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The effects of Pilates and Aerobic Exercises on Students'Balancing-Ability and Interest in Physical Education
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Abstract

This study aimed to determine the performance levels of first-year Physical Education students in enhancing their balancing ability and their interest in the PE subject through an intervention program involving Pilates and aerobic exercises. A Quasi-experimental research design was utilized in this study. A total of sixty (60) students participated in the study, divided into two (2) intervention groups. A validated and modified research instrument was used in the study to collect data. Descriptive Statistics were used including Mean, Standard Deviation and Analysis of Covariance (ANCOVA) for the treatment of the data. Regarding the program intervention, the first group of participants engaged in Single-Leg Stance and Side-Leg Series, whereas the second group participated in Step Aerobics and Jumping Exercises. The Pre-test results for both Pilates and Aerobic Exercises showed that there was already a high level of Balancing-Ability during their exposure to both exercises. The post-test results also indicated a high level of balancing ability following exposure to both exercises. On the other hand, the results regarding students' interest in Physical Education showed an increase in performance before and after they were exposed to both Pilates and aerobic exercises. Along with the pre-test and post-test scores showing similar levels of performance, the results after the program intervention also indicated that participants increased their balancing ability and interest in Physical Education following exposure to both Pilates and aerobic exercise interventions. Therefore, it is suggested that Physical Educators conduct further studies or research on the effectiveness of both Pilates and aerobic exercises in improving individuals' balancing abilities and their interest in the subject of Physical Education replicating these variables and at the same time adding relevant others.
Keywords: Aerobics, Jumping Exercises, Pilates, Side-Leg Series, Single-Leg Stance, Step Aerobics

1. Introduction

   In an era marked by sedentary lifestyles and a surge in musculoskeletal disorders, the dual challenge of maintaining physical stability and promoting general fitness is increasingly being recognized. Physical Education, traditionally a cornerstone of holistic education, is significant in addressing these challenges. Given the transformative potential of exercise program interventions, this study investigates innovative Physical Education approaches to develop effective interventions that empower individuals to overcome the negative impacts of a sedentary lifestyle and embrace a healthier, more active way of life.

   However, existing issues, as highlighted by Romar et al. (2023), reveal a decline in physical activity among children and young adults, indicating a need for innovative approaches in Physical Education. An essential aspect identified in recent studies is the part of Interest as a motivational factor determining students' engagement, steering them toward activities that foster both physical and cognitive development (Renninger & Hidi, 2016). Therefore, Interest is a crucial factor in motivating students' engagement in physical activity. In addition, integrating students' interests into Physical Education programs can result in more successful outcomes regarding to physical fitness, general well-being, and

a lifelong commitment to healthy living, mainly when using interventions like Pilates and Aerobics exercises.

Despite the acknowledged importance of Physical Education, a notable gap exists concerning the declining levels of physical activity, especially among the youth (Romar, 2023). The study conducted by Solak et al. (2022) further emphasized the impact of decreased balancing ability on daily activities and the increased risk of falls. While various exercises, such as Yoga, Tai Chi, Aerobics, and Pilates, have shown promise in improving balance, the comparative effectiveness of Pilates and Aerobic Exercises on balancing ability remains underexplored (Bavlı, 2016; Patti, 2021).

By evaluating how well Pilates and Aerobic exercises improve balance and increase students'interest, this study aims to add to the body of knowledge already in the field. While previous research has independently assessed the impact of these exercises on various aspects of physical well-being, a comparative analysis of their influence on balancing ability remains limited (Patti, 2021). Focusing on students in a specific academic setting, like Bukidnon State University, adds a unique perspective, emphasizing practical implications for the academic community.

The primary aim of this study was to investigate the effectiveness of Pilates and Aerobic Exercises in the enhancement of Balancing-Ability and increasing students'interest in the subject among First Year students enrolled in Physical Education classes at Bukidnon State University. By addressing the identified gaps in the literature, this research aimed to provide insights into structured exercise interventions that can be universally applicable and adaptable for individuals of all ages and fitness levels. The ultimate goal is to contribute in improving physical health, overall well-being, and the quality of life, particularly for students engaged in Physical Education Programs.

2. Methods

This section deals with the research methodology that was used in this study. It includes the research design, participants and procedure, instruments and materials used, data analysis and ethical considerations.

2.1 Research Design

This study utilized a quasi-experimental pre-test-post-test group design. When the researcher's goal was to determine the effectiveness of Pilates and Aerobic Exercises in enhancing students' performance in balancing ability and their interest in the Physical Education subject, a quasi-experimental design was utilized (Bloomfield et al. 2019).

Similarly, Collins (2020) investigated causal hypotheses using a quasi-experimental design. Participants performed a preliminary observation (pre-test), gave them treatment, and then have conducted a follow-up observation (post-test) as what is referred to as a quasi-experiment. Two distinct exercise regimens, namely: Pilates and Aerobics Exercises, were introduced to two groups in this study.

2.2 Participants and Procedures

The study participants were the Two (2) sections of first-year Physical Education students enrolled in the Second Semester of the School Year 2023-2024. The participants of this study age range from Nineteen to Twenty-Three (19-23) years old.

Simple Random Sampling was utilized in this study. Simple random sampling was used for populations that are highly homogeneous and members of the research team are chosen randomly to participate in the survey (Bhardwaj, 2019). Two (2) sections from PE classes were selected to be the study participants. Section One (1) were the Pilates Group and the section Two (2) are the Aerobic Group.

2.3 Instruments and Materials Used

Two (2) instruments were used in gathering data for this study. One of the two instruments was a rubric adapted and modified from the Mini-BESTest: Balance Evaluation Systems Test. It was used to assess balancing skill of an individual through various aspects. Each item is scored on a 3-point scale including 3-(Normal 30 Sec), 2-(Moderate <30 sec), and 1-(Severe Unable), and the total score indicates of the individual's overall balance abilities. The MiniBESTest has gained popularity both as a clinical tool and as a research outcome measure of dynamic balance control, as stated in the study by Boonsinsukh et al. (2016). The other instrument used was a survey questionnaire employing a Likert Scale to assess student's interest in the subject after receiving the treatment.

Individual Interest Questionnaire (IIQ) was used in this study, which measures students'inclination and willingness to interact with a subject at school, as well as their favorable attitude toward the subject and propensity to reengage with it over time, and was validated by Rotgans (2015). These questionnaires have the benefit of producing a uniform, unidimensional measure of individual interest that captures the various dimensions of the construct and can be used across the curriculum.

2.4 Data Analysis

To facilitate the analysis of the interpretation of data, the following statistical tools were employed:

Mean and Standard Deviation – were used to answer problem one and problem three and to explain the mean average of the participants'score to see if there is progress, as well as the difference between the pre-test and post-test scores of participants.

Analysis of Covariance (ANCOVA). This instrument was used to answer problems two and four to determine the significant difference in post-test scores between students who are exposed to Pilates and Aerobics Exercises. Analysis of covariance (ANCOVA) will be employed to assess changes in the mean

values of the dependent variables to the effect of the independent variables.
This study utilized statistical instrument such as Mean, Standard Deviation and Analysis of Covariance since it is used to examine the study's hypothesis as stated by Creswell, (2018).
2.5 Ethical Considerations
The researchers followed the University protocol to ensure the quality and orderly data collection of the study. The researcher secured permission from the Liceo de Cagayan Research and Ethics Board, as well as permission from the Dean of the School of Teachers Education and the President of Bukidnon State University. Upon approval by the school principal, the researcher then conducted the study. The data will be gathered during the final term of the second semester of the Academic Year 2023-2024.

3. Conclusion
This section should provide a clear and concise summary of the study's findings. Conclusions must be based on the results and highlight key insights or implications of the study. Recommendations should emerge logically from the findings and suggest specific, actionable steps. These may include practical applications, policy suggestions, or directions for future research. Indicate the intended audience or beneficiaries of the recommendations. This section should be written in cohesive essay form—not as a numbered list.
The findings of problem one revealed that students'balancing ability increased after exposure to Pilates and aerobic exercises. In problem two, it showed that both Pilates and aerobic exercises are equally practical in improving students balancing ability. Pertaining to problem three, students'interest increased after they were exposed to Pilates and aerobic exercises. And lastly, in problem four, both Pilates and aerobic exercises have a similar impact on students' interest in physical education. Neither Pilates nor aerobic exercises significantly outperformed the other in influencing participants' interest in physical education.

Moreover, physical education instructors could prioritize continuing professional development, including innovative instructional approaches, and emphasize practical application to improve their coaching abilities. To add more, trainers and coaches could incorporate balance drills from Pilates and aerobic workouts into training programs to improve athletes' coordination and stability, particularly in sports that require advanced balancing skills. Furthermore, athletes could consider incorporating exercises like Pilates and aerobics into their training regimens, as these activities enhance coordination, reaction time, and balance. And finally, future researchers could build on the findings of this study to look more into the precise components of Pilates and aerobic exercises that contribute to improved balancing ability. Future research in this area could adjust exercise programs and training regimens to maximize the benefits for people looking to improve their balance and coordination.

The results of the study showed that both Pilates and Aerobics exercises improve students' balancing abilities, showing that both activities have the potential to to contribute to physical health positively. Furthermore, the data show that exposure to both workouts enhances student's interest in Physical Education, indicating an avenue toward getting students involved in physical activities. It also implies that integrating diverse exercise modalities into educational programs to accommodate various preferences and enhance the benefits for students' general well-being and participation in physical fitness activities.

Furthermore, studying the long-term impact of these exercises on balancing abilities and overall athletic performance could provide helpful information for designing more tailored therapies in sports medicine and physical therapy.

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