Variables Influencing the Emotional Attachment of Adolescents in Prague Schools to Physical Education

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ABSTRACT

Background: Emotional attachment to any activity is a frequently discussed topic. Backgrounds speak of the importance of building emotional attachment since childhood, we agree with this statement and we see school Physical Education as one of the important sources that can significantly influence this attachment in the field of physical activities. The aim of the study is to define the variables that influence the emotional attachment between pupils and school Physical Education. **Method**: A questionnaire used by Antala for a similar investigation in Slovakia was chosen as the research tool. After assessing the normality of the data, we chose the Kruskal- Wallis test for statistical data processing. **Results**: Our research group contained 480 respondents from 22 primary schools in Prague. 38% of the pupils have a negative relationship with Physical Education. 41% of pupils have a neutral relationship with Physical Education. Emotional attachment also affects the state of health. In many cases sick students have a more positive relationship with physical education. **Conclusions**: Pupils who are not focused on performance perceive Physical Education more positively than pupils focused on achievement. Children's emotional attachment to physical activities is important, we recommend working on tools to better clarify this area.

Keywords: physical activity; Kruskal- Wallis test; education; performance

INTRODUCTION

Currently, health is a topic of discussion, the value of which many people have verified during the COVID-19 pandemic. During the pandemic, physical activities and the movement of people were restricted, which was reflected in all aspects of health for many people. At the present time, the situation around COVID-19 is more relaxed and society is returning to the time before the first wave of this pandemic broke out.

According to WHO (2002), adult lifestyle is influenced by childhood and adolescence. This is also supported by Malina (2004), who emphasizes that childhood and adolescence are key to the creation of a movement regime. In these periods, relationships and attitudes towards physical activities are formed. The task of parents and teachers is to create opportunities for regular activity and thus create a positive relationship to physical activity. Physical education serves as a tool for creating a regular exercise regime. A regular exercise regime in childhood and adolescence is the first prerequisite for its continuation in adulthood. Jeřábek and Tupý (2007) are of the opinion that educating children to actively develop and protect physical health and responsibility for it should be one of the top priorities of current educational trends in elementary education in the Czech Republic.

In advanced foreign educational systems, Physical Education has an important role and the conditions in the curriculum documents enable the fulfillment of the goals of school Physical Education. In the Norwegian education system, schools compensate children for physical activity on days when children do not have Physical Education in the schedule. Swedish curriculum programs are autonomous in the design of Physical Education, schools also choose the number of teaching hours. It is similar in the Spanish curriculum. The conditions for the realization of educational goals in the Czech curriculum system are not at such a level. These data are presented by the following authors in their studies: Habrdlová (2019), Vlček (2012), Lupač (2018) and Zoglowek (2012).

Lupač (2018) finds in Czech documents a certain discrepancy between the educational goals (strongly health-oriented) and the curriculum (movement-oriented). The goals of school Physical Education in the Czech educational system are comprehensively conceived. According to Fialová (2010), the main goal of Physical Education is to stimulate and develop movement regime, health prevention, movement abilities and skills. Furthermore, it is also necessary to develop the personal characteristics and positive attitudes of pupils towards physical activity. We perceive the last part of this definition as crucial, which states that it is important to develop positive attitudes of pupils towards physical activity, because physical activity is an important determinant contributing to the level of human health.

In the professional physical education community, many topics are discussed that affect this educational field and its impact on students. A very important topic is the assessment of pupils in Physical Education. Cihlář (2017) points out that a positive assessment affects the pupil's attitude towards Physical Education in the dimension related to performance, efficiency, and health, and it is also important to realize that the physical activity of the parents has an effect on the physical activity of the child. In our opinion, it is the motivation of pupils at the beginning of schooling and the subsequent evaluation of their activity that is a very important factor in building positive attitudes among pupils at all levels of education. The aim of the study is to assess the variables that can influence the emotional attachment of adolescents to physical activity.

METHOD

The chosen research tool was the questionnaire used by Antala for a similar investigation in Slovakia in 2012. In our study, we interpret scaled items from the first, second and third dimensions. In total, there were ten items assessing the emotional relationship to Physical Education. All items were rated points (1-5), the more points, the more positive the relationship. The first dimension contains six items and assesses the emotional relationship to Physical Education. In the study, we refer to it as the score of domain 1 – emotional relationship (hereafter referred to as emotional relationship). So, the respondent can get from 6 to 30 points. The remaining items delimited by the scale assessed the relationship to Physical Education. These items are contained in the second and third dimensions. These are two items in the second dimension and two items in the third dimension. The total score of the tool ranges from 10-50 points. The questionnaire also includes identification data. The tool did not pass standardization for the Czech population. From the psychometric data, we calculated the internal consistency using the Cronbach's alpha coefficient (0.7), this is a lower value, but sufficient according to Gurková (2011). Table 1 shows the division of probands into categories according to the number of points obtained.

Table 1. Evaluation of selected items

Total score	Score - emotional relation	
10-17 points	6-10 points	Very negative relationship
18–25 points	11-15 points	Negative relationship
26-34 points	16-20 points	Neutral relationship
35-42 points	21-25 points	Positive relationship
43-50 points	26-30 points	Very positive relationship

(Antala, 2012; Gurková, 2011)

Pupils from primary schools, grammar schools and high schools from Prague were included in the deliberately selected research group. The tool was distributed to pupils in the 9th grade of elementary schools and in the 1st grade of high schools. At grammar schools, the questionnaire was distributed in the first years of secondary education. The age of the group ranges from 14 to 16 years, which corresponds to the developmental period of middle adolescence (Macek, 2003).

The set was deliberately selected by students of FTVS UK (Faculty of Physical Education) as part of their internships in Prague. The total number of anonymous respondents was 589 from 22 schools. From this number, we included 480 questionnaires into the research. The conditions for exclusion from the research were set as follows. A respondent was excluded from the research if the questionnaire lacked identifying information (height, weight, age), if there were three or more unanswered items in the questionnaire, or if the open-ended answer was a nonsense. Failure to fill in an item or crossing it out was considered an unanswered item.

We divided the group according to identification data (health status, BMI, level of physical activity) into sub-sets, which were subsequently subjected to statistical analysis. By dividing, we have defined the variables that we believe will enter the relationship of adolescents to school

Physical Education. You can view the representation of individual types of schools and study programs in Table 2. As can be seen, grammar school students are the most represented ones, specifically the 8-year study program, on the contrary, high schools are the least represented. The composition of the partial sets can be seen in Table 3.

The criteria for division into individual groups were determined as follows. We divided the subsets according to BMI into three categories according to the percentile graphs into the categories "underweight", "optimal weight" and "overweight and obesity". Subsets divided according to the level of physical activity were divided according to the following criteria. If the respondent participates in competitions and is registered under the association, he falls into the category "do sports competitively". If the respondent engages in physical activities but is not registered under an association and does not participate in competitions, he falls into the category "play sports recreationally". If the respondent does not do sports, he falls into the "do not do sports" category. The division according to health status divided the respondents into the "healthy" category, which is made up of respondents who are sick once in the school year, the "occasionally sick" category is made up of respondents who are sick for two to three weeks during the school year. If the respondent is absent more often during the school year, he falls into the category "often sick". The criteria were clearly defined, and the respondents were able to assign themselves to individual categories.

Data collection took place in January and February 2020, just before the start of the first wave of the COVID-19 pandemic.

Table 2. Participants characteristics

Study program		Boys	Girls	Total
Upper primary	ISCED 2	48	51	99
8-year grammar school	ISCED 2	95	67	162
4-year grammar school	ISCED 2	52	83	135
High school	ISCED 3	27	57	84
Total		222	258	480

ISCED (International Standard Classification of Education)

Table 3. Dividing the group into individual sub-sets

Criterium	Category	n
Sport activity	I do sports competitively	216
	I do sports recreationally	210
	I do not do sports	54
Health	Healthy	182
	Occasionally sick	227
	Often sick	71
BMI	Underweight	154
	Normal weight	173
	Overweight and obesity	153

BMI (Body Mass Index)

For the results part, we worked with frequencies, percentages, descriptive statistics, and inferential statistics as part of the statistical analysis. Statistical data processing was performed in the R program. Descriptive statistics determined measures of central tendency and measures of variability. We used the Shapiro-Wilk test to determine normal distribution of the data (p= 0.00046), according to which the data are non-parametric. Statistical significance was determined using the Kruskal-Wallis test. We performed subsequent post hoc analysis using the Dunn-test with Bonferroni correction (Skutil, 2011; Sigmund, 2012).

RESULTS

From table 4, it can be read that the highest frequency of students is represented in the categories "neutral relationship" and "negative relationship". We can state this for the results of the 1st domain as well as for the overall score of our tool. On the contrary, the percentage of students with a positive and very positive relationship is very low.

Table 4. Participants results

Relationship	Frequency				Cumulative frequency			
	Emotional Relationship Score		Total Score		Emotional Relationship Score		Total Score	
	A.F.	R.F.	A.F.	R.F.	A.F.	R.F.	A.F.	R.F.
Very negative	52	10.9%	39	8.2%	52	10,.9%	39	8.2%
Negative	187	38.9%	197	41%	239	49.8%	236	49.2%
Neutral	199	41.4%	215	44.8%	438	91.2%	451	93.8%
Positive	36	7.5%	25	5.2%	474	98.7%	476	99.2%
Very positive	6	1.3%	4	0.8%	480	100%	480	100%

Legend (A.F. – absolute frequency; R.F. – relative frequency)

Tables 5 and 6 show the position measures and the variability measures. For the overall results as well as for the emotional relationship score, we point out that the medians of the individual subsets move around the center of the scale. However, an interesting finding is that the highest scores appear in the subset of non-sporting respondents and frequently ill respondents. On the contrary, the lowest values of the medians appear in competitive athletes and in healthy respondents.

Table 5. Results per total score

Set split criterion		**Average**	**Modus**	**Median**	**SD**
	Whole set	26	28	26	6
Sport	Competitive sport	24	21	24	5.2
	Recreational sport	27	28	27	5.3
	Non-sportsmen	28	30	28	7
Health	Healthy	25	23	24	6.2

	Sometimes sick	26	25	26	5.3
	Often sick	27	28	28	5.1
BMI	Underweight	26	23	26	5.1
	Normal weight	26	28	26	5.7
	Overweight and obesity	25	22	25	6.1

Legend (SD= Standard Deviance)

Table 6. Results per emotional relatedness scores

Setting the split criteria	Average	Modus	Median	SD
Whole set	16	15	16	4
Sport				
Competitive sport	14	13	14	3.6
Recreational sport	16	17	17	3.5
Non-sportsmen	18	20	17	5
Health				
Healthy	15	14	14	4.4
Sometimes sick	16	16	16	3.5
Often sick	16	15	17	3.5
BMI				
Underweight	16	15	15	3.5
Normal wight	16	16	16	3.8
Overweight and obesity	15	13	15	4.2

Legend (SD= Standard Deviance)

Tables 7 and 8 show the results of the Kruskal–Wallis test and subsequent post hoc analyses. Statistically significant values are highlighted. There is a statistically significant difference for the overall health score and physical activity level, and the same is true for the emotional relationship score. According to the post hoc analysis in Table No. 8, there is a difference in the category of athletes between the sets of non-athletes and competitive athletes in both the total score and the emotional relationship score. For health, there is often a statistically significant difference between the sick and healthy sets.

Table 7. Kruskal–Wallis test criteria

Comparison	p- value
Total score x health	***0.00627***
Total score x BMI	0.28873
Total score x sport	***0.00001***
Domain Score x health	***0.00870***
Domain Score x BMI	0.51840
Domain Score x sport	***0.00008***

Table 8. Post hoc analysis using Dunn-test with Bonferroni correction

Kruskal – Wallis	Sets compared	p- value
Domain Score x sport	Non-athletes x recreational athletes	0.49099
	Non-athletes x competitive athletes	***0.00002***
	Recreational athletes x competitive athletes	***0.00001***
Total score x sport	Non-athletes x recreational athletes	0.09546
	Non-athletes x competitive athletes	***0.00176***
	Recreational athletes x competitive athletes	***0.00026***
Domain Score x health	Sick x sometimes sick	0.14753
	Sick x healthy	***0.00687***
	Sometimes sick x healthy	0.32836
Total score x health	Sick x sometimes sick	0.09654
	Sick x healthy	***0.00456***
	Sometimes sick x healthy	0.37745

DISCUSSION

In the study, we reached the following results. Over 80% of pupils have a neutral or negative attitude towards school Physical Education, 10.9% have a very negative attitude. 9% of pupils have a positive and very positive relationship. Based on the statistical analysis, we can state that significance was demonstrated for the total score in the category classified according to the performance of physical activity. Post hoc analysis shows significance between competitive athletes and non-athletes (0.00002) and between competitive athletes and recreational athletes (0.00001). The same results appear for the emotional relationship score. Competitive athletes vs. non-athletes (0.00176) and competitive athletes vs. recreational athletes (0.0026).

According to Pereira (2020), increasing age affects the interest in Physical Education among girls, he claims that the interest in Physical Education among pupils in Portugal decreases with age. If we compare this study with Cruz's study (2021), we find that Filipino children maintain a positive attitude towards physical activity even after graduating from high school. These studies confirm the thesis that it is necessary to build children's relationship to physical activity from childhood.

In his experiment, Sigmund (2009) demonstrated an increase in motivation with varied and attractive content. This is confirmed by Adamcak (2020) who claims that the relationship to Physical Education can be improved with attractive content and new and unconventional games. The question remains, what is the importance of competitions and activities based on them. In his study, Gosset (2019) finds no difference between programs focused on competitive and non-competitive forms of Physical Education. This is confirmed by Bernstein (2011) who claims that educational programs based on competition and racing are not very popular among students. Coulter (2020) points at the importance of fun and variety over competition.

An important factor in the perception of this issue is the subjective perception of the lessons by the teachers themselves. Maciulevičiene (2016) looks about teachers' views on their Physical Education lessons, the research group consists of teachers and their pupils. In general, teachers tend

to rate the lessons more positively than their students, especially in the areas of content variety and modern features. Teachers are more likely to believe that the content of the lessons corresponds to the needs of the students, rather than the latter. In this study, only 20% of students report that the teaching meets their needs. This reduces the need for students to play sports and be physically active at school and after school, which is the main goal of the general PE program. This factor has a significant influence on building a relationship to physical activity.

The value of the BMI index does not have a statistically significant effect on the relationship to Physical Education classes. However, the level of physical activity in the domain assessing the emotional relationship also has a statistically significant effect on the students' attitude towards Physical Education classes and in the overall score.

Pupils who do not engage in physical activities in their free time or engage in them recreationally have more positive attitudes towards Physical Education lessons, on the contrary, pupils who engage in a certain sport competitively have a negative attitude towards Physical Education lessons. We believe that competitive athletes are not linked to school Physical Education, because they are used to the load from sports training, which is somewhat different from Physical Education. In addition, it is likely that children are not willing to engage in any sport other than their own.

Another variable that statistically significantly affects the attitude of students to Physical Education classes is their health status. Post hoc analysis showed that adolescents who fall into the category of often ill have a more positive attitude towards Physical Education than adolescents who fall into the category of healthy. This finding contradicts the research of Zeng (2016), according to which Chinese students consider Physical Education as an important part of a healthy lifestyle. The same can be said for primary school pupils in Ireland. Wang's study (2019) contains similar results, adding to them the finding that boys have a more positive attitude towards PE than girls.

CONCLUSION

The aim of the study was to evaluate the relationship of pupils to school Physical Education and to find the variables that influence this relationship. This statement is confirmed by Antala's research (2012), in which he concludes that primary school pupils have a negative attitude towards Physical Education. Pupils who are not focused on performance perceive Physical Education more positively than pupils focused on performance. The teacher has several tools at his disposal to improve pupils' relationship with physical education. Our recommendation is to prepare a variety of hours with attractive content. It was at the time of the COVID-19 pandemic that many teachers prepared colorful activities with different content for children. The aim of these activities was to provide children with physical activity despite the inconvenient situation in society.

REFERENCES

Adamcak, S., Bartik, P., & Michal, J. (2020). Comparison of Primary School Pupils' and Secondary School Students' Opinions on Physical Education Classes in Slovakia. *European Journal of Contemporary Education*, 9 (2), 258–270. doi:10.13187/ejced.2020.2.258

Antala, B. & al. (2012). *Telesná a športová výchova v názoroch žiakov základných a stredných škôl*. Bratislava: END, spol. s r.o, Topoľčianky.

Bernstein, E., Philips, S., R & Silverman, S. (2011). Attitudes and Perceptions of Middle School Students Toward Competitive Activities in Physical Education. *Journal of Teaching in Physical Education*, 30(1). https://doi.org/10.1123/jtpe.30.1.69

Cihlář, D. (2017). *Hodnocení* žáků *2. stupně základních* škol *v* Ústeckém *kraji a jejich postoj ke školní tělesné výchově*. Praha. Dissertation FTVS UK.

Coulter, M., Mcgraine, B., & Woods, K. (2020). PE should be an integral part of each school day: Parents' and their children's attitudes towards primary physical education. *Education* 3-13, 48(4). https://doi.org/10.1080/03004279.2019.1614644

Cruz, A. (2021). Post-primary School Students 'Attitudes Toward Physical Education and Physical Activity Preferences: Philippines' K-12 Program. *The Asia-Pacific Education Researcher*. https://doi.org/10.1007/s40299-021-00598-2

Fialová, L. (2010). *Aktuální témata didaktiky: školní tělesná* výchova. Praha: Karolinum.

Gosset, M., & Silverman, S. (2019). Upper Elementary School Students' Attitudes Toward Physical Education in Skill-Themes and Multiactivity Approaches. *The Physical Educator*, 76. https://doi.org/10.18666/TPE-2018-V75-I2-7786

Gurková, E. (2011). *Hodnocení kvality života: pro klinickou praxi a ošetřovatelský výzkum*. Praha: Grada.

Habrdlová, M. (2019). Tělesná výchova ve vybraných kurikulárních dokumentech Norska a České republiky – srovnávací studie. Česká *kinantropologie*, 23 (3-4), 7–17.

Jeřábek, J., & Tupý, J. (2007). *Rámcový vzdělávací program pro základní vzdělávání*. Praha: VÚP.

Lupač, M. (2018). Analysis of the Swedish PE curricula: A comparison with the Czech curricula documents. *Tělesná kultura*, 41 (1), 25–41. doi:10.5507/tk.2018.003

Macek, P. (2003). *Adolescence*. Praha: Portál.

Maciulevičiene, E. (2016). 10–11 Classes students and Physical Education teachers subjective opinions about their Physical Education lessons modernity. *Human. Sport. Medicine*, 16 (2), 67–70. doi:10.14529/hsm160207

Malina, R., Bouchard, M., & Bar-Or, O. (2004). *Growth, maturation, and physical activity*. Champaign: Human Kinetics.

Pereira, P., Santos F., & Marinho, D. (2020). Examining Portuguese High School Students' Attitudes Toward Physical Education. *Frontiers in Psychology*, 11. https://doi.org/10.3389/fpsyg.2020.604556

Sigmundová, D., & Sigmund, E. (2012). The statistical and practical significance and "effect size" coefficients for the evaluation of physical activity. *Tělesná kultura*, 35(1). https://doi.org/10.5507/tk.2012.004

Sigmund, E., Frömel, K., Chmelík, F., Lokvencová, P. & Groffik, D. (2009). Oblíbený obsah vyucovacích jednotek telesné výchovy – pozitivně hodnocený prostředek vyššího tělesného zatížení děvčat. *Tělesná kultura*, 32 (2), 45–63.

Skutil, M. (2011). *Základy pedagogicko-psychologického výzkumu pro studenty učitelství*. Praha: Portál.

The European Health report: WHO regional publications. (2002). Denmark. Retrieved from https://www.euro.who.int/__data/assets/pdf_file/0007/98296/E76907.pdf

Vlček, P., & Mužík, V. (2012). Soulad mezi projektovaným a realizovaným kurikulem jako faktor kvality vzdělávání v tělesné výchově. Česká *kinantropologie*, 16 (1), 31–45.

Wang, Y. (2019). Attitudes Toward Physical Education and Physical Activities: A Comparison Study of Chinese and American High School Students. *In Proceedings of the 2nd International Workshop on Education Reform and Social Sciences* (ERSS 2019). Paris, France: Atlantis Press. https://doi.org/10.2991/assehr.k.191206.023

Zeng, H., Wang, Z., & Wang, X. (2016). A Study of Chinese Collegiate Attitudes toward Physical Education. *International Research in Higher Education*, 1(2). https://doi.org/10.5430/irhe.v1n2p1

Zoglowek, H. (2012). Physical education in Norway. *Journal of physical education and health*, 1(2), 17–25.

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