Acta Gymnica, vol. 45, no. 3, 2015, 139–145
doi: 10.5507/ag.2015.015

Pupils with sensory disabilities in physical education classes: Attitudes and preferences

Petra Kurková[1,*], Dagmar Nemček[2], and Jela Labudová[2]

[1]Faculty of Education, Palacký University Olomouc, Olomouc, Czech Republic; [2]Faculty of Physical Education and Sports, Comenius University in Bratislava, Bratislava, Slovakia

Background: The key factor that affects the success of shaping positive attitudes towards regular life-long performance of physical activity (PA) is the pupils' level of inner motivation. This is influenced, among other things, by their family background, the educational institution that they attend and the educator's competencies. **Objective:** The purpose of this study was to describe and analyse the attitudes among pupils with sensory disabilities in physical education (PE) classes. A partial objective was to compare the preferences for various PA by pupils with sensory disabilities in PE classes. **Method:** 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 disability, and c) had to have been educated in special educational settings. The data were quantified on the percentage basis. To carry out cross-group statistical testing of differences, a ratio analysis with the help of the Chi-square test was applied. The level of statistical significance was set to $p < .05$. We analysed the data of 70 pupils attending the second stage of two elementary schools in Slovakia: a) 37 pupils (22 boys and 15 girls, age 13.3 ± 1.45 years) from a school for the deaf, and b) 33 pupils (14 boys and 19 girls, age 13.4 ± 1.41 years) from a school for the blind. **Results:** The differences in the preferences for various PA during PE classes in the cross-group comparison of pupils with sensory disabilities were discovered. A comparison of the opinions of pupils with sensory disabilities pointed out a difference consisting in a higher percentage of positive attitudes among pupils with visual disabilities in indicators of popularity, importance, the pupils' efforts and feelings towards education. A statistically significant difference was discovered only in feelings during PE classes. This result may be considered proof of the suitability of the educational environment for pupils with visual disabilities. **Conclusion:** Comparing the opinions of pupils with sensory disabilities showed a difference in that pupils with visual disability have a higher percentage of positive views in all studied indicators: popularity, importance, pupils' efforts and their feelings towards PE.

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

Introduction

One possible reaction to the current call to schools about how to best combine knowledge and physical skills is to accept the physical, mental, health and social aspects of pupils with disabilities, and to respect their interests in school subjects. The concept of the ISCED 2 (2008) national educational programme shows the efforts invested in developing the perceptions, understanding, experience and interpretations of the pupils' physical activities for the rest of their lives (Labudová, 2007). Developing a habit of engaging in regular physical activity is a gradual and unforced process that must respect a pupil's physical readiness and interests. Those findings were supported by research studies conducted by Nagyová (1995) and also Novotná, Kariková, and Vladovičová (2007). Those studies proved that there are both various positive and negative factors that affect pupils in physical education (PE) class.

Even for pupils with disabilities, compulsory PE classes can be considered an integral part of their education, and the most effective form of physical activity (Gerhatová, 2001). An important precondition is the pupils having a subjective feeling of satisfaction. Petrušová (2001) traced the pupils' satisfaction with

* Address for correspondence: Petra Kurková, Department of Anthropology and Health Education, Faculty of Education, Palacký University Olomouc, Žižkovo nám. 5, 771 40 Olomouc, Czech Republic. E-mail: kurkova.p@centrum.cz

their own participation in PE classes; however she pointed out the low demands for performing physical activities. Teaching pupils with disabilities is a dynamic process that currently – within the Health and Exercise educational programme – combines knowledge, habits, attitudes, skills and competences leading to increased physical and mental activity, to socialization and support of a pupil's identity. Meeting the objectives helps pupils who are deaf and hard of hearing (D/HH) or with visual disabilities (VD) to develop their personalities, their sports literacy and creativity and to increase their proactivity in enhancing their own lifestyle (Labudová, 2010).

Teaching becomes an important means of mental hygiene for the pupils and helps them to increase their education and expand their knowledge and skills (Slezák, 2009). Boys with physical disabilities (PD) attending elementary schools who play sports expressed more significant enthusiasm for PE class compared to girls and to pupils with a more sedentary lifestyle (Nemček & Bergendiová, 2013). Effective education means maximization of all outputs in relation to invested costs for educational inputs. The process is related not only to certain standards, but it also brings aesthetical improvement to the process. Górny (2010) pointed out that pupils with VD showed a lower level of exercise aesthetics. This difference was, however, minimal when comparing healthy and partially sighted pupils. The active participation of girls in PE class is supported by motivation, and the results of the research carried out by Uherová (2006) indicated that above all, motivation in terms of relaxation, a friendly atmosphere and the opportunity to learn something new are the most important.

The purpose of this study was to describe and analyse the attitudes among pupils with sensory disabilities in PE classes. A partial objective was to compare the preferences for various physical activities by pupils with sensory disabilities in PE classes.

Method

Participants

The research sample was comprised of 70 pupils attending the second stage of two special elementary schools in Bratislava (Slovakia). The elementary boarding school for children and pupils who are D/HH located in Drotarska Street was represented by 37 pupils (22 boys and 15 girls, age 13.3 ± 1.45 years), and the elementary boarding school for the partially sighted and blind located in Svrčia Street was represented by 33 pupils (14 boys and 19 girls, age 13.4 ± 1.41 years). Only those pupils who were not diagnosed with combined disabilities (for instance, combined intellectual, visual and physical disabilities) were included in the research.

Pupils 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 pupils who are D/HH, we set up a procedure that ensured that pupils who are D/HH and used 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 by a teacher who had perfect command of sign language and to whom the pupils were familiar. We proceeded by asking each item individually and then fact-checking to make sure that the pupils individually understood the questions.

Pupils with VD had the use of a questionnaire with enlarged letters and the head teacher read the questions out loud to the pupils. Pupils with partial sight completed the questionnaire with the help of special aids. Consent of the legal representatives of the pupils at both schools regarding the pupils' participation in the study was obtained well in advance.

Data collection

A non-standardized questionnaire (Antala et al., 2012) was used to collect the data, of which five questions were selected. Those questions assessed: a) the popularity of PE (Question 1: For me, physical education as a school subject is: very popular; popular; neither popular nor unpopular; unpopular; very unpopular); b) the importance of PE (Question 2: For me, physical education as a school subject is: very important; important; neither important nor unimportant; less important; unimportant); c) the pupils' efforts and feelings towards PE (Question 3: In physical education classes, I am: very assiduous; assiduous; sometimes assiduous, sometimes not; less assiduous; no effort at all. Question 4: In physical education classes, I feel: always good; mostly good; sometimes good, sometimes bad; mostly bad; always bad); d) preferences for various physical activities during PE classes (Question 5: What kind of physical activities would you like to prefer during PE classes?). In four questions, the pupils with sensory disabilities expressed their subjective opinions using a 5-degree scale (1 was the highest level and 5 was the lowest level of attitude). The lower the average value of the replies, the higher the attitude level. In the fifth question, the pupils could mark with circles a maximum of three sports that they most enjoy during the PE classes.

Data analysis

The data were differentiated from the point of view of the type of school or, as the case may be, the type of disability. The data were quantified on a percentage basis. To carry out cross-group statistical testing of differences, a ratio analysis with the help of the Chi-square test was applied. The level of statistical significance was set to $p < .05$.

Results

Perception of physical education by pupils with sensory disabilities

The results showed no statistically significant difference in the popularity of PE from the point of view of the respondents' disability. When comparing differences among pupils with sensory disabilities, pupils with VD (48.5%) marked PE as their favourite subject. 5.4% of the pupils who are D/HH stated they had a dislike of this subject (Figure 1).

Comparison of responses from pupils of various types of schools regarding physical education

By comparing the average values of the responses provided by pupils with disabilities (receiving special education) with pupils without disabilities from regular Slovak elementary schools from previous study (Antala et al., 2012), the highest level of popularity of PE was stated by pupils with VD (1.64 of the point score) as opposed to pupils without disabilities (1.92 of the point score). The lowest level of popularity was expressed by pupils who are D/HH (Table 1) whose average value of responses reached 2.08 of the point score. When comparing the average values of responses by pupils from the second stage of the regular elementary schools in the Czech Republic for the given indicator (Hrabal & Pavelková, 2010), a popularity concordance was discovered with responses by the Slovak pupils with VD (1.65 vs 1.64 of the point score). There was another interesting fact that the secondary school for students with PD from study of Nemček and Bergendiová (2013) expressed the highest average value of responses of all monitored groups of pupils (2.13 of the point score), i.e. the lowest degree of popularity of PE in comparison with other mentioned groups (Table 1).

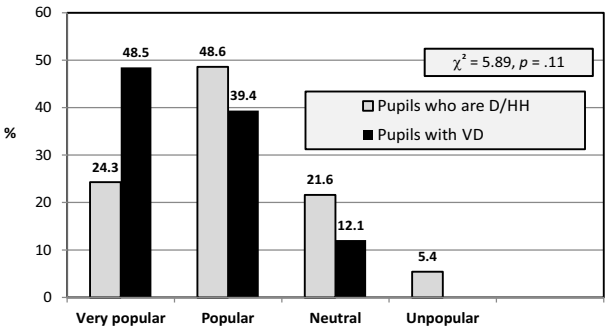

Figure 1. Popularity of physical education among pupils with sensory disabilities. D/HH = deaf and hard of hearing, VD = visual disabilities

By comparing the evaluation of the importance of PE by pupils from other schools in previous studies, we found out that pupils with VD consider PE to be their most important subject (1.73 of the point score). Pupils who are D/HH consider it their second most important (2.05 of the point score) and pupils without disabilities (Antala et al., 2012) consider it the least important of the three groups. The lowest degree of importance of PE was assessed by secondary school of students with PD (Nemček & Bergendiová, 2013), with a point score of 2.43. Czech pupils without disabilities (Hrabal & Pavelková, 2010) considered PE to be the least important from all evaluated schools, and their point score was 2.80 (Table 1).

Importance of physical education among pupils with sensory disabilities

When evaluating opinions regarding the importance of PE among pupils who are D/HH and pupils with VD, no significant differences were proven (Figure 2). A percentage evaluation of responses, however, points to a greater degree of importance expressed by pupils with VD, of which 87.9% considered PE to be an important or even very important subject, as opposed to 78.4% of the pupils who are D/HH. They took a neutral or even negative view at a higher percentage (Figure 2). This difference also affected the analysis of the importance level, which was expressed at a lower degree in the group of pupils who are D/HH as opposed to pupils with VD (Table 1).

Feelings of pupils with sensory disabilities during PE classes

Even though pupils who are D/HH have a good feeling about themselves while in PE classes, pupils with VD expressed having a higher evaluation of their feelings (Figure 3). The cross-group comparison of the opinion towards PE among pupils with sensory disabilities proved to be statistically important. This may serve as evidence of the suitability of the educational environment for pupils with VD; nevertheless, this result does not provide enough data to satisfactorily stipulate the quality of education and learning, i.e. the character of the topics taught and level of actual inclusion in class.

The above-mentioned statement is closely related to the attitudes of pupils with sensory disabilities regarding their displays of effort during the classes (Figure 4).

Table 1
Evaluation of responses from pupils of various types of schools regarding physical education: comparison to previous studies

	2nd stage of elementary schools				Secondary schools
Indicator	Slovak pupils who are D/HH (n = 37)	Slovak pupils with VD (n = 33)	Slovak pupils without disabilities[1] (N = 817)	Czech pupils without disabilities[2] (N = 3,108)	Slovak pupils with PD[3] (N = 70)
Popularity	2.08	1.64	1.92	1.65	2.13
Importance	2.05	1.73	2.31	2.80	2.43
Effort	2.30	2.09	2.15	1.92	2.11
Feelings	2.14	1.52	–	–	1.90

Note. D/HH = deaf and hard of hearing, VD = visual disabilities, PD = physical disabilities. [1]Study of Antala et al. (2012), [2]Study of Hrabal and Pavelková (2010), [3]Study of Nemček and Bergendiová (2013).

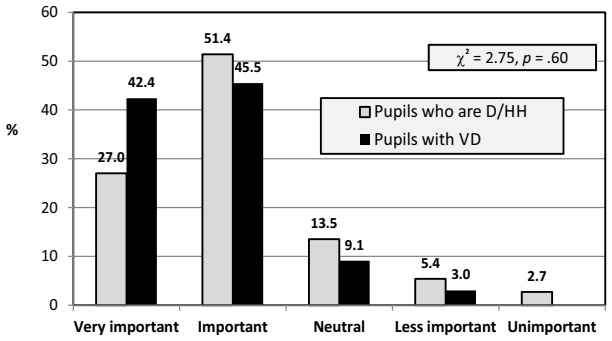

Figure 2. Importance of physical education among pupils with sensory disabilities. D/HH = deaf and hard of hearing, VD = visual disabilities

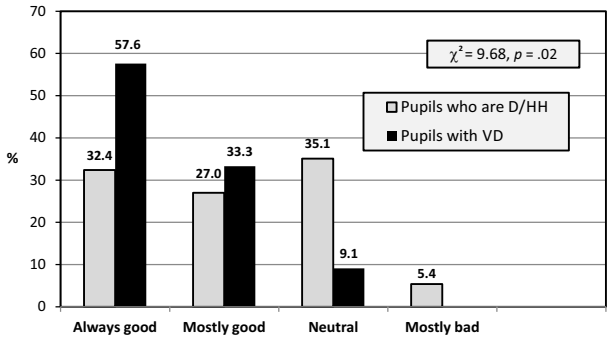

Figure 3. Feelings of pupils with sensory disabilities during PE classes. D/HH = deaf and hard of hearing, VD = visual disabilities

The very assiduous and assiduous group mostly consists of pupils with VD, not D/HH pupils, who are mostly just assiduous or had a neutral attitude. This is clearly shown by the percentage evaluation of the indicator of effort invested in exercises. The amount of effort shown during PE classes is most likely dependent on what they are doing at the moment, thus sometimes they make effort and sometimes they do not. Their lower level of effort expended when participating in PE class can also be inferred from the achieved higher

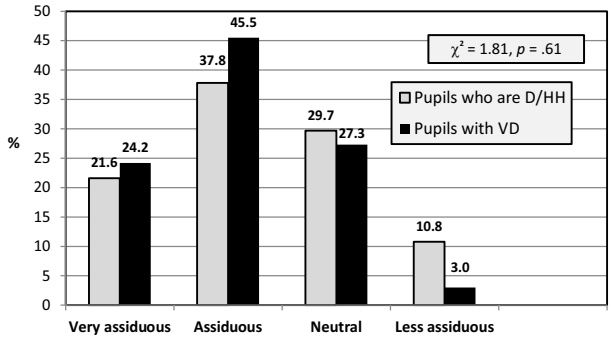

Figure 4. Displays of efforts during PE classes by pupils with sensory disabilities. D/HH = deaf and hard of hearing, VD = visual disabilities

average level of the responses in Table 1 (2.30 of the point score) as opposed to pupils with VD (2.09 of the point score).

Preference for various physical activities among pupils with sensory disabilities

When comparing the differences in the preference of various physical activities and exercises in PE classes, pupils who are D/HH were most interested in swimming (45.9%), whereas pupils with VD opted for the showdown (Table 2). Showdown is a fast-moving sport originally designed for people with VD. Sometimes it is mistakenly referred to as table tennis for the blind because it is a table game. The points are scored by hitting the ball into a goal pocket (International Blind Sports Federation, 2015). Other very popular activities in PE classes for pupils who are D/HH covered various sports (floorball, soccer and basketball) which were, however, less popular among pupils with VD.

Discussion

The aim of this study was to describe and analyse the perceptions of the attitudes of PE among pupils

Table 2
Preferences for various physical activities among pupils with sensory disabilities

	Pupils who are D/HH (n = 37)		Pupils with VD (n = 33)	
Ranking	Activity	%	Activity	%
1.	Swimming	45.9	Showdown	45.5
2.	Floorball	40.5	Swiss ball exercises	36.4
3.	Soccer	35.1	Athletics	30.3
4.	Basketball	27.0	Swimming	30.3
5.	Athletics	27.0	Movement education	30.3
6.	Tennis	16.2	Gymnastics	21.2
7.	Wrestling	13.5	Soccer	18.2
8.	Badminton	8.1	Basketball	15.2
9.	Zumba	8.1	Dodge ball	15.2
10.	Gymnastics, dancing, dodgeball	5.4	Goalball, floorball, relaxation exercises	6.1

Note. D/HH = deaf and hard of hearing, VD = visual disabilities.

with sensory disabilities. The partial objective was to compare preferences for various physical activities by pupils with sensory disabilities in their PE classes.

Despite the fact that our hypothesis regarding the attitudes of PE in the cross-group comparison of pupils who are D/HH and pupils with VD did not prove to be correct, pupils with VD expressed greater interest in PE. This finding may be perceived as positive from the point of view of the performance of regular physical activity for both groups in which a low level of physical activity by children and youth with sensory disabilities may significantly contribute to their obesity when compared to the majority of society (Dair, Ellis, & Lieberman, 2006; Longmuir & Bar-Or, 2000). Nevertheless, when comparing the evaluation of the importance of PE between Slovak and Czech pupils without disabilities (Antala et al., 2012; Hrabal & Pavelková, 2010) with pupils with disabilities, pupils with disabilities expressed a lower level of importance to exercises.

The reason for the discovered differences in the comparison between pupils with disabilities and without disabilities may lie in the fact that pupils with sensory disabilities show less locomotion and space orientation and are able to perform only limited independent movement in space (Butterfield, van der Mars, & Chase, 1993; Longmuir & Bar-Or, 2000). Neglecting the health-oriented physical activities that are integral parts of the PE curriculum in schools for the pupils with sensory disabilities may also lead to poor posture or overweight in adulthood. Those findings have also been mentioned in several other studies (e.g. Dair et al., 2006; Prechtl, Cioni, Einspieler, Bos, & Ferrari, 2001).

The differences in the preferences for various physical activities during PE classes in the cross-group comparison of pupils with sensory disabilities were discovered. The cause of such differences was the schools' curricula. Those findings were also supported by a Czech-American study in which schools specially established for deaf pupils had different conditions for performing physical activities, including educational programmes with different content (Kurková, Scheetz, & Stelzer, 2010). Whereas pupils who are D/HH could be, though not always, educated in regular programmes, pupils with VD are educated by a school curriculum adjusted to their specific disability with the objective of assistance with the best possible inclusion in the later regular lives. Special education is specific because of the amount of stress laid on the prevention of injuries when participating in physical activities, and therefore individuals with VD prefer individual physical activities such as athletics, swimming or gymnastics so that they can avoid direct contact with their teammates. An interesting yet quite understandable fact is the finding that activities with music accompaniment (zumba, gymnastics and dance) are not popular in pupils who are D/HH since their ability to use rhythm as an assistive aid may not be possible. Thus, physical activities of this kind are not attractive for pupils who are D/HH. A study conducted by Kurková and Maertin (2014), however, proved that even physical activities that place high demands on rhythm perception with musical accompaniment or cues may become a lifelong hobby for individuals who are D/HH regardless of their age.

Limits of study

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 pupils with sensory disabilities, as well as due to the lack of knowledge of the level of current fitness and overall health condition of the pupils under this study. Another limitation was the variability of communication preferences by pupils who are D/HH.

Conclusion

Comparing the opinions of pupils with sensory disabilities showed a difference in that pupils with VD have a higher percentage of positive views than pupils who are D/HH in all studied indicators: popularity, importance, pupils' efforts and their feelings towards PE. Nevertheless the only statistically significant difference was discovered in the feelings during PE classes.

The degree of popularity of PE is often related to the level of a pupil's successful gaining of movement skills, the level of intensity of specific exercises and their degree of difficulty, all which affect the pupil's ability to display their personality. When accepting the specific requirements of physical activities for pupils with sensory disabilities, we recommend that teachers create a space allowing pupils to utilise their individual skills and abilities to the maximum. This will increase the popularity of this mandatory subject and allow physical activities to become a regular part of pupils' leisure activities.

For subsequent studies, we therefore recommend applying the following procedures: a) including both a qualitative and quantitative approach that combines both methods in order to provide more detailed information on the relationship between pupils with sensory disabilities and PE as well as on to factors that play a role in PE; b) differentiating between the communication preferences of pupils who are deaf (sign language users), hard of hearing and pupils who use a cochlear implant; and c) taking into account the methods of communication among such pupils and their teacher during PE class in relation to all studied items.

References

Antala, B., Šimonek, J., Čilík, I., Labudová, J., Medeková, H., Bebčáková, V., ... Melek, P. (2012). *Telesná a športová výchova v názoroch žiakov základných a stredných škôl* [Physical and sports education as reflected in opinions of pupils of the elementary and secondary schools]. Bratislava, Slovakia: End.

Butterfield, S. A., Van der Mars, H., & Chase, J. (1993). Fundamental motor skill performances of deaf and hearing children ages 3 to 8. *Clinical Kinesiology, 47*, 2–6.

Dair, J., Ellis, K., & Lieberman, L. J. (2006). Prevalence of overweight among deaf children. *American Annals of the Deaf, 151,* 318–326.

Gerhatová, B. (2001). Školská telesná výchova v Národnom programe rozvoja športu [School physical education in the National programme of sports development]. In J. Labudová & V. Majerský (Eds.), *Perspektívy školskej telesnej výchovy a športu pre všetkých v Slovenskej republike* (pp. 43–48). Bratislava, Slovakia: Slovenská vedecká spoločnosť pre telesnú výchovu a šport.

Górny, M. (2010). Hodnocení a diagnostika estetiky pohybu u dětí se zrakovým postižením [Evaluation and diagnostics of movement aesthetics at children with visual disabilities]. In B. Antala, J. Labudová, & M. Górny (Eds.), *Hodnotiaca činnosť v telesnej a športovej výchove* (pp. 125–143). Bratislava, Slovakia: End.

Hrabal, V., & Pavelková, I. (2010). *Jaký jsem učitel* [What type of teacher I am]. Prague: Portál.

International Blind Sports Federation. (2015). *Showdown - General information.* Retrieved from http://www.ibsasport.org/sports/showdown/

ISCED 2. (2008). *Štátny vzdelávací program pre 2. stupeň základnej školy v Slovenskej republike* [National education programme for the 2nd stage of elementary schools in the Slovak Republic]. Retrieved from http://www.statpedu.sk/documents

Kurková, P., & Maertin, J. J. (2014). The benefits of square dancing as a means of physical activity for Czech dancers with hearing loss. *Acta Gymnica, 44*, 223–230.

Kurková, P., Scheetz, N. A., & Stelzer, J. (2010). Health and physical education as an important part of school curricula: A comparison of schools for the deaf in the Czech Republic and the United States. *American Annals of the Deaf*, *155*, 78–87.

Labudová, J. (2007). Pohľad na kurikulárnu prestavbu vyučovania telesnej výchovy v školách [View of the curricular transformation of the subject of physical education at schools]. In J. Labudová (Ed.), *Tvorba kurikula telesnej výchovy v rámci transformácie vzdelávania v Slovenskej republike* (pp. 32–41). Bratislava, Slovakia: Comenius University in Bratislava.

Labudová, J. (2010). Telovýchovná a športová činnosť pri zmyslovom a intelektovom postihnutí [Physical education and sports activities with sensory and intellectual disabilities]. In J. Labudová, O. Veselá, I. Gályová, D. Nemček, & P. Pčolka (Eds.), *Edukológia zdravotnej telesnej výchovy a športu postihnutých* (pp. 54–63). Bratislava, Slovakia: Slovenský zväz rekreačnej telesnej výchovy a športu.

Longmuir, P. E., & Bar-Or, O. (2000). Factors influencing the physical activity levels of youths with physical and sensory disabilities. *Adapted Physical Activity Quarterly, 17*, 40–53.

Nagyová, Ľ. (1995). Determinovanosť účasti mládeže a dospelých na telovýchovných aktivitách [Determination of participation of the youth and adults in physical and sporting activities]. In J. Bartišík, K. Félix, & Ľ. Nagyová (Eds.), *Štúdie I.: Telesná výchova* (pp. 103–108). Nitra, Slovakia: Univerzita Konštantína Filozofa.

Nemček, D., & Bergendiová, F. (2013). Obľúbenosť telesnej výchovy žiakov s telesným postihnutím [Popularity of physical education among pupils with physical disabilities]. *Telesná výchova a šport, 23*(2), 2–6.

Novotná, N., Kariková, S., & Vladovičová, N. (2007). Postoje žiakov mladšieho školského veku k telesnej výchove [Attitudes of younger pupils towards physical education]. In J. Labudová

(Ed.), *Tvorba kurikula telesnej výchovy v rámci transformácie vzdelávania v Slovenskej republike* (pp. 111–117). Bratislava, Slovakia: Comenius University in Bratislava.

Petrušová, M. (2001). Názory zdravotne oslabených žiakov týkajúcich sa procesu integrácie v telesnej výchove [Views of the health disabled pupils regarding the process of their integration in physical education]. In J. Labudová & V. Majerský (Eds.), *Perspektívy školskej telesnej výchovy a športu pre všetkých v Slovenskej republike* (pp. 126–129). Bratislava, Slovakia: Slovenská vedecká spoločnosť pre telesnú výchovu a šport.

Prechtl, H. F., Cioni, G., Einspieler, C., Bos, A. F., & Ferrari, F. (2001). Role of vision on early motor development: Lessons from the blind. *Developmental Medicine & Child Neurology, 43*, 198–201.

Slezák, J. (2009). Telesná a športová výchova v školách nesmie stagnovať [Physical and sport education at schools shall not stagnate]. In E. Malíková & B. Gerhátová (Eds.), *Slovenský školský šport – podmienky – prognózy – rozvoj* (pp. 87–89). Štrbské Pleso, Slovakia: Slovenská asociácia univerzitného športu.

Uherová, Z. (2006). Motivačné faktory žiačok SŠ vo vyučovacom predmete telesná výchova [Motivational factors for secondary school girls in the subject of physical education]. In J. Jakubíková & M. Modrák (Eds.), *Zborník prác z vedecko-pedagogickej konferencie učiteľov telesnej výchovy* (pp. 70–74). Prešov, Slovakia: Metodicko-pedagogické centrum.