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Students' attitudes to PE lessons with respect to lesson content, sex, and type of school

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ABSTRACT

Neuls, F., Vašíčková, J. & Vysloužilová, L. (2014). Students' attitudes to PE lessons with respect to lesson content, sex, and type of school. *J. Hum. Sport Exerc., 9*(Proc1), pp.S326-S334. Although school work is typical by its sedentariness, school as an institution has undoubted potential to influence total physical activity of students, particularly due to regular physical education. The main aim of this paper is to describe school PE lessons with various content from the aspects of 1) number of steps referred to physical load of students and 2) students' attitudes to realized PE lessons, with regard to sex of participants and type of school the students attended. All presented data were gathered within teaching practices of PE students at secondary schools and high schools in the Czech Republic during 2012. The sample consisted of 734 boys and 590 girls. To measure number of steps within PE lessons, participants wore the Yamax pedometers. To collect relevant data on participating students' attitudes toward realized PE lessons, the standardized questionnaire "Diagnostics of PE lesson for students" was applied. Mann-Whitney U-test was used to process the data comparisons. Mean number of steps realized during the school PE lessons was higher in boys (secondary schools: 57.80±22.92 steps·min-1; high schools: 59.25±19.54 steps·min-1) than in girls (secondary schools: 50.04±20.00 steps·min-1; high schools: 42.50±14.99 steps·min-1). The highest number of steps was detected in PE lessons focused on sports games (especially basketball and football). The questionnaire data did not reveal any specific trends in attitudes towards various PE lessons regarding sex or type of school within the overall evaluation. Nevertheless, significant differences were found in partial comparisons. These analyses might be helpful when considering efforts aimed at increasing efficiency of PE lessons through thinking over levels of physical load, selection of content or educational methods and forms. **Key words**: EXERCISE, PEDOMETER, ADOLESCENTS, SECONDARY SCHOOL, HIGH SCHOOL, SPORTS GAMES.

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INTRODUCTION

Hypokinesia, lack of physical activity, physical inactivity or sedentary lifestyle belong to the terms frequently associated with the assessment of activities in school youth (Brettschneider & Naul, 2004; Dumith et al., 2011; Strong et al., 2005). Although schoolwork is typical by its sedentary nature, school as an institution has an undoubted potential to influence the total physical activity in students, particularly through regular physical education (PE). As Faulkner et al. (2009) stated, the level of daily and weekly physical activity in adolescents is significantly influenced by school PE. School PE lessons are also essential from the perspective of the educational regime, motivation for active leisure time after school or the creation of positive attitudes to be physically active on a lifelong basis (Dumith et al., 2011; Fairclough et al., 2002).

In secondary and high schools in the Czech Republic, school PE as an obligatory course is realized by means of two 45-minute-long lessons a week with an option of one extra lesson. Although PE remains among the most popular school subjects, the number of students totally exempt from school PE rises (Sigmundová et al., 2005). To improve the efficiency of school PE, it is necessary to overcome the contradictions between the needs, wishes, preferences, interests or inclinations and physical activity during schoolwork/school PE (Frömel, 2001) and to analyze students' attitudes to school PE content from various perspectives as well.

The main aim of this paper is to describe school PE lessons with various content in terms of 1) step counts corresponding to the students' physical load, and 2) the students' attitudes to PE lessons with regard to the participants' sex (gender) and type of school.

MATERIAL AND METHODS

The sample consisted of n=1324 participants (734 boys and 590 girls) from 29 secondary schools and 28 high schools in the Czech Republic. The participants were 11 to 19 years of age (secondary schools: 11 to 15-year-old students, n = 357 boys and 254 girls; high schools: 15 to 19-year-old students, n = 377 boys and 336 girls). All participants and their legal representatives were informed that the research was approved by the Ethical Committee of the Faculty of Physical Culture, Palacky University in Olomouc.

To measure step counts in various PE lessons, 10 students randomly selected from each class involved wore the Yamax (type Digi-Walker 700) pedometers during the whole lesson. These pedometers are considered most accurate for research purposes (Schneider et al., 2004). To follow the recommendations specified in various studies by Scruggs and colleagues (Scruggs, 2007a, 2007b, 2013a, 2013b; Scruggs et al., 2003, 2005, 2010), all data gathered during PE lessons were adjusted to units of steps per minute to make the results comparable with other studies. For this reason the exact duration of pedometer measurement within PE lessons was recorded. The students also expressed their attitudes to the monitored PE lessons by means of a 5-minute questionnaire inquiry right after the lesson finished. To collect relevant data on the students' attitudes towards PE lessons, a standardized "Diagnostics of PE lesson for students" questionnaire (Frömel et al., 1999) was applied. This questionnaire consists of 24 dichotomous questions divided into six dimensions (cognitive, emotional, health, social, attitudinal, and creative) and one additional dimension "student's role" containing 8 selected questions (Frömel et al., 2013).

Basic descriptive and comparative statistics was performed using the IBM SPSS 19.0 statistical program. To process the inter-group data comparisons, the non-parametrical Mann-Whitney U-test was used to

obtain statistical differences, and the effect size d coefficient was used for the purposes of confirmation (Cohen, 1988). This effect size d was calculated from the Z score: $d = 2 \times Z \times (n1 + n2) - 1/2$. All data presented were collected in 2012 during the teaching practices of the students of the Master's PE teacher education program.

RESULTS

As far as physical load is concerned, boys are more active during various PE lessons than girls. The mean value (± standard deviation) of the steps measured was 58.54 ± 21.25 steps·min-1 in boys compared with 45.75 ± 17.71 steps·min-1 in girls ($Z = 11.60$; $p < .001$; $d = .64$). There were no statistical differences when comparing boys from high schools (59.25 ± 19.54 steps·min-1) and secondary schools (57.80 ± 22.92 steps·min-1), ($Z = 1.84$; $p = .06$, $d = .14$). The same comparison within the group of girls revealed high school girls to be the least active subgroup (high school: 42.50 ± 14.99 steps·min-1; secondary school: 50.04 ± 20.00 steps·min-1), ($Z = 4.55$; $p < .001$; $d = .38$).

The main activity content of the analyzed PE lessons consisted mainly of a variety of sports games (84%, mostly basketball), gymnastics, athletics, fitness exercise, dance, and dance aerobics. Figures 1 and 2 briefly show the mean number of steps taken during various PE lessons. Speaking in general, higher numbers of steps were detected in PE lessons focused on sports games (especially basketball and football) compared with individual sports.

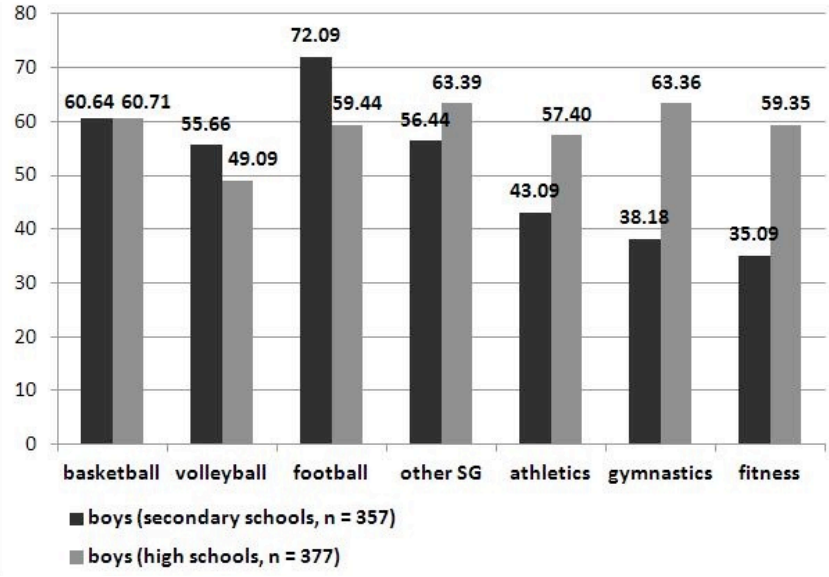

Figure 1. *Physical activity in PE lessons (mean steps·min-1) with various contents in boys*

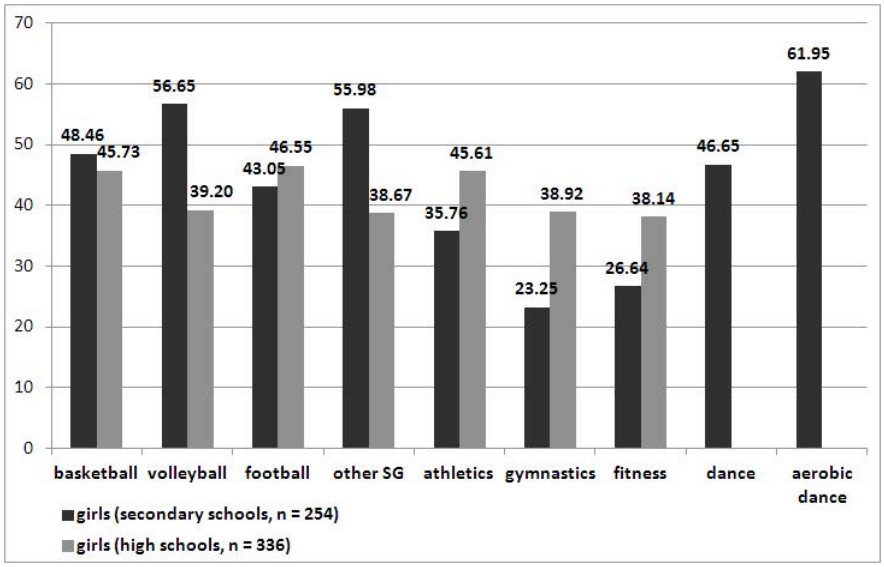

Figure 2. *Physical activity in PE lessons (mean steps·min-1) with various contents in girls*

The questionnaire data display an overall positive attitude to PE lessons; the percentage of positive answers was not lower than 55% in boys and 60% in girls (Tables 1 and 2). When excluding PE lessons with a low number of involved participants, basketball and football lessons were evaluated the best in younger boys while football and volleyball were favored by older boys. Girls evaluated most positively PE lessons with volleyball and basketball (younger girls) or volleyball and other sports games including floorball, handball etc. (older girls).

Table 1. *Overall evaluation of PE lessons by lesson content and type of school in boys (positive answers out of 24)*

Type of PE lesson	Secondary schools			High schools		
	n	*positive*	*%*	*n*	*points*	*%*
Basketball	65	16,68	69,50	169	15,88	61,17
Volleyball	40	13,35	55,62	50	15,42	64,24
Football	62	16,19	67,45	70	16,49	68,71
Other sports games	140	15,74	65,58	58	14,52	60,50
Athletics	25	13,68	57,00	16	18,06	75,25
Gymnastics	6	22,00	91,67	9	17,89	74,54
Fitness	9	13,89	57,87	5	15,40	64,17

Table 2. *Overall evaluation of PE lessons by lesson content and type of school in girls (positive answers out of 24)*

Type of PE lesson	Secondary schools			High schools		
	n	*positive*	*%*	*n*	*points*	*%*
Basketball	102	16,38	68,25	99	15,81	65,87
Volleyball	38	16,95	70,62	84	16,36	68,16
Football	2	17,50	72,92	19	17,42	72,58
Other sports games	56	14,77	61,54	67	16,40	68,33
Athletics	14	14,71	61,29	34	14,50	60,42
Gymnastics	6	16,50	68,75	9	17,11	71,29
Fitness	10	17,70	73,75	14	15,71	65,46
Dance	8	19,13	79,71	N/A	N/A	N/A
Dance aerobics	18	17,39	72,46	N/A	N/A	N/A

Tables 3, 4, and 5 show statistical analyses considering particular dimensions of the attitudinal questionnaire. Strong or specific trends in attitudes to PE lessons regarding sex or type of school were not observed. However, significant differences were found in partial comparisons. Girls evaluated more positively the social/interaction dimension of their lessons compared with boys (d = 0.27; small effect), (Table 3). High school boys denoted their PE lessons to be more creative than secondary school boys but this finding was not confirmed by the effect size coefficient (d = .17), (Table 4). The educational/cognitive dimension of the lesson content was better perceived by secondary school girls compared with their high school counterparts but again, this was not confirmed by effect size (d = .16), (Table 5).

Table 3. *Comparison of attitudes to PE lessons by questionnaire dimensions and sex (Mann-Whitney U-test; n = 734 boys and 590 girls)*

Dimension	|Z|	p
Educational (cognitive)	0.62	.53
Emotional	0.59	.55
Health	0.02	.99
Social (interaction)	5.01	.0001* (girls)
Relational	1.72	.08
Creative	1.34	.18
TOTAL	1.26	.21
Student's role	0.07	.94

(* denotes statistical significance, p < .05)

Table 4. *Comparison of attitudes to PE lessons by questionnaire dimensions and type of school in boys (Mann-Whitney U-test; n = 357 boys from secondary schools and 377 boys from high schools).*

Dimension	|Z|	p
Educational (cognitive)	0.04	.97
Emotional	1.11	.27
Health	1.72	.08
Social (interaction)	1.31	.19
Relational	0.02	.99
Creative	2.24	.02* (high)
TOTAL	0.66	.51
Student's role	1.30	.20

(* denotes statistical significance, p < .05)

Table 5. *Comparison of attitudes to PE lessons by questionnaire dimensions and type of school in girls (Mann-Whitney U-test; n = 254 girls from secondary schools and 336 girls from high schools).*

Dimension	|Z|	p
Educational (cognitive)	1.96	.05* (secondary)
Emotional	1.26	.21
Health	0.55	.58
Social (interaction)	0.07	.94
Relational	1.76	.08
Creative	1.00	.32
TOTAL	1.35	.18
Student's role	0.87	.38

(* denotes statistical significance, p < .05)

DISCUSSION

As Scruggs (2007a) states, pedometer steps/min is a valid, objective, and practical approach to PE physical activity monitoring. Steps/min accurately discriminates between achievement and non-achievement of the 50% moderate to vigorous physical activity criterion in school PE lessons. A steps/min interval of 82 to 83 is the most accurate indicator of the 50% criterion for high school PE (Scruggs et al., 2010). For PE in secondary schools, Scruggs (2007b) recommends a steps/min interval of 60 to 62 as the best cut-point indicator in students meeting the PA guidelines. In our study, the participants' physical activity was rather low when taking these guidelines into account. On the other hand, the students of PE teacher education who led the analyzed lessons distinguished between "habitual" lessons with a usual physical load and more intensive lessons with a higher physical load (Vašíčková et al., 2013). Hence, we can also expect a higher number of steps/min in further analyses focused on these more intensive PE lessons.

As expected, boys were significantly more physically active during PE lessons compared with girls. Adjusted to a typical duration of a PE lesson, the measured range from 42.50 steps·min-1 (high school girls) to 59.25 steps·min-1 (high school boys) is equivalent to approximately 1900–2700 steps in a 45-min PE lesson. In a similar study implemented earlier by Frömel et al. (1999), boys were more active during their PE lessons than girls in both types of school. Step counts in a 45-min lesson ranged from 2400 (n = 846 girls from secondary schools and high schools) to 2600 (n = 175 boys from secondary schools) or even 2900 (n = 59 boys from high schools).

The content of the analyzed PE lessons was based mostly on sports games. This finding is in accordance with Hardman (2008a) who confirms traditional sports games to be the leading content of PE lessons in almost all European countries. The same author states elsewhere (Hardman, 2008b) that despite the development of new activities, the proportion of time devoted to games, track and field athletics and gymnastics collectively accounts for over 70% of PE curriculum content in secondary schools. It is suggested that there is a continuing pre-disposition towards competitive sports-dominated, performance-related activity programs.

PE lessons with sports games were evaluated better than lessons containing individual sports. Nevertheless, there is a strong need to balance the sample numbers in the subgroups analyzed according to the lesson content to make the results more comparable. For instance, football scored surprisingly high in the subgroup of high school girls; however, the rather low number of submitted questionnaires does not allow any clearer conclusion.

Our findings on the particular dimensions in the attitudinal questionnaire are not in complete agreement with the abovementioned study by Frömel et al. (1999). They suggest that girls from secondary schools and high schools evaluate PE lessons more positively than boys in all (sports games or gymnastics lessons) or almost all (fitness lessons) questionnaire dimensions. They also found the attitudes to PE lessons in younger students (secondary schools) to be more positive when compared with older students (high schools). These statements were not fully confirmed in our study using the same questionnaire where only partial differences in some dimensions between boys' and girls' attitudes to PE lessons (or younger and older students) were found as described in the results section. This area of our project is to be clarified in further analyses.

Limitations of the present study are as follows: pedometer specifics (different nature of compared activities leading to a bias when detecting the steps, no intensity measures, not suitable for swimming lessons etc.), questionnaire specifics (subjective measures, results dependent also on the teacher personality), and incomparable sample numbers in some subgroups.

CONCLUSION

Boys are usually more physically active during PE lessons than girls and girls from high schools seem to be the least active subgroup. The main content of PE lessons included various sports games, especially basketball. In general, PE lessons were evaluated positively by both boys and girls. No specific trends in attitudes to the analyzed PE lessons were found. However, significant differences were observed in partial comparisons. These analyses could serve as a feedback not only for the participants but also for PE teacher education students and teacher beginners to improve their curricula or PE programs (motivation of students to be active, selection of a suitable and preferred content with an adequate physical load etc.).

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