechnology Information, Bookshelf ID: NBK553213.
[10] American College of Sports Medicine, *ACSM’s Guidelines for Exercise Testing and Prescription*, 10th ed. Philadelphia, PA, USA: Wolters Kluwer, 2018.
[11] M. Chavarrias, S. Villafaina, A. M. Lavín-Pérez, J. Carlos-Vivas, E. Merellano-Navarro, and J. Pérez-Gómez, “Zumba, fat mass and maximum oxygen consumption: A systematic review and meta-analysis,” *Int. J. Environ. Res. Public Health*, vol. 18, Art. no. 105, 2020.
[12] M. Heid, “Why Zumba is insanely good exercise,” *TIME*, USA, 2017.
[13] P. Kutac, V. Bunc, M. Buzga, M. Krajcig, and M. Sigmund, “The effect of regular running on body weight and fat tissue of individuals aged 18 to 65,” *J. Physiol. Anthropol.*, vol. 42, Art. no. 28, 2023, doi: 10.1186/s40101-023-00348-x.

[14] S. R. Berliana, "Effects of 12-week Zumba dance training on weight reduction and body fat percentage in overweight women," *J. Exercise Sci. Fitness*, vol. 17, no. 2, pp. 43–50, 2019.

[15] A. Smith, B. Jones, and D. Chen, "Zumba®, fat mass and maximum oxygen consumption: A systematic review and meta-analysis," *Int. J. Environ. Res. Public Health*, vol. 18, no. 1, pp. 105–109, 2021.