

Dance exercise as a school-based strategy for stress reduction among Grade 9 students

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ABSTRACT

This study examined the effectiveness of a dance exercise intervention as a school-based strategy for reducing stress levels among Grade 9 students at Cagay National High School, Barili, Cebu, during the School Year 2025–2026. Specifically, it aimed to determine the profile of the respondents in terms of sex, age, socio-economic status, and participation in extracurricular or physical activities; assess students' baseline and post-intervention stress levels; determine whether a significant difference exists between pre- and post-intervention stress levels; and explore students' perceptions of dance exercise as a strategy for stress reduction. The study employed a mixed-methods design using the Adolescent Stress Questionnaire (ASQ) and semi-structured interviews for data collection. Quantitative data were analyzed using frequency, percentage, mean, and paired-samples t-test, while qualitative responses were examined through thematic analysis. Results indicated that students experienced varying levels of stress, with school performance identified as the most prominent source. Findings also showed a significant reduction in overall stress levels after the dance exercise intervention, $t(39) = 4.91, p < .001$, suggesting the positive contribution of structured physical activity to stress management among learners. Qualitative findings further revealed improvements in students' mood, academic focus, social interaction, and emotional well-being. The findings suggest that dance exercise may serve as a practical and sustainable strategy for stress management in school settings. Based on the results, an action plan was developed to support the integration of structured physical activities into school wellness programs aimed at promoting student well-being.

Keywords: Physical education, stress reduction, mixed-methods research, Cebu, Philippines

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INTRODUCTION

Adolescence is a critical developmental stage characterized by rapid physical, emotional, and social changes that significantly influence health behaviors and lifestyle choices (Steinberg, 2017). During this period, the establishment of healthy habits, particularly regular physical activity, plays an important role in promoting overall well-being and preventing long-term health risks. However, many adolescents today experience increasingly sedentary

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lifestyles due to academic pressures, increased screen time, and limited opportunities for active recreation.

Physical inactivity among adolescents has become a growing global public health concern. According to the World Health Organization (WHO, 2020), more than 80% of adolescents worldwide do not meet the recommended levels of physical activity. Insufficient physical activity among young people has been linked to increased risks of obesity, cardiovascular diseases, and other non-communicable health conditions. These concerns highlight the importance of developing effective strategies that encourage adolescents to engage in regular physical activity.

Schools play a crucial role in addressing this challenge. Physical Education (PE) programs provide structured opportunities for students to develop active lifestyles regardless of socio-economic background. However, traditional PE activities may not always sustain students' motivation and engagement, particularly in a generation that is highly exposed to digital technologies. As a result, integrating technology-based tools into PE instruction has emerged as a promising strategy for promoting active participation among learners.

One innovative approach involves the use of mobile fitness applications, which are designed to monitor, guide, and motivate users to engage in physical activity. These applications often include features such as goal setting, activity tracking, progress monitoring, and instructional workout programs that encourage sustained participation in physical exercise. Research has indicated that mobile fitness applications can positively influence physical activity behaviors by enhancing motivation, self-monitoring, and user engagement (Dennison et al., 2013; Direito et al., 2021).

Among these digital tools, the Nike Fitness App, particularly the Nike Training Club, provides structured workout programs, guided exercise routines, and progress monitoring features that may support students in maintaining active lifestyles. By integrating such applications into school-based physical activity programs, educators can leverage students' familiarity with mobile technology to enhance engagement in PE activities.

Despite the increasing popularity of fitness applications globally, their integration within Philippine basic education settings, particularly in public secondary schools, remains limited. Many school-based PE programs continue to rely primarily on conventional teaching approaches with minimal use of digital fitness technologies. Moreover, empirical studies examining the effectiveness of fitness apps in improving physical activity levels among Filipino students are still scarce. This highlights the need for context-specific research that explores technology-supported strategies for promoting active lifestyles among adolescents.

In Mandaue City, Cebu, similar challenges related to sedentary behavior and limited physical activity opportunities among students have been observed. As urban environments continue to evolve and digital technology becomes increasingly accessible, schools must explore innovative approaches that integrate technology into health-promoting educational practices.

In response to this need, this study seeks to examine the effectiveness of the Nike Fitness App as a technology-supported intervention for improving the physical activity levels of Grade 8 students at Mandaue City Comprehensive National High School. By integrating a mobile fitness application into PE activities, the study aims to explore how digital tools can support student engagement in physical activity within the school environment.

Furthermore, this research supports the objectives of Sustainable Development Goal (SDG) 4, which promotes inclusive and equitable quality education and lifelong learning opportunities (United Nations, 2015). Integrating digital technologies into Physical Education contributes to the development of innovative teaching strategies that enhance both learning experiences and student well-being.

In summary, this study investigates the potential of the Nike Fitness App as a technology-supported intervention to enhance the physical activity levels of Grade 8 students. The findings of this research may provide valuable insights for educators, school administrators, and policymakers in designing programs that integrate digital tools into Physical Education to promote active lifestyles among learners.

Statement of the problem

This research investigated the effectiveness of a school based physical activity which is dance exercise intervention in reducing stress levels among Grade 9 students at Cagay National High School in Barili, Cebu during the school year 2025–2026, as basis for developing an action plan to support student well-being through physical activity initiatives.

1. What is the profile of the Grade 9 student respondents in terms of sex, age, socio economic status, and participation in extracurricular or physical activities?
2. What is the baseline perceived stress level of Grade 9 students before the implementation of the physical activity intervention?
3. What is the perceived stress level of Grade 9 students immediately after the implementation of the physical activity intervention?
4. Is there a significant difference in the perceived stress levels of Grade 9 students before and after the implementation of the physical activity intervention?
5. How do students perceive the use of physical activity as a strategy for stress reduction?
6. Based on the findings, what action plan can be developed?

METHODOLOGY

This study employed a mixed-methods descriptive-evaluative research design, integrating both quantitative and qualitative approaches to assess the effectiveness of a school-based physical activity intervention in reducing stress levels among Grade 9 students.

The quantitative component utilized a one-group pretest-posttest design, wherein the same group of students is assessed before and after the intervention using the Adolescent Stress Questionnaire (ASQ). This approach allows the researcher to measure changes in perceived stress levels over time without the use of a control group or random assignment. This design is appropriate for natural school settings where experimental control is limited, yet outcome measurement is essential.

The qualitative component involved the use of a semi-structured interview guide to gather in-depth insights into students' experiences, perceptions, and feedback regarding the intervention. Through focus group discussions or individual interviews, the study explores emotional responses, perceived benefits, and suggestions for improvement, enriching the interpretation of quantitative findings.

This design was well-suited for educational research, particularly when working with minors, as it ensured ethical implementation while allowing all participants to benefit from the intervention. It also provided a comprehensive understanding of both measurable outcomes and lived experiences, making it ideal for informing future school-based stress reduction programs.

The respondents of the study were Grade 9 students of Cagay National High School for the school year 2025–2026. A total of 40 students from selected sections participated in the study, chosen through purposive sampling. The selection criteria included students who are regularly attending school, physically capable of engaging in moderate-intensity exercises, and who provided both parental and personal consent to participate in the study.

This group of students was considered appropriate for the intervention due to their developmental stage and the common stressors they experience, such as academic demands and social pressure. Their participation will provide meaningful insights into the potential of physical activity as a stress-reducing strategy for adolescents.

To ensure ethical compliance, participation was voluntary, and confidentiality of all collected data was strictly maintained. Students identified with high stress levels were referred to the school guidance counselor for further support if necessary.

This study employed three primary research instruments to gather both quantitative and qualitative data to assess the effectiveness of a school-based physical activity intervention for stress reduction among Grade 9 students: Adolescent Stress Questionnaire (ASQ) – This standardized tool measured various sources and levels of stress among adolescents which is adapted from the study Profiles of adolescent stress: The development of the Adolescent Stress Questionnaire (ASQ) by Byrne, D. G., Davenport, S. C., & Mazanov, J. (2007). It included items that assess stress related to school performance, peer pressure, home life, and self-image. The ASQ consists of 50 statements rated on a 5-point Likert scale, where 1 means "Not at all stressful" and 5 means "Very stressful." The tool has demonstrated high reliability and validity in previous studies and is adapted to the local context. In this research, the ASQ is administered both before and after the intervention to measure changes in stress levels. Structured Physical Activity Log Sheet – This was a researcher-made monitoring tool used to document student participation in the intervention. It recorded the date, type, and duration of physical activities, as well as the students' subjective feedback after each session. The log sheet helps track adherence and provides additional qualitative data for analysis. The log sheet also helps correlate levels of participation with changes in perceived stress. Semi-Structured Qualitative Interview Guide – A researcher-made semi-structured interview guide was used to gather in-depth insights from participants through individual interviews or focus group discussions. It was organized into four key themes: perceptions and experiences, engagement and motivation, suggestions for improvement, and closing reflections. Open-ended questions encouraged participants to share their thoughts, feelings, and suggestions related to the intervention. Interviews were audio-recorded with consent, transcribed, and analyzed thematically to identify common patterns and meaningful insights. This qualitative data supported a deeper understanding of the intervention's impact.

The data collected from the ASQ were analyzed using the following statistical methods: Descriptive Statistics – Mean, standard deviation, and frequency distribution were used to describe the students' stress levels before and after the intervention. Paired Sample t-Test – This inferential test was used to determine whether there is a statistically significant difference between the pre-test and post-test stress scores. Thematic Analysis – For qualitative responses from students, emerging themes were identified and analyzed to supplement quantitative findings.

RESULTS AND DISCUSSION

This section presents the results and discussion of the study involving 40 Grade 9 students from Cagay National High School, selected through a school-based sampling approach. The study employed a quantitative pretest-posttest research design complemented by qualitative data to capture students' perceptions. Data were gathered using a structured perceived stress questionnaire consisting of 50 indicators and semi-structured interview responses. Descriptive statistics such as frequency, percentage, mean, and standard deviation were utilized to describe the data, while a paired samples t-test was employed to determine significant differences in stress levels before and after the intervention. The discussion that follows is grounded in the data gathered and interprets the results in direct relation to the

objectives of the study, particularly in examining the effectiveness of dance exercise as a stress reduction strategy among adolescents.

The demographic profile revealed that the respondents were equally distributed by gender, with females ($n = 20$, 50.00%) and males ($n = 20$, 50.00%), yielding a total of 40 participants. This equal distribution strengthens the internal validity of the findings by minimizing gender bias and ensuring that both sexes are proportionately represented in the analysis of stress experiences and intervention outcomes. The balanced composition supports a more comprehensive interpretation of adolescent stress, considering that females often report higher levels of internalized stress such as anxiety, while males tend to exhibit externalizing responses. The inclusion of both groups equally enhances the generalizability of the findings and aligns with existing literature indicating that physical activity interventions are beneficial for both male and female adolescents in improving mood, emotional regulation, and stress reduction.

In terms of age, the majority of respondents were 14 years old ($n = 26$, 65.00%), followed by 15 years ($n = 6$, 15.00%), while 13 years ($n = 4$, 10.00%) and 16 years ($n = 4$, 10.00%) comprised the smallest groups. This distribution indicates that most participants were in early to middle adolescence, a developmental stage characterized by heightened sensitivity to academic pressure, peer relationships, and identity formation. The dominance of this age group suggests that the study effectively captures stress experiences during a critical developmental window. The findings are consistent with developmental theories indicating that adolescents in this stage are more vulnerable to stress due to increasing academic demands and evolving social expectations, thus reinforcing the relevance of implementing timely and developmentally appropriate interventions.

The socio-economic profile showed that most respondents belonged to the low socio-economic status group ($n = 28$, 70.00%), while 30.00% ($n = 12$) were categorized under middle socio-economic status, and none were classified under high socio-economic status (0, 0%). This indicates that the majority of students were exposed to economic constraints that may contribute to elevated stress levels. The predominance of low socio-economic status highlights the influence of financial instability, limited access to resources, and additional household responsibilities on students' psychological well-being. These findings support previous research indicating that adolescents from low-income backgrounds are more susceptible to stress and emotional difficulties due to chronic exposure to socio-economic pressures. The absence of respondents from high socio-economic status further emphasizes the need for accessible and cost-effective interventions such as school-based physical activity programs.

Participation in extracurricular and physical activities revealed that students were engaged in various school programs, with Scouting (BSP, GSP) having the highest participation ($n = 30$, 44.78%), followed by Performing Arts ($n = 12$, 17.91%), Sports ($n = 9$, 13.43%), Music (School Choir) ($n = 9$, 13.43%), Leadership (SSLG, BKD) ($n = 6$, 8.96%), and Others ($n = 1$, 1.49%), with a total of 67 responses. This distribution indicates that students were actively involved in structured group activities that promote social interaction, discipline, and teamwork. The dominance of Scouting reflects a strong culture of civic engagement within the school, while participation in arts, sports, and leadership activities provides diverse avenues for self-expression and skill development. These findings align with existing literature suggesting that extracurricular involvement enhances psychological well-being, reduces stress, and fosters resilience through social connectedness and intrinsic motivation.

The baseline perceived stress levels prior to the intervention showed an overall mean of 3.00 with a standard deviation of 1.43, interpreted as moderately stressful. Several indicators were categorized as stressful, including worrying about grades and performance ($M = 3.43$, $SD = 1.11$), feeling nervous before exams ($M = 3.63$, $SD = 1.31$), difficulty focusing due to stress

or anxiety ($M = 3.43$, $SD = 1.36$), discomfort when making mistakes in front of others ($M = 3.53$, $SD = 1.24$), and stress when forgetting tasks or assignments ($M = 3.45$, $SD = 1.11$), as well as stress when not understanding lessons quickly ($M = 3.43$, $SD = 1.24$). The highest mean was recorded for experiencing stress when thinking about responsibilities ($M = 4.70$, $SD = 7.76$), interpreted as very stressful. Other indicators such as feeling emotionally drained ($M = 3.10$, $SD = 1.32$), having difficulty sleeping ($M = 3.08$, $SD = 1.47$), and often feeling sad ($M = 3.33$, $SD = 1.49$) were categorized as moderately stressful. These findings indicate that academic demands, social expectations, and emotional pressures were the primary sources of stress among the respondents. The predominance of academic-related stressors confirms that performance pressure, workload, and evaluation anxiety significantly influence students' stress levels. These results are consistent with prior studies indicating that academic stress is a leading contributor to adolescent psychological distress and can negatively affect cognitive functioning, emotional regulation, and overall well-being.

Following the implementation of the dance exercise intervention, the perceived stress levels decreased to an overall mean of 2.39 with a standard deviation of 1.08, interpreted as slightly stressful. Most indicators shifted to the slightly stressful category, including worrying about grades ($M = 2.33$, $SD = 1.00$), feeling overwhelmed by homework ($M = 2.25$, $SD = 0.98$), feeling nervous before exams ($M = 2.13$, $SD = 0.94$), difficulty balancing schoolwork and leisure time ($M = 2.23$, $SD = 0.95$), and difficulty focusing ($M = 2.50$, $SD = 1.24$). Improvements were also observed in social indicators such as anxiety in making new friends ($M = 2.10$, $SD = 1.06$) and fear of being judged ($M = 2.08$, $SD = 1.00$). However, some indicators remained moderately stressful, including stress due to family problems ($M = 3.25$, $SD = 1.39$), feeling sad without knowing why ($M = 2.69$, $SD = 1.28$), difficulty managing time ($M = 2.68$, $SD = 0.94$), worrying about deadlines ($M = 2.68$, $SD = 1.14$), stress when thinking about responsibilities ($M = 2.83$, $SD = 1.15$), difficulty expressing emotions ($M = 3.03$, $SD = 1.19$), anxiety when alone ($M = 2.63$, $SD = 1.21$), concerns about family finances ($M = 3.10$, $SD = 1.37$), discomfort discussing emotions ($M = 2.73$, $SD = 1.15$), and stress from high expectations ($M = 2.68$, $SD = 1.25$). These results indicate a substantial reduction in stress across academic, social, and emotional domains. The decline in stress levels suggests that the intervention improved students' coping mechanisms, emotional regulation, and psychological resilience. The findings are supported by literature emphasizing that physical activity enhances mood, reduces physiological stress responses, and improves cognitive functioning through neurochemical processes.

The paired samples t-test results further confirmed the effectiveness of the intervention. The computed t-value of 4.91 with $df = 39.0$ and a p-value of $< .001$ at a conventional alpha level of 0.05 indicates a statistically significant difference between pre-test and post-test stress levels. The decision was to reject H_0 , leading to the interpretation that the reduction in perceived stress levels was significant. This statistical evidence demonstrates that the observed improvements were not due to chance but were attributable to the dance exercise intervention. The significant difference reflects a meaningful positive shift in students' psychological state, indicating that participation in structured physical activity effectively alleviated stress. These findings align with empirical studies showing that exercise-based interventions significantly improve emotional regulation, reduce anxiety, and enhance well-being among adolescents. The results also support theoretical perspectives such as Self-Determination Theory, which posits that physical activity fulfills basic psychological needs for autonomy, competence, and relatedness, thereby promoting mental health.

Qualitative findings further reinforced the quantitative results, revealing that students perceived physical activity as an effective stress reduction strategy. Thematic analysis identified key experiences, including improved mood and relaxation, better academic focus, enhanced social interaction, and stress relief through physical outlet. Students reported feeling

lighter and happier after exercise, indicating emotional release and improved well-being. They also noted improved concentration in academic tasks, suggesting cognitive benefits of physical activity. Social bonding emerged as another significant theme, with students highlighting the role of group activities in strengthening peer relationships. These perceptions align with existing research demonstrating that physical activity promotes endorphin release, enhances cognitive performance, and fosters social connectedness, all of which contribute to stress reduction.

In synthesis, the findings of the study demonstrate that Grade 9 students initially experienced moderately stressful levels of stress ($M = 3.00$, $SD = 1.43$), primarily driven by academic, social, and emotional factors. Following the implementation of the dance exercise intervention, stress levels significantly decreased to slightly stressful ($M = 2.39$, $SD = 1.08$), with a statistically significant difference confirmed by $t(39.0) = 4.91$, $p < .001$, leading to the rejection of the null hypothesis. The results indicate that dance exercise is an effective, accessible, and developmentally appropriate strategy for reducing stress among adolescents. The integration of quantitative and qualitative findings highlights the multifaceted benefits of physical activity in improving emotional regulation, cognitive functioning, and social well-being. These findings contribute to the growing body of evidence supporting school-based physical activity interventions as essential components of holistic education and mental health promotion. Moreover, the results provide a strong empirical basis for developing action plans and institutionalizing physical activity programs within the school system, thereby setting the stage for the subsequent section on recommendations and implementation strategies.

CONCLUSION

The findings confirm that structured physical activity interventions are effective tools in reducing stress among Grade 9 students. Stress levels were reduced significantly in all six domains, with students reporting improved emotional well-being, enhanced focus on academics, and better social relationships. Therefore, integrating school-based physical activity programs is a practical, low-cost, and sustainable approach to addressing adolescent stress. Such interventions not only improve mental health but also foster resilience, holistic development, and academic success.

Based on the study's significance, the following recommendations are made: For Students: Actively participate in structured physical activities to develop resilience, improve stress management, and foster healthy habits that can be carried into adulthood. For Teachers: Integrate stress-reducing physical activities into lessons and promote active lifestyles by encouraging students to join extracurricular activities that enhance well-being. For School Administrators: Institutionalize physical activity programs as part of school-wide wellness initiatives to ensure sustainability and inclusivity of stress management strategies. For Parents: Support and encourage children to engage in physical activity both at home and in the community to reinforce healthy coping mechanisms and stress management. For Policy Makers: Develop and strengthen educational and health policies that mandate school-based wellness programs, ensuring that physical activity is recognized as a critical tool for mental health promotion. For Future Researchers: Conduct further studies on physical activity interventions across different grade levels and settings, and explore their long-term effects on adolescent stress and well-being.

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