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EFFECT OF TWELVE WEEKS JOGGING ON THE BODY COMPOSITION OF USERS OF ERUDITE GYMNASIUM AT OVIA NORTH EAST LOCAL GOVERNMENT AREA, EDO STATE

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ABSTRACT

The purpose of this study was to determine the effect of twelve weeks jogging on the body composition of users of erudite gym in Ovia North East of Edo state. Three research questions were raised in this study and three corresponding hypotheses were formulated and tested at 0.05 level of significant. The pretest-post-test control group experimental design was adopted in this study. The population of the study comprised all the 125 users of erudite gym in Ovia North East. The sample size of this study was made of 32 users of erudite gym. The multistage sampling procedure was used to select the subjects. The instrument for the test includes a stadiometer and Omron fat monitor. Data collected was analysed using Analysis of Co-variance (ANCOVA). The findings of the study revealed that there is a significant difference in the body weight of participants after twelve weeks jogging. It was therefore concluded that there was a significant difference in the body mass index of the participants following 12 weeks jogging programme. It is recommended among others that regular jogging should be part of our daily routine.

Keywords: Jogging, Body Composition, Percentage Body-Fat, Body Mass Index, Body Weight

INTRODUCTION

Engaging in physical activities is beneficial for both the anatomical and physiological components of human bodies. Physical activity can be categorized as bodily movement produced by skeletal muscles (either categorized as occupational, sports, conditioning, household, or other activities) that consume energy which can be measured in kilocalories (WHO, 2025). Participants in regular physical activities promotes physical, psychological and cognitive health(Lubans et al, 2022). Exercise is defined as the training of the body to improve its function and enhance its fitness. It is a structured activity specifically planned to develop and maintain physical fitness(Steven et al., 2025). Subsequently, physical fitness is defined as a set of attributes that are either health-or skill-related which can be measured with specific tests.

Jogging is seen as a subset of programmed and repetitive physical activity that has a final goal to improve physical fitness. Jogging with it strong mass base in the current era of national fitness, offers several advantages such as easy, popular, low cost, suitable for many circumstances and significant cost benefits(Yuxuan etal. 2025). According to Liang et al. (2020) jogging has significant effects on reducing body weight and play a positive role in improving and maintaining body shape and self-esteem. According to the National Library of Medicine (2025) physical fitness is one pathway toward resilience because regular exercise and/or physical activity induce positive physiologic and psychological benefits, protects against the potential consequences of stressful events, and prevents many chronic diseases.

Physical fitness depicts one's temporary physical quality after doing programmed exercise. Aitermann and Gropel (2024) described physical fitness is as a set of attributes to perform physical activities that require speed, endurance, strength, coordination and flexibility or can be seen as ability to carry out daily activities efficiently without undue fatigue and still enjoy one's spare times. Everybody dreams of having a healthy and fit body that they assume that through sporting activities such as aerobics, they will manage to fulfil the dream. People's awareness to improve health and fitness is growing better nowadays. Such improvement in health and fitness level will benefit people in daily activities that no matter what the activities are, they will manage to do it well. In fact, Da Silver, et al (2019) stated that there is a linear relation between physical activity and health status, such that a further increase in physical activity and fitness will lead to additional improvements in health status. Recently, people in societies have begun to be aware to improve their physical fitness, as can be seen from the many sporting activities that people are now likely to participate, such as aerobic on the weekends, cycling, green walk, marathon, jogging and so on. This could have something to do with the growing concerns of major public health for teenagers and young adults today and in the future which is the combination of increasing body fatness together with decreasing physical fitness.

Exercise can improve insulin sensitivity, alleviate plasma dyslipidemia, normalize plasma dyslipidemia, normalize elevated blood sugar, decrease blood viscosity, promote endothelial nitric oxide production and improves leptin sensitivity to protect the heart and vessels (Danyang & Jinqi, 2019). Regular physical activity and health related physical fitness are key indicators of health outcome. Jogging helps in the maintenance of an ideal body weight, reduces the risk of developing diabetes, hypertension and cardiovascular diseases as well improvement in emotions and self-control (Chen et al, 2018). More so,

improvement in health-related physical fitness such as cardiovascular endurance, flexibility, body composition, muscular strength and endurance are geared towards health improvement. For instance, a healthy level of cardiovascular endurance is positively associated with a healthier heart profile for adult and children. Furthermore, a healthier cardiopulmonary endurance level have a lower level of abnormal adiposity. Additionally, improvement in muscular strength, endurance and flexibility had a more positive effect on skeletal health. Maintaining and enhancing physical fitness is a cornerstone for establishing a physically active lifestyle. Evidence abound that jogging activity improves cardiopulmonary fitness, cognitive function both in young and older adults as noticed in cognitive speed, motor function, visual attention as well as auditory (Agus & Sari, 2019).

A study carried out by Deny (2017) compared the effects of jogging and interval training method on physical fitness and discovered that extensive interval method had better effects on physical fitness. However, jogging could improve physical fitness. Jogging itself has many undebatable benefits as a form of physical exercise. Agus and Sari (2019) suggested that jogging exercise could be effective in improving depressive state, hormonal response to stress and physiological fitness of adolescent females with depressive symptoms. Sriyono et al (2023) opined jogging activities can burn calories and reduce body fat, so that it can increase the metabolic ability of cells to absorb and store glucose. Burning calories and absorbing good glucose levels in the body can reduce the risk of cholesterol and diabetes. Cox (2017) also stated that jogging is one of the most appropriate strategies for body weight loss. Regular jogging is a variable and manageable parameter making it a fundamental requirement for maintaining ideal body weight and muscle mass parameter. The quality of muscle mass of an individual enables the person to involve in an exercise programme even when the individual has grown old (Cox, 2017). Therefore, regular jogging is considered

a preventative factor of many chronic noninfectious diseases such as cardiovascular diseases, cancer, type 2 diabetes, bone health degradation and increased disability.

Despite the benefits of jogging to human being, Agus and Sari (2019) found that only 30 percent of secondary students involve in regular physical fitness programme while 20 percent engage in moderate regular exercises. Furthermore, almost half of all college students report a decrease in physical activity following graduation. A test conducted to test physical fitness of all students in Sports Science Department of Universitas Negeri Padang who took Sports Fitness course in the first semester of 2016/2017 academic year. It was discovered that over 60 percent of the students lack physical activity. The finding of the test and the outcome of the survey in 2016 revealed that jogging activity is effective for the improvement of physical activity. Participating in physical activities will improve the body composition of athletes and non-athletes.

Jogging causes physiological changes that include body fat, body mass index, visceral fat as well as body fat. These parameters together with increased body mass are some of the risk factor of several noninfectious diseases. However, changes in body composition can be influenced by regular physical activity. Jogging is a suitable, accessible and most effective physical activity cultivating people. Jogging can substantially improve body composition. Body composition is the percentage of fat in human bodies. Non-fat component referred to as Fat free mass (FFM) and it exists primarily as the chief structural and functional component of the human body (Oriakhi & Ejuvwevwo, 2023). Lean body mass, also known as the fat free mass compartment, consist of water 72%, protein 21% and bone minerals 7% . The same authority further maintained that the fat compartment of the body is termed Fat Mass (FM) and it varies considerably between individuals in terms of absolute amount. The purpose of this study was to find out the intricate relationship between jogging and body composition.

Statement of the Problem

Common to all aerobic activities is the involvement of the cardiovascular system. Jogging is an aerobic activity that can improve cardiovascular fitness, agility, as well as increase balance, muscular strength and endurance. It modifies and strengthens body composition. Despite the usefulness and the cost effectiveness of jogging and the activity therefrom, athletes and non-athletes alike pay little or no attention to its use to improve body composition. Attention of the assessment of aerobic power or cardiovascular fitness has been directed to more sophisticated devices involving bicycle ergometer, stepper, and other sports equipment with the neglect of a simple exercise activity such as jogging. However, this study intends to provide useful insights to adults to make choices and maintain healthy physical activities, which may also have positive significance for the promotion of public physical fitness and health. Hence the need for this study.

Objectives of the Study

The objectives of this study was to:

1. determine the effects of twelve weeks jogging on the body weight of users of erudite gym.
2. ascertain he effect of twelve weeks jogging on the body fat of users of erudite gym
3. determine the effect of twelve weeks jogging on the Body Mass Index of users of erudite gym

Research Questions

The following research questions were raised to guide the study:

1. Will there be any difference in the body weight of users of erudite gym after twelve weeks jogging programme
2. Will there be any difference in the body fat of users of erudite gym after twelve weeks jogging programme
3. Will there be any difference in the Body Mass Index of users of erudite gym after twelve weeks jogging programme.

Null Hypotheses

The following hypotheses were formulated and tested at 0.05 significant level:

- HO₁: There is no significant difference in the body weight of users of erudite gym after twelve weeks jogging programme
- HO₂: There is no significant difference in the percentage body fat of users of erudite gym after twelve weeks jogging programme
- HO₃: There is no significant difference in the Body Mass Index of users of erudite gym after twelve weeks jogging programme.

METHODOLOGY

The pretest-post-test control group experimental design was adopted in this study. The 125 users of erudite gym in Ovia North East constituted the population of this study. However, 48 met the inclusion criteria. The exclusion criteria of the subject included those with heart disease, respiratory disease, metabolic condition, cigarettes smokers and musculoskeletal disorders and users of erudite gym for over 2 months. The inclusion criteria included users of the gym within one month and those who do not possess any of the conditions listed in the exclusion criteria. The sample size made up of 32 users of erudite gym. The multistage sampling procedure was used to select the subjects. First, a simple random sampling technique was used to select the subject, this means that each member of the population is given a number that is written on pieces of paper. The pieces of paper were then put in a bag from where one piece is picked at a time, the piece picked is recorded. This process is repeated until the desired sample is obtained.

Secondly, systematic random sampling technique was used to place the subjects in control and experimental groups. The subjects was serialized from 1-32. All the odd number selected were assigned to the control group while the even number were assigned to the experimental group. The control group did not participate in the jogging programme. Meanwhile, both the control and experimental were given pretest and posttest. It's only the experimental group that was involved in the jogging activities. The recommended

protocol which was an adapted Gary and American College of Sports Medicine (2021) was used to obtain height and weight, waist and hip circumference. Height was measured using a stadiometer. Height was recorded to the nearest of 0.5cm. Omron fat monitor was used to electronically assess body weight, body fat and BMI which would automatically appear in the monitor's screen when the subjects mounted it. Jogging was an intervention that was used for this programme.

The treadmill was the device or the jogging equipment for the subjects. The jogging programme lasted for twelve weeks, first the subjects started with a mild jogging of 30-40 meters for the first week, that was performed three times in a week. The duration of the activity was 30 to 35minutes of mild, moderate to vigorous jogging activity, based on how the treadmill was programmed. The target of the jogging programme was to achieve a distance of 4800 meters. Week two, the jogging progress further, higher distant was achieved, until the subjects were able to meet the desired target, within the twelve weeks programme. The instrument for the test included a stadiometer and Omron fat monitor were all standardized instrument. Stadiometer was the instrument for measurement of the subjects' height. Each participant was asked to remove his or her shoes in order to obtain measurement. The participants stood with their feet flat on the base plate together and their heels firmly against the back of the plate or rod. The arms of the subject hung loosely by the sides and facing forward. The head plate was placed on the participant's head and measurement was taken. The Omron fat monitor was used to collect data on each participant's body weight, body fat and BMI. The participant fed his/her age, sex and height to the electronic machine, stand on the machine without shoe or phone with feet shoulder width apart, within a minute, the machine displayed body weight, body fat and BMI on the screen which was recorded. Data collected was analysed using the statistical package for social science (version 21) for ANCOVA.

RESULTS

Table 1: Analysis of Co-variance showing Difference in the Body Weight of Participants.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	3362.481 ^a	2	1681.240	8.713	.001
Intercept	1793.319	1	1793.319	9.293	.005
Preweight	1732.276	1	1732.276	8.977	.006
Groups	1262.167	1	1261.167	6.541	.016
Error	5596.034	29	92.967		
Total	192879.640	32			
Corrected Total	8956.515	31			

a. R Squared = .375 (Adjusted R Squared = .332)

Results from Table 1 revealed that the F-value is 6.541 and the alpha level is .016, which is less than the 0.05 level of significant. As a result, the hypothesis which states that there is no significant difference in the body weight of Users of Erudite Gym prior to and following 12 weeks jogging programme was rejected.

Table 2: Analysis of Co-variance Showing Difference in Body Fat of Participants

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2211.596 ^a	2	1105.798	8.501	.001
Intercept	1161.451	1	1161.451	8.929	.006
Preweight	615.471	1	615.471	4.732	.038
Groups	1017.595	1	1017.595	7.823	.009
Error	3772.119	29	130.073		
Total	30029.960	32			
Corrected Total	5983.715	31			

a. R Squared = .370 (Adjusted R Squared = .326)

Results from Table 2 revealed that the F-value is 7.823 and the alpha level is .009 which is less than the 0.05 level of significance. As a result, the hypotheses which state that there is no significant difference in the body fat of Users of Erudite Gym prior to and following 12 weeks jogging programme was rejected.

Table 3: Analysis of Co-variance Showing Difference in Body Mass Index of Participants

Source	Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1573.565 ^a	2	786.782	21.692	.000
Intercept	267.573	1	267.573	7.377	.011
Prebmi	373.065	1	373.065	10.286	.003
Groups	568.739	1	568.739	15.681	.000
Error	1051.824	29	36.270		
Total	26792.400	32			
Corrected Total	2625.389	31			

a. R Squared = .599 (Adjusted R Squared = .572)

Results from Table 3 revealed that the F-value is 15.681 and the alpha level is .000 which is less than the 0.05 level of significant. As a result, the hypotheses which state that there is no significant difference in the body mass index of Users of Erudite Gym prior to and following 12 weeks jogging programme was rejected.

DISCUSSION

The result of the analysis of Co-variance led to the rejection of the null hypotheses in Table 1. It follows that there was a significant variation in the effect of 12 weeks jogging on the body weight of Users of Erudite Gym. It shows that the jogging training programme had effects on the participants. This study aligns with the findings of Cox (2017) jogging seems to be one of the most appropriate strategies for body weight loss. Jogging has proven to burn calories in the body. One sport that is easy to do to lose weight is jogging. Everyone of all ages can jog, so jogging is the sport's most often done by people. More so, regular jogging is a variable and manageable parameter making it a fundamental requirement for maintaining ideal body weight and muscle mass parameter. An adequate volume and quality of muscle mass empower individuals to engage in physical activities even at an older age. Therefore, regular jogging is considered a preventative factor of many chronic noninfectious diseases such as cardiovascular diseases, cancer, type 2 diabetes, bone health degradation and increased disability.

The result of the analysis of Co-variance led to the rejection of the null hypotheses in Table 2. It follows that there was significant changes in the effect of 12 weeks jogging on the percentage body fat of Users of Erudite Gym. It shows that the training programme jogging had effects on the participants' percentage of

body fat. This study agreed with the findings of Sriyono et al (2023) jogging activities reduce body fat and can as well burn calories, as a result increases metabolic ability of cells to absorb and store glucose. Burning calories and absorbing good glucose levels in the body can reduce the risk of cholesterol and diabetes.

The result of the analysis of Co-variance led to the rejection of the null hypotheses in Table 3. It follows that there was a significant difference on the effect of 12 weeks jogging on the BMI of Users of Erudite Gym It shows that the training programme jogging had effects on the participants' body mass index. This study agreed with Lindman et al (2024) a high BMI is considered a likelihood for several health issues including metabolic syndrome, cardiovascular health and cancer, jogging has been shown to reduce the risk regardless of BMI. More so, there are several positive effects for jogging with a high BMI, both its direct effects on health benefit.

CONCLUSION

Based on the findings of this study, it was concluded that there was a variations in the BMI of the participants following 12 weeks jogging programme with a significant effect on the body weight of participants also. The implication of this is that jogging as an exercise is capable of altering body composition, that will lead to ideal body weight, BMI and body fat. Also, jogging can impact on the body composition by helping to reduce fat, potentially increase lean mass and improve overall body fat percentage, which can lead to efficient metabolism and help to maintain a healthy weight.

RECOMMENDATIONS

Based on the outcome of the findings and conclusion made, it was recommended that|:

1. A day should be set outside which will be called jogging day, this will help to raise people consciousness.
2. Regular jogging should be part of our daily routine.
3. Exercise experts, such as exercise physiologist should design exercise plan that is right for fitness level and lifestyle.

4. Edo state government and other spirited individuals should build designated center for jogging and other allied exercise activities in various communities.

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