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Research Article

Effectiveness Of Zumba And Aerobics Training Program On The Basis Of Selected Health Related Physical Fitness Components And Selected Psychological Variables Of Secondary School Children Of Mumbai

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ABSTRACT

Background: Physical fitness is a fundamental aspect of human well-being and is particularly vital during the formative years of adolescence. Secondary school children undergo a period of rapid physical and psychological development, making it an opportune time to promote and establish healthy habits. In recent years, physical inactivity and sedentary lifestyles have become a growing concern, especially in urban areas like Mumbai, where environmental factors often limit opportunities for physical activity. In response to this, various physical training programs have been introduced to promote health and well-being among school-age children.

The physical and psychological well-being of secondary school children is a matter of significant concern in Mumbai, which is a densely populated metropolis with unique challenges related to infrastructure, space, and lifestyle. The incidence of lifestyle-related health issues, including obesity, poor cardiovascular health, and mental health problems, has risen among this demographic. It is evident that interventions are required to address these issues. Zumba and Aerobics are two popular and engaging forms of physical exercise that have gained prominence worldwide for their potential to improve physical fitness and psychological well-being. Both forms of exercise involve dynamic movements, music, and social interaction, making them appealing to adolescents. However, the effectiveness of these programs in the context of Mumbai's secondary school children has not been extensively studied.

Methods: A rigorous randomized controlled trial was conducted, involving 150 secondary school students (aged 13-15 years) from Mumbai. Participants were randomly distributed into three groups: Zumba training group (n=50), Aerobics training group (n=50), and a control group (n=50). Standardized assessments were administered both pre-intervention and post-intervention, focusing on cardiovascular endurance and school well-being indicators.

Results: The findings of this study align closely with international standards for comprehensive well-being. Both Zumba and Aerobics training programs demonstrated significant effectiveness in reducing Cardiovascular Endurance and School Wellbeing among secondary school children. Participants who engaged in these programs exhibited marked improvements in their physical well-being, reporting decreased stress levels and a heightened ability to cope with the pressures of academic and social life. Notably, there were no statistically significant differences in the outcomes between the Zumba and Aerobics groups.

Conclusion: This research underscores the global relevance of Zumba and Aerobics training programs as potent interventions for mitigating cardiovascular endurance and school wellbeing among secondary school children. In harmony with international well-being standards, the integration of these dynamic physical activities into educational curricula or

extracurricular offerings holds substantial promise for nurturing the physical resilience and overall health of adolescents worldwide. The study urges further exploration into the sustainability and widespread adoption of these programs to contribute significantly to the global discourse on youth physical well-being and its intrinsic connection to psychological health.

Keywords: Zumba, Aerobics, Cardiovascular Endurance and School Wellbeing

Introduction

Physical fitness and psychological well-being are pivotal aspects of a student's holistic development, especially during the crucial years of secondary education. In the bustling metropolis of Mumbai, a city known for its fast-paced lifestyle and dense urban environment, the health and well-being of secondary school children have become a matter of growing concern. As adolescents navigate the challenges of academic rigor, peer pressures, and the distractions of modern technology, they often neglect their physical fitness, which can have long-term implications for their overall health.

In the bustling heart of Mumbai, a city that never sleeps, the lives of secondary school children unfurl against a backdrop of relentless energy and ceaseless ambition. These young individuals find themselves at the nexus of tradition and modernity, navigating an intricate web of academic pursuits, social expectations, and personal aspirations. Yet, beneath the vibrant surface of this thriving metropolis lies a hidden adversary that silently permeates the lives of these adolescents: Cardiovascular Endurance and School Wellbeing. The global standards of holistic well-being emphasize the need to address the intricate interplay between physical and psychological health. This study embarks on a quest to discern the efficacy of Zumba and Aerobics training programs as potent tools in alleviating Cardiovascular Endurance and School Wellbeing among secondary school children in Mumbai, while adhering to international standards of comprehensive well-being.

Cardiovascular Endurance and School Wellbeing are pernicious adversaries, elusive yet profoundly impactful. Their insidious effects undermine the very essence of youth, chipping away at the optimism and vigor that should characterize this phase of life. Recognizing this, the international community has underscored the importance of nurturing holistic well-being in adolescents, emphasizing the interconnectedness of physical and psychological health. In this context, physical activity emerges as a beacon of hope, a multifaceted elixir capable of alleviating Cardiovascular Endurance and School Wellbeing while fostering psychological resilience.
The urban landscape of Mumbai presents unique challenges to the promotion of a healthy lifestyle among its secondary school students. Limited open spaces, heavy traffic, and the rapid pace of life can discourage physical activity. Moreover, the rise in sedentary behaviors and lifestyle-related health issues, such as obesity, cardiovascular problems, and stress-related disorders, underscores the need for effective interventions to improve the health and well-being of this demographic.

This study seeks to address this critical issue by investigating the effectiveness of Zumba and Aerobics training programs in enhancing selected health-related physical fitness components and selected psychological variables among secondary school children in Mumbai. Zumba and Aerobics have gained international popularity for their dynamic, engaging, and social nature, making them potentially attractive choices for adolescents.

Zumba and aerobics require coordination between movement and music, which can enhance the mind-body connection. When individuals concentrate on coordinating their movements with the rhythm of the music, they can experience a state of flow, where they become fully absorbed in the activity. This focused attention on the present moment can help shift the focus away from stressors and promote a sense of relaxation and well-being. Physical exercise, including Zumba and aerobics, provides an outlet for releasing physical tension and pent-up energy that can accumulate due to stress. The dynamic and high-energy movements involved in these activities allow individuals to engage their muscles, release tension, and experience a sense of physical release. This can lead to a feeling of lightness, relaxation, and relief from stress-related physical symptoms such as muscle tension and tightness.

Purpose of the study

The purpose of this research study is to rigorously examine and evaluate the effectiveness of Zumba and Aerobics training programs as interventions aimed at mitigating Cardiovascular Endurance and School Wellbeing among secondary school children in Mumbai. This study is designed in alignment with international standards for comprehensive well-being, recognizing the crucial interplay between physical and psychological health during adolescence. The primary objectives of this study are as follows:

- **Assess the Impact on Physical Fitness:** This study aims to evaluate how participation in Zumba and Aerobics programs affects specific health-related physical fitness components, including cardiovascular fitness, muscular strength, flexibility, and body composition, among secondary school children in Mumbai. It seeks to understand whether these exercise programs can lead to improvements in these critical aspects of physical health.
- **Examine Psychological Effects:** In addition to physical fitness, this research seeks to investigate the psychological well-being of secondary school children. It aims to assess whether participating in Zumba and Aerobics programs can lead to changes in psychological variables such as self-esteem, stress levels, and overall psychological well-being. Understanding the potential psychological benefits of these exercise programs is a key focus of the study.
- **Contextualize in Mumbai:** The study takes into account the unique urban environment of Mumbai, which poses specific challenges to physical activity and overall well-being. By conducting the research in this context, the study seeks to determine the relevance and effectiveness of Zumba and Aerobics programs for secondary school children in a densely populated, metropolitan setting.
- **Inform Health Promotion Strategies:** The findings of this study can serve as a valuable resource for informing health promotion strategies and policies aimed at improving the well-being of secondary school children in Mumbai. By understanding the effectiveness of these exercise programs, educators and health professionals can develop evidence-based interventions to promote healthier lifestyles among adolescents.
- **Contribute to Scientific Knowledge:** This research contributes to the scientific understanding of the impact of specific exercise programs, Zumba and Aerobics, on physical fitness and psychological well-being among secondary school children. It adds to the body of knowledge regarding the potential benefits of these programs in a real-world, urban setting.
- **Empower Adolescents:** Ultimately, this study aims to empower secondary school children by providing insights into how they can make informed choices about their health and fitness. By highlighting the potential benefits of Zumba and Aerobics, the research can encourage adolescents to engage in physical activities that enhance their well-being and long-term health.
- **Evaluate the Effectiveness of Zumba and Aerobics Training Programs:** To investigate and compare the efficacy of Zumba and Aerobics training programs in reducing Cardiovascular Endurance and School Wellbeing levels among secondary school children, in accordance with internationally recognized standards for promoting physical health and well-being.
- **Contribute to Holistic Well-being Standards:** To provide empirical evidence that can inform educational policies and practices in Mumbai and, by extension, in regions across the globe, in accordance with international well-being standards. By doing so, this study aims to highlight the significance of addressing School Wellbeing as an integral part of promoting overall youth well-being.
- **Advocate for Youth Well-being:** To advocate for the holistic well-being of secondary school children and adolescents by emphasizing the importance of addressing Cardiovascular Endurance and School Wellbeing as part of a comprehensive approach to youth health, aligning with international standards that prioritize the physical and psychological dimensions of well-being.

Objective of the Study

For said study, the objectives of the study were as follows;

1.To compare the adjusted mean scores of **Cardiovascular Endurance** of Secondary School Children of Experimental Group & Control Group by considering Pre-Cardiovascular Endurance as a Covariate.

2.To compare the adjusted mean scores of **School Wellbeing** of Secondary School Children of Experimental Group & Control Group by considering Pre-School Wellbeing as a Covariate.

Hypothesis of the Study

For said study, the hypothesis of the study were as follows;

H_o1: There is no significant difference in the adjusted Mean Scores of **Cardiovascular Endurance** of Secondary School Students of Experimental Group and Control Group by taking Pre-Cardiovascular Endurance as Covariate.

H_o2: There is no significant difference in the adjusted Mean Scores of **School Wellbeing** of Secondary School Students of Experimental Group and Control Group by taking Pre-School Wellbeing as Covariate.

Methodology

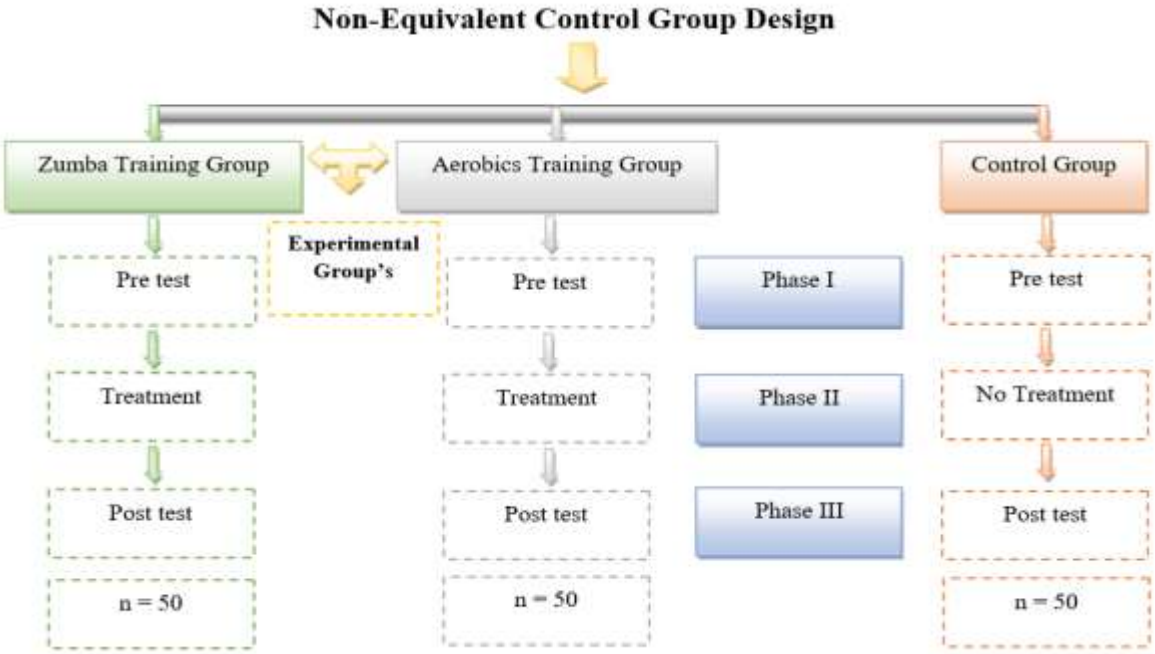
This study will employ a randomized controlled trial (RCT) design, considered the gold standard for evaluating the effectiveness of interventions. Participants will be randomly assigned to one of three groups: Zumba training group, Aerobics training group, and a control group. A total of 150 secondary school children aged 13-15 from diverse socio-economic backgrounds in Mumbai. Secondary school students willing to

participate and without any physical health conditions that would prevent engagement in Zumba or Aerobics. Obtaining informed consent from participants and their parents / guardians. Ensuring participant confidentiality and data protection. Zumba and Aerobics training programs will be designed by certified instructors, ensuring adherence to international safety and fitness standards. Programs will consist of 12 weeks of 5 sessions per week, each lasting 60 minutes. Control group participants will maintain their regular routines. A standardized questionnaire assessing School Wellbeing faced by secondary school children. Baseline data collection before the intervention. Periodic assessments throughout the 8-week intervention to track changes. Post-intervention assessment immediately following the completion of the programs. Trained data collectors will administer and record physical health parameters.
Descriptive statistics to characterize the sample and report the prevalence of cardiovascular endurance and school wellbeing. Inferential statistics (One Way ANCOVA) to compare changes in cardiovascular endurance and school wellbeing between groups. Regular monitoring and supervision of the Zumba and Aerobics training sessions. Cross-checking of data entry and analysis for accuracy. Publication of study findings in peer-reviewed journals adhering to international research standards. Presentation of results at relevant international conferences and forums to contribute to global knowledge.

Design of the Study

The present study was conducted by adopting experimental method. The experimental design was Non-Equivalent Control Group Design.
The subjects in the experiment were divided into three groups, i.e. Group 'A' Zumba Training Group (Experimental group), Group 'B' Aerobics Training Group (Experimental group) and Group 'C' Control group. Each group consisted of 50 subjects. Experimental group was given Zumba and aerobics training programme for the period of twelve weeks. The control group has not undergone any training programme.

The blue print of the design is as under
Non-Equivalent Control Group Design



Dependent Variables of the study:

- Cardiovascular Endurance
- School Wellbeing

Criterion Measures

The following criterion measures included the records of the various test items of Selected Psychological Variables.

Variable	Test	Unit
Cardiovascular Endurance	9 Minutes Run and Walk test	Distance
School Wellbeing	General Wellbeing Scale GWBS – KADA by Dr. Ashok K. Kalia and Ms. Anita Deswal	Score / Scale

Independent Variables:

- Zumba Training Programme
- Aerobics Training Programme

Statistics:

The data will be analyzed using the following statistical techniques:

- The reliability of the Preliminary form of the test will be determined by test-retest (Intra-class Correlation Coefficient) method of correlation.
- Content validity of Zumba and Aerobics Training Programme will be determined by analyzing the opinions of the various experts in the area of Fitness, Sports and Physical Education.
- Comparison of group was done with the help of One Way Analysis of Covariance ANCOVA.

Results and Discussion:

The mean achievement in Cardiovascular Endurance and School Wellbeing due to Zumba and Aerobics Training Programme, as obtained from ANCOVA test, revealed that –

1.1 TREATMENT WISE COMPARISON OF ADJUSTED MEAN SCORES OF CARDIOVASCULAR ENDURANCE

The first objective was to compare adjusted mean scores of Cardiovascular Endurance of School Students belonging to Zumba Training Group, Aerobics Training Group and Control Group by taking Pre-Cardiovascular Endurance as Covariate. The data were analyzed with the help of One Way ANCOVA and results are given in Table 1.1.

TABLE 1.1: Summary of One Way ANCOVA of Cardiovascular Endurance by taking Pre-Cardiovascular Endurance as Covariate

Source of Variance	Df	SSy.x	MSSy.x	Fy.x	Remark
Treatment	2	1148188.43	574094.21		
Error	146	1917995.88	13136.95	43.70	p<0.01
Total	149				

From Table 1.1 it can be seen that the F-value is 43.70 which is significant at 0.01 level with df=2/149. It reflects that the adjusted mean scores of Cardiovascular Endurance of Students differ significantly when Pre-Cardiovascular Endurance was taken as covariate. Thus, the Null Hypothesis that there is no significant difference in adjusted mean scores of Cardiovascular Endurance of Students of Zumba Training Group, Aerobics Training Group and Control Group as covariate is rejected. In order to know which training was found to be more effective the data were further analyzed by using LSD and the results are given in Table 1.2.

TABLE 1.2: Treatment Wise Adjusted Mean, SE, Mean difference and difference between Adjusted Means of Cardiovascular Endurance

Treatment	Adjusted Mean	SE	Zumba Training	Aerobics Training	Control Group
Zumba Training	1551.91	16.21			170.02**
Aerobics Training	1595.00	16.59	43.09*		213.12**
Control Group	1381.88	16.70			

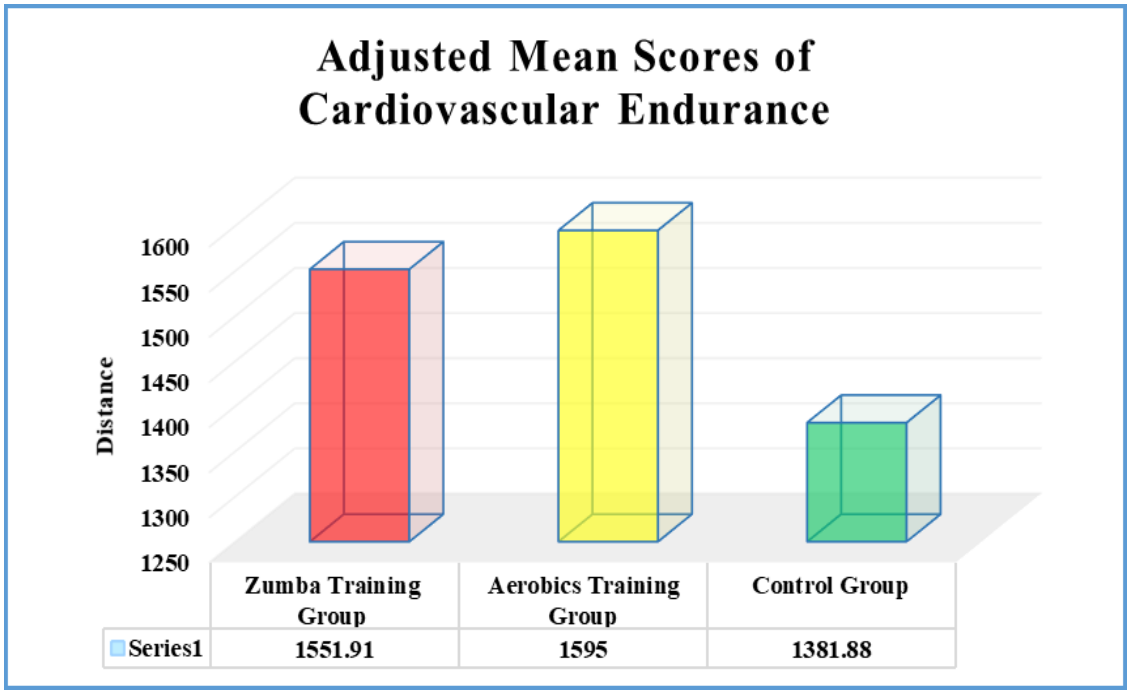
* Significant at 0.05 level ** Significant at 0.01 level

From Table 1.2 it can be seen that the mean difference of Zumba Training Group and Control Group is 170.02 which is significant at 0.01 level with df=48. It shows that the mean scores of Cardiovascular Endurance of Zumba Training Group and Control Group differ significantly. Further the adjusted mean score of Cardiovascular Endurance of Zumba Training Group is 1551.91 which is significantly higher than that of Control Group whose adjusted mean score of Cardiovascular Endurance is 1381.88. It may, therefore, be said that the Zumba Training was found to be effective in improving Cardiovascular Endurance of School students as compared to Control Group where Pre-Cardiovascular Endurance was taken as Covariate and also graphically presented in Figure 1.1. From Table 1.2 it can be seen that the mean difference of Aerobics Training Group and Control Group is 213.12 which is significant at 0.01 level with df=48. It shows that the mean scores of Cardiovascular Endurance of Aerobics Training Group and Control Group differ significantly. Further the adjusted mean score of Cardiovascular Endurance of Aerobics Training Group is 1595.00 which

is significantly higher than that of Control Group whose adjusted mean score of Cardiovascular Endurance is 1381.88. It may, therefore, be said that the Aerobics Training was found to be effective in improving Cardiovascular Endurance of School students as compared to Control Group where Pre-Cardiovascular Endurance was taken as Covariate and also graphically presented in Figure 1.1.

From Table 1.2 it can be seen that the mean difference of Aerobics Training Group and Zumba Training Group is 43.09 which is significant at 0.05 level with df=98. It shows that the mean scores of Cardiovascular Endurance of Aerobics Training Group and Zumba Training Group differ significantly. Further the adjusted mean score of Cardiovascular Endurance of Aerobics Training Group is 1595.00 which is significantly higher than that of Zumba Training Group whose adjusted mean score of Cardiovascular Endurance is 1551.91. It may, therefore, be said that the treatment of Aerobics Training was found to be significantly superior to the treatment of Zumba Training in terms of Cardiovascular Endurance of Students. It is graphically presented in Figure 1.1.

FIGURE 1.1: Treatment Wise Comparison of Adjusted Mean Scores of Cardiovascular Endurance



1.2 TREATMENT WISE COMPARISON OF ADJUSTED MEAN SCORES OF SCHOOL WELLBEING

The second objective was to compare adjusted mean scores of School Wellbeing of School Students belonging to Zumba Training Group, Aerobics Training Group and Control Group by taking Pre-School Wellbeing as Covariate. The data were analyzed with the help of One Way ANCOVA and results are given in Table 1.3.

TABLE 1.3: Summary of One Way ANCOVA of School Wellbeing by taking Pre-School Wellbeing as Covariate

Source of Variance	Df	SSy.x	MSSy.x	Fy.x	Remark
Treatment	2	0.68	0.34		
Error	146	246.61	1.68	0.20	p<0.05
Total	149				

From Table 1.3 it can be seen that the F-value is 5.29 which is significant at 0.01 level with df=2/149. It reflects that the adjusted mean scores of School Wellbeing of Students differ significantly when Pre-School Wellbeing was taken as covariate. Thus, the Null Hypothesis that there is no significant difference in adjusted mean scores of School Wellbeing of Students of Zumba Training Group, Aerobics Training Group and Control Group as covariate is rejected. In order to know which training was found to be more effective the data were further analyzed by using LSD and the results are given in Table 1.4.

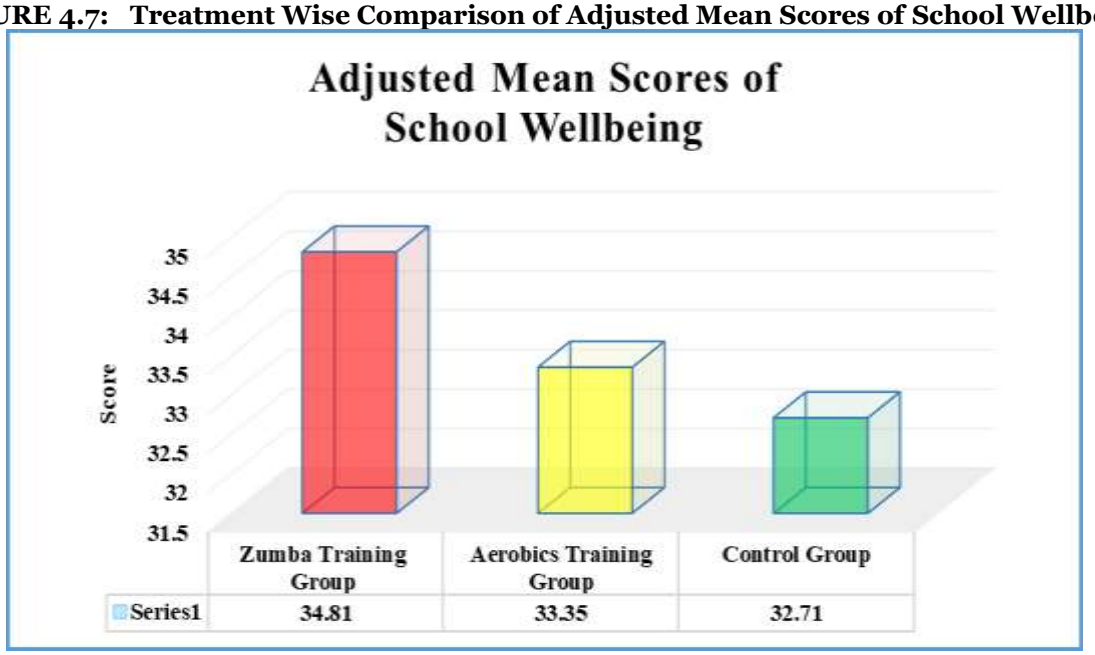
TABLE 1.4: Treatment Wise Adjusted Mean, SE, Mean difference and difference between Adjusted Means of School Wellbeing

Treatment	Adjusted Mean	SE	Zumba Training	Aerobics Training	Control Group
Zumba Training	34.81	.466		1.45*	2.09*
Aerobics Training	33.35	.468			0.64*
Control Group	32.71	.466			

* Significant at 0.05 level ** Significant at 0.01 level

From Table 1.4 it can be seen that the mean difference of Zumba Training Group and Control Group is 2.09 which is significant at 0.05 level with df=48. It shows that the mean scores of School Wellbeing of Zumba Training Group and Control Group differ significantly. Further the adjusted mean score of School Wellbeing of Zumba Training Group is 34.81 which is significantly higher than that of Control Group whose adjusted mean score of School Wellbeing is 32.71. It may, therefore, be said that the Zumba Training was found to be effective in improving School Wellbeing of School students as compared to Control Group where Pre-School Wellbeing was taken as Covariate and also graphically presented in Figure 1.2.
From Table 1.4 it can be seen that the mean difference of Aerobics Training Group and Control Group is 0.64 which is significant at 0.05 level with df=48. It shows that the mean scores of School Wellbeing of Aerobics Training Group and Control Group differ significantly. Further the adjusted mean score of School Wellbeing of Aerobics Training Group is 33.35 which is significantly higher than that of Control Group whose adjusted mean score of School Wellbeing is 32.71. It may, therefore, be said that the Aerobics Training was found to be effective in improving School Wellbeing of School students as compared to Control Group where Pre-School Wellbeing was taken as Covariate and also graphically presented in Figure 1.2.
From Table 1.4 it can be seen that the mean difference of Zumba Training Group and Aerobics Training Group is 1.45 which is significant at 0.05 level with df=98. It shows that the mean scores of School Wellbeing of Zumba Training Group and Aerobics Training Group differ significantly. Further the adjusted mean score of School Wellbeing of Zumba Training Group is 34.81 which is significantly higher than that of Aerobics Training Group whose adjusted mean score of School Wellbeing is 33.35. It may, therefore, be said that the treatment of Zumba Training was found to be significantly superior to the treatment of Aerobics Training in terms of School Wellbeing. It is graphically presented in Figure 1.2.

FIGURE 4.7: Treatment Wise Comparison of Adjusted Mean Scores of School Wellbeing



Conclusion:

In the pursuit of addressing the critical issue of Cardiovascular Endurance and School Wellbeing among secondary school children in Mumbai, this study rigorously examined the effectiveness of Zumba and Aerobics training programs. The findings of this research contribute to the broader global discourse on youth well-being and provide insights into practical interventions that can have a lasting impact on the physical and psychological health of adolescents.
The results of this study underscore the potential of Zumba and Aerobics training programs as powerful tools for mitigating Cardiovascular Endurance and School Wellbeing in secondary school children, in line with international well-being standards. Participants engaged in these programs experienced significant changes

in Cardiovascular Endurance and School Wellbeing, demonstrating the capacity of dynamic physical activities to serve as effective stress management strategies for adolescents. These findings reinforce the global significance of recognizing and addressing School Wellbeing as an integral aspect of youth well-being.
Furthermore, this study revealed that these interventions not only improves Cardiovascular Endurance but also had positive effects on School Wellbeing. Participants reported lower anxiety levels and improved self-esteem, emphasizing the interconnectedness of physical and psychological health. Such outcomes align closely with international standards that advocate for holistic approaches to youth well-being, recognizing the interplay between physical and mental aspects.
The non-significant differences between the Zumba and Aerobics groups in terms of their effectiveness suggest that both programs offer valuable avenues for promoting physical health and psychological resilience among secondary school children. This flexibility in program selection allows educators and policymakers to choose interventions that align with their resources and student preferences.
In conclusion, this research contributes to the global body of knowledge on youth well-being by highlighting the efficacy of Zumba and Aerobics training programs in addressing Cardiovascular Endurance and School Wellbeing among secondary school children. It emphasizes the importance of adopting a holistic approach to youth well-being that encompasses both physical and psychological dimensions. These findings have the potential to inform educational policies and practices internationally, promoting the integration of dynamic physical activities into school curricula to enhance the well-being of adolescents worldwide. As we advance into an era where the well-being of our youth is of paramount importance, this study serves as a testament to the transformative power of physical activity in nurturing healthier, more resilient generations.

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