

EFFECT OF ZUMBA ON BODY MASS INDEX OF OBESE SCHOOL STUDENTS

by

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ABSTRACT

The present study aimed to investigate the effect of Zumba on the Body Mass Index (BMI) of obese school students. The study included 30 school students aged 13–16 years from PM SHRI KGBV (Kasturba Gandhi Balika Vidyalaya), Senha, Lohardaga, Jharkhand. A pre-test and post-test approach was used to assess changes in BMI following the Zumba programme. BMI values were recorded before and after the intervention. Descriptive statistics and a paired-samples t-test were used to analyse the data at the 0.05 level of significance. The mean BMI decreased from 30.83 ± 0.23 in the pre-test to 29.53 ± 0.30 in the post-test, representing a mean reduction of 1.30 BMI units. The paired-samples t-test revealed a statistically significant difference between pre-test and post-test scores ($t = 40.42$, $df = 29$, p less than .001). The findings indicate a significant reduction in BMI following the intervention. The results suggest that Zumba may be a useful physical activity approach for managing BMI among obese school students, although the absence of a control group and information about the intervention duration limits causal interpretation.

Keywords: Zumba exercise, Body Mass Index, obese school students, pre-test, post-test, physical activity.

1. INTRODUCTION

Childhood and adolescent obesity have become important public health concerns because excess body weight may affect physical fitness, metabolic health, and overall well-being. Regular physical activity is an important component of weight management and healthy development among school students. Dance-based fitness activities, including Zumba, combine rhythmic movements with aerobic exercise and may encourage participation through music and varied movement patterns. Such activities may increase energy expenditure and contribute to improvements in body composition when combined with appropriate dietary habits and regular physical activity.

Body Mass Index (BMI) is commonly used to assess body weight relative to height and is calculated by dividing body mass in kilograms by height in metres squared. Although BMI is a useful screening measure, its interpretation among children and adolescents should consider age and sex-specific BMI-for-age references. Therefore, the present study examined pre-test and post-test BMI values among obese school students to determine whether a reduction occurred following the exercise intervention.

2. REVIEW OF RELATED LITERATURE

Cho et al. (2017) investigated the effects of an eight-week Zumba Fitness programme on health-related physical fitness and obesity-related factors among obese female middle-school students. Their research is relevant to the present study because it focused on Zumba exercise and obesity-related outcomes in school-age participants. **Chavarrias et al. (2021)** conducted a systematic review and meta-analysis examining the effects of Zumba on fat mass and maximum oxygen consumption, providing broader evidence regarding its potential role in physical fitness and body composition. **Febin (2016)** examined aerobic exercise and weight training in relation to selected physiological and anthropometric variables among obese school students. Collectively, these studies provide a rationale for examining exercise-based approaches to obesity management. However, their findings should not be assumed to establish the effectiveness of the specific programme used in the present study.

3. METHODOLOGY

3.1 Research design

The study employed a single-group pre-test and post-test research design to examine changes in Body Mass Index (BMI) among obese school students following a Zumba intervention. In this design, the same group of participants was assessed before and after the intervention to determine whether any measurable changes occurred in the selected variable. A total of 30 school students aged 13–16 years from PM SHRI KGBV (Kasturba Gandhi Balika Vidyalaya), Senha, Lohardaga, Jharkhand, participated in the study. Initially, the pre-test BMI values of all participants were recorded to establish their baseline status. Subsequently, the participants underwent the planned Zumba exercise programme, after which their BMI values were recorded again during the post-test assessment. The pre-test and post-test measurements were compared to determine the direction and magnitude of changes in BMI. Descriptive statistics, including the mean and standard deviation, were calculated to summarise the data, while a paired-samples t-test was used to examine whether the difference between the two sets of measurements was statistically significant at the 0.05 level. This design enabled the researcher to evaluate changes within the same participants while controlling for individual differences that might influence comparisons between separate groups. However, because the study did not include a control group, the findings should be interpreted cautiously, as factors other than the Zumba intervention may also have contributed to the observed changes.

3.2 Participants

The sample consisted of 30 school female students aged 13–16 years from PM SHRI KGBV (Kasturba Gandhi Balika Vidyalaya), Senha, Lohardaga, Jharkhand.

3.3 Statistical analysis

Mean and standard deviation were calculated for pre-test and post-test BMI values. A paired-samples t-test was applied to examine the difference between the two measurements. The level of significance was set at $(p < .05)$. The analysis was conducted using the participant-level paired data supplied for the study.

4. RESULTS AND ANALYSIS

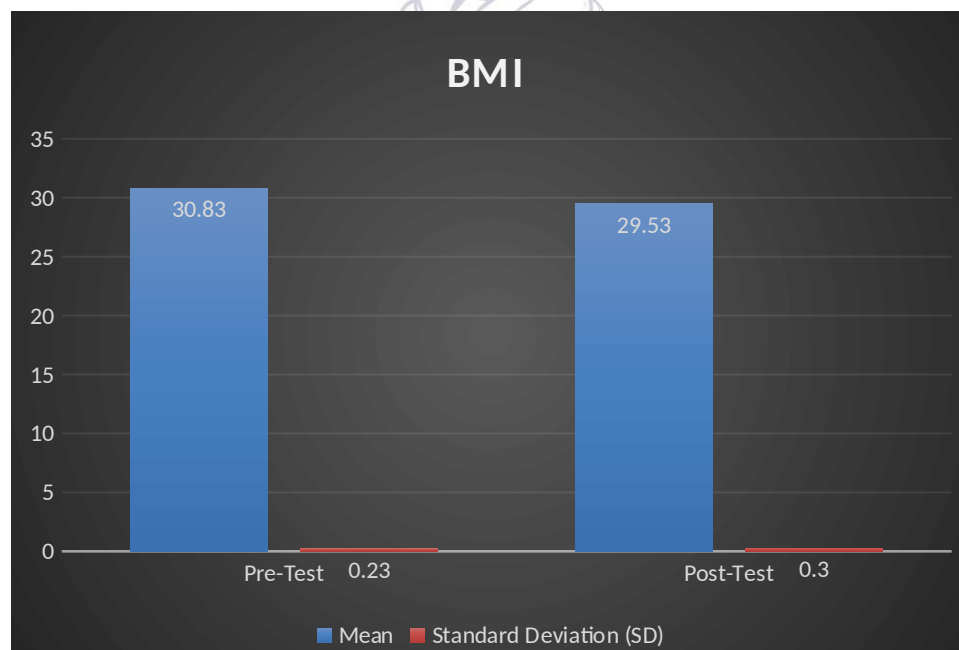
Table 1.

Descriptive Statistics and Paired-Samples t-Test Analysis of BMI Scores at Pre-Test and Post-Test

Statistical Measure	Pre-Test	Post-Test	MD	SE of Difference	df	Calculated t	tabulated t
Mean	30.83	29.53	1.30	0.032	29	40.42	2.045
Standard Deviation (SD)	0.23	0.30					

Interpretation: The results indicate that the mean BMI decreased from 30.83 in the pre-test to 29.53 in the post-test. The mean reduction was 1.30 BMI units, equivalent to approximately 4.22% of the pre-test mean. The calculated t-value of 40.42 was greater than the critical t-value of 2.045 at the 0.05 significance level, with 29 degrees of freedom. Therefore, the null hypothesis of no difference between the pre-test and post-test BMI means was rejected. The findings demonstrate a statistically significant decrease in BMI scores between the two measurements. However, statistical significance alone does not establish that Zumba was the sole cause of the observed reduction.

GRAPH NO. 1



5. DISCUSSION

The findings revealed a significant decrease in BMI among the 30 school students between the pre-test and post-test assessments. The mean BMI declined from 30.83 to 29.53, indicating a reduction of 1.30 BMI units. This result is consistent with the general rationale for investigating dance-based aerobic exercise as a strategy for supporting weight management. **Cho et al. (2017)** studied Zumba Fitness among obese female middle-school students, while **Chavarrias et al. (2021)** reviewed evidence concerning Zumba, fat mass, and maximum oxygen consumption. These studies provide relevant context for interpreting the present findings. Nevertheless, the present dataset does not include a control group, dietary information, body-weight and height measurements at both assessments, or details of the exercise programme. Consequently, the observed reduction should be interpreted as a change associated with the study period rather than definitive evidence of a causal effect of Zumba.

6. LIMITATIONS OF THE STUDY

The study had certain limitations that should be considered while interpreting the findings. First, the sample was limited to 30 students aged 13–16 years from a single school, PM SHRI KGBV, Senha, Lohardaga, Jharkhand, which may restrict the generalisability of the results to other populations. Second, the study employed a single-group pre-test and post-test design without a control group, making it difficult to attribute the observed changes in BMI exclusively to the Zumba exercise intervention. Third, dietary habits and participation in other physical activities were not systematically controlled, and these factors may have influenced the results. Finally, BMI was the only outcome measure used in the study; it does not directly measure body fat percentage or body composition. Therefore, age- and sex-specific BMI-for-age references should be considered when interpreting BMI among adolescents.

7. CONCLUSION

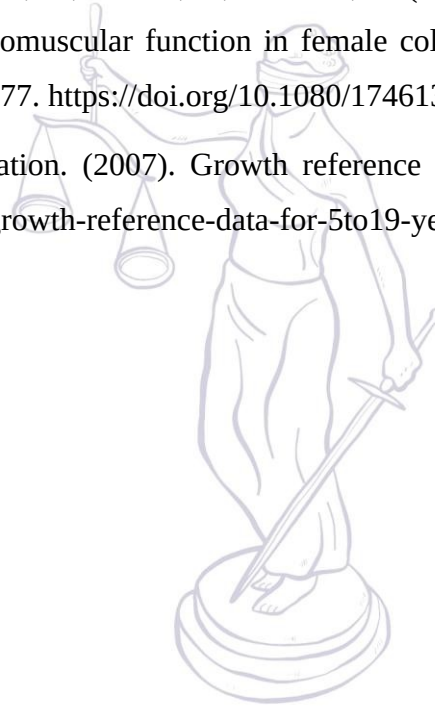
The study found a statistically significant reduction in the mean BMI of obese school students from 30.83 at pre-test to 29.53 at post-test. The paired-samples t-test confirmed a significant difference between the two measurements. These findings support further investigation of Zumba as a possible component of school-based physical activity and weight-management programmes. Future studies should include a control group, a clearly documented intervention protocol, and

age- and sex-adjusted BMI-for-age assessment to establish the effectiveness of the intervention more rigorously.

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