

Attitudes of austrian high-school students towards selected aspects of school physical education in light of gender and environmental conditions

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Abstract

Problem Statement and Approach. Physical education is a compulsory subject in Austria's educational system and it makes a major contribution to the general educational process at primary and secondary schools in this country. The main goal of physical education is to support the psychophysical development of school students as well as to introduce them to physical activity in adult life. The aim of the article is to examine the attitudes of Austrian high school students towards selected aspects of physical education at school, such as: the importance of the physical education as a subject, declarations regarding marks obtained in this subject, as well as students' opinions regarding the current number of PE hours and the intention to practice recreational sport after graduation. **Material and Methods.** In the study, gender and the size of the surveyed students' place of residence was considered. The study involved 391 high-school students living in a large city and small town in Austria. In the first part of the study, the significance of physical education was examined compared to other subjects using a "scale of values". In the second part of the study, the aim of which was to examine selected attitudes of students towards physical education, the Attitudes and Behaviours Questionnaire Towards Sports Activity was applied. **Results.** The results of the author's research show the great interest of students from both environments, especially boys, in the subject of physical education. The surveyed boys, more often than girls, received very good marks in physical education and would like the number of hours devoted to this subject to be increased. Additionally, the vast majority of respondents from both environments declared their intention to practice sport after completing school education. **Conclusions.** The research results indicate that the surveyed students have positive attitudes towards school physical education. For this reason, they should be taken into account to better organise and conduct physical education lessons by teachers.

Keywords: school sport, secondary schools, schoolchildren, Austria.

Introduction

Physical education plays a significant role in the Austrian educational system. It is an indispensable part of comprehensive education and upbringing and it aims to awaken pleasure derived from physical exercise and sport in all children and young people, and to make them aware that constant sports activity, combined with a healthy lifestyle, positively affects their physical, social, emotional and mental development (Grössing, 2007; Galan et al., 2019; Görner & Reineke, 2020 and Romar et al., 2023). That physical education enjoys high social acceptance and certain expectations is already evidenced by the fact that politicians and international as well as national organisations regularly warn against the consequences of too little physical activity and recognise physical education as very important (Senekowitsch, 2015).

Physical education as a school subject was introduced into the Austrian educational system in 1842, and since 1869, it has been a compulsory school subject in education within this country (Grössing, 1998). It is included in the curriculum from the first year of primary education to the final year of high-school (secondary education). Unlike many countries around the world, in Austria, the school subject physical education is called "Movement and Sport". In primary school, which lasts 4 years in Austria, the number of hours devoted to physical education classes is 3-4 hours a week. In secondary school, grades 5-8, the number of hours of physical education classes is also 3-4 hours a week, while in grades 9-12, the amount is 2-3 hours per week. Therefore, students can also take part in additional afternoon sports classes organised by the school (Informational materials of Austrian Federal Ministry of Education, Science and Research, 2023).

According to Grössing (1998, 2007) and Balz (2009), in Austria and Germany in the 1970s, there was a period of transformation regarding the nature of education classes from gymnastic to sports. According to this concept, the selection of appropriate forms of movement during physical education classes primarily concerned various sports disciplines as well as other forms of physical activity, such as athletics or activities carried out among nature. Prohl (2012), Stibbe (2013) and Aschebrock & Stibbe (2013) emphasize the importance of Kurz's

(1977) concept, the core element of which is "the ability to carry out action in the area of sporting activity", and it is used both in school physical education and during extracurricular sports activities.

According to Romar et al. (2023), currently, physical education has to face the challenge that the lives of children and young people are becoming less and less active. Balanced physical development, a variety of motor skills, health promotion and the ability to act in sport are therefore the central concerns of the subject (Sawicki, 2018; Görner & Reineke, 2020; Kuśnierz et al. 2020). Modern movement education assumes that the variety of movement culture (from simple activities to complex sports) is brought closer to the pupils. The most urgent task of promoting physical activity and sport in schools is to create motor development stimuli through an extensive range of physical activity and sport, to provide compensation for a wide range of stresses and to enable a joyful experience in sporting activity. In the compulsory subject 'Movement and Sport' in Austrian primary and secondary schools, as well as in the school's extracurricular sports activities, the aim is to equip students with appropriate competences to enable their participation in various sports and forms of exercise. At the same time, school physical education is designed to shape and strengthen sports skills such as honesty, tolerance, team spirit, shared responsibility and willingness to act. As the only movement subject, physical education makes a special contribution to holistic personality education. In addition, Balz & Neumann (2013), Blömeke et al. (2016), Meier (2020) and Tortella et al. (2021) also pointed to other important pedagogical aspects of physical education, such as: the use of the natural environment for sports and recreational activities of schoolchildren in their free time, gender roles and differences in sport, issues of multiculturalism, teacher-student interactions in physical education and the dynamics of sport development at school.

Grössing (2007) emphasized not only the great role of physical education in both school sport and physical activities, but also the preparation of students for sports activities after completing school education. The results of numerous studies show that physical education at school is a significant factor influencing extracurricular interest and involvement in sport (Burrmann, 2015; Mischenko et al., 2020). Additionally, a positive attitude towards physical education is related to both the (subjective) importance of sport and general interest in it, the frequency of practicing recreational sport and membership in sports clubs within the context of positive relationships (Vishnu et al., 2010; Zengin et al., 2016; Vashliaeva et al. 2019). Klautzer's survey (1998) confirmed the statement that pleasure during physical education classes positively correlates with physical activity in leisure time and schoolchildren belonging to a sports club.

According to the information materials provided by the Austrian Federal Ministry of Education, Science and Research, which is responsible, among others, for school physical education, this subject must make a significant contribution to the holistic education and upbringing of students, while its task is to equip them with comprehensive physical and sports skills (technical, methodological, social and personal skills). Furthermore, building on fine motor skills, students should be able to lead an active sporting lifestyle and develop a responsible understanding of movement, sport and health.

Emphasis is mainly placed on fine motor skills and abilities as well as tendencies and interests that are geared towards:

- further development of motor basics and sports skills both through active movement and the acquisition of cognitive basics;
- developing a positive attitude towards exercise and sport.

What is more, in the process of physical education, teacher-student functional interaction is of great importance. It is crucial for achieving the aims of the lesson (Meier, 2020). Therefore, the lesson must be designed in such a way that students develop their skills, abilities and willingness, actively including them in the lesson.

In particular, when planning and delivering physical education lessons, it is important to ensure that students:

- have the opportunity to learn to realistically assess their abilities and motor skills and how to improve them;
- recognise the importance of movement and sport for health and well-being;
- recognise all the risks associated with exercise and learn how to deal with them appropriately;
- experience situations in which they can independently apply their skills and knowledge in sports practice and transfer them to new situations;
- have the opportunity to acquire skills and attitudes that enable joint and responsible action;
- experience the joy of exercise, games and sports.

The basic content of physical education lessons in Austrian schools includes:

- disciplines of individual nature, such as: gymnastics apparatus, gymnastics and dance, fitness and coordination exercises, swimming, Track-and-Field, winter sports;
- team sports, such as: football, basketball, handball, volleyball and other team games.

As part of additional classes organised by Austrian schools, students can choose from, among others, the following sports disciplines: team sports, Track-and-Field, winter sports, badminton, tennis, table tennis, climbing, martial arts, cycling, swimming and others (Informational materials of the Austrian Federal Ministry of Education, Science and Research, 2023).

In conclusion, it should be emphasized that the subject of physical education is of great importance in the Austrian educational system, which, apart from physical activity during physical education classes, also implements the preparation of students for sports activity after finishing their school education. Many authors are of the opinion that the motivation of students and their attitudes towards physical education are a key condition for the successful process of physical education, and getting to know them can be very helpful for teachers of this subject in planning and implementing classes (Martinen et al. 2018; Sawicki et al., 2019; Mischenko et al., 2021)

For this reason, and due to the small number of empirical studies on students' attitudes towards physical education classes in Austria, the aim of this paper is to examine the attitudes of students in Austrian schools towards school physical education.

The study was focused on examining students' declarations regarding the significance of physical education compared to other school subjects, students' declarations about marks in physical education, opinions about the current number of hours devoted to this subject and the willingness to practice sports after graduating from school.

In the undertaken research, it was assumed that the sex of the respondents and their origin (large city, small town) may affect the quality of attitudes towards physical education, therefore, it was decided to conduct a statistical analysis of these factors. The following research questions were formulated:

1. What is the place of physical education among other school subjects in the opinion of Austrian high-school students?
2. What is the opinion of the surveyed youth about the current number of hours of physical education?
3. What marks do high-school students receive in physical education?
4. What are the opinions of the surveyed youth regarding the intention to practice sport after finishing school education?
5. Do the sex and the size of the residence place among the surveyed youth differentiate their attitudes towards physical education?

Material and methods

Participants

The study involved 391 people aged 18 ($M=18.53\pm0.42$) from secondary schools in Austria, including 96 boys and 103 girls from a large city (over 140,000 inhabitants) and 94 boys and 98 girls from a small town (about 7,000 inhabitants).

The survey was conducted personally by the author at randomly selected schools in a large city and a small town in Austria. Young people who voluntarily took part in the study were selected in accordance with the principles of random selection, based on the drawing of school classes (Rea & Parker, 2014).

Research methods

In the study, the author used the diagnostic survey method using a written questionnaire. In the first part of the study on the importance of physical education compared to other school subjects, the scale of values developed by Rost (2004) was used. The aim of this research was to determine the position of physical education among other school subjects, such as: German, English, mathematics, physics, history, geography, biology, art education and Latin.

In the second part of the study, the Attitudes and Behaviours Towards Sport Activity Questionnaire, prepared according to the concept by Digel (1996) and Wydra (2001), was applied.

It consists of 3 parts:

- declarations regarding the current number of physical education hours per week (enough, too little, too many);
- declarations regarding marks obtained in physical education (very good, good, satisfactory);
- opinions about the intention to play sports after graduation (confirmation, refusal, no decision).

Statistical analysis

The results of the author's research on Austrian students' attitudes towards physical education were subject to statistical analysis. The Receiver Operating Characteristic (ROC) method was used (Bradley, 1997).

The purpose of this analysis was:

- determining the significance of differences between the variables: gender and the size of the residence place among the surveyed school students;
- determining the relative chance of respondents' participation in a specific activity, occurrence of a specific behaviour or motive, etc., via the Odds Ratio (OR).

In addition, the statistical significance level of $p<0.05$ was assumed.

Results

The importance of physical education compared to other school subjects declared by the Austrian high-school students

In Figure 1, the results are shown for the preferences of individual subjects declared by the Austrian high-school students. The most important school subjects are physical education, English and mathematics, while Latin is considered to be the least favoured subject.

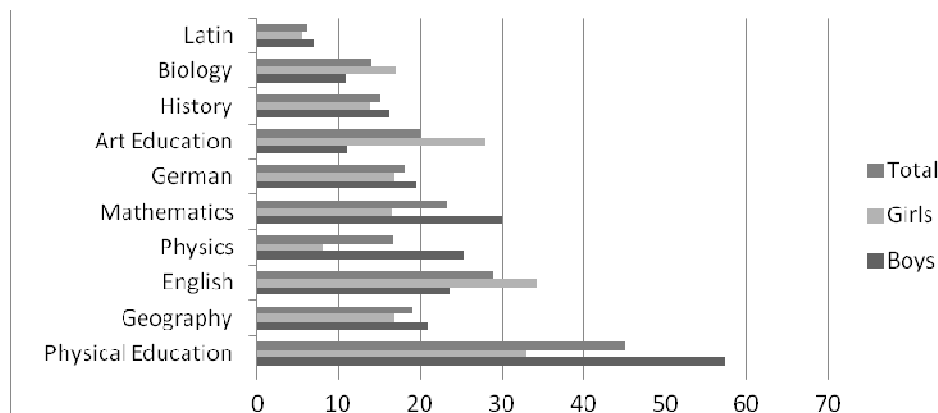


Fig. 1. Favourite school subjects declared by the Austrian school students (in percentages).

In Figure 1, the results of research are demonstrated regarding the importance of school subjects in the opinion of Austrian male students. All the surveyed boys recognise physical education as the most favourite subject, followed by mathematics, physics and English. According to ROC statistical analysis, boys from a large city prefer geography twice as much as boys from a small town ($OR=2.03$). Moreover, for boys from a big city, biology ($OR=1.31$) and mathematics ($OR=1.25$) are more important, although the statistical analysis did not show any significant differences in this regard ($p>0.05$).

Taking the preferences of the surveyed Austrian female students into account, regardless of their size of place of residence (Figure 1), the favourite school subject is English, followed by physical education, art education, biology, geography and German, as well as mathematics and physics. However, there were no statistically significant differences between them ($p>0.05$). ROC statistical analysis, namely the values of OR ratios, showed that girls from a large city prefer history ($OR=1.71$), geography ($OR=1.36$) and English ($OR=1.31$) more than girls from a small town.

The results of the ROC statistical analysis (Table 1) demonstrate differences between boys and girls in preferences for school subjects. Boys prefer physics more than girls, because they declared a preference for this subject 3 times more often ($OR=3.17$; $p=0.00311$). A similar relationship is visible in the case of mathematics ($OR=1.83$; $p=0.02027$) and physical education ($OR=1.75$; $p<0.0000$). Girls prefer art education more, which is indicated by statistical analysis of this subject ($OR=1.23$; $p=0.00407$). Due to the lack of highly significant differences as well as similar values of odds ratios for other school subjects, it can be concluded that they are perceived similarly by both boys and girls.

Table 1. Favourite school subjects declared by the Austrian school students (boys: $n=190$; girls: $n=201$)

Subject	AUC	SE	95% CI	<i>p</i>	OR
Physical Education	0.6227	0.02837	0.5670 to 0.6783	0.00000*	1.75
Geography	0.5207	0.02924	0.4634 to 0.5780	0.47940	1.24
English	0.5532	0.02904	0.4963 to 0.6102	0.06886	1.16
Physics	0.5865	0.02890	0.5299 to 0.6432	0.00311*	3.17
Mathematics	0.5679	0.02904	0.5110 to 0.6248	0.02027*	1.83
German	0.5128	0.02925	0.4554 to 0.5701	0.66190	1.15
Art Education	0.5840	0.02875	0.5277 to 0.6404	0.00407*	1.23
History	0.5119	0.02925	0.4546 to 0.5693	0.68340	1.17
Biology	0.5293	0.02916	0.4721 to 0.5865	0.31620	1.07
Latin	0.5068	0.02925	0.4495 to 0.5642	0.81490	1.25

*level of significance $p<0.05$

The declarations of Austrian high-school students on the number of physical education lessons

In Figure 2, the results are illustrated regarding the opinions of the Austrian school students on the number of hours devoted to physical education classes at school. More than 40% of the respondents declare that they would like the number to be higher, while only 17% believe that the number of physical education lessons

is too great. Based on these results, it can be assumed that such opinions may indicate a positive attitude of the surveyed Austrian school students towards physical education classes.

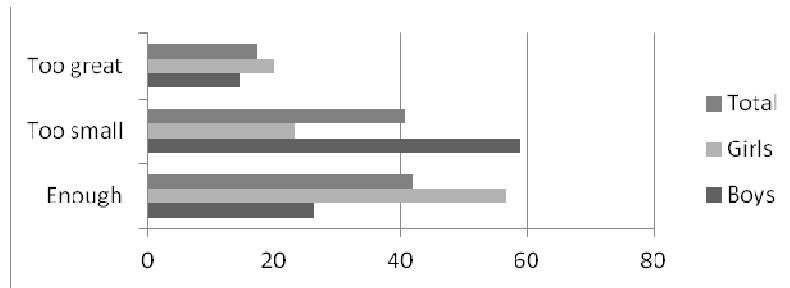


Fig. 2. Declarations of Austrian students on the number of physical education lessons (in percentages).

Based on ROC statistical analysis, it can be concluded that the surveyed boys and girls have different opinions regarding the number of hours allocated to physical education at school (Table 2). There is a clear tendency observed for the surveyed girls, indicating that the current number of PE hours does not need to be changed (OR=2.24) while boys are more willing to have more of these hours (OR=1.7). There were statistically significant differences in both categories ($p < 0.00001$).

Table 2. Declarations of Austrian students on the number of physical education lessons (boys: n=190; girls: n=201)

Cut-off	AUC	SE	95% CI	p	OR
Overall	0.6106	0.02904	0.5536 to 0.6675	0.00000*	
>0.500					2.24
>1.500					1.70
>2.500					0.74

Answer categories: 1. Enough, 2. Too small, 3. Too great

*level of significance $p < 0.05$

Tables 3 and 4 contain the results of the ROC statistical analysis concerning the opinions of the Austrian male and female students on the number of hours of physical education at school. On the basis of similar OR values (from 0.97 to 1.19), as well as due to the lack of statistically significant differences in all response categories, it can be concluded that both boys and girls have similar opinions on the number of hours intended for physical education.

Table 3. Declarations of Austrian male students on the number of physical education lessons (large city: n=96; small town: n=94)

Cut-off	AUC	SE	95% CI	p	OR
Overall	0.5522	0.04190	0.4501 to 0.6144	0.44260	
>0.500					1.15
>1.500					1.05
>2.500					1.19

Answer categories: 1. Enough, 2. Too small, 3. Too great

Table 4. Declarations of Austrian female students on the number of physical education lessons (large city: n=103; small town: n=98)

Cut-off	AUC	SE	95% CI	p	OR
Overall	0.5018	0.04083	0.4218 to 0.5819	0.9642	
>0.500					0.97
>1.500					1.16
>2.500					1.16

Answer categories: 1. Enough, 2. Too small, 3. Too great

Declarations of Austrian high-school students on marks in physical education

In Figure 3, results are presented concerning the survey on marks received in physical education at the end of the previous school year. The most common grade in PE turned out to be 'good', which was achieved by ½ of the studied Austrian youth. Approximately 30% of the respondents obtained a 'very good' mark, and only 1 in 5 students were given 'satisfactory' marks in the subject. Taking the generally much greater number of good PE marks into account, it can be concluded that they may confirm the positive attitude towards this subject.

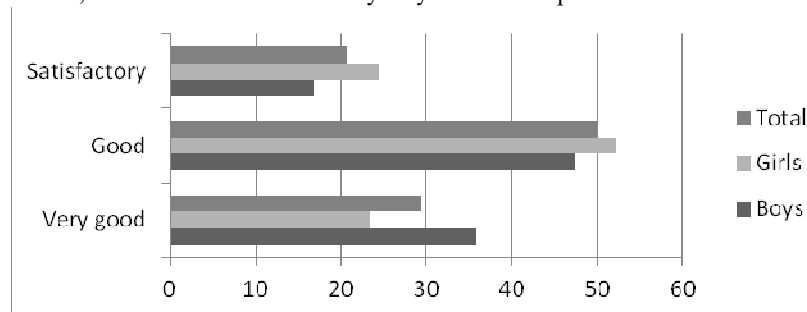


Fig. 3. Declarations of Austrian students on marks in physical education (in percentages).

The Austrian adolescents' declarations on recently received marks in school physical education (Table 5) showed statistically significant differences between boys and girls ($p=0.00959$). They mainly concern the 'very good' mark, which is more than 1½ times more frequently obtained by boys than girls (OR=1.53). In addition, the presence of the 'satisfactory' mark is 1.35 times higher in the studied girls than boys.

Table 5. Declarations of Austrian students on marks in physical education (boys: n=190; girls: n=201)

Cut-off	AUC	SE	95% CI	p	OR
Overall	0.5758	0.02886	0.5192 to 0.6324	0.00959*	
>0.500					1.53
>1.500					1.10
>2.500					1.35

Answer categories: 1. Very good, 2. Good, 3. Satisfactory

*level of significance $p<0.05$

In Tables 6 and 7, the results of ROC statistical analysis are illustrated with regard to the declarations of the surveyed students of Austrian secondary schools about marks in PE. There were no statistically significant differences in all categories of declarations in either the groups of boys or girls ($p>0.05$).

Table 6. Declarations of Austrian male students on marks in physical education (large city: n=96; small town: n=94)

Cut-off	AUC	SE	95% CI	p	OR
Overall	0.5243	0.04193	0.4421 to 0.6065	0.5634	
>0.500					1.06
>1.500					1.05
>2.500					1.26

Answer categories: 1. Very good, 2. Good, 3. Satisfactory

Table 7. Declarations of Austrian female students on marks in physical education (large city: n=103; small town: n=98)

Cut-off	AUC	SE	95% CI	p	OR
Overall	0.5225	0.04081	0.4425 to 0.6025	0.5819	
>0.500					1.08
>1.500					1.06
>2.500					1.08

Answer categories: 1. Very good, 2. Good, 3. Satisfactory

The declarations of Austrian high-school students on practicing sports after graduating from school

In the study, the opinions of Austrian youth school were also examined concerning intentions to practice sport after graduating from school. It is positive that 78% declare their intention to practice sport in the future (Figure 4) with a very low percentage of respondents who do not want to undertake sport in the future (7%) or have not yet decided (15%). It can be assumed that such declarations are closely related to the positive attitude of young people towards sport and physical education.

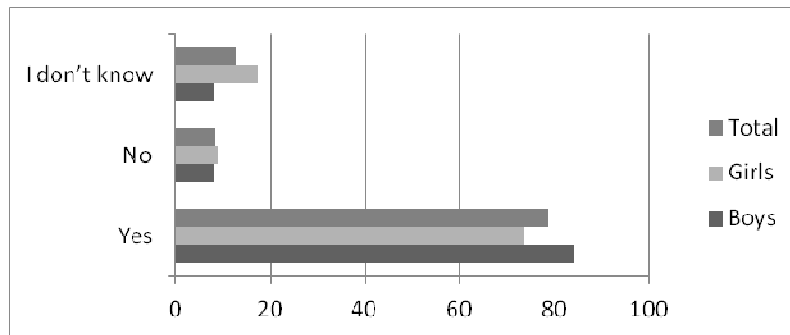


Fig. 4. Declarations of Austrian students on practicing sports after finishing school (in percentages).

Taking results of the statistical analysis into account, the on practicing sports by Austrian youth after finishing school (Table 8), no statistically significant differences were found between boys and girls ($p>0.05$). Only in the category of the answer: “I don’t know if I will practice sports in the future”, was the dominance of the surveyed girls visible (OR=1.92. Taking the declarations of both boys and girls from different backgrounds in Austria into account, the results of the statistical analysis did not confirm any statistically significant differences.

Table 8. Declarations of Austrian students on practicing sports after finishing school (boys: n=190; girls: n=201)

Cut-off	AUC	SE	95% CI	p	OR
Overall	0.5562	0.02899	0.4994 to 0.6131	0.05758	
>0.500					1.14
>1.500					1.12
>2.500					1.92

Answer categories: 1. Yes, 2. No, 3. I don’t know

Discussion

Physical education in the educational system in Austria is a compulsory subject in primary and secondary schools and, at the same time, an important element of the didactic and educational process in this country. Numerous studies in the field of physical education and sport allow to indicate not only the importance of physical education during school activities, but also its great impact on the free-time behaviour of schoolchildren in the field of recreational sports (Grössing, 2007; Balz, 2009; Prohl, 2012; Aschebrock & Stibbe, 2013; Sawicki, 2015; Sawicki & Suchý 2017; Burrmann, 2020). Considering the significant relationship between school physical education, sports and recreational activity performed by young people in their free time, it was decided to study the behaviour and attitudes of school students towards selected aspects of physical education. These aspects included: the place of physical education among other school subjects, opinions on the number of hours devoted to this subject, students' declarations about the marks obtained in physical education and the intention to continue practicing sports after graduating from school.

The results of research on the significance of physical education compared to other school subjects showed that physical education is highly appreciated by the surveyed students, regardless of the size of the place of residence, especially among male students. Art education as well as the English language are also highly valued, specifically by female students. In the research by Wydra (2001), Barney & Christenson (2012), Zengin et al. (2016), Gråstén & Watt (2017), Keskin et al. (2017), Preece & Bullingham, (2022) and Kurniawan et al. (2022) the authors also highlighted the great interest in physical education, especially among young men. Wydra (2001) and Burrmann (2020) noted the decreasing interest in physical education of girls in secondary school in favour of other subjects such as art education or English. In the studies by Vishnu et al. (2010), Zeng et al. (2011), Senekowitsch (2015), Atan & Imamoglu (2016), Ding & Sugiyama (2018) and Muszkieta et al. (2019), the high preference for physical education among both male and female youth was further emphasized. Similar

results were reported by Schrittwieser (2009) and Vashliaeva et al. (2019), who studied the psychological attitudes of sports and physical culture students towards physical education in sport.

The next aspect of upbringing, being the focus of the author's research, was attitude towards physical education. This was examined in the form of school declarations by Austrian youth on the number of hours devoted to PE classes at school. The author's research allows to state that almost half of the respondents, regardless of gender and size of place of residence, believe that the number of hours of physical education is too low, with statistical analysis showing that girls more often declare that the current number of hours of physical education is sufficient for them, while boys more frequently declare that they would like to have more physical education classes at school. Schrittwieser (2009), examining Austrian school youth, presented similar results, according to which 49% of the respondents would like to have more PE hours, and according to gender, 61% of boys want more PE hours while 59% of girls believe that the number of hours is sufficient. In addition, the respondents (65%) are of the opinion that it would be a good solution to introduce even 1 hour a day to the school curriculum. Moreover, in accordance with the research carried out by Wydra (2001), even 75% of boys and 41% of girls would like to have more hours of physical education at school.

It may be assumed that the quality of marks obtained in physical education subjects may also reflect the positive attitude towards these classes. The results of the author's research on marks in physical education show that half of the respondents, regardless of the size of the place of residence, received a 'good' mark, and about 30% a 'very good' mark, with statistically significant differences noted in this category in favour of boys. Similar results were obtained by Klenk (2004) and Schrittwieser (2009), noting that the most popular mark in physical education is 'good' (40-45% on average) and 'very good' (30-35%), with boys generally receiving higher marks than girls, which may confirm greater interest in the physical education of young men. Similar results on marks in physical education at school were also presented by Stibbe (2010), Burmann & Zander (2017) and Meyer (2020).

Finally, in the study, opinions regarding the intention to continue practicing sports after graduation were also examined. According to the author's research, 78% of the respondents intend to practice sport after graduation, while statistical analysis did not show any statistically significant differences regarding the future practice of sport according to gender of the respondents or their environment. It can be generally assumed that such declarations may have decisive impact on the actual undertaking of physical activity by young people after finishing school.

Conclusions

Taking the results of the author's research into account, the following conclusions may be drawn:

1. Due to the significant position of physical education among other school subjects, it can be concluded that the surveyed youth, especially boys, regardless of the size of the place of residence, show great interest in this subject.
2. The surveyed Austrian school students, especially boys, declare their willingness to increase the number of hours devoted to school physical education.
3. The most frequently achieved mark in physical education is "good" (approx. 50%) and "very good" (approx. 30%).
4. The majority of the surveyed young people from high-schools in Austria, regardless of their gender and the size of place of residence, declare their intention to practice sports after finishing school.
5. Taking all the declarations of students of Austrian high-schools regarding selected elements of physical education into account, they indicate a positive attitude towards school physical education.

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