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# Effect of Physical Exercise on Weight Reduction of Students

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## ABSTRACT

This study investigated the effect of physical exercise on weight reduction among students at Kwara State University, Nigeria. A pre-test, post-test control quasi-experimental research design was adopted for the study. A convenience sampling technique was used to select 20 participants University assigned to two groups: an experimental group and a control group. Two hypotheses were stated and tested at a 0.05 level of significance. The participants' weight measurements were taken at the beginning and end of the study using a weight measurement machine. Data gathered were analyzed through Analysis of Covariance (ANCOVA). The study's findings revealed that there was a significant main effect of physical exercise on the weight reduction of students and no significant interaction effect of gender and physical exercise on weight reduction of students. it was concluded that physical exercise has a positive effect on weight reduction of students, therefore it was recommended that University management should have an exercise course that will be compulsory for students to take.



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## 1. INTRODUCTION

Physical exercise has long been recognized as a key component of weight management, the prevalence of overweight and obesity among students has become a significant public health concern worldwide. In recent decades, there has been a noticeable increase in the number of students who are overweight or obese, which has far-reaching implications for their physical health, psychological well-being, and academic performance (Tremblay *et al*., 2016). The transition to College or University often coincides with significant lifestyle changes for students, including a shift in dietary habits, decreased physical activity, and increased sedentary behaviors. These changes, coupled with academic pressures, can contribute to weight gain and an unhealthy body mass index (BMI) (Deliens *et al*., 2018; Laska *et al*., 2019). Therefore, they gain excess weight and do not have time in participating in physical exercise because of the workload in the University.

Physical activity is any movement of the body carried out by the skeletal muscles which can produce energy expenditure which is expressed in units of kilo calories. Physical activity is a means of channeling excess energy and burning excess fat in the body to prevent obesity. The intervention has an important role in preventing obesity if the focus is on physical activity. Exercise that is done in an appropriate and regular way can help you lose weight. The recommended sport is aerobic exercise, namely sports that use oxygen in the energy formation system. The type of exercise that is intended is an exercise that is not too strenuous but is done in more than 15 minutes. Examples of sports that are recommended include walking for 20-30 minute.

Excess weight and obesity in students are associated with a range of health problems, such as cardiovascular diseases, type 2 diabetes, musculoskeletal disorders, and psychological issues like low self-esteem and depression (Gutin *et al*., 2015; Huang *et al*., 2019). Physical exercise has long been recognized as a crucial component of a healthy lifestyle, and its benefits extend beyond cardiovascular fitness and muscle strength. Regular exercise can help in weight management, reduce the risk of chronic diseases, improve mental health, and enhance overall well-being (Biddle *et al*., 2019; see https://www.who.int/news-room/fact-sheets/detail/physical-activity).

Despite these known benefits, many students lead sedentary lives, lacking adequate physical activity, while some have irregular exercise due to many reasons known to students. Understanding the effects of physical exercise on weight reduction among students is essential for developing effective interventions and promoting healthy behaviors. Numerous studies have examined the impact of exercise interventions on weight reduction in different populations, including students. These studies have investigated various exercise modalities, such as aerobic exercise, resistance training, high-intensity interval training (HIIT), and combined exercise programs (Costigan *et al*., 2015; Martínez-Vizcaíno *et al*., 2020).

Furthermore, Milanović *et al*. (2012) examined effect of physical exercise and diet in weight reduction of obese. The study included middle-aged people between 40 and 64 year and that they were over-weight (BMI> 25 kg/m2) or obese (BMI> 30 kg/m2), results showed that the combination of exercise (either aerobic or resistance training) and diet has shown the best results in the reduction of body weight. significant differences ($p < 0.01$). Conclusion moderate physical activity for middle aged people (40-64 year) in combination with reduced calorie intake has positive impact on body fat and body weight reduction. While some studies have shown positive effects of exercise on weight reduction and motor skills acquisition among students, in a study conducted by Adesokan (2022) on the effect of physical exercise on the motor skills acquisition among pupils with intellectual disability, it was revealed that physical

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exercise had significant main effect on motor skills acquisition among pupils with intellectual disability (P<0.05), There is still a need to comprehensively review the existing literature to gain a better understanding of the overall efficacy of exercise interventions.

Adeogun *et al*. (2018) worked on effects of 8-week aerobics exercises on selected performance related physical fitness components of children with autism spectrum disorders, two group pre-test posttest experimental design was adopted for the study. The population for the study consists of Sixty–four children diagnosed with autism spectrum disorders attending National Orthopedic Hospital Special School, Igbodi, Lagos between the ages of 2-20 years. The participants for this study were forty children selected from the population which the severities are mild. The simple random sampling technique was used to select the sample. Findings from the study revealed that 8-week aerobics exercises have effects on static balance, bilateral coordination, weight watch and reaction time of children with autism; this implies exercise reduces wight of the participants.

Similarly, Kostić *et al.* (2006) found that dance aerobic training provides sufficient cardiorespiratory demand to promote weight loss in female. Based on the above, the study therefore, examined the effect of physical exercise on weight reduction of students at Kwara State University, Malete Nigeria. It is believed that the findings of this study would inform educators, healthcare professionals, school management and policymakers in developing evidence-based treatment and promoting physical activity to combat overweight and obesity among students, ultimately improving their overall health and well-being.

The prevalence of overweight and obesity among students has become a global concern, with significant implications for their overall health and well-being. The transition to college or university often leads to lifestyle changes characterized by decreased physical activity and increased sedentary behaviors, contributing to weight gain and an unhealthy body mass index (BMI). While physical exercise is known to be beneficial for weight reduction, the effectiveness of exercise interventions specifically targeting students and the factors that influence their outcomes remain unclear.

The literature reviewed by researchers shows that numerous researchers have researched the effect of physical exercise on the weight reduction of students. None of these researchers have considered students at Kwara State University, Nigeria. This is the gap this study wants to fill. Therefore, the study intended to examine the effect of physical exercise on weight reduction of students at Kwara State University, Nigeria. Hypotheses are the following:

(i) Ho1: There is no significant main effect of physical exercise on weight reduction among students at Kwara State University, Nigeria.
(ii) Ho2: There is no significant interaction effect of physical exercise and gender on weight reduction of students in Kwara State University, Nigeria.

## 2. METHODS

A pretest-posttest control group experimental research design was adopted to find out if the independent variable (physical exercise) has an effect over the dependent variable (weight reduction). A total of 20 students with excess weight were sampled for the study using the convenience sampling technique. Participants were randomly assigned to two groups: the treatment group (N=10) and the control group (N=10). The treatment group underwent a 5-week exercise program, consisting of three ten-minute sessions per week. The program included a combination of physical exercises on the treadmill and bicycle ergometer. The control group did not receive any specific treatment and continued with their regular activities. Participants' weight was measured and recorded before the treatment and after

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the treatment. The treatment lasted for 5-weeks. The data gathered were analyzed using Analysis of variance (ANCOVA).

## 3. RESULTS AND DISCUSSION

### 3.1. Hypothesis 1: There is No Significant Main Effect of Physical Exercise on Weight Reduction of Students at Kwara State University Nigeria

**Table 1** shows the effect of physical exercise on students' weight reduction. There was a significant main effect of physical exercise on weight reduction of students ($F_{(1,19)} = 3.908$; $P < 0.05$). Therefore, the hypothesis is rejected in light of the result since the significant value is less than 0.05. This implies that there was a significant difference in the weight of participants exposed to physical exercise.

**Table 1.** Summary of analysis of variance (ANCOVA) of the main effect of physical exercise on weight reduction of students at Kwara State University, Nigeria.

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 919.400[a] | 3 | 306.467 | 3.908 | 0.029 |
| Intercept | 48609.800 | 1 | 48609.800 | 619.825 | 0.000 |
| Treatment | 583.200 | 1 | 583.200 | 7.436 | 0.015 |
| Gender | 320.000 | 1 | 320.000 | 4.080 | 0.060 |
| Treatment * gender | 16.200 | 1 | 16.200 | 0.207 | 0.656 |
| Error | 1254.800 | 16 | 78.425 | | |
| Total | 50784.000 | 20 | | | |
| Corrected Total | 2174.200 | 19 | | | |

Note: R Squared = 0.423 (Adjusted R Squared = 0.315)

### 3.2. Hypothesis 2: There is No Significant Interaction Effect of Gender and Physical Exercise on Weight Reduction of Students.

**Table 1** also showed the interaction effect of gender and physical exercise on weight reduction of students. There was no significant interaction effect of gender and physical exercise on weight ($F_{(2,17)} = 0.207$; $P < 0.05$). The hypothesis is therefore not rejected in the light of the result since the significant value (0.16) is greater than 0.05 which means there is no significant interactive effect of gender and physical exercise on weight reduction of students.

The findings of this study revealed that there was a significant main effect of physical exercise on weight reduction of students, the reason being that students showed great interest and active participation in physical exercise. This finding is in line with Milanović *et al.* (2012) who found that physical exercise has a significant main effect on weight reduction. Similarly, Adeogun *et al*. (2018) revealed that 8-week aerobics exercises have effects on static balance, bilateral coordination, weight watch, and reaction time of children with autism; this implies exercise reduces the weight of the participants.

The second finding of the study showed that there was no significant interaction effect of gender and physical exercise on weight, the reason for this that could be that both male and female students have the same interest and dedication. This finding is in line with the findings of Woźniak *et al*. (2022) found that no differences in weight loss between men and women expressed in kilograms. However, women reduced weight more than men when the amount of reduction was assessed in relative terms (percentages).

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## 4. CONCLUSION

In conclusion, the evidence overwhelmingly supports the positive effect of exercise on weight reduction among students. Numerous studies have demonstrated that regular physical activity plays a crucial role in helping students achieve and maintain a healthy weight. By engaging in various forms of exercise, such as aerobic activities, strength training, and sports, students can burn calories, increase their metabolic rate, and improve their body composition. The studies explored in this analysis consistently demonstrate that students who incorporate exercise into their daily routines experience greater success in losing excess weight and maintaining a healthy body mass. Educational institutions and policymakers should recognize the significance of incorporating physical activity into the daily lives of students. By promoting physical education programs, active recreational opportunities, and a supportive environment for exercise, schools can play a pivotal role in fostering healthy habits that extend beyond the school years. In conclusion, exercise remains a potent tool for weight reduction among students, enhancing their overall health and well-being. By encouraging regular physical activity and fostering a culture of wellness, we can empower the younger generation to lead healthier lives and build a foundation for a more robust and happier future. The study recommended that University management should have an exercise course that will be compulsory for students to take, and students should be encouraged to do physical exercise more often every week.

## 5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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