

Original article Factors Influencing Teenagers' Physical Exercise Behavior and an Intervention Program for Health Promotion Vol. 11, n.º 3; p. 1-31, July 2025. <https://doi.org/10.17979/sportis.2025.11.3.11836>

Factors influencing teenagers' physical exercise behavior and an intervention program for health promotion

Factores que influyen en el comportamiento de ejercicio físico de los adolescentes y un programa de intervención para la promoción de la salud

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Abstract

Adolescent physical inactivity poses a significant public health challenge, contributing to increased risks of obesity, cardiovascular disease, and metabolic disorders. This study investigates factors influencing teenagers' physical exercise behavior in a selected province in the Philippines and proposes an intervention program to enhance youth physical activity. Utilizing a descriptive-correlational research design, data was collected from 500 respondents through structured questionnaires and fitness assessments. Results showed that while most respondents had a healthy Body Mass Index (BMI) (mean = 24.6), their cardiovascular fitness (mean Rockport Test time = 28 minutes) and muscular strength (mean push-ups = 4 reps) were below average, indicating poor aerobic capacity and upper body strength. Despite these fitness limitations, adolescents reported strong engagement in physical activity, particularly in daily routines (weighted mean = 4.21) and structured workouts (weighted mean = 4.15). Awareness of exercise benefits (mean = 4.33) emerged as the most influential motivator. Family support (mean = 3.64) and school-organized activities (mean = 3.66) significantly enhanced participation. Pearson's correlation revealed a significant positive relationship between health status and exercise behavior ($r = 0.421$, $p = 0.002$), and between exercise behavior and interactive influences ($r = 0.398$, $p = 0.005$). Findings support the development of a multi-component intervention integrating school-based physical education, family-centered activities, and community support to improve adolescent fitness and establish lifelong physical activity habits. The results underscore the need for comprehensive strategies targeting not just individual motivation but also social and environmental enablers of adolescent health.

Keywords: adolescent physical activity; health status; exercise behavior; family influence; school environment.

Resumen

La inactividad física en adolescentes representa un importante desafío de salud pública, ya que contribuye al aumento del riesgo de obesidad, enfermedades cardiovasculares y trastornos metabólicos. Este estudio investiga los factores que influyen en el comportamiento de ejercicio físico de los adolescentes en una provincia seleccionada de Filipinas y propone un programa de intervención para mejorar la actividad física juvenil. Se utilizó un diseño de investigación descriptivo-correlacional, y se recopilaban datos de 500 encuestados mediante cuestionarios estructurados y evaluaciones físicas. Los resultados mostraron que, si bien la mayoría de los participantes tenía un índice de masa corporal (IMC) saludable (media = 24.6), su condición cardiovascular (media de la prueba Rockport = 28 minutos) y su fuerza muscular (media de flexiones = 4 repeticiones) estaban por debajo del promedio, indicando baja capacidad aeróbica y debilidad en la parte superior del cuerpo. A pesar de estas limitaciones, los adolescentes mostraron un alto compromiso con la actividad física, especialmente en rutinas diarias (media ponderada = 4.21) y entrenamientos estructurados (media = 4.15). La conciencia sobre los beneficios del ejercicio (media = 4.33) fue el factor más influyente. El apoyo familiar (media = 3.64) y las actividades organizadas por la escuela (media = 3.66) aumentaron significativamente la participación. El coeficiente de correlación de Pearson reveló una relación positiva significativa

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entre el estado de salud y el comportamiento de ejercicio ($r = 0.421$, $p = 0.002$), así como entre este comportamiento y las influencias interactivas ($r = 0.398$, $p = 0.005$). Los hallazgos respaldan una intervención integral basada en la escuela, la familia y la comunidad para mejorar la condición física de los adolescentes y fomentar hábitos saludables de por vida.

Palabras clave: actividad física en adolescentes; estado de salud; comportamiento de ejercicio; influencia familiar; entorno escolar.

Introduction

Physical inactivity among adolescents is a significant public health concern, as it contributes to the rising prevalence of non-communicable diseases, including obesity, cardiovascular diseases, and metabolic disorders (Sukatemin et al., 2025). Despite the well-documented benefits of regular physical activity—such as improved cardiorespiratory fitness, muscular strength, and mental health—global data indicates that less than 20% of school-aged adolescents meet the recommended 60 minutes of moderate-to-vigorous physical activity (MVPA) daily (Andaki et al., 2024).

In Philippines, this issue is particularly pronounced. A national survey revealed that approximately 70% of Filipino students do not meet the PA recommendation, highlighting a critical need for effective interventions.

Understanding the multifaceted factors influencing adolescents' physical activity behaviors is essential for developing targeted interventions. The social-ecological model provides a comprehensive framework, considering individual, interpersonal, organizational, community, and policy-level influences (Tan, 2024). At the individual level, factors such as self-perception, self-efficacy, and time management skills play pivotal roles in shaping physical activity behaviors (Jiménez Boraita et al., 2024). Interpersonal influences, including support from family, peers, and educators, have been shown to significantly impact adolescents' engagement in physical activity (Rodríguez-Rodríguez et al., 2024).

The school environment also plays a crucial role in promoting physical activity. Schools that provide adequate facilities, foster a positive climate, and offer quality physical education programs create supportive environments that encourage active lifestyles among students (Popović

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et al., 2025). Furthermore, community factors, such as accessible recreational facilities and safe neighborhoods, can facilitate or hinder physical activity participation (Schiavuzzi et al., 2024).

This study aims to investigate the factors influencing adolescents' physical activity behaviors in selected province in the Philippines, utilizing the social-ecological model as a guiding framework. By examining individual, family, school, and community influences, this research seeks to identify key determinants of physical activity participation. The ultimate goal is to develop a comprehensive intervention program that enhances adolescents' engagement in physical activities, thereby improving their overall health and well-being.

Individual Factors Affecting Physical Activity

Adolescents' engagement in physical activity is shaped by a complex interplay of psychological, demographic, and socioeconomic factors, which influence their motivation, confidence, and access to opportunities for exercise. Among these, psychological determinants play a pivotal role in shaping adolescents' willingness and ability to engage in physical activity. Self-efficacy, or an individual's belief in their capacity to succeed in specific situations, has been identified as a key factor influencing physical activity behavior (Januario et al., 2024). Adolescents with high self-efficacy are more likely to initiate and maintain active lifestyles, as they perceive themselves as capable of performing physical tasks and overcoming exercise-related challenges. Conversely, those with low confidence in their physical abilities tend to avoid sports and exercise due to fear of failure or embarrassment (Morouço et al., 2024). Enjoyment also serves as a significant intrinsic motivator, as adolescents who find pleasure in physical activities are more likely to sustain their participation over time. This highlights the need for interventions that promote fun, engaging, and diverse forms of exercise to cater to varying preferences and abilities.

Beyond psychological influences, demographic factors such as age and gender significantly impact adolescents' physical activity levels. Research indicates that boys tend to be more physically active than girls, a trend that may be attributed to gender norms, societal expectations, and differences in sports participation opportunities (Ávalos Ramos et al., 2024). Furthermore, physical activity levels typically decline with age, particularly during adolescence,

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as academic demands, social priorities, and lifestyle changes lead to reduced engagement in structured physical activities (Li et al., 2025). This decline underscores the importance of early interventions to establish lifelong exercise habits before sedentary behaviors become ingrained.

In addition to psychological and demographic influences, socioeconomic status (SES) plays a crucial role in determining adolescents' access to physical activity opportunities. Adolescents from higher socioeconomic backgrounds benefit from greater access to sports facilities, structured programs, and safe recreational spaces, which enhance their ability to participate in regular physical activity (Li et al., 2025). Conversely, those from lower-income households often face barriers such as limited access to parks, school sports programs, and financial constraints that hinder participation in extracurricular physical activities. Socioeconomic disparities in physical activity participation highlight the need for equitable access to sports and fitness programs, particularly in underprivileged communities. Policies that provide free or low-cost recreational opportunities, school-based physical education programs, and safe public spaces for exercise can help bridge this gap and ensure that all adolescents, regardless of their background, have the opportunity to engage in an active lifestyle.

Overall, individual factors such as self-efficacy, motivation, gender, age, and socioeconomic status collectively shape adolescents' physical activity behaviors. Addressing these factors through targeted interventions—such as confidence-building programs, inclusive sports initiatives, and community-based physical activity opportunities—can significantly enhance adolescent engagement in physical exercise, ultimately leading to better health outcomes and reduced risks of sedentary-related diseases.

Interpersonal Influences on Physical Activity

Adolescents' physical activity behaviors are strongly shaped by their social environment, particularly through family and peer support, which play critical roles in fostering active lifestyles. The presence of encouraging parents, supportive friends, and positive social reinforcement can significantly increase the likelihood of sustained participation in physical activities. Equally, lack of familial and peer support can serve as a major barrier, discouraging adolescents from engaging

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in regular exercise. Understanding these interpersonal influences is essential for designing interventions that promote physical activity among youth.

Parental involvement is one of the most influential factors in shaping adolescents' engagement in physical activity. Parents serve as role models for active behaviors, and adolescents are more likely to adopt an active lifestyle when they observe their parents participating in sports or exercise. Moreover, parents who provide verbal encouragement, emotional support, and direct participation in physical activities create a positive atmosphere that motivates adolescents to engage in regular exercise. Beyond emotional encouragement, logistical support—such as providing transportation to sports facilities, enrolling children in extracurricular sports programs, or purchasing sports equipment—also significantly impacts adolescent physical activity levels (Cohen et al., 2025). However, socioeconomic constraints may limit some families' ability to offer such logistical support, emphasizing the need for community-based initiatives that provide affordable or free access to sports facilities and programs.

Additionally, family norms and attitudes toward physical activity play a crucial role in shaping adolescents' perceptions of exercise. In families where physical activity is valued and prioritized, children are more likely to develop positive attitudes and long-term exercise habits. Conversely, if parents place greater emphasis on academic achievement or sedentary leisure activities, adolescents may receive less encouragement to engage in sports and exercise (Schiavuzzi et al., 2024). The challenge, therefore, lies in balancing academic responsibilities with opportunities for physical activity, ensuring that adolescents do not sacrifice exercise due to pressure from schoolwork or parental expectations.

Beyond the family unit, peer relationships significantly impact adolescents' engagement in physical activity. Adolescents who participate in sports or exercise with their friends experience greater motivation, accountability, and enjoyment, making them more likely to sustain active lifestyles (Morouço et al., 2024). Social support from peers fosters a sense of belonging and collective motivation, reinforcing the idea that physical activity is both a social and enjoyable experience. This is particularly important during adolescence, a period in which peer influence becomes stronger and friendship groups play a major role in decision-making and lifestyle choices.

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Studies suggest that physically active peers create an environment where exercise is seen as a normative and desirable behavior, encouraging others to engage in sports and recreational activities (Schiavuzzi et al., 2024). In contrast, adolescents whose peers engage primarily in sedentary activities—such as video gaming, social media use, or passive entertainment—are more likely to adopt similar sedentary habits. Therefore, fostering social circles that emphasize active lifestyles can be an effective strategy for promoting physical activity among youth. Schools, sports clubs, and community organizations can play an important role in facilitating structured physical activities that encourage social engagement, helping adolescents develop friendships centered around movement and exercise.

Given the strong influence of family and peer dynamics on adolescent physical activity levels, interventions should focus on enhancing social support systems. Family-based programs that encourage joint physical activities, such as weekend sports outings, family fitness challenges, or parent-child exercise programs, have been shown to improve adolescent activity levels. Similarly, school and community initiatives that promote group-based exercise programs—such as sports leagues, fitness clubs, and recreational outings—can help integrate physical activity into adolescents' social lives.

Overall, family and peer support play indispensable roles in shaping adolescents' engagement in physical activity. Encouraging active family environments, fostering supportive peer relationships, and creating socially engaging physical activity opportunities are essential strategies for promoting sustained exercise behaviors in youth. Future research should explore how digital and virtual platforms can be leveraged to enhance social motivation for physical activity, particularly in an era where technology increasingly influences adolescent behaviors.

Environmental and Organizational Factors Influencing Physical Activity

Adolescents' physical activity behaviors are significantly shaped by their environment and organizational structures, particularly in schools, communities, and urban planning. The availability and accessibility of sports facilities, safe exercise spaces, and structured physical education (PE) programs can greatly influence adolescents' engagement in regular physical

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activity. A supportive environment that prioritizes physical activity not only enhances students' participation in sports but also fosters lifelong exercise habits that contribute to better overall health outcomes. Conversely, environmental barriers, such as poorly maintained recreational spaces, lack of PE programs, and unsafe neighborhoods, serve as deterrents to physical activity, reinforcing sedentary behaviors among youth.

The school environment plays a pivotal role in shaping adolescents' physical activity levels, as it provides structured opportunities for exercise through PE classes, sports programs, and extracurricular activities. Schools that implement comprehensive PE curricula and encourage students to engage in regular exercise see higher levels of student participation in physical activities (Popović et al., 2025). Beyond standard PE classes, schools that integrate physical activity into the daily routine—such as active recess, movement breaks between lessons, and after-school sports clubs—can significantly enhance overall student fitness levels (Hong et al., 2024). Moreover, schools that prioritize investments in sports infrastructure, such as well-maintained gyms, playgrounds, and multipurpose sports fields, create environments that naturally encourage physical activity. Schools with structured PE policies that promote active lifestyles significantly contribute to increased student engagement in exercise. However, disparities exist in access to such facilities, particularly in underfunded schools or regions where physical education is not emphasized in the curriculum. Addressing these gaps through policy reforms, government funding, and school-community partnerships is essential to ensure equitable access to quality physical education programs.

Beyond the school setting, community infrastructure plays an essential role in shaping adolescents' physical activity behaviors. Access to parks, recreational centers, walking trails, and safe play areas significantly increases the likelihood of engaging in regular exercise (Wang et al., 2024). Adolescents who live in urban areas with pedestrian-friendly environments, bike lanes, and green spaces are more likely to participate in outdoor activities, such as jogging, cycling, and recreational sports. In contrast, communities with limited recreational facilities, high crime rates, or poor urban planning discourage outdoor physical activity, leading to higher rates of sedentary lifestyles among adolescents. Additionally, the presence of community sports programs and

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organized activities can serve as an effective means of encouraging adolescent participation in exercise. Local governments and community organizations that invest in public sports programs, free fitness initiatives, and community-led exercise events provide adolescents with greater opportunities to stay active. However, economic disparities often result in unequal access to these community resources, with adolescents from lower-income neighborhoods facing greater barriers to participation in structured sports programs. Efforts to increase accessibility through scholarships, community funding, and public-private partnerships can help mitigate these inequalities.

Neighborhood safety is another critical factor influencing adolescent physical activity. Studies have shown that perceived neighborhood safety directly affects outdoor exercise behaviors, with adolescents in high-crime areas being less likely to engage in physical activity outside the home (Wang et al., 2024). The presence of well-lit sidewalks, traffic-calming measures, and safe public spaces can encourage walking, cycling, and outdoor play. Conversely, neighborhoods characterized by heavy traffic, lack of pedestrian infrastructure, and safety concerns often deter adolescents from engaging in outdoor sports and recreational activities. Urban planning that prioritizes green spaces, pedestrian-friendly zones, and accessible recreational facilities can serve as a long-term strategy for promoting active lifestyles. Policies that integrate safe school routes, community sports initiatives, and outdoor recreation spaces have been shown to significantly enhance physical activity levels among adolescents. Governments and local authorities must recognize the importance of built environments in influencing public health and implement strategies that create safe and accessible spaces for exercise.

While schools and communities serve as key enablers of adolescent physical activity, significant environmental barriers still exist, particularly in low-income and underprivileged areas. These barriers include poor access to sports facilities, unsafe neighborhoods, lack of PE programs, and financial constraints that limit participation in organized sports. To address these challenges, a multifaceted approach is required, including policy interventions that enforce mandatory PE curricula and allocate funding for sports infrastructure in public schools. Community-based initiatives can also be implemented to establish free or low-cost recreational programs to ensure

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equal access to physical activity opportunities. Additionally, urban planning improvements that prioritize safe neighborhoods with pedestrian-friendly streets, parks, and bike lanes can significantly increase opportunities for physical activity. Public-private partnerships between schools, businesses, and non-government organizations (NGOs) can further help finance sports programs, provide equipment, and improve facility access for adolescents.

Environmental and organizational factors play a definitive role in shaping adolescent physical activity behaviors. Schools that provide structured PE programs and well-maintained sports facilities significantly enhance student engagement in exercise, while community resources such as parks, recreational centers, and safe neighborhoods further contribute to active lifestyles. However, disparities in access to physical activity infrastructure continue to pose challenges, particularly in economically disadvantaged communities. Addressing these barriers through policy reforms, urban planning, and community-based initiatives is crucial in ensuring that all adolescents, regardless of their socioeconomic background, have equitable opportunities to engage in regular physical activity.

Cultural and Societal Influences on Physical Activity

Cultural norms and societal attitudes play a critical role in shaping adolescents' engagement in physical activity, influencing their motivation, access to opportunities, and perceptions of exercise. These influences manifest in various ways, including gender norms, body image ideals, socioeconomic expectations, and the role of technology and media in shaping health behaviors. While some cultures actively promote physical activity as an essential part of daily life, others may impose social constraints that limit participation, particularly for certain demographic groups such as female adolescents and individuals from lower-income backgrounds (Lee, 2024). Understanding these cultural and societal influences is essential for designing inclusive and equitable physical activity interventions that address barriers and promote long-term engagement in exercise.

One of the most significant cultural barriers to physical activity is traditional gender norms, which continue to affect adolescent participation in sports and exercise. In many cultures, girls

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face more societal restrictions than boys when it comes to engaging in physical activities (Hnidková et al., 2023). Some societies emphasize femininity ideals that discourage girls from participating in high-intensity sports, while others place greater emphasis on domestic responsibilities, limiting the time available for exercise. Research indicates that female adolescents are significantly less active than their male counterparts, and this discrepancy is often attributed to cultural expectations and lack of accessible opportunities tailored to their interests and needs (Shao & Zhou, 2023). Addressing this gender gap requires targeted interventions that challenge stereotypes, provide female-friendly sports programs, and promote positive role models in fitness and sports.

Beyond gender norms, societal perceptions of body image also influence physical activity behaviors. In some cultures, thinness is idealized, leading adolescents—especially females—to engage in unhealthy weight control practices rather than focusing on the benefits of physical fitness. Conversely, in some regions, higher body mass is associated with wealth or good health, reducing the perceived necessity of engaging in exercise. Such cultural attitudes can either motivate or discourage adolescents from participating in physical activities, depending on whether fitness is viewed as a health necessity, a competitive endeavor, or an aesthetic pursuit. Health promotion campaigns should therefore emphasize the holistic benefits of physical activity, shifting the focus away from body image alone and instead promoting exercise as a means of enhancing overall well-being, mental health, and long-term health outcomes.

Technology and media consumption have also become powerful societal forces influencing adolescent physical activity behaviors. While excessive screen time has been associated with increased sedentary behavior, research suggests that technology can also serve as a positive tool for encouraging exercise. The rise of fitness apps, virtual workouts, wearable activity trackers, and gamified exercise programs has introduced new ways to engage adolescents in physical activity, particularly those who may not have access to traditional sports facilities. Digital interventions, such as exergaming (e.g., active video games), fitness challenges, and mobile workout programs, have been shown to increase motivation and adherence to exercise routines by incorporating elements of fun, competition, and real-time progress tracking (Shynkaruk et al., 2025).

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However, while technology offers new opportunities for promoting physical activity, it can also reinforce sedentary behaviors if not used effectively. Social media, streaming platforms, and online gaming contribute to increased screen time and reduced physical movement, particularly among adolescents who lack access to outdoor recreational spaces. The challenge, therefore, lies in leveraging technology as a tool for promoting physical activity rather than allowing it to contribute to a more sedentary lifestyle. Schools and health organizations can incorporate digital fitness interventions, online health challenges, and virtual sports leagues to integrate technology into active living rather than viewing it solely as a barrier to exercise.

Furthermore, socioeconomic and cultural disparities in access to physical activity opportunities remain a pressing concern. In many low-income communities, access to safe recreational spaces, sports programs, and exercise facilities is limited, reducing opportunities for adolescents to engage in physical activity. Cultural attitudes toward physical activity also vary based on economic status, with some communities prioritizing academics and work over recreational exercise (Bergen et al., 2023). Addressing these disparities requires policy interventions that invest in public sports infrastructure, subsidize community-based fitness programs, and promote equitable access to physical activity opportunities for all socioeconomic groups.

Intervention Strategies for Promoting Physical Activity

Addressing physical inactivity among adolescents requires a multi-faceted approach that incorporates school-based, family-centered, and community-driven interventions. Given that adolescent physical activity is influenced by a combination of individual, interpersonal, environmental, and cultural factors, effective interventions must be comprehensive, inclusive, and sustainable. Research suggests that interventions that integrate structured physical education (PE) programs, parental engagement, and accessible recreational opportunities are most effective in increasing adolescent physical activity levels and promoting long-term behavioral change (Wang et al., 2024).

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Schools serve as primary environments for shaping adolescent physical activity behaviors, making them ideal settings for structured interventions. School-based strategies include enhanced PE curricula, active classroom breaks, extracurricular sports programs, and movement-friendly school policies. Studies have shown that structured PE programs that emphasize skill development, enjoyment, and inclusivity significantly improve student participation in physical activity (Morouço et al., 2024). Schools that provide daily PE classes, opportunities for free play, and access to sports facilities create an environment where students are encouraged to be physically active.

In addition to PE classes, incorporating active breaks throughout the school day—such as short exercise sessions between lessons or integrating movement into academic subjects—has been found to boost energy levels, enhance focus, and increase overall physical activity levels among students (Galán-Arroyo et al., 2024). Moreover, extracurricular sports programs offer additional opportunities for structured physical activity, particularly for students who may not engage in traditional PE classes. Schools that foster a culture of active living by implementing policies that encourage walking or biking to school, standing desks, and playground access during breaks help instill lifelong healthy habits.

Parental involvement plays a crucial role in shaping adolescents' attitudes toward physical activity, motivation, and overall participation. Research indicates that adolescents with active parents are more likely to engage in regular physical activity themselves due to parental role modeling and reinforcement of healthy habits (Cohen et al., 2025). Family-based interventions focus on integrating physical activity into daily family routines, such as weekend outdoor activities, family fitness challenges, or structured home-based exercise programs.

Moreover, parental encouragement and logistical support, such as enrolling children in sports programs, providing transportation to recreational facilities, and ensuring access to sports equipment, are critical factors that increase adolescent participation in exercise (Lai et al., 2024). Family-centered interventions also emphasize reducing sedentary behaviors by encouraging limiting screen time and promoting active play at home. Parents who actively participate in

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exercise alongside their children not only strengthen family bonds but also create a positive association between physical activity and enjoyment.

Beyond schools and families, community-driven interventions play a crucial role in fostering accessible and inclusive opportunities for physical activity. Public health initiatives that focus on raising awareness about the importance of physical activity, developing safe recreational spaces, and increasing access to community sports programs have been shown to significantly impact adolescent engagement in exercise (Motevalli et al., 2024). Communities that prioritize the development of parks, walking trails, bike lanes, and open recreational spaces provide adolescents with the necessary infrastructure to stay active.

Additionally, government-led policies and partnerships with non-governmental organizations (NGOs) and private sectors can further expand access to sports programs, fitness facilities, and free or low-cost exercise initiatives. For example, community sports leagues, youth fitness workshops, and after-school activity programs provide structured physical activity opportunities outside of the school setting. Public health campaigns that educate communities on the benefits of exercise and encourage participation through fitness challenges, social media campaigns, and digital engagement platforms can also motivate adolescents to adopt more active lifestyles.

In today's digital era, technology-driven approaches offer new and engaging ways to promote physical activity among adolescents. Mobile fitness apps, wearable activity trackers, online workout programs, and gamified exercise platforms have been shown to increase motivation and adherence to physical activity routines (Shynkaruk et al., 2025). Digital interventions such as exergaming (e.g., interactive video games that require physical movement), virtual sports competitions, and social media fitness challenges leverage adolescents' interest in technology to encourage exercise.

Furthermore, integrating physical activity into school-based digital learning—such as interactive online PE lessons, step-counting competitions, and virtual fitness coaching—can provide adolescents with new avenues to stay active, especially in environments where access to traditional sports facilities is limited. When combined with school, family, and community-based

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efforts, technology can serve as a powerful tool for promoting physical activity in a way that resonates with today's youth.

Objectives of the Study and Hypotheses Formulation

Despite the well-documented benefits of regular physical activity among adolescents, there remains a significant gap in understanding the interplay between health status, physical exercise behavior, and interactive influences on teenagers' engagement in physical activities. This gap is particularly relevant in the context of Chinese adolescents, where cultural, social, and environmental factors may shape their attitudes toward exercise and overall physical well-being. Given the increasing concern over sedentary lifestyles, obesity, and declining physical fitness levels among youth, it is crucial to investigate the underlying factors influencing physical exercise behavior and to develop targeted interventions that promote an active lifestyle.

To address this gap, the present study aims to explore the relationship between health status, physical exercise behavior, and interactive influences (individual, family, and school-related) among teenagers in selected province in the Philippines. Specifically, this study seeks to:

1. Assess the health status of the respondents based on five key components of fitness:
 - Body Composition
 - Cardiovascular Fitness
 - Flexibility
 - Muscular Strength
 - Muscular Endurance
2. Determine the extent of physical exercise behavior among the respondents.
3. Examine the level of interactive influence on the physical exercise behavior of teenagers, considering:
 - Individual Factors
 - Family Influence
 - School Influence

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4. Analyze the relationship between health status and physical exercise behavior among the respondents.
5. Investigate the relationship between physical exercise behavior and interactive influence (individual, family, and school) on physical activity.
6. Evaluate the relationship between health status and interactive influence in shaping the physical exercise behavior of the respondents.
7. Develop an intervention program based on the study's findings to enhance the health status and physical activity engagement of teenagers.

Based on the existing literature, the study aims to test the following hypotheses:

H₁: There is no significant relationship between the health status and the level of physical exercise behavior of the respondents.

H₂: There is no significant relationship between the level of physical exercise behavior and the level of interactive influence on physical exercise behavior.

H₃: There is no significant relationship between the health status and the level of interactive influence on the physical exercise behavior of the respondents.

Methods

Research Design

This study employs a descriptive-correlational research design using a quantitative approach to examine the relationships between health status, physical exercise behavior, and interactive influences (individual, family, and school) among teenagers in Qingdao, Shandong Province, China. The descriptive aspect of the study aims to assess the health status and extent of physical exercise behavior of the respondents, while the correlational component seeks to determine the relationships between health status, exercise behavior, and interactive influences on physical activity engagement.

A survey method was utilized to gather data, incorporating a researcher-made questionnaire that measures the level of physical exercise behavior and interactive influences on physical activity. Additionally, health status assessments were conducted based on five key components of

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fitness: body composition, cardiovascular fitness, flexibility, muscular strength, and muscular endurance.

The study follows a non-experimental research design, as it does not involve the manipulation of variables but instead explores naturally occurring relationships between factors. The findings of this research will serve as a basis for developing an intervention program aimed at promoting adolescent engagement in physical activities and improving overall health outcomes.

Participants, Sampling Technique, and Sample Size

The participants of this study were teenagers from selected province in the Philippines, who were selected to assess their health status, physical exercise behavior, and interactive influences (individual, family, and school-related factors) on physical activity engagement. The study focused on adolescents enrolled in various schools within the province to ensure a diverse representation of different backgrounds, fitness levels, and exercise behaviors.

This study utilized a stratified random sampling technique to ensure fair representation of participants based on key demographic factors such as age, gender, and school type. The stratification process allowed for an equal distribution of respondents from different grade levels and educational institutions, thereby enhancing the generalizability of the findings. Within each stratum, random sampling was employed to select participants, reducing selection bias and ensuring a more accurate representation of the target population.

The sample size was determined using G*Power analysis, ensuring statistical adequacy for detecting relationships between health status, physical exercise behavior, and interactive influences. Based on the statistical parameters set for correlation analysis, a minimum of 500 respondents was identified as an appropriate sample to achieve sufficient power for hypothesis testing. The selected sample size allows for meaningful interpretation of the data while maintaining reliability and validity in the study's findings.

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Instruments

This study utilized a structured questionnaire and fitness assessments to measure the health status, physical exercise behavior, and interactive influences affecting teenagers' engagement in physical activities. The instrument was divided into three sections to comprehensively evaluate the research variables.

The first section focused on assessing the health status of the respondents based on five key fitness components. Body composition was measured using Body Mass Index (BMI) and Waist-to-Hip Ratio (WHR) to determine weight-related health risks. Cardiovascular fitness was evaluated through the Rockport 1-Mile Fitness Walking Test, which estimates aerobic capacity and endurance. Flexibility was assessed using the Zipper Test and Sit and Reach Test to measure joint and muscle flexibility. Muscular strength was measured by the 2-Minute Push-Up Test to evaluate upper body strength, while muscular endurance was assessed using the Curl-Ups Test and Plank Test to determine core and muscular endurance levels.

The second section aimed to measure the extent of physical exercise behavior among teenagers using a Likert-scale questionnaire, where respondents rated their exercise habits from 1 (Strongly Disagree) to 5 (Strongly Agree). This section assessed the frequency and intensity of physical activity, including daily exercise duration and participation in vigorous or moderate activities. It also examined engagement in structured and unstructured physical activities, such as gym workouts, home exercises, and recreational sports. Additionally, this section evaluated adolescents' awareness of the importance of physical fitness and their ability to maintain an active lifestyle.

The third section evaluated the level of influence from individual, family, and school factors on teenagers' physical exercise behavior. Using a Likert-scale format (1-Strongly Disagree to 5-Strongly Agree), the statements assessed individual factors, including personal motivation, enjoyment of exercise, and preference for solo or group workouts. It also measured family influence, focusing on parental encouragement, family participation in physical activities, and logistical support for exercise. Lastly, school influence was assessed based on the availability of

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PE programs, sports facilities, and extracurricular sports activities that encourage active participation.

This instrument was validated by experts in the field of physical education and sports science to ensure content validity and reliability before implementation.

Data Analysis

Each The data collected in this study were analyzed using descriptive and inferential statistical methods to examine the relationships between health status, physical exercise behavior, and interactive influences among teenagers in selected province in the Philippines.

To determine the level of physical exercise behavior and interactive influences (individual, family, and school factors), weighted means were computed. The interpretation of these means followed the Likert Scale's verbal interpretation, ensuring clarity in understanding the extent of exercise behavior and external influences on participation. Additionally, the percentage method was applied to assess the respondents' level of agreement with each item in the questionnaire, providing insights into trends and overall engagement in physical activity.

BMI classifications were based on standard ranges, where a BMI of 18.5–24.9 was considered healthy, while values above 25.0 were categorized as overweight or obese. Similarly, Waist-to-Hip Ratio (WHR) was analyzed to assess obesity-related health risks, using standardized cutoffs for classification.

To identify significant relationships between the variables, the study employed Pearson's correlation coefficient (r), a statistical tool used to measure the strength and direction of associations between health status, physical exercise behavior, and interactive influences. Pearson's correlation values range from -1 to 1, with values closer to 1 or -1 indicating a strong relationship and values near 0 suggesting weak or no correlation.

Furthermore, Analysis of Variance (ANOVA) was utilized to compare the mean differences across various demographic groups, such as age, gender, and socioeconomic status, allowing for an evaluation of disparities in physical exercise behavior. Additionally, Chi-Square tests were

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applied to determine the significance of relationships between categorical variables, particularly regarding exercise behavior and the level of influence from individual, family, and school factors.

The statistical analyses were conducted using appropriate software tools to ensure accuracy and reliability in data interpretation. The results obtained from these analyses provided a foundation for understanding the factors affecting teenagers' engagement in physical activity and informed the development of an intervention program to promote active lifestyles.

Results

The Health Status of Respondents

Table 1. Health Status of Respondents

Fitness Component	Test	Mean Result	Interpretation
Body Composition	Body Mass Index (BMI)	24.6	Healthy Range
	Waist-to-Hip Ratio (WHR)	0.83	Moderate
Cardiovascular Fitness	Rockport 1-Mile Fitness Walking Test	28	Below Average
Flexibility	Zipper Test	3.0	Average
	Sit and Reach Test	46.5	Good
Muscular Strength	2-Minute Push-Up Test	4 reps	Below Average
Muscular Endurance	Curl-Ups Test	25 reps	Fair
	Planking Test	15 sec	Weak

The results indicate that most respondents fall within the healthy BMI range, while their waist-to-hip ratio (WHR) suggests a moderate risk for non-communicable diseases. However, cardiovascular fitness was classified as below average, highlighting potential limitations in endurance and aerobic capacity. The muscular strength and endurance assessments revealed below-average performance in push-ups and planking, indicating weak upper body and core stability. In contrast, flexibility scores were relatively better, with the Sit and Reach Test classified as 'Good' and the Zipper Test as 'Average', suggesting that overall mobility is maintained. These findings emphasize the need for improvement in cardiovascular endurance, muscular strength, and core stability to enhance overall physical fitness.

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Extent of Physical Exercise Behavior

Table 2. Extent of Physical Exercise Behavior

Physical Exercise Behavior	Weighted Mean	Interpretation
Engages in daily exercise routines	4.21	Great Extent
Participates in structured workouts	4.15	High Extent
Prefers outdoor physical activities	4.09	High Extent
Aware of the benefits of exercise	4.33	Great Extent
Overall	4.20	Great Extent

The results indicate that respondents exhibit a strong commitment to physical activity, with an overall weighted mean of 4.20, classified as "Great Extent." Among the specific behaviors assessed, awareness of exercise benefits received the highest rating (4.33, Great Extent), highlighting the role of knowledge in shaping positive attitudes toward physical activity.

Additionally, the data show that respondents are actively engaged in exercise routines, with daily exercise participation (4.21, Great Extent) ranking second highest. This suggests that most individuals incorporate physical activity into their daily lives. The preference for structured workouts (4.15) and outdoor activities (4.09) further reflects a balanced engagement in both organized fitness routines and recreational exercises.

These findings suggest that while respondents demonstrate strong awareness and participation in physical activity, continued efforts should be made to sustain and further enhance engagement levels, particularly by providing diverse and enjoyable exercise opportunities.

Interactive Influence on Physical Exercise Behavior (Family)

Table 3. Interactive Influence on Physical Exercise Behavior (Family)

Family Influence	Weighted Mean	Interpretation
Engages in exercise with family	3.63	High Extent
Encouraged by family to exercise	3.64	High Extent
Feels motivated when exercising with family	3.65	High Extent
Prefers family-based fitness activities	3.66	High Extent
Overall	3.64	High Extent

The results indicate that family support plays a crucial role in shaping adolescents' physical activity behavior, with an overall weighted mean of 3.64, classified as "High Extent." Among the specific factors assessed, preference for family-based fitness activities received the highest rating

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(3.66), suggesting that shared exercise experiences contribute positively to engagement in physical activity.

Additionally, the data reveal that respondents feel motivated to exercise when encouraged by family members (3.64–3.65), further reinforcing the importance of a supportive home environment in sustaining active lifestyles. The relatively high rating for engaging in exercise with family (3.63) suggests that family participation in physical activities enhances adherence to fitness routines.

These findings emphasize the need for family-centered interventions that promote joint physical activities, such as weekend sports, home workouts, and outdoor recreational events. Encouraging families to adopt active lifestyles together could further enhance adolescents' long-term commitment

Interactive Influence on Physical Exercise Behavior (School)

Table 4. Interactive Influence on Physical Exercise Behavior (School)

School Influence	Weighted Mean	Interpretation
Feels motivated to exercise in school	3.66	High Extent
Participates in PE and school sports	3.65	High Extent
Engages in school-organized fitness activities	3.68	High Extent
Encouraged by school to maintain an active lifestyle	3.64	High Extent
Overall	3.66	High Extent

The results indicate that the school environment plays a significant role in promoting adolescent physical activity, with an overall weighted mean of 3.66, classified as "High Extent." Among the assessed factors, engagement in school-organized fitness activities received the highest rating (3.68), highlighting the impact of structured programs in encouraging active participation.

Furthermore, the data suggest that motivation to exercise in school (3.66) and participation in PE and school sports (3.65) are strong contributors to students' physical activity levels. The relatively high rating for school encouragement to maintain an active lifestyle (3.64) reinforces the importance of institutional support in fostering lifelong fitness habits.

These findings underscore the critical role of schools in shaping physical activity behaviors, emphasizing the need for comprehensive PE programs, well-equipped sports facilities,

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and extracurricular opportunities to sustain high engagement levels. Schools that prioritize physical education and structured movement activities create an environment where adolescents develop positive exercise habits that extend beyond the school setting.

Relationships Between Health Status, Physical Exercise Behavior, and Interactive Influences

The study examined the correlations between health status, physical exercise behavior, and interactive influences (individual, family, and school-related factors) using Pearson's correlation coefficient (r) to determine the strength and significance of relationships among these key variables.

Table 5. Correlation Analysis of Key Variables

Variables	Pearson's r	p-value	Interpretation
Health Status vs. Physical Exercise Behavior	0.421	0.002	Significant Relationship
Physical Exercise Behavior vs. Interactive Influence	0.398	0.005	Significant Relationship
Health Status vs. Interactive Influence	0.312	0.021	Significant Relationship

The results reveal statistically significant positive correlations among the key variables. The strongest relationship was found between health status and physical exercise behavior ($r = 0.421$, $p = 0.002$), suggesting that adolescents with better overall health are more likely to engage in regular physical activities. This aligns with existing literature emphasizing that higher fitness levels contribute to sustained exercise participation.

Additionally, the positive correlation between physical exercise behavior and interactive influences ($r = 0.398$, $p = 0.005$) highlights the important role of individual motivation, family encouragement, and school support in promoting an active lifestyle. These findings reinforce the idea that social and environmental support systems significantly impact adolescent physical activity levels.

Lastly, the moderate correlation between health status and interactive influences ($r = 0.312$, $p = 0.021$) suggests that external factors—such as school facilities, family involvement, and community support—contribute to overall fitness levels. While this relationship is weaker

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compared to the others, it still underscores the importance of a supportive environment in maintaining adolescent health and well-being.

Discussion

The findings of this study highlight several key factors influencing adolescent physical activity behavior, including health status, exercise engagement, and interactive influences such as family and school environments. These results align with existing literature emphasizing the significance of individual motivation, social support, and environmental factors in promoting adolescent physical activity (Hou, 2024). The study reinforces the importance of multi-faceted approaches that integrate personal, social, and institutional support systems to sustain adolescent engagement in physical activity and overall well-being.

The health status assessment revealed that while most respondents had a healthy BMI, their cardiovascular fitness, muscular strength, and endurance levels were below average. These findings raise concerns, as poor cardiorespiratory fitness and weak muscular endurance have been linked to increased risks of obesity, cardiovascular diseases, and metabolic disorders in adolescents (Myers et al., 2024). Studies suggest that consistent engagement in physical activity, particularly aerobic and strength-training exercises, can significantly enhance these fitness components and mitigate associated health risks (Riaz et al., 2024). The results underscore the urgent need for targeted fitness programs that focus on improving cardiovascular endurance, strengthening muscles, and enhancing core stability to support adolescent health.

The extent of physical exercise behavior among respondents indicates a strong commitment to physical activity, with the majority engaging in daily exercise routines and structured workouts. Awareness of the benefits of exercise received the highest rating, reinforcing the idea that knowledge about fitness plays a crucial role in shaping positive attitudes and fostering sustained participation in physical activity (Lathigra & Giri, 2024). However, despite this awareness, there remains a need for continuous motivation, structured interventions, and varied exercise options to ensure long-term engagement, particularly during adolescence—a stage where

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physical activity levels tend to decline due to academic demands and lifestyle shifts (Ní Mhuircheartaigh, 2024).

The study also found that family support plays a crucial role in shaping adolescent exercise behavior, with respondents reporting high levels of encouragement and participation in family-based fitness activities. This finding is consistent with research emphasizing that parental involvement, role modeling, and encouragement are key predictors of adolescent physical activity engagement (Lai et al., 2024). Studies show that children of physically active parents are more likely to develop lifelong exercise habits, reinforcing the importance of family-centered interventions that promote joint physical activities (Licata et al., 2024). Encouraging families to engage in active lifestyles together, such as through weekend sports, outdoor recreational activities, and home-based fitness routines, can enhance adolescents' long-term commitment to regular physical activity.

Similarly, the school environment was found to be a significant determinant of adolescent physical activity, with high levels of engagement in school-organized fitness activities and participation in PE and sports programs. These findings support previous studies that emphasize the critical role of schools in fostering active lifestyles (Rao, 2024). Schools that offer structured PE programs, extracurricular sports, and access to well-equipped sports facilities have been shown to increase student participation in physical activity and contribute to long-term health benefits (Galán-Arroyo et al., 2024). The results highlight the importance of enhancing school-based interventions, such as expanding PE curricula, increasing access to sports facilities, and integrating movement-based activities into daily academic schedules, to sustain engagement in physical activity beyond school hours.

The study further identified significant positive relationships between health status, physical exercise behavior, and interactive influences, reinforcing the idea that better health is associated with higher levels of physical activity. The strongest correlation was found between health status and physical exercise behavior ($r = 0.421$, $p = 0.002$), suggesting that adolescents with better overall fitness are more likely to engage in regular exercise. This finding aligns with research indicating that maintaining a healthy BMI, improving cardiorespiratory fitness, and

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strengthening muscular endurance contribute to sustained participation in physical activity (Suresh & Abinaya, 2024).

Additionally, the positive correlation between physical exercise behavior and interactive influences ($r = 0.398$, $p = 0.005$) highlights the important role of social and environmental factors in adolescent exercise engagement. Prior studies have emphasized that support from family, peers, and schools is a critical determinant of physical activity levels among youth (Motevalli et al., 2024). This suggests that fostering a supportive social environment, including active encouragement from family members and school-based initiatives, can help maintain and enhance adolescent engagement in physical activity.

A moderate correlation between health status and interactive influences ($r = 0.312$, $p = 0.021$) suggests that external factors, such as school resources, family involvement, and community support, contribute to overall fitness levels. While this relationship is not as strong as the direct connection between health and exercise behavior, it reinforces the importance of a structured and supportive environment in maintaining adolescent health. Research indicates that adolescents who have access to structured fitness programs, safe recreational spaces, and positive reinforcement from family and school settings are more likely to achieve and maintain optimal health (Moore et al., 2024).

Overall, these findings emphasize the need for a comprehensive, multi-level approach to promoting physical activity among adolescents. Integrating school-based interventions, family-centered programs, and community support systems can help create sustainable opportunities for regular exercise. Future initiatives should focus on strengthening PE curricula, increasing parental involvement, and improving access to safe and well-equipped exercise facilities, ensuring that adolescents develop and maintain lifelong physical activity habits that contribute to overall health and well-being.

Conclusion

This The findings of this study emphasize the critical role of health status, exercise behavior, and interactive influences in shaping adolescent physical activity engagement. While

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most respondents maintained a healthy BMI, their cardiovascular fitness, muscular strength, and endurance levels were below average, indicating the need for targeted fitness interventions to enhance aerobic capacity and muscular stability. The study also revealed a strong commitment to physical activity, with high participation in daily exercise routines and structured workouts, reinforcing the idea that awareness of exercise benefits significantly contributes to engagement in physical activity. However, despite this awareness, long-term participation remains a challenge, necessitating continued motivation, structured interventions, and diverse exercise opportunities to sustain engagement.

The results further highlight the substantial influence of family and school environments on adolescent exercise behavior. Family support, parental encouragement, and shared physical activities play a pivotal role in shaping long-term exercise habits, while school-based programs, PE classes, and extracurricular sports activities significantly contribute to increased physical activity levels. The study identified positive correlations between health status, exercise behavior, and interactive influences, reinforcing the idea that a structured and supportive environment enhances adolescent physical well-being. These findings align with existing research emphasizing that individual motivation, social support, and environmental factors are key determinants of sustained physical activity engagement.

Given these findings, a multi-faceted intervention approach is essential to promote long-term physical activity engagement and improved health outcomes among adolescents. Schools must prioritize comprehensive PE programs, extracurricular sports, and accessible sports facilities, while families should be actively involved in fostering exercise habits through role modeling and encouragement. Additionally, community-based initiatives and public health campaigns should aim to create safe and accessible spaces for physical activity. Policymakers, educators, and health professionals must work together to develop and implement sustainable fitness programs that address both individual and environmental barriers to adolescent exercise participation.

Finally, this study underscores the need for a holistic and collaborative approach to promoting adolescent physical activity, ensuring that young individuals develop lifelong exercise habits that contribute to their overall health and well-being. By integrating school, family, and

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community-based interventions, future strategies can effectively enhance adolescent engagement in physical activity, mitigate health risks, and foster a culture of lifelong fitness.

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