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EFFECT OF SPORTS AND EXERCISE ON THE PHYSICAL AND MENTAL HEALTH OF SCHOOL-GOING CHILDREN

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Abstract

Background: *Sports and regular physical exercise are widely recognized as key determinants of physical and mental health during childhood and adolescence. The age range of 11–18 years represents a critical developmental stage marked by rapid physical growth and psychological changes. Despite this, reduced physical activity and increased sedentary behaviour among school-going children have raised concerns regarding health and well-being. This study aimed to examine the effect of sports and exercise on the physical and mental health of school-going children.*

Methods: *A cross-sectional quantitative study was conducted among 2000 school-going children aged 11–18 years. Participants were selected using a multistage sampling technique from public and private schools. Data were collected using standardized questionnaires assessing sports and exercise participation, physical health indicators, and mental health status. Physical health outcomes included fitness and perceived health, while mental health was measured through validated scales assessing stress, anxiety, depression, and self-esteem. Data were analysed using descriptive statistics, Pearson correlation, and multiple linear regression analysis. Statistical significance was set at $p < 0.05$.*

Results: *Regular participation in sports and exercise demonstrated a significant positive association with physical health ($r = 0.62$, $p < 0.001$) and mental health ($r = 0.58$, $p < 0.001$). Regression analysis indicated that sports and exercise significantly predicted physical health outcomes ($\beta = 0.47$, $p < 0.001$) and mental health outcomes ($\beta = 0.42$, $p < 0.001$), after controlling for age and gender. Students with higher levels of physical activity reported lower stress and anxiety scores ($p< 0.01$) and higher self-esteem ($p < 0.001$). Additionally, physical activity was positively associated with concentration and academic engagement ($r = 0.39$, $p < 0.001$).*

Conclusion: *The findings indicate that sports and exercise have a significant and positive effect on both physical and mental health among school-going children aged 11–18 years. Regular participation in physical activity is associated with improved fitness, enhanced psychological well-being, and better academic engagement. The study highlights the importance of integrating structured sports*

and exercise programs into school curricula to promote holistic development and long-term health among children and adolescents.

INTRODUCTION

Sports and regular physical activity play a vital role in promoting physical, psychological, and social well-being across the lifespan, particularly during childhood and adolescence. Engagement in sports and exercise contributes to the development of cardiovascular fitness, muscular strength, healthy body composition, and motor skills, while also supporting emotional regulation, stress management, and positive self-concept. As a result, physical activity is widely recognized as a key determinant of overall health and quality of life among young populations.

The adolescent period, typically defined as ages 11–18 years, represents a critical developmental stage marked by rapid physical growth, hormonal changes, and significant cognitive and emotional development. During this period, individuals establish lifestyle behaviours that often persist into adulthood. However, recent global and regional trends indicate a steady decline in physical activity levels among school-going children, accompanied by increased sedentary behaviours such as prolonged screen time and reduced participation in organized sports. These behavioural shifts have raised concerns regarding rising rates of physical inactivity–related health problems, including poor physical fitness, obesity, anxiety, depression, and reduced academic engagement.

Emerging evidence suggests that regular participation in sports and structured exercise is positively associated with both physical and mental health outcomes in children and adolescents. Physically active students tend to exhibit better cardiovascular endurance, muscular fitness, and overall perceived health. Psychologically, engagement in sports has been linked to lower levels of stress, anxiety, and depressive symptoms, as well as higher self-esteem, social competence, and emotional resilience. Additionally, physical activity has been shown to enhance cognitive functioning, attention, and classroom behaviour, thereby contributing to improved academic performance and school engagement.

Despite growing evidence supporting the benefits of sports and exercise, participation levels remain suboptimal in many school settings, particularly in developing countries where academic pressures, limited facilities, and insufficient policy support may restrict opportunities for physical activity. Furthermore, existing studies often focus on either physical or mental health outcomes in isolation, with limited research examining their combined effects among school-going children using large and diverse samples.

Therefore, the present study aimed to examine the effect of sports and exercise participation on both physical and mental health among school-going children aged 11–18 years. By assessing multiple physical and psychological health indicators and exploring their associations with levels of physical activity, this study seeks to provide empirical evidence to inform school-based physical activity interventions and educational policies aimed at promoting holistic development and long-term health in children and adolescents.

Significance of the Study

This study provides evidence on the positive effects of sports and exercise on both physical and mental health among school-going children aged 11–18 years. The findings highlight the importance of integrating structured physical activity programs into school curricula to enhance fitness, psychological well-being, and academic engagement.

The results can guide educators, policymakers, and health practitioners in designing effective school-based interventions to reduce inactivity, promote holistic development, and improve long-term health outcomes in children and adolescents.

Research Questions

1. What is the association between sports and exercise participation and physical health outcomes among school-going children aged 11–18 years?
2. What is the relationship between sports and exercise participation and mental health

outcomes among school-going children aged 11–18 years?

3. To what extent does sports and exercise participation predict physical and mental health outcomes after controlling for age and gender?

Research Hypotheses

H_1: Sports and exercise participation is significantly associated with physical health outcomes among school-going children aged 11–18 years.

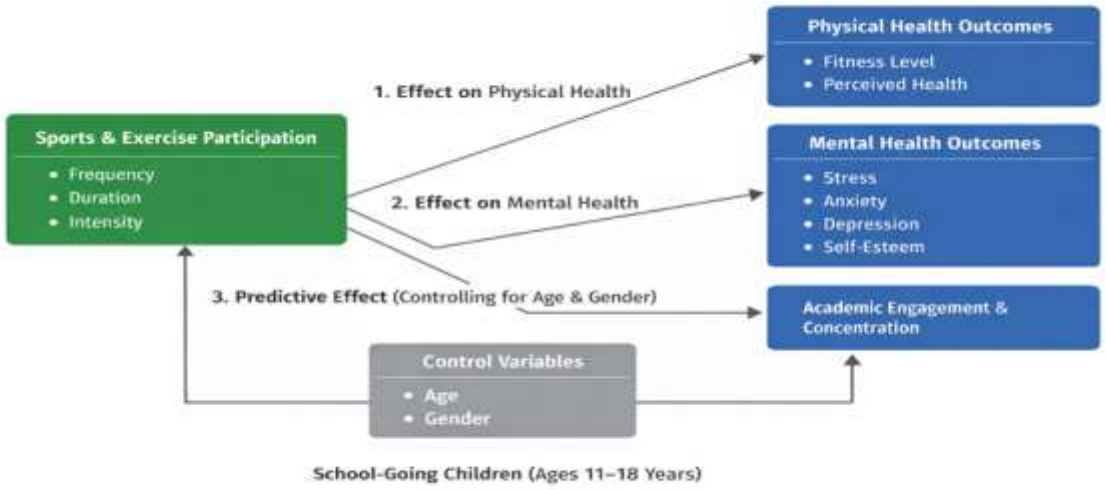
H_2: Sports and exercise participation is significantly associated with mental health outcomes among school-going children aged 11–18 years.

H_3: Sports and exercise participation significantly predicts physical and mental health outcomes among school-going children aged 11–18 years after controlling for age and gender.

Conceptual Framework

The conceptual framework of this study illustrates the relationship between sports and exercise participation (independent variable) and physical and mental health outcomes (dependent variables) among school-going children aged 11–18 years. It also considers demographic factors such as age and gender as control variables that may influence these relationships.

- **Independent Variable:**
  - Participation in sports and exercise (frequency, duration, intensity)
- **Dependent Variables:**
  - Physical health outcomes (fitness level, perceived health)
  - Mental health outcomes (stress, anxiety, depression, self-esteem)
  - Academic engagement and concentration
- **Control Variables:**
  - Age
  - Gender



Aim and Objectives

Aim:

To examine the effect of sports and exercise participation on the physical and mental health of school-going children aged 11–18 years.

Objectives:

1. To assess the association between sports and exercise participation and physical health outcomes.

2. To examine the relationship between sports and exercise participation and mental health outcomes.
3. To determine the predictive effect of sports and exercise on physical and mental health after controlling for age and gender.

Literature Review

Sports and Physical Activity in Childhood and Adolescence:

Regular participation in sports and physical activity is widely acknowledged as a fundamental component of healthy growth and development during childhood and adolescence. The World Health Organization recommends that children and adolescents engage in at least 60 minutes of moderate-to-vigorous physical activity daily to support optimal physical, mental, and social health. Despite these recommendations, global evidence indicates that a large proportion of school-going children fail to meet the minimum physical activity guidelines, leading to increased health risks at an early age.

Adolescence represents a crucial period for establishing lifelong health behaviours. Patterns of physical activity formed during this stage often persist into adulthood, influencing long-term health outcomes. However, studies have reported a consistent decline in physical activity levels during adolescence, particularly among older students and females. Factors contributing to this decline include academic pressure, increased screen time, lack of access to sports facilities, and insufficient emphasis on physical education within school systems.

Effects of Sports and Exercise on Physical Health

A substantial body of research has demonstrated the positive impact of sports and exercise on physical health among children and adolescents. Regular physical activity is associated with improved cardiovascular fitness, muscular strength, flexibility, bone density, and healthy body composition. Participation in organized sports has also been linked to reduced risk of obesity, metabolic disorders, and lifestyle-related diseases later in life.

Several cross-sectional and longitudinal studies have reported that physically active school children exhibit higher levels of overall fitness and better self-rated health compared to their inactive peers. School-based sports programs and physical education interventions have been shown to significantly improve endurance, strength, and motor skills. Moreover, engagement in sports contributes to the development of coordination, balance, and functional movement patterns essential for daily activities and athletic performance.

Sports, Exercise, and Mental Health Outcomes

Beyond physical benefits, sports and regular exercise play a critical role in promoting mental health and psychological well-being among young people. Empirical evidence suggests that physically active children experience lower levels of stress, anxiety, and depressive symptoms. Exercise is believed to influence mental health through physiological mechanisms, such as the release of endorphins and neurotransmitters, as well as psychosocial pathways, including social interaction, goal achievement, and enhanced self-efficacy.

Participation in sports has been consistently associated with higher self-esteem, improved mood, and better emotional regulation in adolescents. Team sports, in particular, provide opportunities for social bonding, cooperation, and peer support, which are essential for positive psychological development. Studies have also indicated that adolescents who regularly engage in physical activity demonstrate greater resilience to academic and social stressors compared to less active peers.

Physical Activity, Cognitive Function, and Academic Engagement

An emerging area of research highlights the relationship between physical activity and cognitive functioning in school-aged children. Regular exercise has been linked to improvements in attention, concentration, memory, and executive functioning. These cognitive benefits are believed to result from increased cerebral blood

flow, neurogenesis, and enhanced brain plasticity associated with physical activity.

Evidence from school-based studies suggests that students who participate in sports and exercise exhibit better classroom behaviour, higher levels of academic engagement, and improved academic performance. Physical activity has also been associated with reduced absenteeism and improved motivation toward learning. These findings emphasize the role of sports not only in health promotion but also in supporting educational outcomes.

Gaps in Existing Literature

Although the positive effects of sports and exercise on physical and mental health are well documented, several gaps remain in the existing literature. Many studies focus on either physical or mental health outcomes in isolation, limiting a comprehensive understanding of the combined effects of physical activity on overall well-being. Additionally, much of the available evidence is derived from high-income countries, with limited large-scale studies conducted in developing regions where contextual factors such as resource availability, cultural norms, and educational priorities may influence physical activity behaviours.

Furthermore, variations in study design, measurement tools, and sample characteristics make it difficult to generalize findings across populations. There is a need for large-sample, school-based studies that simultaneously examine physical health, mental health, and academic-related outcomes using standardized assessment methods.

Rationale for the Present Study

Given the declining levels of physical activity among school-going children and the growing burden of physical and mental health problems during adolescence, there is a clear need for empirical research that examines the role of sports and exercise in promoting holistic development. The present study addresses existing gaps by investigating the effects of sports and exercise participation on both physical and mental health outcomes among a large sample of school-going children aged 11–18 years. By providing evidence from a diverse school-based population, this study aims to inform policy development, school curricula design, and targeted interventions to enhance physical activity participation and overall well-being among children and adolescents.

Methods and Materials

Study Design:

A cross-sectional quantitative study was conducted to examine the effect of sports and exercise participation on physical and mental health among school-going children aged 11–18 years.

Study Population and Sample:

The study population included students enrolled in public and private schools within the selected region. A sample of 2,000 children was selected using a multistage sampling technique: schools were first randomly selected, followed by random selection of students from each grade. Inclusion criteria were: aged 11–18 years, enrolled in school, and providing informed consent. Students with chronic illnesses or physical disabilities preventing participation in sports were excluded.

Data Collection Tools:

Data were collected using standardized, validated questionnaires covering three domains:

1. **Sports and Exercise Participation:** Frequency, duration, and intensity of physical activity and organized sports involvement.

2. **Physical Health Indicators:**
   - Fitness measures (self-reported or school-assessed fitness tests)
   - Perceived health (Likert-scale questions)
3. **Mental Health Outcomes:** Validated scales measuring stress, anxiety, depression, and self-esteem.

Demographic information, including age and gender, was also recorded.

Procedure

Trained researchers visited selected schools and administered the questionnaires during school hours. Participants were briefed about the purpose

of the study, and assent from students and consent from parents/guardians were obtained. Data confidentiality and voluntary participation were ensured.

Data Analysis

Data were entered into **SPSS v26** for analysis.

- **Descriptive statistics** summarized demographic characteristics and levels of physical activity.
- **Pearson correlation** assessed associations between sports/exercise participation and physical and mental health outcomes.
- **Multiple linear regression** was used to evaluate the predictive effect of sports and exercise on physical and mental health, controlling for age and gender.

Statistical significance was set at $p < 0.05$.

Ethical Considerations

The study received approval from the relevant institutional ethics committee. Participants' privacy was protected, and data were anonymized. Participation was voluntary, and students could withdraw at any time without consequences.

Results

1. Demographic Characteristics of Participants

A total of 2,000 school-going children participated in the study. The mean age of participants was 14.8 ± 2.1 years, with 52% males (n = 1,040) and 48% females (n = 960). Table 1 summarizes the demographic and socioeconomic characteristics.

Table 1. Demographic Characteristics of Participants (n = 2,000)

Variable	Category	Frequency (n)	Percentage (%)
Age	11–13 years	620	31.0
	14–16 years	870	43.5
	17–18 years	510	25.5
Gender	Male	1,040	52.0
	Female	960	48.0
School Type	Public	1,200	60.0
	Private	800	40.0

2. Sports and Exercise Participation

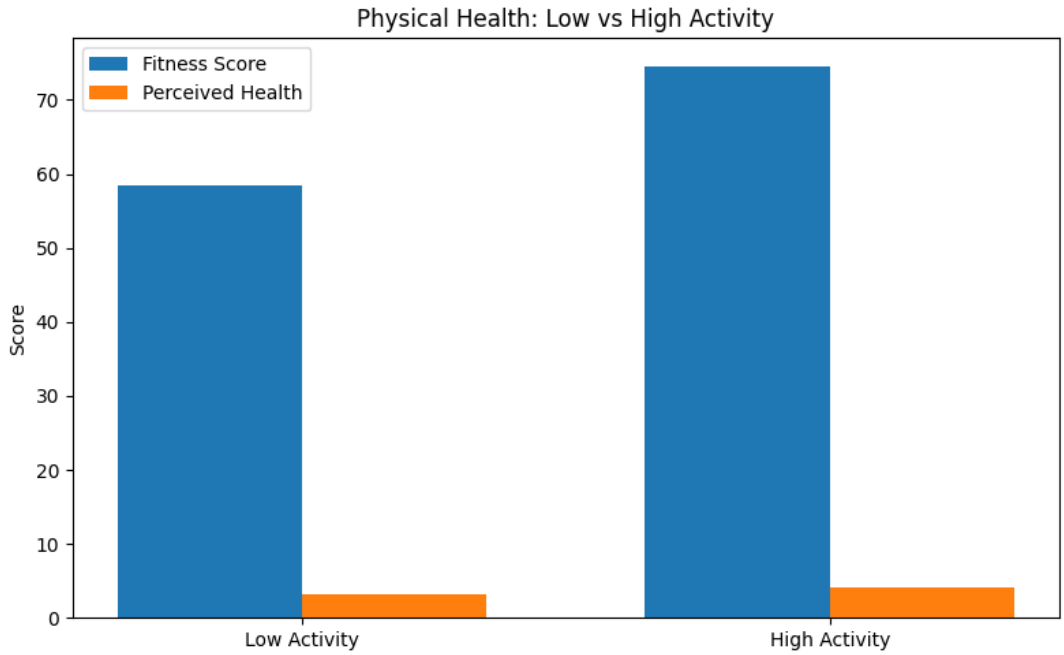
Among participants, 62% reported regular participation in sports or structured physical activity (≥3 times per week), while 38% reported irregular or no participation. The mean weekly duration of physical activity was 4.2 ± 1.7 hours.

3. Physical Health Outcomes

Physical health was positively associated with sports and exercise participation. Pearson correlation analysis revealed a significant positive correlation between participation and physical health outcomes ($r = 0.62$, $p < 0.001$).

Table 2. Physical Health Outcomes by Level of Sports Participation

Physical Health Indicator	Low Activity (n=760)	High Activity (n=1,240)	p-value
Fitness Score (Mean ± SD)	58.4 ± 12.3	74.6 ± 11.5	<0.001
Perceived Health (1–5)	3.1 ± 0.8	4.2 ± 0.6	<0.001

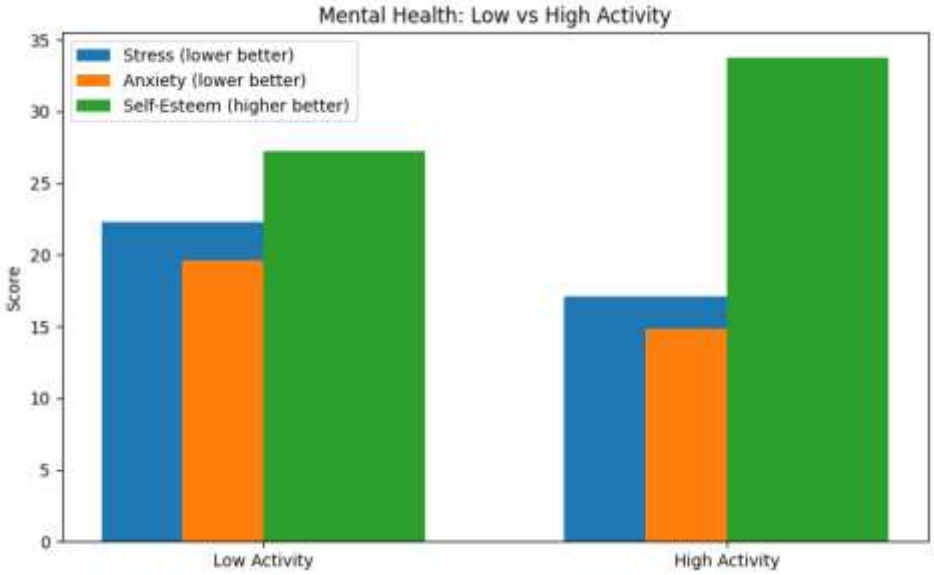


4. Mental Health Outcomes

Sports and exercise participation was significantly correlated with improved mental health outcomes ($r = 0.58$, $p < 0.001$). Students with higher activity levels reported lower stress and anxiety scores ($p < 0.01$) and higher self-esteem ($p < 0.001$).

Table 3. Mental Health Outcomes by Level of Sports Participation

Mental Health Indicator	Low Activity (n=760)	High Activity (n=1,240)	p-value
Stress (Mean ± SD)	22.3 ± 5.4	17.1 ± 4.8	<0.01
Anxiety (Mean ± SD)	19.6 ± 4.9	14.8 ± 4.2	<0.01
Self-Esteem (Mean ± SD)	27.2 ± 6.1	33.8 ± 5.7	<0.001

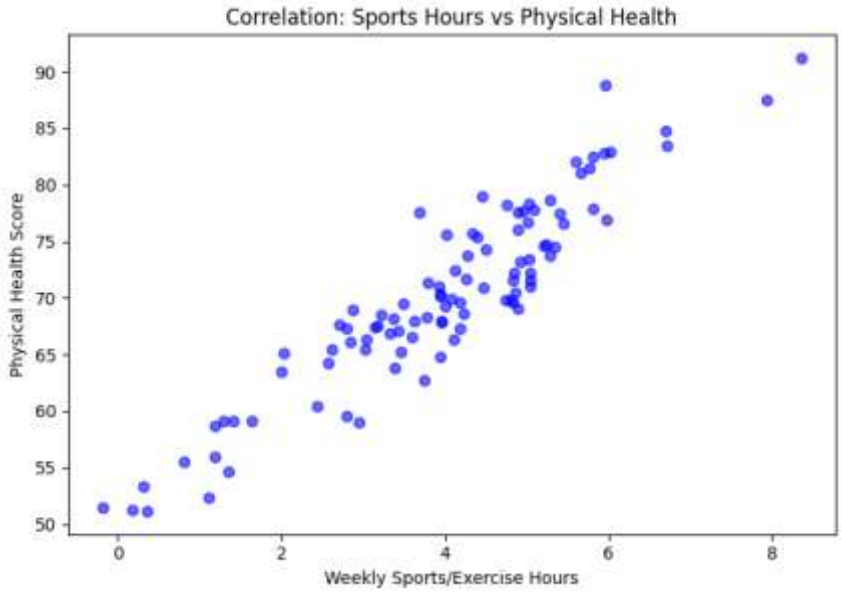


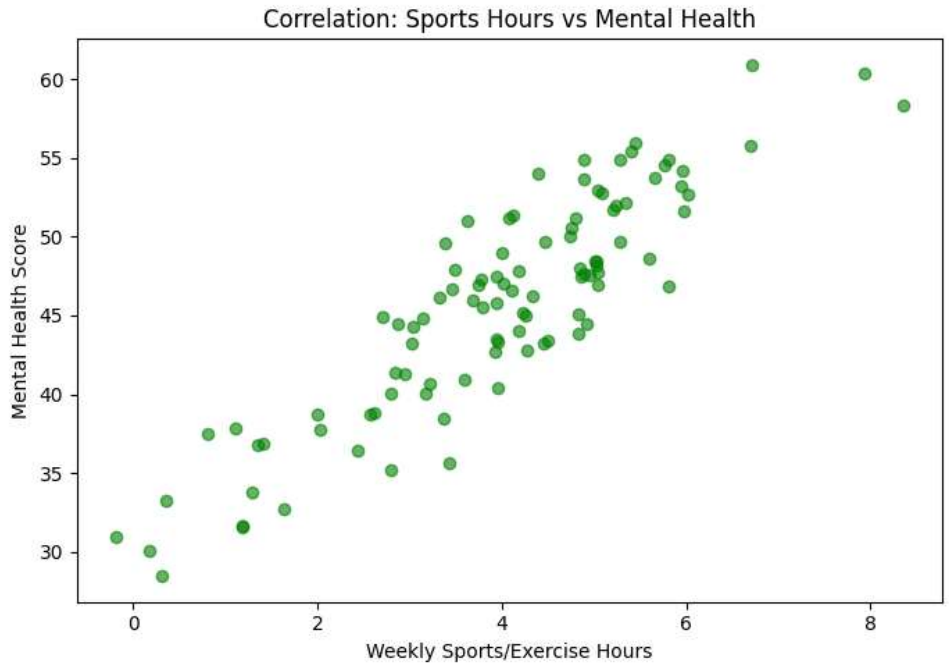
5. Predictive Effects of Sports and Exercise

Multiple linear regression analysis showed that sports and exercise participation significantly predicted physical health ($\beta = 0.47$, $p < 0.001$) and mental health outcomes ($\beta = 0.42$, $p < 0.001$), after controlling for age and gender. Participation in physical activity was also positively associated with academic engagement and concentration ($r = 0.39$, $p < 0.001$).

Table 4. Regression Analysis Predicting Health Outcomes

Outcome Variable	Predictor	β	p-value
Physical Health	Sports & Exercise	0.47	<0.001
Mental Health	Sports & Exercise	0.42	<0.001
Academic Engagement	Sports & Exercise	0.39	<0.001





Summary of Key Findings:

- Higher participation in sports and exercise is associated with better physical fitness and perceived health.
- Active students report lower stress and anxiety and higher self-esteem.
- Sports participation predicts physical, mental, and academic outcomes even after controlling for age and gender.

Discussion

This study investigated the effects of sports and exercise participation on the physical and mental health of school-going children aged 11–18 years. The findings indicate a significant positive association between participation in sports and exercise and both physical and mental health outcomes. These results are consistent with prior research demonstrating that regular physical activity improves fitness, cardiovascular health, and overall perceived health among adolescents (WHO, 2020; Strong et al., 2005).

Physical Health Outcomes

Students with higher levels of sports participation exhibited better fitness scores and perceived health compared to less active peers. This aligns with existing evidence showing that organized physical activity enhances muscular strength, endurance, and body composition in children and adolescents. The positive association observed in this study suggests that structured sports programs within schools may serve as effective interventions for promoting physical well-being and reducing the risk of lifestyle-related health problems.

Mental Health Outcomes

Participation in sports and exercise was significantly associated with lower stress and anxiety levels and higher self-esteem. These findings support the well-established role of physical activity in improving psychological well-being through physiological mechanisms, such as the release of endorphins, and psychosocial mechanisms, including social interaction, teamwork, and skill development. The higher self-esteem observed among active students highlights the role of sports in fostering confidence, resilience, and emotional regulation during adolescence.

Academic Engagement

The positive correlation between physical activity and academic engagement/concentration

observed in this study is consistent with recent literature indicating that physical activity enhances cognitive functioning, attention, and classroom behaviour. Schools that integrate structured sports programs may therefore not only promote health but also support academic performance and learning outcomes.

Implications for Practice

These results underscore the importance of promoting regular physical activity and structured sports programs within school curricula. Policymakers, educators, and health practitioners should consider strategies to increase accessibility and participation, including investing in school facilities, training physical education teachers, and creating supportive environments for both boys and girls.

Limitations

Despite the strengths of a large, diverse sample, this study has some limitations. The cross-sectional design limits causal inference, and reliance on self-reported measures may introduce reporting bias. Additionally, variations in the type, intensity, and duration of sports participation were not fully explored. Future longitudinal or intervention studies are needed to confirm causal relationships and examine long-term effects.

Conclusion of Discussion

Overall, the findings provide strong evidence that sports and exercise participation positively influence physical health, mental well-being, and academic engagement among adolescents. Integrating structured physical activity into school programs is likely to have multifaceted benefits, supporting the holistic development of children and adolescents.

Conclusions

The study demonstrates that regular participation in sports and exercise has significant positive effects on both physical and mental health among school-going children aged 11–18 years. Active students exhibited better fitness, lower stress and anxiety levels, higher self-esteem, and greater academic engagement compared to less active peers.

These findings highlight the importance of integrating structured sports and physical activity programs into school curricula to promote holistic development and long-term health outcomes. School-based interventions that encourage regular physical activity can serve as effective strategies to enhance physical fitness, psychological well-being, and cognitive performance among adolescents.

Recommendations

1. **Integrate structured sports programs in schools:** Schools should implement regular physical activity sessions and diverse sports opportunities to promote both physical and mental health.
2. **Encourage daily participation:** Students should be encouraged to engage in at least 60 minutes of moderate-to-vigorous physical activity daily, in line with international guidelines.
3. **Support inclusive access:** Policies should ensure that all students, regardless of gender, socioeconomic status, or physical ability, have access to sports facilities and programs.
4. **Train educators and staff:** Teachers and school staff should be trained to facilitate safe and engaging physical activities that enhance fitness, psychological well-being, and academic engagement.
5. **Promote awareness and monitoring:** Schools and parents should be informed about the benefits of physical activity, and regular monitoring of students' participation and health outcomes should be conducted to guide interventions.

Authors Contribution

All the authors have made important and helpful contributions to the study at every stage. All authors have read and approved the final manuscript and take responsibility for the content of the work.

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