Individual and Interpersonal Factors and Their Interaction Predicting the Intentional Physical Education Skipping Behavior among Lithuanian High School Students

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Abstract: The promotion of physical activity in physical education (PE) might be enabled only in the case that PE is attended. Intentional skipping of PE, while widespread, is understudied. The aim of the study is to identify individual and interpersonal correlates as well as their interaction effect on the intentional PE skipping behavior in Lithuanian high school students. This cross-sectional population-based study included 1285 students aged from 14 to 18 years old. Among them, 42.2 were male. PE skipping, sociodemographic, individual and interpersonal indicators were measured. Results revealed that 58.4% of high school students intentionally skip their PE class at least once per week. The main correlates of PE skipping are sedentary behavior and social participation. The main preventive factors are perception of PE usefulness, better self-rated health among direct predictors. Indirectly, social capital played a protective role for PE skipping classes through a more positive perception of PE usefulness. Raising awareness of physical education benefits, providing a rationale for physical education in the social contexts of family and school, in terms of family support and building trust with teachers, strengthening reciprocity at school indirectly prevents students’ PE skipping behaviors.

Keywords: social capital; family support; social participation

1. Introduction

Physical education (PE) has a serious health-related mission to promote physical activity (PA) not only in PE class but also throughout the lifetime [1,2] by providing a positive PA experience and forming a positive attitude towards PA. However, less than half of students achieve a sufficient amount (at least 50% of a PE class time) of moderate-to-vigorous PA (MVPA) during PE class [3–7]. On the other hand, an insufficient engagement during PE lessons by 65% increases the chance of future physical inactivity after 20 and more years [8].

The importance of the PE mission becomes even more important during school closures, such as during the recent lockdowns due to the COVID-19 pandemic. The restrictions to attend school and limited access to after-school sports resulted in significant decreases in PA and increases in sedentary behavior (SB) [9]. That leads to gradual health deterioration in later life and current posture problems [10]. Lithuanian health statistics indicate that as much as 1.6% of children have scoliosis and 3.6% have abnormal posture [11]. This, in turn, brings the economic burden of physical inactivity in populations because of the series of deteriorating health conditions at adult age [12].
A number of studies searched for correlates of PA and specifically MVPA at PE classes. The significant factors they found could be classified into several groups. Among sociodemographic groups, gender is an important correlate, with boys being more physically active than girls, and girls accumulating more SB during the school day than boys [13]; ethnicity is also important, with the white race being related to higher levels of MVPA [14]. Individual motivating factors such as knowledge, motivation, expectancy beliefs, subjective task values, enjoyment, and attitudes towards PE and/or PA are also significant correlates of MVPA at PE [14,15]. Some other studies point out organizational factors identifying that PA in PE depends on PE content, gaining higher levels of MVPA in fitness classes rather than playing games, gymnastics, or dance [16]. In addition, team games and outdoor lesson location were positively associated with MVPA and movement learning is negatively associated with MVPA in PE [14]. In addition, external reinforcing factors—an interpersonal school social capital and environmental school physical environment were both related to higher MVPA at school. Although school social capital may be a more important factor in increasing students MVPA than the school physical environment [17]. In addition to the above, another interpersonal factor, specifically, the teacher’s autonomy support in PE, is related to higher and a teacher’s controlling behavior has been found to lower students’ PE class and leisure-time PA across many studies [18–23].

These are very important findings indicating targets for intervention at PE. However, for the process of change to be enabled, the attendance of PE classes is assumed. PE attendance seems to facilitate the main goal of PE as it is related to a higher level of PA not only in PE but also out of school during weekdays in children from countries at various levels of development. As well, it reduces school-time and overall SB [24,25].

It seems to be a problem, in some countries more than in others, since the attendance of PE varies across countries. For instance, the cross-national comparisons across 52 countries indicated the mean PE class attendance in the US and Canada is 2.3 days/week showing that as much as 41.3% of school students attended no PE classes, 6.3%—2 days/week, and 33.1%—5 days/week. In contrast, in most other countries, these figures had more centrally shaped distributions (e.g., Sweden: mean 2.3 days/week; 2.0, 64.3, and 1.8% of students attended PE classes on 0, 2, and 5 days/week, respectively) [26]. However, from this review the attendance/non-attendance ratio is not clear, considering that compulsory PE classes as a mandatory minimum of minutes vary across countries (e.g., 135 min/week in Poland, yet no mandatory minimums in England, Colombia, or the U.S.) [26]. In addition, it is not clear if non-attendance is a result of intentionally skipping in order to avoid PE or justified skipping, such as temporary illness.

A study in Brazil revealed that only 41.9% of high school students attended two or more PE classes per week. Attendance was related to a more favorable attitude to engaging in PA and with positive health perceptions. Attendance was higher among public students versus private school students [27]. Another study showed that PE is skipped twice as often as the other subjects such as Mathematics, Biology, Chemistry, Physics, or even more often compared to native language subjects [28].

There is a lack of studies investigating correlates of non-attendance and, specifically, of intentional PE skipping in order to avoid PE, which might also be important to target as a correlate of more active engagement into PA at PE class. Similarly, it could be supposed that the factors of intentional PE skipping could vary from the most proximal individual to the most distant organizational or curriculum-based factor.

The Present Study

Only 20–30% of school-aged children are meeting the requirements of PA in general, accumulating 60 or more minutes a day every day [29,30]. That means PA from PE might probably be the main PA they have. Given the above, it is important to identify factors for targeting in order to avoid students’ skipping of PE, which is vitally important for their current and future health [31].
The present study seeks to at least partly fill the gap and to explore factors related to intentional skipping of PE lessons. To explain the intentional skipping of PE lessons, the ecological model is employed. Theoretical premises of the ecological model identify individual factors as the most proximal predictors of behavior. In addition, they serve as the mediators transferring the effects of the more distant behavioral predictors. Based on the studies and theoretical observations, motivation and the PE-related attitudes are important predictors of PA from PE [3,32]. It is hypothesized that higher motivation and more positive attitudes will be negatively related to PE skipping.

In addition, the individual health- and health-behavior-related factors such as participation in sports, self-rated health, sedentary behavior, and body mass index (BMI) are considered as important predictors of attending or skipping PE, given the evidence that relates them to MVPA in PE or to meeting general PA requirements [13,24].

Next, the more distant interpersonal levels of the ecological model, i.e., the reinforcing social factors, are allocated. In this study, family, school, and peers’ social capital variables were included as these are the most important reference groups for high school-aged students [5,33]. The higher the social capital across social groups, the less PE skipping is expected.

Finally, sociodemographic factors (such as age, gender, parental education, and place of living) are included serving as the covariates. While age, place of living, and family socio-economic status all show mixed associations with PA, gender definitely creates the difference in PA both at PE and in leisure time in favor of boys [5,13,15,26]. It is proposed that this difference might be partly accounted for skipping PE classes.

The aim of the study is to identify individual and interpersonal correlates as well as their interaction effect on the intentional PE skipping behavior in Lithuanian high school students.

2. Materials and Methods

2.1. Study Design and Procedure

This is a cross-sectional population-based study. The cluster (area) random sampling was used. The study sampling covered all 10 regions of Lithuania within the period of September–November 2019. One school from the main city in the region and one from the rural area (primary sampling units) were randomly selected. Twenty schools were selected in total. Then, students from the 9th, 10th, 11th, and 12th grades, one class per grade, were chosen using the classes whose number was followed by the letter A (e.g., 10A) within each selected school. Both the school and classes in the schools were considered clusters. A study questionnaire was filled in approximately 30 min. by those students whose parents gave their written consent to participate in the study and those students who themselves gave their verbal consent. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Lithuanian Sports University (No. SMTEK-13).

2.2. Participants

The initial study sample consisted of 1386 students. Sixty-five questionnaires (4.7%) were not returned, and 36 questionnaires (2.6%) were filled inconsistently or inaccurately, or deliberately damaged. A total of 1285 students’ data were available for analysis. The students’ ages varied from 14 to 18 years old, with a mean and standard deviation (SD) 16.1 ± 1.2. Males comprise 40.2 and females comprise 57.8% of the study sample, with the mean age of participants around 16 years. Most of the participants live in an urban area (61.2%). Almost two-thirds of study participants have mothers with higher education, and around a half of them have fathers with higher education.
2.3. Measurements

2.3.1. PE Attendance

A number of compulsory PE classes was identified by answers to the question “How many PE classes per week at school do you have?”.

PE skipping was identified by answers to an item “How many classes did you skip the previous week unjustified?”. Students were explained that any health condition chronic or temporarily is considered as justified skipping and should not be counted.

2.3.2. Individual Psychological Factors

The 19-item BREQ-2 questionnaire was used to assess autonomous motivation towards exercise and physical activity [34]. Answers were provided on a 5-point Likert scale ranging from 0 = “not true for me” to 4 = “very true for me” used to rate each item. The scores on each subscale were calculated by summing scores of scales’ items and averaging by the number of items. The Relative Autonomy Index (RAI), in which higher scores represented higher autonomous motivation towards PA, was generated after scores on each of the five subscales were calculated. RAI score ranges from −24 to +20 and was calculated using the formula RAI = (amotivation * −3) + (external * −2) + (introjected * −1) + (identified * 2) + (intrinsic * 3) [35].

The Student Attitude Toward Physical Education scale [30] was used to measure the respective phenomena. The questionnaire is comprised of two subscales of enjoyment and usefulness. Each of them consists of 10 items. The enjoyment subscale includes items indicating the affective aspects of activities in PE classes, e.g., “The games I learn in my physical education class get me excited about physical education”, and the teacher’s ability to make students interested in physical education, e.g., “I feel my physical education teacher makes learning in my physical education class fun for me.” Internal consistency of questions on this subscale Cronbach α was 0.869. The usefulness subscale assesses the cognitive evaluation of pros, e.g., “I feel the games I learn in my physical education class are valuable to me.”, and cons, e.g., “The games I learn in my physical education class seem unimportant to me.”, and of activities in PE class, as well as the subscale address the PE teacher competencies, e.g., “My physical education teacher makes my physical education class seem unimportant to me.”. The internal compatibility of this scale is Cronbach α 0.901.

2.3.3. Individual Health- and Health-Behavior-Related Factors

Participation in sports was identified by asking students if they do regular sports after school. Answers were provided on a binary scale: Yes or No.

Sedentary behavior was measured by one item (“During the last seven days, how much time did you usually spend sitting on a weekday?”) from the IPAQ-short form questionnaire [36]. Answers were provided by hours per day.

Self-rated health was measured by one item “How would you estimate your health?”. Responses were distributed on a five-point Likert scale, ranging from very poor (1), poor (2), average (3), good (4), to excellent (5) [37].

Body mass index calculated by dividing weight by height in meters squared from self-reported height and weight. Based on thresholds provided by Cole et al. [38] according to age and gender, students were distributed into two groups of not overweight and overweight or obese.

2.3.4. Interpersonal Factors

The assessment of social capital in adolescents in this study was based on theoretical premises [39] and previous empirical research [40–42]. The social network was identified by a number of friendship connections that students identified answering the question “Please rate how many peers you are interacting with, could you name as your friends?”. Social participation was determined by the total number of activities a student was engaged in with others, which were provided by answering the question “How many times in the
last month, have you been doing anything with your friends, e.g., going to the movies, taking a walk, otherwise entertaining?”.

Family social capital was assessed in terms of perceived family social support (“Do you feel that your family understands and cares about you?”). Vertical trust represented students’ trust in their teachers at school (“Do you feel that teachers and students trust each other in your high school?”). Horizontal trust revealed general trust in their schoolmates (Do you feel students trust each other in your high school?). Reciprocity represented collaboration at school between students (“Do you think students collaborate with each other in your high school?”). The responses to the latter three questions were given on a five-point Likert scale from 1, strongly disagree, to 5, strongly agree.

2.3.5. Sociodemographic Factors

Parental education was used as a binary variable dichotomizing elementary, middle school, and high school education to “Lower than college”, and college as well as university education to “At least college” education. Answers on parental education were collected together with the written consent parents provided for their children to participate in the study. Place of living was evaluated by students indicating if they live in an urban or a rural area. Students identified their gender by choosing one of two options: male or female. Age was indicated by asking students to answer to open question “How old are you?” The answers were provided in full years at the time of the survey. The sociodemographic factors were considered as covariates in this study.

2.4. Statistical Analysis

Data were analyzed using SPSS 24.0 (SPSS Inc., Chicago, IL, USA) and MPLUS 8.4 software. All continuous variables met the assumptions of normality after the outliers exceeding three SDs were removed. Skewness and kurtosis indicators were within the range—1 and 1. Descriptive statistics were employed to determine the means and their SDs and frequencies. The relationships between skipping PE and individual, interpersonal and sociodemographic factors were identified using univariate and multivariate logistic regression analysis, producing odds ratios (ORs) and 95% confidence intervals (95% CIs). Each cluster of independent variables was entered separately into the regression model for univariate regression. The associations between dependent and all independent variables for multivariate regression were calculated by entering all variables. For mediation analysis, PROCESS version 3.5. [43] SPSS macro (Model 4) was employed, which identifies direct and indirect effects. Confidence intervals (CI) of 95% were estimated. An effect in which CI did not include zero was considered significant. Bootstrapping was set at 5000 samples. The completely standardized indirect effects were calculated as effect sizes for mediation [44]. Their values of 0.01, 0.09, and 0.25 representing small, medium, and large effect sizes, respectively [45]. Statistical significance was set at a p-value of less than 0.05.

STROBE Statement—checklist guidelines were followed in organizing this paper.

3. Results

The descriptive statistics in Table 1 show that 58.4% of high school students intentionally skip their PE classes at least once per week. That is half of their PE, given that the average of PE classes is two classes per week. Four out of ten participate in sports regularly. On average, high school students spend their time sitting almost five hours per day. Self-rated health on average is evaluated as three in the range from one to five. There is 12% of overweight or obese students. High school students indicate having six close friends and going out about nine times per month. Other social capital indicators vary from 3.33 for horizontal trust to 4.27 for family support in the range from 1 to 5.

Univariate and multivariate logistic regressions predicted skipping PE classes (Table 1). In the univariate logistic regression blocks of study, variables were included separately, identifying the unique effects per block.
Table 1. Descriptive statistics and results of the univariate and multivariate logistic regression models predicting skipping physical education classes at least once per week, (N = 1285).

| Bocks and Study Variables                        | Descriptives | Univariate Logistic Regression | Multivariate Logistic Regression |
|--------------------------------------------------|--------------|--------------------------------|---------------------------------|
|                                                  | Mean ± SD or % | OR [95% CI] | Nagelkerke R² | OR [95% CI] | Nagelkerke R² |
| Skipping PE classes (at least once/week)         | 58.4         |                |                |                |                |
| Number of PE classes/week (range 2–4)            | 2.03 ± 0.38  | 1.18 [0.65–2.14] | 0.001           | 1.43 [0.74–2.71] | 0.14 |
| Sociodemographic                                 |              |                |                |                |                |
| Gender (female)                                  | 57.8         | 1.55 [1.22–1.97] | **             | 1.67 [1.19–2.35] | **             |
| Age (range 14–19)                                | 16.1 ± 1.2   | 1.23 [1.12–1.36] | **             | 1.20 [1.06–1.37] | **             |
| Place of living (rural)                          | 38.9         | 0.92 [0.72–1.77] |                | 1.05 [0.76–1.46] |                |
| Mother’s education (at least college)            | 59.6         | 1.07 [0.96–1.19] |                | 1.04 [0.90–1.20] |                |
| Fathers’ education (at least college)            | 46.9         | 1.10 [0.99–1.22] |                | 1.04 [0.90–1.19] |                |
| Individual (psychological)                       |              |                |                |                |                |
| PE enjoyment (range 1–5)                         | 3.30 ± 0.88  | 1.09 [0.80–1.50] |                | 1.27 [0.86–1.89] |                |
| PE usefulness (range 1–5)                        | 3.39 ± 0.95  | 0.61 [0.45–0.82] | **             | 0.55 [0.38–0.80] | **             |
| RAI (range −15–20)                               | 7.28 ± 6.74  | 0.99 [0.97–1.01] |                | 0.99 [0.97–1.02] |                |
| Individual (health and health behaviors)         |              |                |                |                |                |
| Participation in sports (yes)                    | 40.4         | 1.12 [0.85–1.48] |                | 0.71 [0.50–1.01] |                |
| Sedentary behavior (h/day)                       | 4.6 ± 3.3    | 1.08 [1.03–1.13] | **             | 1.07 [1.02–1.31] | **             |
| Self-rated health (range 1–5)                    | 3.1 ± 0.7    | 0.77 [0.63–0.93] | **             | 0.76 [0.60–0.96] | *              |
| Body mass index (overweight and obese)           | 12.1         | 1.54 [1.02–2.31] |                | 1.56 [0.96–2.54] |                |
| Social capital (range 0–25)                      |              |                |                |                |                |
| Social network (range 0–25)                      | 6.15 ± 5.15  | 0.98 [0.95–1.01] |                | 0.99 [0.96–1.02] |                |
| Social participation (range 0–46)                | 9.01 ± 9.02  | 1.02 [1.01–1.04] | **             | 1.02 [1.01–1.04] | *              |
| Family support (range 1–5)                       | 4.27 ± 1.11  | 0.98 [0.85–1.13] |                | 1.00 [0.84–1.19] |                |
| Vertical trust (range 1–5)                       | 3.40 ± 1.15  | 0.84 [0.70–1.01] |                | 0.88 [0.71–1.08] |                |
| Horizontal trust (range 1–5)                     | 3.33 ± 1.14  | 0.89 [0.74–1.08] |                | 0.90 [0.72–1.11] |                |
| Reciprocity at school (range 1–5)                | 3.72 ± 1.11  | 1.09 [0.92–1.30] |                | 1.21 [0.99–1.49] |                |

Note: N/A, not applicable; h, hours; PE, physical education; RAI, relative autonomy index; *p < 0.05; **p < 0.01.

In the multivariate logistic regression, all blocks of predictors were included in the analysis. The results indicated that the number of PE classes per week was not related to PE skipping. The female gender and older age among sociodemographic variables are related to skipping PE. The chances that girls will skip PE is 55% higher than boys. Gender and age remained significant in multivariate analysis as well.

Among individual psychological factors, a higher perception of PE usefulness is adversely related to skipping PE in both univariate and multivariate analyses. Neither PE enjoyment nor autonomous motivation for physical activity is related to PE skipping.

Among individual health-related predictors, higher sedentary behavior and lower self-rated health are related to skipping PE in a univariate analysis. In addition, being overweight or obese increases chances to skip PE by 54% in comparison with those not overweight. However, in a multivariate analysis, BMI stopped being significant.

Social participation is the only social capital predictor of skipping PE in both univariate and multivariate analyses. Though, its effect is adverse. The more frequent participation in social gatherings and going out with friends is related to higher chances for skipping PE.

Based on the results in Table 1, three individual factors were tested for mediation effect between interpersonal social capital factors and skipping PE. For mediator PE usefulness all mediation models for each social capital variable satisfied the criteria for mediation that the predictor variable should be significantly related to the mediator, except for social participation, which directly predicted PE skipping. The rest of the social capital components showed significant positive direct associations with mediator PE usefulness. The higher trust in teachers, peers, and higher perception of reciprocity at school and bigger social network, and higher family support predicts a more positive perception of PE usefulness with the trust in teachers having the strongest relationship among other social capital factors (Table 2).

The evidence of positive indirect effect was found for the social network, vertical trust, horizontal trust, and reciprocity at school, as their CIs for its βs do not contain 0. These
social capital factors through mediator PE usefulness are negatively related to skipping PE, thus lower the probability of skipping. The standardized effect sizes were between $10.02\times10.06$, indicating small effect sizes (Table 2).

Thus, these findings provide support for the presence of the indirect effect of social capital, especially school social capital, in reducing the behaviour of skipping PE in high school students. Social network, vertical trust, horizontal trust, and reciprocity at school are directly related to self-rated health and the latter two are related with sedentary behavior.

Table 2. Gender and number of PE classes/week adjusted analysis of mediation effect of personal variables for the relationship of social capital and PE skipping.

| Predictor                  | Effect          | PE Usefulness | Self-Rated Health | Sedentary Behavior |
|----------------------------|-----------------|---------------|-------------------|--------------------|
|                            |                 | $\beta$ [95% CI] | $B$ [95% CI]     | $B$ [95% CI]       |
| Social Participation       | Direct effect   | 0 [−0.1−0]    | 0.01 [0.01−0.01] | 0.01 [−0.01−0.04]  |
|                            | Indirect effect | 0 [0]         | 0 [0]             | 0 [0]              |
|                            | CSIE            | 0.01 [0.00]   | −0.1 [−0.02]      | 0 [0−0.01]         |
| Social Network             | Direct effect   | 0.02 [0.01−0.03] | 0.02 [0.01−0.03] | −0.04 [−0.08−0.01] |
|                            | Indirect effect | 0 [−0.1]      | 0 [0]             | 0 [0]              |
|                            | CSIE            | −0.02 [−0.04−0.01] | −0.01 [−0.02]   | −0.01 [−0.02]      |
| Family support             | Direct effect   | 0.17 [0.12−0.22] | 0.15 [0.12−0.19] | −0.13 [−0.31−0.06] |
|                            | Indirect effect | −0.03 [−0.05−0.02] | −0.01 [−0.02]  | 0 [−0.01]          |
|                            | CSIE            | −0.4 [−0.06−0.03] | −0.01 [−0.03]  | 0 [−0.01]          |
| Vertical trust             | Direct effect   | 0.24 [0.20−0.29] | 0.10 [0.06−0.13] | −0.08 [−0.26−0.10] |
|                            | Indirect effect | −0.04 [−0.06−0.03] | −0.01 [−0.01]  | 0 [−0.01]          |
|                            | CSIE            | −0.06 [−0.08−0.04] | −0.1 [−0.02]   | 0 [−0.01]          |
| Horizontal trust           | Direct effect   | 0.19 [0.14−0.24] | 0.10 [0.07−0.14] | −0.30 [−0.48−0.12] |
|                            | Indirect effect | −0.03 [−0.05−0.02] | −0.1 [−0.02]   | −0.1 [−0.02]      |
|                            | CSIE            | −0.05 [−0.06−0.03] | −0.1 [−0.02]   | −0.1 [−0.02]      |
| Reciprocity at school      | Direct effect   | 0.21 [0.16−0.26] | 0.11 [0.07−0.15] | −0.28 [−0.46−0.09] |
|                            | Indirect effect | −0.04 [−0.06−0.03] | −0.1 [−0.02]   | −0.1 [−0.02]      |
|                            | CSIE            | −0.05 [−0.07−0.03] | −0.1 [−0.02]   | −0.1 [−0.02]      |

Note. Indicators in lines of Direct effect contains unstandardized $\beta$ coefficients that represent the relationship between predictor and mediator variable. Indicators in the lines of Indirect effect contains unstandardized $\beta$ coefficients that represent the indirect relationship between predictor and outcome variable; CSIE, completely standardized indirect effect; ** $p < 0.01$.

Results indicated that the higher the social capital is the better is self-rated health and lower sedentary behavior. Although, none of the social capital factors are mediated by self-rated health or sedentary behavior (Table 2).

4. Discussion

This study was aimed to investigate the underlying factors of PE skipping behaviors on individual and interpersonal levels as well as their interaction.

As much as 58% of high school students skip their PE classes at least once per week. The results are very similar to those in Brazil where exactly the same proportion of students attend PE classes less than two times per week [27]. Another study among Polish students revealed that the importance of PE is lower compared with Mathematics (49.8%), Foreign Languages, and native language. However, PE is perceived as more important than Arts, Music, Design, and Technology [46]. PE teachers and school nurses explain that those who skip PE often strive in other subjects in school, have mental health problems, and are outsiders in several arenas [47].

The results of the current study reveal that perception of PE usefulness, which is based on the perception of the PE teacher and the PE curriculum, prevents PE skipping. PE usefulness is based on the cognitions indicating PE as meaningful, valuable, and useful. Students have a moderately positive attitude towards PE in terms of both usefulness and
enjoyment indicators. While the latter—enjoyment, based on emotions towards PE—is not related to PE skipping behavior, even though some studies state that interaction, fun, freedom, and movement-play are key elements that make PE attractive, it thus might increase the probability of lower skipping \[48,49\]. However, this might be a valid statement for younger age school children but not older ones, as a recent study revealed that positive attitude towards PE decreases with older age, and this is especially related to its affective component \[50\]. It seems that at an older age, rational aspects of attitude, such as the perception of PE usefulness, predominate making decisions for behavior.

Autonomous motivation towards PA as well as regular participation in sports was not related to PE skipping behavior, which leads to the premise that PA, in general, has not much in common with PE attendance. Those skipping PE might be as much physically active in total as those attending PE. Another study also revealed that a positive attitude towards PE in terms of social benefits, fitness, and health, does not encourage students to go to school \[46\]. Some authors suggest that there is an energy expenditure limit in order to attain energy balance. When the limit is reached, children reduce their PA levels for a while \[51\]. So, the association between PE skipping and participation in regular sports, if it was significant, might as well be adverse.

Meanwhile, sedentary behavior is associated with PE skipping. So, even though PE attendance might not increase PA, it might prevent sedentary behavior. In relation to health indicators, skipping PE is also more prevalent among those with lower self-rated health. Self-rated health in other studies is usually attributed to PA with the findings that show that more physically active students rate their health better than those who are less active \[52\]. As PE is closely related to PA, this result might indicate that either students’ tendency to skip leads to a lower perception of their own health due to consequences of inactivity \[53\] or they skip their PE classes because of feeling unwell.

In addition, on a broader level, it is suggested that those students who skip their lessons have more mental health symptoms such as general anxiety, separation anxiety, social phobia, panic, obsessions and compulsions, and depression in comparison with those who skip less \[54\].

Another health indicator, body mass index, appeared to be important in the univariate analysis—the tendency to skip PE is more prevalent among overweight or obese students—but not in the multivariate analysis. In general, overweight and obesity are considered closely related to body image concerns \[55\]. Meanwhile, in PE, the body is a focus of curricular outcomes, not only in terms of physical ability but in terms of the potential for social comparisons and body judgments \[56\]. This might prevent overweight or obese students from PE attendance as well. This is in line with a study that revealed that among girls, the number of days in PE and among both genders, the number of minutes spent exercising in PE was negatively related to body size perception \[57\].

Among social capital indicators, only social participation was an important predictor of PE skipping. Though the effect of social participation is adverse, the more occasions students have to hang out with others, the higher the chances are of skipping PE. Generally, social capital is supposed to prevent PE skipping, among other deviant behaviors, and promote prosocial behaviors in students \[58\]. However, it is still known that there is a dark side of social capital \[59\], which arises when self-identification occurs with a group where social norms are disregarded. Social participation, though, in comparison with other social capital indicators such as social support, social trust, and reciprocity indicators, is the one which is likely to be linked to skipping PE as skipping PE in adolescents usually occurs in a company together with like-minded others. So, PE skipping itself accounts for another occasion for social participation.

Although social network, family support, vertical, horizontal trust, and reciprocity at school were not directly related to PE skipping, they had an indirect impact on preventing PE skipping through a more positive perception of PE usefulness. Higher family social capital in terms of support and at school in terms of trust and reciprocity, and especially vertical trust that represents relationships with teachers, contribute to developing favorable
perceptions of PE. This might be possibly explained by findings that schools with a high social capital have excellent communication between students and teachers [17] and this may increase the awareness of PE benefits. This is also in line with theoretical premises of social capital that track the impact of social capital on behavior through (1) knowledge on appropriate behavior provided in social contexts; (2) informal social control through norms of social cooperation when the desired behavior is encouraged, and the deviant behavior is not tolerated; and (3) through psychological processes when emotional support is provided [60]. So, perceptions are usually made in social contexts, and that is why it is crucial to emphasize the importance of PE and its outcomes within the family and at school. In addition, studies showed that students perceiving support from PE teachers develop confidence in PE, which leads to higher motivation for PE [61] and possibly prevents from skipping. Teacher support is more efficient for MVPA in PE than a goal strategy, especially in girls [62].

Meanwhile, negative social factors such as bullying at school, bad school atmosphere, and relationship problems with peers and teachers also explain skipping lessons at school [63]. PA interventions can increase up to 24% of the proportion of time students spend in MVPA during PE lessons. Thus, participation in PE could lead to substantial public health benefits [4]. Skipping school was also related to lower parental involvement, and engagement into learning process of their children [64]. On the other hand, even strict measures, such as an applied school’s zero tolerance for unexcused absence policy may result in undue consequences and may further encourage unexcused absences [65, 66]. This is in line with self-determination theory which states that control, which the zero-tolerance policy most probably implies, does not lead to or may only temporarily induce the expected behavior. Meanwhile, perceived autonomy support that is obtained from a close social environment and important others leads to behavioral adherence [67]. These findings again emphasize the importance of social context for prosocial behavior such as school attendance.

Finally, among sociodemographic factors, female gender and older age of students were determinants of PE skipping. This is in line with a similar study in Brazil where higher attendance in PE classes was observed in male and younger students [27]. Gender differences in PE attendance was also identified in a PISA study across the world in favor of male students [28]. Actually, females prefer socializing more than males [68], and this might go along with another result of this study that social participation is a risk factor for skipping PE. Parental education and living in an urban or rural area were not related to PE skipping. While the PISA study showed the importance of household wealth, which is usually correlated with parental education when higher rather than lower is related to better attendance of PE [28].

Limitations

This study has its limitations. First, it is mainly an observational, cross-sectional study. Any link of causality between individual, interpersonal, and students’ PE skipping behavior could be determined. In addition, the reasons for intentional PE skipping were not investigated. This understudied topic should be explored in qualitative research at first. However, the study revealed some correlates and interactions between them, which might be further studied to determine the causal effect of predictors.

5. Conclusions

Low physical education attendance raise concern as 58% of unexcused absences were determined among Lithuanian high school students, particularly among girls and older students. The perception of physical education usefulness and better self-rated health are the preventive factors for physical education skipping among high school students. Greater social participation, sedentary behavior, female gender, and older age are negative predictors of physical education skipping and could be the targets for interventional studies. Meanwhile, greater social network, family support, trust in teachers and peers at
school, and reciprocity at school indirectly prevent PE skipping through a more positive perception of PE usefulness. Raising awareness of physical education benefits, providing a rationale for physical education in the social contexts of family and school, in terms of family support and building trust with teachers, strengthening reciprocity at school indirectly prevents students’ physical education skipping behaviors. These results may contribute to create school-based programs on building and strengthening the social capital of the school community, including students’ families. Benefits and values of prosocial behavior should be also implemented. A coherent community having strong values, in turn, might prevent not only PE skipping but also reduce rates of unexcused absenteeism in general and improve learning and health outcomes.

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