

# Attendance in Physical Education classes and associated factors among high school students

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## Abstract

The objective of this study was to examine the prevalence of high school student attendance in Physical Education classes and analyze associated factors. The sample consisted of 2,874 public and private high school students (57.9% women, mean age of 16.5 years; SD = 1.2) from João Pessoa, Paraíba (PB) state in Northeastern Brazil. Attendance in Physical Education classes was measured by the following question: 'How many Physical Education classes do you attend during a normal week?' The associated factors measured were: attitude, self-efficacy, risks and benefits related to physical activity, perceived health, level of physical activity, sedentary behavior and nutritional status. It was observed that 41.9% (95% CI: 40.1–43.7) of the students attended two or more Physical Education classes per week, with a higher incidence in public schools (56.6%, 95%CI: 54.6–58.9) than in their private counterparts (6.6%, 95%CI: 4.9–8.2;  $p < 0.001$ ). Higher attendance in Physical Education classes was identified in the following subgroups: male students and the youngest from both schools, in students from public school that did not work, members of the highest economic class, whose parents had higher schooling levels, and those in the 1st and 2nd year of high school education in private institutions. Attending two or more Physical Education classes per week is positively and significantly associated with a more favorable attitude to engaging in physical activity as well as its level, in both private and public students, in addition to positive health perception in public students. Student attendance in Physical Education classes was low, particularly in private schools. Attending two or more Physical Education classes per week was associated with positive aspects of physical activity and health in the students under study.

KEYWORDS: Physical Education; Adolescent; Motor Activity.

## Introduction

According Worldwide Survey of School Physical Education - Final Report 2013, Physical Education is a mandatory curricular component of basic education in a number of countries<sup>1</sup>. In Brazil, the Law of National Guidelines and Bases of National Education - LDB<sup>2</sup> made Physical Education mandatory for elementary and secondary students, except for those who work six or more hours a day, persons aged 30 years or older, armed forces personnel, those with chronic diseases or disorders, and female

students with children<sup>2</sup>.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) report on the quality of Physical Education suggests that this discipline is a basic right and should be an important part of the educational system, aimed at contributing to the development of biological, affective, cognitive, motor and sociocultural aspects of human movement, in addition to being an essential component for empowering an active and healthy lifestyle<sup>3</sup>.

State surveys: Pernambuco - 33.1%<sup>4</sup> and Santa Catarina (58.8%)<sup>5</sup>; and municipal surveys: São Paulo (SP) - 49.5%<sup>6</sup>, Londrina (PR) - 72.9%<sup>7</sup>, Ponta Grossa (PR) - 85.5%<sup>8</sup> and Aracaju (SE) - 79.5%<sup>9</sup> have reported low attendance in Physical Education classes in Brazil. According to UNESCO reports<sup>3</sup>, this problem is not confined to Brazil, but prevalent worldwide. The scenario can be even more worrisome if the effective attendance of students is considered<sup>6,8,10</sup>.

Attending Physical Education classes has been associated with less exposure to sedentary behaviors<sup>11</sup>, higher levels of physical activity<sup>4,7</sup>, greater participation in sports<sup>7</sup>, healthy eating habits<sup>4</sup>, better academic performance<sup>12</sup> and lower likelihood of consuming legal and illegal drugs<sup>5</sup>. Self-efficacy<sup>13</sup>, positive attitudes toward physical activity<sup>1</sup> and perceived risks and benefits of physical activity<sup>13</sup> are factors linked to physical activity in adolescents. Thus, attending Physical

Education classes may be associated with these factors in students.

However, important knowledge gaps persist, regarding high school student attendance in Physical Education classes and their distribution in public and private schools; the association between attending these classes and behavioral factors, physical activity correlates, nutritional status and perceived health status.

Information on student attendance in Physical Education classes may help identify groups with poor attendance and increase knowledge about the possible benefits associated with attending these classes. Thus, the aim of this study was to determine the prevalence of Physical Education class attendance and analyze its association with physical activity level, sedentary behavior, correlates of physical activity, nutritional status, and perceived health status among high school students in Northeastern Brazil.

## Method

### Participants

This is a cross-sectional epidemiological study was conducted with data from a representative sample of public and private high school students in João Pessoa (PB), Northeastern Brazil, in 2009. The reference population of 32,112 high school students, given the multiple outcomes of the project was considered to determine sample size prevalence estimated at 50%; maximum error of three points percentage points; 95% confidence interval; design effect (*deff*) of two; and 30% increase in the minimum sample size to compensate for losses and refusals, resulting in a sample of 2,686 students.

Sample selection was made by conglomerates in two stages.

In the first stage, of the 82 existing schools in the municipality, 30 schools were systematically selected, distributed proportionally by size (number of students enrolled), type (16 public and 14 private) and geographic location (north, south, east and west). In the second, 135 classes were randomly selected (based on an estimated 20 students per class), distributed according to the proportion of students enrolled per grade (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> grade) and study shift (morning,

afternoon and night).

### Measures

Data collection was carried out between May and September 2009 by a team of six previously trained Physical Education students submitted to a pilot study under the same conditions as the primary study. The students who were present for at least one of two data collection team visits responded to the questionnaire during regular class time, in the form of a collective interview (mean duration of 25 minutes per application).

The sociodemographic variables measured were sex (male and female), age in years and later categorized (14-15 and 16-19 years of age), father's and mother's schooling (elementary, secondary and university), employment status (working or not working), skin color (white and non-white [mulatto, black, yellow and indigenous]) and economic class (Methodology of the Brazilian Association of Research Companies - ABEP<sup>14</sup>, using the following categories: class A/B and class C/D/E).

Attendance in Physical Education classes was measured by the question 'How many Physical Education classes do you attend during a normal

week?' and the responses were categorized as follows: no classes per week, one class per week and two or more classes per week.

Physical activity was measured by a questionnaire<sup>15</sup>. The students provided information on the frequency (days/week) and duration (minutes/day) of moderate to vigorous physical activities engaged in for at least 10 minutes a day, during the week preceding data collection. Physical activity level was determined by adding the products of time and frequencies, resulting in a score expressed as minutes per week. Students who engaged in 300 minutes or more per week were classified as physically active and the remainder as physically inactive.

The measure of sedentary behavior consisted of questions regarding time (hours/day) spent by students watching television, using the computer or playing videogames, during the week (Monday to Friday) and on the weekend (Saturday or Sunday). The weighted mean was calculated by multiplying the number of hours of sedentary behavior on weekdays by five and by two for weekends, adding to two amounts and dividing the result by seven to obtain the average number of hours per day. This variable was categorized as follows:  $\leq 2$ h/day and  $> 2$ h/day of sedentary behavior<sup>16</sup>.

The following correlated factors of physical activity were measured: self-efficacy, attitude, perceived risks and benefits of physical activity. Self-efficacy for physical activity and the perceived risks and benefits were measured by 10 and 12-item scales, respectively, with a four-point Likert scale (ranging from strongly disagree = 1 to strongly agree = 4). Attitude toward physical activity was measured by a five-item scale based on a four-point semantic differential scale. All the scales were previously validated<sup>17</sup>. A score was calculated using the mean value of the sum of the items on each scale for each of the correlated factors, and for the purpose of analysis, tertiles of these variables were calculated and recategorized as low (1<sup>st</sup> and 2<sup>nd</sup> tertile) and high (3<sup>rd</sup> tertile).

Nutritional status was assessed by body mass index ( $BMI = \text{body mass [kg]} / \text{height [m]}^2$ ), based on self-reported measures of body mass and height. Nutritional status classification followed the criteria suggested by COLE et al.<sup>18</sup>, grouping students into no excess body weight (low weight + normal weight) and excess body

weight (overweight + obesity). Perceived health status was measured by the question 'How do you classify your health status' (poor, fair, good, very good, excellent). Next, these response categories were grouped into negative (poor, fair) and positive health perception (good, very good, excellent).

## Analysis

Mean, standard deviation and 95% confidence interval (95%CI) were used to describe numerical variables and relative and absolute frequency distribution (%) for categorical variables. The chi-square test for heterogeneity was applied to compare the proportion of students in Physical Education classes according sociodemographic characteristics.

Binary logistic regression was used to assess the crude and adjusted association between attendance in Physical Education classes (no class/week = 0; one class/week = 1; two or more classes/week = 2) and the dependent variables (physical activity: physically active = 1 and physically inactive = 0; sedentary behavior:  $< 2$  hours/day = 1 and  $> 2$  hours/day = 0; self-efficacy: high = 1 and low = 0; attitude: high = 1 and low = 0; risks: not perceived = 1 and perceived = 0; benefits: perceived = 1 and not perceived = 0; nutritional status: no excess body weight = 1 and excess body weight = 0; and perceived health: positive = 1 and negative = 0). In multivariate analysis all the independent variables were maintained in the model regardless of p-value. Analyses were stratified by type of school (public vs private), given that this variable exhibited significant interaction with the variables sex, age, school grade, parents schooling, economic class, skin color, employment status and perceived health status. Potential confounding factors were: sex, age, economic class, school grade and skin color. Statistical analyses were conducted in Stata 11.0 software. A 5% significance level was adopted for the two-tailed tests.

The study was approved by the Ethics Committee of the Federal University of Paraiba (Protocol 0062/2009). All adolescents younger than 18 years of age were given permission to take part in the study by their mother/father/legal guardian and those 18 years and older gave their informed consent.

## Results

A total of 3,220 students were interviewed, 231 were excluded because they were < 14 or > 19 years of age, 105 did not provide their age, five had some physical disability that limited or impeded their engaging in physical activity, and five did not respond adequately to the questionnaire (many unanswered questions). The final sample consisted of 2,874 students (losses and refusals totaled 17.8% of the cases). A posteriori calculations demonstrated that this sample had a power of 80% to detect an odds ratios greater than or equal to 1.40 as significant with prevalence of outcome between 19.1% and 46.6%.

The largest proportion of students was from public schools (70.4%), girls (57.8%), aged

between 16 and 19 years (60.7%), belonging to the lower economic classes (C/D/E: 54.2%), whose parents had elementary schooling (fathers: 50.0% and mothers: 48.9%) and who were not working (86.9%). Information on physical activity level, nutritional status, perceived health, sedentary behavior and correlated factors of physical activity are described in TABLE 1.

It was found that 41.9% (95%CI: 40.1-43.7) of the students reported attending two or more Physical Education classes per week, the proportion being significantly higher in public schools (56.8%; 95%CI: 54.6-59.0) when compared to private institutions (6.6%; 95%CI: 4.9-8.2;  $p < 0.001$ ) - FIGURE 1.

TABLE 1 - Characteristics of students sample from João Pessoa (PB), Brazil, 2009

Characteristics	Private (n = 850)		Public (n = 2,024)		All (n = 2,874)	
	n	(%)	n	(%)	n	(%)
<b>Sex</b>						
Male	384	45.3	822	40.9	1,206	42.2
Female	464	54.7	1,189	59.1	1,653	57.8
<b>Age in years</b>						
14-15	403	47.4	725	35.8	1,128	39.3
16-19	447	52.6	1,299	64.2	1,746	60.7
<b>Skin color</b>						
White	364	43.0	566	28.1	930	32.5
Non-white	483	57.0	1,446	71.9	1,929	67.5
<b>Grade of high school</b>						
1 <sup>a</sup>	307	36.1	773	38.2	1,080	37.6
2 <sup>a</sup>	265	31.2	688	34.0	953	33.2
3 <sup>a</sup>	278	32.7	563	27.8	841	29.2
<b>Economic class</b>						
A/B	685	89.4	476	26.9	1,161	45.8
C/D/E	81	10.6	1,291	73.1	1,372	54.2
<b>Father's schooling</b>						
Elementary	147	17.5	1,244	64.0	1,391	50.0
Secondary	315	37.6	580	29.8	895	32.2
University	377	44.9	120	6.2	497	17.8

continue

continue

Characteristics	Private (n = 850)		Public (n = 2,024)		All (n = 2,874)	
	n	(%)	n	(%)	n	(%)
<b>Mother's schooling</b>						
Elementary	125	14.8	1,266	63.3	1,391	48.9
Secondary	317	37.5	859	29.4	906	31.8
University	404	47.7	146	7.3	550	19.3
<b>Employment status</b>						
Working	50	6.1	316	15.9	366	13.1
Not working	769	93.9	1,667	84.1	2,436	86.9
<b>Attitude</b>						
High	590	70.6	1,339	68.8	1,929	69.3
Low	246	29.4	608	31.2	854	30.7
<b>Self-efficacy</b>						
High	553	68.2	1,210	66.1	1,763	66.7
Low	258	31.8	622	33.9	880	33.3
<b>Risks</b>						
Perceived	279	33.9	691	36.7	970	35.8
Not perceived	545	66.1	1,192	63.3	1,737	64.2
<b>Benefits</b>						
Not perceived	266	32.4	593	31.1	859	31.5
Perceived	555	67.6	1,314	68.9	1,869	68.5
<b>Physical activity</b>						
Physically active	410	48.2	1,020	50.4	1,430	49.8
Physically inactive	440	51.8	1,004	49.6	1,444	50.2
<b>Sedentary behavior</b>						
≤2 hours/day	59	7.0	283	14.3	342	12.1
> 2 hours/day	785	93.0	1,701	85.7	2,486	87.9
<b>Nutritional status</b>						
Excess body weight	132	16.5	221	11.8	353	13.2
No excess body weight	666	83.5	1,655	88.2	2,321	86.8
<b>Perceived health</b>						
Negative	100	12.0	349	17.5	449	15.8
Positive	737	88.0	1,648	82.5	2,385	84.2

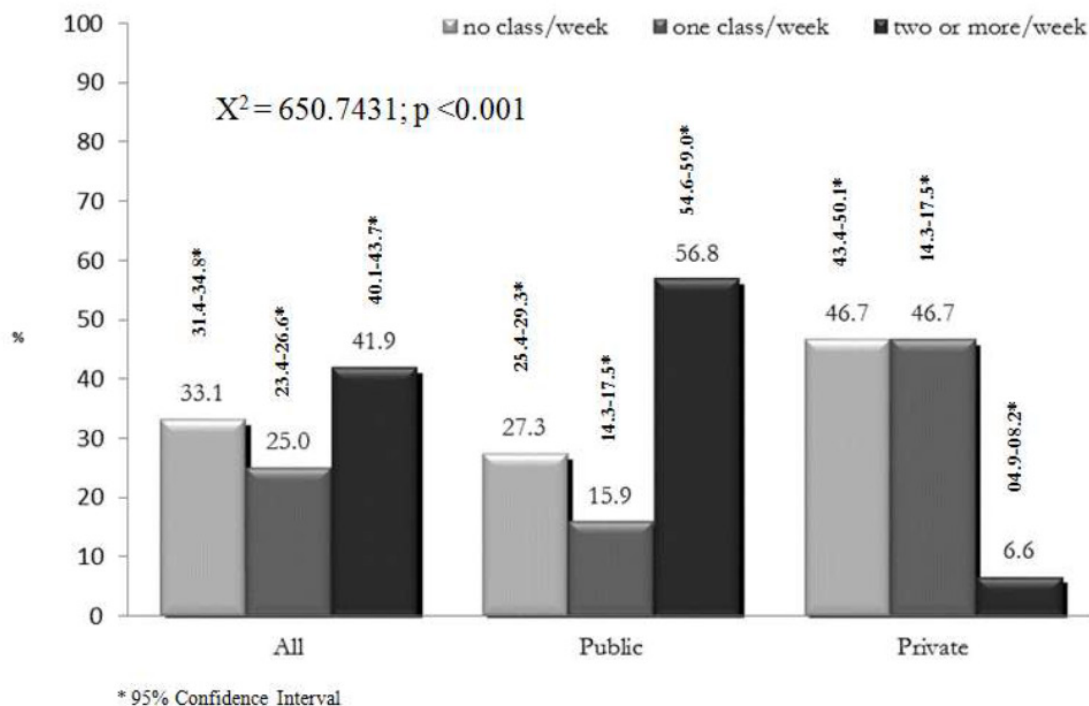


FIGURE 1

In both school systems there was a higher proportion of boys attending two or more Physical Education classes. At private schools this was observed in older students (16-19 years old) and those in grades 1 and 2 of high school, whereas at public institutions, the highest proportions were found in younger students (14-15 years old), those whose parents had more schooling (high school or university), belonged to a high economic class (A/B) and did not work (TABLE 2).

Crude logistic regression showed a significant association between student attendance in two or more Physical Education classes and a positive attitude toward high levels of physical activity

in both public and private schools, and positive health perception in the former.

In adjusted analyses at private schools, students that attended two or more Physical Education classes per week reported more positive attitudes (OR: 3.07; CI: 1.07-8.83) and being more physically active (OR: 2.69; CI: 1.16-6.24) than those who did not. At public schools, those who attended two or more Physical Education classes per week were more physically active (OR: 2.20; CI: 1.66-2.91), 67% and 48% more likely to exhibit highly positive attitudes and positive health perception, respectively compared to those who attended no classes (TABLE 3).

TABLE 2- Attendance in Physical Education classes among public and private high school students according sociodemographic characteristics, João Pessoa (PB), 2009

Variables	Private						Public					
	no class/week		one class/week		two or more classes/week		no class/week		one class/week		two or more classes/week	
	n	%	n	%	n	%	n	%	n	%	n	%
<b>Sex</b>	0.013						0.001					
Male	167	43.7	180	47.1	35	9.2	201	24.7	90	11.1	522	64.2
Female	226	49.2	213	46.4	20	4.4	340	28.8	227	19.3	612	51.9
<b>Age in years</b>	0.001						0.001					
14-15	144	36.0	230	57.5	26	6.5	122	17.0	130	18.1	466	64.9
16-19	250	56.4	164	37.0	29	6.6	426	33.2	188	14.6	671	52.2
<b>Grade of high school</b>	0.001						0.228					
1 <sup>a</sup>	102	33.4	182	59.7	21	6.9	195	25.6	135	17.7	433	56.7
2 <sup>a</sup>	115	43.7	131	49.8	17	6.5	200	29.4	93	13.7	387	56.9
3 <sup>a</sup>	177	64.4	81	29.4	17	6.2	153	27.3	90	16.1	317	56.6
<b>Father's schooling</b>	0.645						0.017					
Elementary	71	48.3	66	44.9	10	6.8	357	29.0	204	16.6	670	54.4
Secondary	148	47.6	139	44.7	24	7.7	142	24.7	78	13.5	356	61.8
University	168	44.9	185	49.5	21	5.6	24	20.2	22	18.5	73	61.3
<b>Mother's schooling</b>	0.113						0.119					
Elementary	66	53.2	51	41.1	7	5.7	358	28.6	207	16.6	686	54.8
Secondary	131	41.7	157	50.0	26	8.3	152	26.0	81	13.8	352	60.2
University	196	48.9	184	45.9	21	5.2	32	22.1	27	18.6	86	59.3
<b>Economic class</b>	0.076						0.028					
A/B	305	44.9	329	48.5	45	6.6	126	26.7	57	12.1	289	61.2
C/D/E	47	58.0	29	35.8	5	6.2	351	27.5	216	16.9	710	55.6
<b>Skin color</b>	0.375						0.763					
White	160	44.5	178	49.4	22	6.1	147	26.2	89	15.9	324	57.9
Non-white	233	48.5	214	44.6	33	6.9	398	27.8	228	15.9	805	56.3
<b>Employment status</b>	0.230						0.001					
Working	29	58.0	18	36.0	3	6.0	145	46.3	21	6.7	147	47.0
Not working	348	45.7	364	47.8	50	6.5	394	23.9	288	17.4	968	58.7



TABLE 3- Binary logistic regression analyses to crude and adjusted association between attendance in Physical Education classes and physical activity correlates, physical activity level, sedentary behavior, nutritional status and perceived health status in students from João Pessoa (PB), 2009

Frequency of participation in PE classes	Attitude		Self-efficacy		Risks		Benefits		Physical activity		Sedentary behavior		Nutritional status		Perceived health status	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
<b>Private schools</b>																
<i>Crude analyses</i>																
One class/week	1.22	0.90-1.66	1.24	0.91-1.68	0.94	0.69-1.26	1.31	0.97-1.78	1.41	1.07-1.87	1.11	0.76-1.63	0.88	0.60-1.30	1.01	0.66-1.55
Two or more class/week	2.39	1.13-5.03	1.12	0.59-2.09	1.05	0.57-1.94	1.38	0.72-2.65	2.58	1.41-4.72	0.71	0.29-1.73	1.13	0.48-2.63	1.81	0.63-5.23
<i>Adjusted analyses*</i>																
One class/week	1.14	0.76-1.71	1.03	0.71-1.51	1.85	0.75-1.57	1.36	0.92-2.00	1.34	0.94-1.91	1.23	0.79-1.92	0.77	0.47-1.24	0.95	0.56-1.62
Two or more class/week	3.07	1.07-8.83	1.14	0.49-2.64	1.42	0.66-3.08	1.20	0.53-2.70	2.69	1.16-6.24	0.62	0.21-1.89	1.06	0.39-2.85	1.07	0.29-3.96
<b>Public schools</b>																
<i>Crude analyses</i>																
One class/week	1.10	0.82-1.47	0.81	0.60-1.09	1.03	0.76-1.39	1.00	0.74-1.36	1.17	0.88-1.55	1.05	0.76-1.45	1.61	0.98-2.64	1.75	1.22-2.52
Two or more class/week	1.67	1.34-2.08	1.17	0.93-1.46	0.92	0.73-1.14	1.09	0.87-1.36	2.31	1.87-2.85	0.83	0.65-1.06	0.99	0.72-1.37	1.86	1.44-2.40
<i>Adjusted analyses *</i>																
One class/week	1.22	0.81-1.82	0.69	0.47-1.00	1.08	0.74-1.58	0.96	0.64-1.43	1.32	0.91-1.93	0.89	0.58-1.37	1.05	0.57-1.94	1.79	1.10-2.90
Two or more class/week	1.67	1.23-2.28	1.01	0.76-1.36	1.07	0.80-1.42	1.02	0.75-1.39	2.20	1.66-2.91	0.81	0.59-1.13	0.82	0.53-1.26	1.48	1.04-2.11

PE = Physical Education; Reference: no class/week; \*Adjusted for sex, age, economic class, skin color, grade of high school's grade and other dependents variables without model analyzed as in the dependent variables



## Discussion

Attendance in Physical Education classes was generally low, particularly at private schools, in girls and older students. Those who attended these classes more frequently had more positive attitudes toward physical activity, higher levels of it and more positive health perception.

The prevalence of attending two or more Physical Education classes observed in the present study was low (41.9%), below that reported in international: United States – 55.7%<sup>19</sup>, Canada – 60.3%<sup>20</sup>; and national studies in the South: Santa Catarina – 48.1%<sup>5</sup> and Parana – 78.9%<sup>8</sup>; and Southeast of the country: São Paulo – 49.5%<sup>6</sup>; but higher than that found in the Northeast: Pernambuco – 35.15<sup>4</sup> to 37.6%<sup>21</sup>. Data from the 2012 National Student Health Survey (PeNSE)<sup>22</sup> of 9<sup>th</sup> grade elementary students in 26 Brazilian state capitals found that 38.6% attended two or more Physical Education classes per week, with the highest prevalence obtained in the South (69.7%) and lowest in the Northeast (27.3%). In João Pessoa (PB), PeNSE data showed that 63.8% of students attended two or more Physical Education classes per week, indicating that attendance tends to decline as children progress to higher grades of elementary education<sup>22</sup>.

The UNESCO report<sup>3</sup> of a worldwide survey on Physical Education classes revealed a set of administrative (absence of political incentives for mandatory Physical Education classes in school curriculums; lack of investment in teacher training and development), environmental (adequate class facilities, equipment and resources) and social factors (lack of strategic partnerships with the community) as determinants for the nonexistence or low attendance of students in Physical Education classes throughout the world.

In many cases, these classes have been characterized by repetitive content, involving practicing basic sport principles and executing technical movements<sup>23</sup>, but without a logical sequence, disconnected from the pedagogic aims of each grade, as well as from students' needs and expectations. This could be referred to as 'exercise for the sake of it'. Aspects such as scarce availability of safe, accessible and well maintained facilities<sup>24</sup>, lack of inclusive methodologies in Physical Education policies and practices, absence of clear definitions regarding contents and their seriation over the course of schooling, lack of strategic partnerships with the

wider community, nonexistence of monitoring and quality control systems for Physical Education<sup>3</sup>, large number of requests to miss class<sup>25</sup>, lack of motivation and empowerment, and low social and financial recognition of teachers<sup>26</sup> are factors that may help explain the poor attendance in Physical Education classes in Brazil.

The lower class attendance in the Northeast of the country may be due to the poor conditions for engaging in sports and physical activity<sup>27</sup> because of low investment in facilities (gymnasiums and soccer fields)<sup>27</sup> and basic class materials (balls, cones, hoops, among others)<sup>24</sup>. Higher attendance among public school students can be explained by the fact that Physical Education classes are optional in the vast majority of private institutions<sup>5,25</sup>. This is owing to the priority given to preparing students for university entrance examinations.

As observed in other studies<sup>7,8</sup>, the attendance rate in Physical Education classes was higher in boys. This finding can be explained by the predominance of sport contents in the classes<sup>21</sup>, given that boys prefer sport activities requiring physical strength and competitiveness, while girls would rather take part in physical activities involving emotional and social skills, characteristics scarcely investigated in Physical Education classes<sup>28</sup>. Since the classes are given during class time, some of the girls may not participate for esthetic reasons, assuming that perspiring during these activities will ruin/mess up their hair and make-up.

As with FEITOSA et al.<sup>21</sup>, who studied high school students from Caruaru, Pernambuco state, the present investigation found a significant reduction in Physical Education class attendance as students progressed to higher secondary school grades. This behavior may be related to the fact that at most schools, attending these classes is not a priority and the time that could be spent on this discipline is used to prepare students for university entrance examinations. As a result, expectations regarding Physical Education are a matter of secondary importance.

In the present study, public students whose parents had a higher schooling level and better economic class (Class A/B) attended more Physical Education classes. Parents who belong to higher socioeconomic strata could better afford to enroll their children in well-structured schools, provide more social support for engaging in physical

activity<sup>29</sup>, and encourage them to participate more in physical activities, especially at school<sup>7</sup>. Taken together, these factors lead to greater student attendance in Physical Education classes.

It was found that students who reported higher attendance in Physical Education classes were more likely to follow recommendations regarding physical activities, reinforcing the findings of earlier studies<sup>4,13</sup>. Adolescents who are more physically active outside the school setting may be more interested in attending Physical Education classes because they feel more able to engage in physical activities (greater perceived self-efficacy), and value their importance (more favorable attitudes toward engaging in physical activities)<sup>7,13</sup>. However, Physical Education classes may represent an important part of weekly physical activities. In some cases, it may be the primary or only opportunity for students to participate in regular physical activity<sup>30</sup>.

Students who attended more Physical Education classes were likely to have more favorable attitudes toward engaging in physical activity. Some studies suggest that greater attendance in Physical Education classes is directly associated with positive attitudes toward physical activity<sup>1,31</sup>. One explanation for this result is that students who attend Physical Education classes have higher levels of knowledge of and interest in physical activity, leading to more positive attitudes<sup>13</sup>.

Public students who attended more Physical Education classes were more likely to exhibit positive perceived health compared to those who did not participate. Adolescents who attended more Physical Education classes were probably the most physically active and thus displayed positive health perception and may have been more exposed to health-related issues in Physical Education classes. Physical Education classes have been considered important in promoting healthy eating habits, physical activity and greater perception of its benefits<sup>32</sup>.

A systematic review of intervention studies<sup>33</sup> carried out in Latin America demonstrated

that interventions to promote physical activity at school are more effective when they involve actions developed in Physical Education classes (for example, small changes in the content taught and the use of instructional didactic materials). These findings show that if high-quality classes are given, they can play an important role in promoting physical activity. Starting from the principle that Physical Education classes are favorable to changing behavior<sup>5</sup>, this discipline acts as an important educational agent for students to adopt a physically active and healthy lifestyle.

The main limitations of this study include: its cross-sectional nature, precluding establishing a cause-effect relationship between attending Physical Education classes and associated factors (attitudes toward physical activity, levels of activity, perceived health status). The following are strengths: it considered the weekly attendance in Physical Education classes, not limiting itself to dichotomous outcomes, as do the majority of studies (attend vs do not attend); is representative of the sample of public and private school students, since most studies have only involved the former<sup>8,11</sup>.

It can be concluded that high school student attendance in Physical Education classes was low, particularly at private schools, in girls and older individuals (at both public and private institutions), as well as those belonging to economic classes C, D and E (public schools). Attending two or more Physical Education classes per week was a favorable aspect for engaging in physical activity (higher levels and more favorable attitudes) and positive health perception.

These results may help create future school-based strategies that seek to make society, authorities, directors and family members aware of the importance of Physical Education in order to improve the quality of these classes and student participation<sup>3</sup>, mainly because participation in these classes may contribute to higher levels of physical activity, positive health perception and positive attitudes toward exercise.

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## Conflict of interest

The Author(s) declare(s) that there is no conflict of interest

## Resumo

Participação nas aulas de Educação Física e fatores associados em estudantes do ensino médio

O objetivo desse estudo foi determinar a prevalência de participação de estudantes do ensino médio em aulas de Educação Física e analisar fatores associados. A amostra foi composta por 2.874 estudantes (57,9% do sexo feminino, média de idade igual a 16,5 anos; DP = 1,2) do ensino médio das redes pública e privada do município de João Pessoa (PB), região nordeste do Brasil. A participação nas aulas de Educação Física foi mensurada pela pergunta: 'Durante uma semana normal, em quantas aulas de Educação Física você participa?'. Os fatores associados mensurados foram: atitude, autoeficácia, riscos e benefícios relacionados à prática de atividade física, percepção de saúde, nível de atividade física, comportamento sedentário e estado nutricional. Observou-se que 41,9% (IC95%: 40,1-43,7) dos estudantes participavam de duas aulas ou mais de Educação Física por semana, sendo maior nas escolas públicas (56,6%, IC95%:54,6-58,9) comparadas às privadas (6,6%, IC95%:4,9-8,2;  $p < 0,001$ ). Uma maior participação nas aulas de Educação Física foi identificada nos seguintes subgrupos: estudantes do sexo masculino e os mais jovens de ambas redes de ensino, nos estudantes de rede pública que não trabalhavam, de classe econômica mais alta e com maior escolarização dos pais, e nos das 1ª e 2ª séries do ensino médio da rede privada. Participar de duas ou mais aulas de Educação Física por semana se associou de forma positiva e significativa com atitude mais favorável à prática e ao nível de atividade física dos estudantes das redes pública e privada; e com percepção positiva de saúde nos estudantes da rede pública. A participação dos estudantes nas aulas de Educação Física foi baixa, particularmente nas escolas da rede privada. Participar de duas ou mais aulas de Educação Física por semana se associou à aspectos positivos em relação à atividade física e à saúde dos escolares.

PALAVRAS-CHAVE: Educação Física; Adolescente; Atividade Motora.

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