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## School Students' Physical Activity: Physical Activity and Its Contributing Factors in Young People

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**Abstract:** There is a dearth of research conducted in Jordan regarding contributing factors of physical activity among school students. The current study investigated the contributing factors of physical activity among Jordanian school students. A cross-sectional study design was used to collect data from 260 students using a self-reported questionnaire. The physical activity was measured by the International Physical Activity Questionnaire (IPAQ). The results indicated that more than half of the students reported being physically active (58.5%). In the past six months, physical activity among school students was associated with Body Mass Index (BMI) and self-perceived health status. Logistic regression indicated that students who perceived their health status as Very Good/Excellent were more likely to be active than those who perceived their health status as Fair/Poor/Good (OR = 5.19; CI = 2.940-9.194). This study offers new understanding of the factors affecting physical activity among school students. The results indicated that physical activity education should be compulsory in the school setting.

**Keywords:** physical activity, school students, International Physical Activity Questionnaire.

## 学校学生的体育活动：青少年体育活动及其影响因素

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**摘要：**约旦缺乏关于影响在校学生体育活动的因素的研究。目前的研究调查了约旦学校学生体育活动的影响因素。横断面研究设计用于使用自我报告问卷收集 260 名学生的数据。体力活动由国际体力活动问卷 (IPAQ) 测量。结果表明，超过一半的学生表示身体活跃 (58.5%)。在过去六个月中，在校学生的体育活动与身体质量指数 (体重指数) 和自我感知的健康状况有关。物流回归表明，认为自己的健康状况为非常好/优秀的学生比认为自己的健康状况为一般/差/好的学生更有可能活跃 (或者 = 5.19 ; CI = 2.940-9.194)。这项研究为影响在校学生体育活动的因素提供了新的认识。结果表明体育活动教育应该在学校环境中成为义务

**关键词：**体育活动，在校学生，国际体育活动问卷。

## 1. Introduction

Being overweight is an alarming global health problem, and the percentage of obesity among children increased by 47.1% between 1980 and 2013 [1]. Physical inactivity, eating habits, and lifestyle are linked to being overweight [2-8]. Physical activity is defined as any physical movement by skeletal muscles that involves energy expenditure and encompasses actions undertaken while working, playing, exercising, carrying out household chores, and traveling. Several positive outcomes of physical activity are reported in the literature [9, 10]. For example, physical activity has been found to improve mental health status [9], prevent the occurrence of heart disease and metabolic disorders [11, 12], and enhance academic performance [10]. The lack of physical activity negatively affects mental health, cardiac status, and academic performance [13-15]. Unfortunately, globally, research has shown that around 80% of adolescents are insufficiently physically active [16]. For example, 88% of the Spanish school students were inactive [17], and 80% of girls and 66% of boys were physically inactive among Saudi school students [18]. However, only 19% of Canadian school students were inactive [19].

Previous research has also explored the determinants of physical activity levels among school students and found it was associated with age, gender, class of study, Body Mass Index (BMI) [20], and mother's employment status [21]. It was also associated with higher socioeconomic status [22], positive self-perception of health status [11], type of school, and smoking status [23].

Studies conducted in Jordan found that adolescents attending schools had a high inactivity rate and high rates

of overweight status and obesity [24-29]. However, none of the previous studies explored the determinants of physical activity among Jordanian school students. Therefore, this study explored the current determinants of physical activity levels among secondary school students in Jordan.

## 2. Methods

The type A cross-sectional study design was implemented with Jordanian public secondary school students of both genders aged 15 to 17 years for two months (February-March, 2021).

Five public secondary schools were randomly selected for the study sample. Two hundred sixty students were requested to complete a self-report questionnaire. Inclusion criteria were (a) 15 to 17 years of age, (b) enrolled at the selected study schools, and (c) willing to commit 20 minutes to complete the questionnaire. The researchers approached the heads of schools and explained the study to them. Teachers identified potential participants based on the inclusion and exclusion criteria. An envelope was given to the students that included a cover letter, the questionnaire, and written informed consents for the children and for their parents to read, sign, and complete. The students' response rate was 86.6%, with a total sample of 260 students.

Students' physical activity levels were measured using a short version of the International Physical Activity Questionnaire (IPAQ). Participants with a cutoff point of less than 600 METS-min/week were classified as physically inactive [30]. A metabolic equivalent (METS) is described as the caloric number consumed by an individual per minute in activity relative to the basal

metabolic rate (BMR). A single unit (1 MET) is the caloric consumption of an individual while at complete rest. Those who achieved 600 METS-min /week or more were classified as physically active [30]. The survey is reliable and valid [31-33]. Spearman correlation coefficients are around 0.8 for most of the survey items, which indicates very good reliability [31].

*Socio-demographic variables* included age (years), gender (male or female), and family monthly income (Jordan Dinar)

*Lifestyle variables* referred to smoking: (smoker /non-smoker) and BMI: Prior to administering the questionnaire, the weight and height of each participant were measured. The weight was measured in light clothing using electronic scales. Height was measured by using meters. The BMI was calculated from the anthropometric measures using weight divided by the square of height (kg/m<sup>2</sup>). BMI was then used to classify participants as (underweight, normal weight; overweight; obese), consistent with the Centers for Disease Control and Prevention (CDC) 2000BMI classification systems [34].

*Health-related variable* reflected self-perceived health status that was measured by asking the participants, "How do you describe your health in the past six months?" Fair/Poor/Good, or Very Good/Excellent.

The analyses were conducted using the SPSS Version 22.0 software, and data were analyzed using descriptive statistics (frequencies, means, and standard deviations). Pearson's correlations and Chi-square associations with categorical variables were conducted to examine correlations between dependent and independent variables. One binary logistic regression model with physically active and physically inactive as the dependent variables was developed to assess odds ratios (OR) with confidence intervals (CI 95%).  $P < 0.05$  was considered as the level of statistical significance.

The Ethics Committee approved the study of the University and the Ministry of Education.

### 3. Results

The study participants were 260 students with a mean age of 16 years. There were more male students (205; 78.8%) compared with females. The majority of students were non-smokers (185; 71.2%), had normal weight (182; 70%), and self-rated their general health status in the past six months as Very Good/Excellent (154; 59.2%) (Table 1).

Table 1 Characteristics of students (N = 260)

Variables	Frequency	Percentage (%)	Mean (S.D)
<b>Socio-demographic variables:</b>			
Age (years)			16 (0.83)

<b>Gender:</b>			
Male	205	78.8	
Female	55	21.2	
Family monthly income (Jordan Dinar)			431 (92.6)
<b>Lifestyle variables:</b>			
<b>Smoking:</b>			
Smoker	75	28.8	
Non-smoker	185	71.2	
<b>BMI:</b>			
Underweight	13	5	
Normal weight	182	70	
Overweight	43	16.5	
Obesity	22	8.5	
<b>Health-related variable:</b>			
<b>Self-perceived health status:</b>			
Fair/Poor/Good	106	40.8	
Very Good/ Excellent	154	59.2	

Based on the IPAQ, more than half of the students were physically active (153; 58.5%) (Table 2).

Table 2 IPAQ-based physical activity levels

Physical Activity in Accordance with IPAQ	N (%)
<b>Activity Level (Modified Categories):</b>	
Inactive < 600 METS-Min/Week	107 (41.2)
Active > 600 METS-Min/Week	153 (58.5)

Normal body weight and a Very Good/Excellent self-rated general health status in the past six months were associated with a significantly greater physical activity level (Table 3). The student's data were entered into the logistic regression. Age, gender, family monthly income, and smoking were not significantly associated with physical activity, and therefore were not entered into the logistic regression.

Table 3 Lifestyle factors associated with physical activity among school students

Lifestyle Variables	Physical activity level among school students
	IPAQ
Age	-.119
Gender	-.050
Family monthly income	.019
Smoking	-.037
BMI	-.192**
Self-perceived health status	.340**

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

In the logistic regression analysis, the self-perceived health status (OR 5.199, 95% CI 2.940- 9.194) was the only factor significantly associated with physical activity among school students (Table 4).

Table 4 Binary logistic regression analysis of predictors of physical activity among school students

Predictors	Physical activity among school students		
	Odds ratio	Confidence Interval (CI)	
		Lower	Upper
<b>Lifestyle variables</b>			
BMI			
Underweight	1.670	0.490	5.695
Normal weight #	1.000	—	—
Overweight	- 0.309	0.148	0.644
Obese	- 0.543	0.206	1.429
<b>Health-related variables</b>			
Self-perceived health status	5.199**	2.940	9.194

# Reference group.

Confidence interval = 95%

\* Odds ratio is significant at the 0.05 level

\*\* Odds ratio is significant at the 0.001 level

## 4. Discussion

In the current study, 58.5% of the students reported being physically active, a rate greater than in Brazil and Spain [17, 23] but far less than in Canada [19]. The explanations for this discrepancy among studies could be related to the self-report nature of some studies, the differences in measures used to assess physical activity among public school students, age differences of participants, and the focus on only public schools in the current study. Additional studies need to be conducted involving private school students and larger population groups from different parts of Jordan to evaluate the physical activity among school students. Such studies are needed to raise physical activity levels among school students by formulating effective school-based health promotion programs that encourage healthy behaviors through education, counseling, and behavioral skill-building. Also, future studies should address the barriers impacting physical inactivity among school students in Jordan [35-37], especially among school students with chronic illnesses [38-48].

The present study found that high BMI versus normal or low BMI was negatively associated with physical activity among school students, similar to that found in Nigeria [20]. The current study found a relationship between self-perceived health status and physical activity among school students regarding the health-related variable. This finding was consistent with the findings of another past study [17]. Therefore, BMI and perceived health status should be emphasized in any future educational plan that targets physical activity.

Self-perceived health status was the significant determinant of physical activity among school students. Logistic regression indicated that school students who perceived their health status as Very Good/Excellent were 5.199 times more likely to be active than those who perceived their health status as Fair/Poor/Good. Results of the present study were consistent with the Spanish study [17]. Such findings may indicate that physical activity positively influences adolescents' health [9] or that perception of one's health status as Very Good/Excellent leads to greater physical activity. Future studies need to examine the environmental, family, and knowledge factors that may influence physical activity among school students in Jordan to encourage more school students to participate regularly in physical activity.

School nurses can stress the importance of physical activity among school students by formulating and evaluating effective school-based health promotion programs. This can be done by designing physical activity programs that match students' interests and encourage healthy behaviors through education, counseling, and behavioral skill-building. Also, it is imperative for school nurses to systematically gather data on students' physical activity and BMI status annually to provide feedback to students and parents about physical activity and physical health status. It is also important to gather data from students on the barriers that prevent them from participating in physical activities at school and the community. Such data could serve as a starting point for forging a school health policy and a national physical activity education and training program.

## 5. Conclusions

Given the positive health outcomes of physical activity, exploring the level of activity among school students was justified to identify factors that could reduce negative physical and mental outcomes. The present study offers new understandings of the factors affecting physical activity among school students. In Jordan, more than half of the school students reported being physically active. Self-perceived health status was the primary determinant of greater physical activity. Therefore, any future health promotion programs should query about self-perceived health status in their educational programs.

There are implications for the results of the current study. First, school-based physical activity programs may be directed at the concept of self-perceived health status as an important determinant of greater physical activity.

They should stress the importance of physical activity among school students. Second, the designing of physical activity programs should match students' interests and encourage healthy behaviors through education, counseling, and behavioral skill-building. Third, it is very important to use Arabic language-based media; for instance, notice boards and magazines present the benefits and importance of physical activity in schools. Last, the results indicate that the Ministry of Education has to make more efforts to increase physical education classes and make physical activity education compulsory in the school setting.

Although the current study offers new empirical data on the factors that influence physical activity among school students, it has limitations. First, self-reporting may impact the results of the current study as some students may have deliberately wanted to show that they engaged in more physical activities than they really did. Second, because of the cross-sectional design of the study, it is not easy to assume causality. Third, the results cannot be generalized to all Jordanian school students as the participants were recruited from the north of Jordan only. More longitudinal studies are required to obtain additional data regarding more predictive factors of greater physical activity to better understand the physical activity trend among school students. In addition, it is important for future studies of physical activity to ground the studies by using constructs and theoretical models to understand behavioral changes that could lead to effective interventions.

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