



Preferences and reasons for the lack of interest of Czech teenagers with sensory disabilities in physical education classes

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Abstract

The objective of this study was to compare the preferences for various physical activities and reasons for the lack of interest by Czech teenagers with sensory disabilities in physical education classes. A non-standardized questionnaire was used to collect the data. The sample was based on the following features: a) a participant had to be deaf or hard of hearing, b) a participant had to have a visual impairment, and c) had to have been educated in special educational settings. In this study participated 24 teenagers who are deaf or hard of hearing (16 boys and 8 girls, an average age of 14.3 ± 1.2 years) and 26 teenagers with a visual impairment (16 boys and 10 girls, an average age of 14.1 ± 1.2 years). Both absolute and relative frequencies were used to describe the data. The differences between teenagers who are deaf or hard of hearing and teenagers with a visual impairment were assessed using the non-parametric Mann-Whitney *U*-test, the chi-squared test and, for low frequencies, the Fisher's exact test. Tests were performed at a level of $\alpha = 0.05$. Statistical tests did prove significant difference in preference for the various physical education where most of teenagers who are deaf or hard of hearing preferred athletics and football in physical education classes. Further, in leisure activities, teenagers who are deaf or hard of hearing significantly more often do sports activities, while teenagers with a visual impairment are more sedentary. Our results have proven that, besides sport, the most frequently preferred leisure activity in both-groups was computers and possibly mobile technologies.

Keywords: physical activity, special education, leisure time, deaf and hard of hearing, blind and partially sighted

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INTRODUCTION

Individuals with sensory disabilities may be disadvantaged in terms of health and participation in beneficial physical activities compared to the majority of society due to their limited sensory perception [1-3]. The involvement in physical activities by students with sensory disabilities is much lower than by general population [4] and they are less likely to meet recommended physical activity guidelines than are their non-disabled peers [5, 10, 24]. For example, Longmuir and Bar-Or [6] in their study discovered that youths who are deaf or hard of hearing are more physically active than those with visual impairments. Young people with a visual impairment have a significantly lower level of habitual physical activity than their non-disabled peers and there are more obstacles to prevent it from happening. As a result of their physical inactivity, children and youth with sensory disabilities tend to be more overweight in comparison to the majority population [7-8].

The education of youngsters with sensory disabilities in schools that have been specifically established for these students takes place under specific conditions that emerge over time as the facilities develop. Students who do not find it convenient to study at mainstream schools for whatever reason mostly attend schools for the deaf or blind. While the schools especially established for students with sensory disabilities feature the possibility of accommodation in a hostel and provide quality leisure time management for the students, schools in mainstream education have other positives, the main one being the close proximity to the student's home [9]. Research has demonstrated that responsible and concentrated programming of physical education (PE) classes can help develop fundamental motor and balance skills needed for students with sensory disabilities to maintain a physically active lifestyle [10-12]. Research focusing on the PE experiences of teenagers with sensory disabilities, has focused on the different topics, such as parents [13-16], typically developing peers [17-18], PE teachers [14, 19-21] or para/deaf professionals [22-23].

Findings from this line of research suggest that students with sensory disabilities tend to experience a number of barriers to participation in physical education. These barriers can include: (a) reduced physical fitness including motor skills of children with sensory disabilities [24-25]; (b) school type and curricular focus including opportunities to physical activity both within and outside of schools [14,26]; c) the personality of the PE teacher – he/she should possess knowledge that is related to the field and should be trained in the specifics surrounding the process of teaching students with sensory disabilities [21, 27].

There has been published increased research investigating the experiences of the children with sensory disabilities in physical education and sports [9, 11, 15-16, 22-23]. Kurková [15] examined emotional reactions after PE classes in students who are deaf or hard of hearing and their classmates and pupils who are deaf or hard of hearing in schools for the deaf. In the evaluation of negative emotional reactions, significantly higher values were found in deaf or hard of hearing pupils who were included in a regular school than in students in schools for the deaf. The worries of students who are deaf or hard of hearing in mainstream education about communication misunderstandings, delayed reactions to starting an action or worries about damage to their hearing aid in contact sports played in PE classes manifested themselves in feelings of anxiety and tension. In the other study Kurková, Nemček and Labudová [28] analysed 70 students with sensory disabilities and found a difference in that students with visual impairments have a higher percentage of positive views in all studied indicators (e.g. popularity, importance, students' efforts and their feelings) towards physical education. Lieberman, Houston-Wilson and Kozub [29] focused on examination barriers perceived by teachers when including students with visual impairments in regular physical education classes. In other study Lieberman, Robinson and Rollheiser [30] or Schultz, Lieberman, Ellis and Hilgenbrinck [20] described necessary modifications to activities and rules, of participants with visual or hearing impairments in regular PE classes and sport. Each of these studies provide preliminary insight into physical activity preference and suggestions; however, further work is necessary to clarify the essence of physical education and sport experiences among those individuals.

The objective of this study was to compare the preferences for various physical activities and reasons for the lack of interest by Czech teenagers with sensory disabilities in PE classes. Furthermore, this study should deepen the knowledge of the structure of leisure time activities in young people with

sensory disabilities to allow for a comparison of characteristic aspects with regard to the type of disabilities.

METHODS

Participants

The research sample comprised a total of 50 teenager's with sensory disabilities from the second stage of four primary schools in Olomouc and Prague, the Czech Republic (Table 1). 24 teenagers who are deaf or hard of hearing (16 boys and 8 girls, an average age of 14.3 ± 1.2 years) and 26 teenagers with a visual impairment (16 boys and 10 girls, an average age of 14.1 ± 1.2 years) participated in the questionnaire survey. The study included only teenagers who had not been diagnosed with a combined disability. Teenagers were informed of the purpose of the research and the procedure for filling out the questionnaire, which was to be completed in the presence of their head teacher and the researcher. At the schools for teenagers who are deaf or hard of hearing, we set up a procedure that ensured that teenagers who are deaf or hard of hearing and used Czech sign language properly understood all the questions in the questionnaire. Upon previous agreement and explanation of the purpose of the questionnaire, the actual questions were signed via video format of Czech sign language and with whom the teenagers were familiar. We proceeded by asking each item individually and then fact-checking to make sure that the teenagers individually understood the questions. Teenagers with a visual impairment had the use of a questionnaire with enlarged letters and the head teacher read the questions out loud to the teenagers. Teenagers with partial sight completed the questionnaire with the help of special aids. The research was approved by the Ethics Committee of the Faculty of Education, Palacký University Olomouc.

Data collection

A non-standardized questionnaire by Antala et al. [31] was used to collect the data, of which three questions were selected. Those questions were related to: a) reason for the lack of interest in PE classes (Question 1: If you do not enjoy PE classes, what is usually the most common reason for that? Unattractive content; the teacher's approach; I don't feel like exercising; poor conditions; I focus on the subsequent classes; other); b) preference for physical activities in PE classes (Question 2: Which of the following physical activities would you like to do in PE classes?); c) leisure activities (Question 3: What activity do you most often do in your leisure time?). In above mentioned questions teenagers could choose one to three preferred replies.

Data analysis

Statistical analysis was undertaken using IBM SPSS Statistics 23.0. The data were differentiated from the point of view of the type of school or, as the case may be, the type of disability. Both absolute and relative frequencies were used to describe the data. The differences between teenagers who are deaf or hard of hearing and teenagers with a visual impairment were assessed using the non-parametric Mann-Whitney *U*-test, the chi-squared test and, for low frequencies, the Fisher's exact test. Tests were performed at a level of $\alpha = 0.05$. If the *p*-value was less than 0.5, we considered the differences to be statistically significant.

RESULTS

Participants characteristic

The demographics of the participants concerning the type, degree and time of onset of disability are shown in Table 1. In terms of demographic data, a statistically significant difference between teenagers who are deaf or hard of hearing and teenagers with a visual impairment was found in the time of onset/diagnosis of the disability. Teenagers who are deaf or hard of hearing have more often been disabled since birth ($n = 20$; 83.3%; $p = 0.048$).

Most respondents used disability aids. Teenagers who are deaf or hard of hearing wore a hearing aid ($n = 12$; 63.2%) or a cochlear implant ($n = 7$; 36.8%). Teenagers with a visual impairment

used a white stick ($n = 5$; 23.8%) or a different aid such as a magnifying glass or glasses ($n = 16$; 76.2%). None of them had a guide dog. Most participants said that their parents had no hearing or visual impairments (Table 1). A difference was found in the mother's disability, where teenagers who are deaf or hard of hearing were significantly more likely to have a mother who is deaf or hard of hearing ($n = 7$; 29.2%; $p = 0.003$). Among teenagers with a visual impairment, none of them had a mother with a visual impairment.

In addition, a difference was also found in the physical fitness of the parents. Teenagers with a visual impairment indicated significantly more often that their father or mother was doing sport ($n = 23$; 88.5%; $n = 21$; 84.0%; $p = 0.005$). Teenagers who are deaf or hard of hearing indicated less often that their father or mother did sport ($n = 12$; 52.2% vs $n = 4$; 16.7%; $p < 0.0001$).

Lack of interest in physical education classes

For both participants who are deaf or hard of hearing and those with a visual impairment, the participants indicated unattractive content and the teacher's approach as the most frequent reasons for the lack of interest in PE classes (Table 2). 45.8% of teenagers who are deaf or hard of hearing and 38.5% of those with a visual impairment indicated attractiveness as their reason for the lack of interest in PE classes ($n = 11$; $n = 10$; $p = 0.775$). 12.5% of teenagers who are deaf or hard of hearing and 26.9% of those with a visual impairment indicated the teacher's approach as their reason ($n = 3$; $n = 7$; $p = 0.294$). In terms of feelings towards physical education as a school subject, teenagers with a visual impairment didn't feel like exercising than teenagers who are deaf or hard of hearing ($n = 7$; 26.9%; $n = 2$; 8.3%; $p = 0.142$).

Preferences in physical activities

A statistically significant difference was only found in the preferences for the various activities in PE classes (Table 2). 41.7% of teenagers who are deaf or hard of hearing wish to do athletic disciplines in physical education; among teenagers with a visual impairment, only 15.4% of the respondents indicated interest in athletics ($n = 10$; 26.9%; $n = 4$ $p = 0.039$). A similar difference can be observed for football, where 58.3% of teenagers who are deaf or hard of hearing and only 15.4% of teenagers with a visual impairment expressed interest in this sport ($n = 14$; $n = 4$; $p = 0.002$).

Leisure time and physical activity

Teenagers who are deaf or hard of hearing significantly more often do sports activities in their leisure time, while among teenagers with a visual impairment, only small part of the respondents do sport ($n = 12$; 50.0%; $n = 6$; 23.1%; $p = 0.048$), see Table 2. In addition, teenagers who are deaf or hard of hearing also significantly more often do housework and gardening ($n = 10$; 41.7%). By contrast, only 7.7% of teenagers with visual impairments were involved in these activities ($n = 2$; $p = 0.005$). Furthermore, a significant difference was also observed in competitive football players in their leisure time, where four respondents who are deaf or hard of hearing and no respondents with a visual impairment play football (17.0%; $p = 0.046$). Among the seven persons with a visual impairment who did competitive sport, one played floorball, two played goalball and showdown, one did kickboxing, two did swimming and one did dancing. Among the seven teenagers with visual impairment who did competitive sport, one played floorball, two played goalball and showdown, one did kickboxing, two did swimming and one did dancing. Among the seven teenagers who are deaf or hard of hearing and who indicated that they did competitive sport, one did athletics, two played soccer, one played football and floorball, one respondent did basketball, swimming, floorball and skiing, and one respondent did not indicate any type of sport.

Table 1. Sample demographic information

Variable	Teenagers who are D/HH (n = 24)		Teenagers with a VI (n = 26)	
	n	[%]	n	[%]
Gender				
Boys	16	66.7	16	61.5
Girls	8	33.3	10	38.5
Onset of disability				
Since birth	20	83.3	13	50.0
Since age 1	1	4.2	13	50.0
Since age 2	1	4.2		
Since age 3	2	8.3		
Degree of hearing loss/VI				
Light to moderate hearing loss/B3	7	29.2	19	73.1
Severe hearing loss/B2	5	20.8	4	15.4
Deaf/B1	12	50.0	3	11.1
Disability aid usage				
Yes	19	79.2	21	80.8
No	5	19.2	5	20.8
Type of disability aid				
Hearing aid	12	63.2		
Cochlear implant	7	36.8		
White stick			5	23.8
Glasses, magnifying glass			16	76.2
Communication				
Czech language	1	4.2	26	100.0
Czech sign language	7	29.2		
Combination	16	66.7		
Teenagers doing sport				
Competitive	6	25.0	7	26.9
Recreational	11	45.8	14	53.8
No sport	7	29.2	5	19.2
Parents - father				
Without a disability	18	78.3	23	88.5
With a disability	5	21.7	3	11.5
Does sport	12	52.2	23	88.5
No sport	11	47.8	3	11.5
Parents - mother				
Without a disability	17	70.8	26	100.0
With a disability	7	29.2		
Does sport	4	16.7	21	84.0
No sport	20	83.3	4	16.0

Note: n – sample size; D/HH – deaf and hard of hearing; VI – visual impairment. According to WHO (2017) [32] hearing loss grades are based on pure-tone frequencies of 500 to 4000 Hz and as: mild hearing loss (21–40 dB), moderate hearing loss (41–60 dB), severe hearing loss (61–80 dB), and profound hearing loss (81 dB or greater). In the case of moderate hearing loss, the range for children is from 31–60 dB. B1 – no light perception (total blindness), up to light perception but inability to recognise the shape of a hand at any distance or in any direction.; B2 – from ability to recognise the shape of a hand up to visual acuity of 2/60 (6.7/200), or visual field of less than 5 degrees; B3 – from visual acuity above 2/60 up to visual acuity of 6/60 (6.7/200 to 20/200) or visual field of 5–60 degrees [33].

Table 2. Preference in physical education classes and leisure time activities

Variable	Teenagers who are D/HH (n = 24)		Teenagers with a VI (n = 26)		χ^2	p
	n	[%]	n	[%]		
Reasons for the lack of interest in PE						
Unattractive content	11	45.8	10	38.5	0.278	0.775 ^a
Teacher's approach	3	12.5	7	26.9		0.294 ^b
I don't feel like exercising	2	8.3	7	26.9		0.142 ^b
Poor conditions	2	8.3	2	7.7		1.000 ^b
I focus on the subsequent classes	3	12.5	2	7.7		0.661 ^b
Other (health condition)	0	0	5	19.2		0.051 ^b
Preferences in PE classes						
Athletics	10	41.7	4	15.4	4.276	0.039 ^a
Aerobics	0	0.0	0	0.0		
Badminton	2	8.3	2	7.7		1.000 ^b
Swimming	7	29.2	9	34.6	0.170	0.680 ^a
Gymnastics	0	0.0	1	3.8		1.000 ^b
Tennis	5	20.8	1	3.8		0.093 ^b
Frisbee	0	0.0	2	7.7		0.491 ^b
Combat sports	0	0.0	4	15.4		0.111 ^b
Floorball	14	58.3	11	42.3	1.282	0.258 ^a
Handball	2	8.3	1	3.8		0.602 ^b
Dancing	4	16.7	3	11.5		0.697 ^b
Football	14	58.3	4	15.4	9.992	0.002 ^a
Volleyball	2	8.3	3	11.5		1.000 ^b
Basketball	5	20.8	7	26.9	0.254	0.614 ^a
Dodgeball	1	4.2	3	11.5		0.611 ^b
Zumba	0	0.0	0	0.0		
Health exercises	2	8.3	1	3.8		0.602 ^b
Leisure activity						
Television	5	20.8	8	30.8	0.64	0.424 ^a
Listening to music	8	33.33	11	42.3	0.427	0.514 ^a
Listening to the radio	0	0.00	0	0.0		
Doing sport	12	50.0	6	23.1	3.926	0.048 ^a
Visiting sports matches	5	20.8	3	11.5		0.456 ^b
Theatre, cinema, concert	3	12.5	3	11.5		1.000 ^b
Reading	3	12.5	8	30.8	2.427	0.119 ^a
Art	3	12.5	3	11.5		1.000 ^b
Friends	6	25.0	6	23.1	0.025	0.874 ^a
PC, mobile phone	14	58.3	16	61.5	0.053	0.817 ^a
Homework, gardening	10	41.7	2	7.7	7.898	0.005 ^a
Self-education	1	4.2	1	3.8		1.000 ^b
Idleness	2	8.3	0	0.0		0.228 ^b

Note: n – sample size; p – value of statistical significance, if the p-value was lower than 0.05, we considered the differences to be statistically significant and the p-value is highlighted in bold; D/HH – deaf and hard of hearing; VI – visual impairment; PE – physical education; χ^2 – the value of the test statistic for the chi-squared test; ^a chi-squared test; ^b Fisher's exact test.

DISCUSSION

In the question relating to the reasons for the lack of interest in PE classes, we have found that – for both teenagers who are deaf or hard of hearing and teenagers with a visual impairment – the most frequently indicated reasons included unattractive content and the teacher's approach. More teenagers with a visual impairment didn't feel like exercising than teenagers who are deaf or hard of hearing. In comparison with the results of the Slovak study [26], students who are deaf or hard of hearing indicated poor conditions or they didn't feel like exercising as the most frequent reasons for the lack of interest in PE classes. Similarly, Slovak students with a visual impairment also indicated that they didn't feel like exercising, and possibly also focusing on the subsequent classes as the reason for their lack of interest. Our results confirm the results of a study by Antala et al. [31], where the most frequent reasons for the lack of interest in PE classes among Slovak students of mainstream primary schools were unattractive content, and focusing on subsequent classes and that they don't feel like exercising.

If we compare the Czech and Slovak studies [28] in terms of students' preferences as to the activities they wished to do more in their classes, Slovak students with a visual impairment were different in that nearly a half of them wished to do showdown, while no respondent in our study mentioned this option. Among Czech teenagers with a visual impairment, the most frequently mentioned sports included e.g. swimming, basketball, floorball and football. With the exception of swimming, these sports turned out to be less popular and less sought after in Slovakia. The reason could be the fact that the research sample of Czech respondents only included two girls and one boy with a severe degree of disability, which could have reflected the choice of preferred activities. However, the research in Slovakia did not specify the degree of disability. In teenagers who are deaf or hard of hearing, differences were only found in the degree of preference for activities (more than 20% preferred). The teenagers consistently mentioned the following activities: floorball, football, athletics, swimming, basketball. The differences that have been found may be due to a different focus of the school, including its material conditions and the content of its curriculum. However, these parameters were not investigated in our study.

A comparison of leisure activities between teenagers who are deaf or hard of hearing and teenagers with a visual impairment shows that teenagers who are deaf or hard of hearing do sport significantly more often in their leisure time. This finding was confirmed by a study carried out by Kurková and Sigmund [35], where students who are deaf or hard of hearing preferred mainly sport and computers in their leisure time. Most often, these students mentioned cycling, skating, aerobics, volleyball, football and swimming. The preference for physical activities among students who are deaf or hard of hearing was also confirmed in a study by Kurková and Nemček [34]. Similar results were obtained for the general population of Slovak students by Antala et al. [31]. The relationship between active sport and playing computer games was also confirmed in a study by Adachi and Willoughby [36]. This subject is connected with research related to health behaviors. Multi-dimensional approach to improving functional efficiency through in the comprehensive treatment (or training) of the people show that optimal functioning improvement considering individual context of each person is a common objective of the interdisciplinary therapeutic interaction [37-39].

While our teenagers who are deaf or hard of hearing preferred to participate in sports in their leisure time, the teenagers with visual impairments preferred playing computer games, listening to music, or watching TV. The very similar preference of sedentary behaviour in leisure time of teenagers with a visual impairment were also found in the research study conducted by Nemček [40] among students with physical disabilities. These students preferred activities of a sedentary nature, especially watching TV, listening to music, and playing computer games. The reason for the discovered differences in the comparison between teenagers with visual impairments and teenagers who are deaf or hard of hearing may lie in the fact that students with a visual impairment show less locomotion and space orientation and are able to perform only limited independent movement in space [6, 41].

CONCLUSION

A statistically significant difference was only found in preference for the various PE activities and in leisure activities, where most of teenagers who are deaf or hard of hearing had preferred athletics and football in PE classes and doing sport and homework in their leisure time. The teenagers with visual impairments preferred mostly sedentary activities – playing computer games, listening to music, or watching TV. The results cannot be generalized, they only attest to the schools within the given region. This study was limited due to the low number of participating schools and the number of teenagers with sensory disabilities, as well as due to the lack of knowledge of the level of current fitness and overall health condition of the teenagers under this study.

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