

THE IMPACT OF THE INTERVENTION PROGRAMME OF CONTROLLED MOVEMENT ACTIVITIES ON THE HEALTH AND QUALITY OF LIFE OF CHILDREN WITH A SENSORY DISABILITY

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Abstract

The term “controlled movement activity” is the name for a system of recreational physical activities aimed at achieving health benefits through professionally driven movement learning. The main objective of the presented study was to analyze the effects of controlled movement activities on physical health and psychosocial health in children with a sensory disability. 80 children with a sensory disability (40 boys, 40 girls) aged 8–15 years, were divided into two groups – experimental (20 boys, 20 girls) and control (20 boys, 20 girls). Testing of psychosocial health indicators (PedsQL 4.0) was performed three times in both groups throughout the 10 month duration of the intervention programme of controlled movement activities. The statistical processing of the data obtained was performed using the ANOVA repeated measures, which included the following factors: subject, phase of the experiment and gender. The results confirmed the health and social benefits of the intervention in the context of disability. Children with a hearing impairment experienced a significant positive shift in social functioning. In visually impaired children it significantly reduced the symptoms of fear and increased self-esteem. The results showed significant positive changes in the experimental group compared to the control group in terms of the “Physical Health” and “Psychosocial Health” scores, including positive changes in the “Emotional Functioning”, “Social Functioning” and “School Functioning” scores.

Keywords: *PedsQL 4.0; intervention movement programme; child with a disability; hearing impairment; visual impairment*

INTRODUCTION

The term disability is defined as the “reduction in functional abilities at the level of the body of an individual, or at the social level, that arises when a person experiences environmental barriers due to their health status.” The English term “disability” has become an international umbrella term covering functional disorders and activities. Since 2001, this term is used by the “International Classification of Functioning, Disability and Health” (Pffe-

fer and Švestková 2008) as the evaluation of disability varied from country to country. In the personality of a child, disability is manifested in all contexts, for example in the emotional field and in behaviour. Thus disability influences the behaviour of the child and the process of socializing. Therefore, in the United Kingdom these children are suitably called “challenging children”. The UK is the first country in Europe to work on replacing integration by inclusive education and to increase participation in schooling, by offering

controlled movement activities which take into account their specific needs (Porkertová 2017).

The term “controlled movement activities” refers to a system of physical activities that are practiced recreationally, mostly during leisure time, with the aim of promoting health benefits through highly professionally trained movement learning (e.g. by specialized trainers, instructors, assistants, etc.). The organization of accessible controlled movement activities for children with disabilities represents a new health and social phenomenon in the EU and the Czech Republic. Accordingly, only the educational influence complementing all the attributes of the family and outside-the-family communities gives an opportunity for the harmonious development of the personality of a child with a disability.

Velemínský and Velemínský (2017) state that the child’s upbringing should take place in several phases. In the first stage of upbringing, the primary role belongs to the mother, whose role is traditionally represented by love and emotion. However, the father has also been recently attributed an active role in the prenatal and postnatal periods, and the term “pregnant parents” has been introduced. The role of the father in upbringing becomes particularly important in boys at the age of three. The father is usually associated with the image of a person who deals with discipline, has the main say, is understood and recognized (Velemínský 2011). At present, upbringing should be conducted in the spirit of equality and friendship; parents and other educators should choose an individual approach to each child (Velemínský and Velemínský 2017). The upbringing process cannot be clearly defined, unlike improper upbringing methods resulting in psychological or social failure, or the so-called “illness” of children. It is necessary to take into account the general concept of positive parenting and the restoration of love in the family, for example, according to the Ethical code of Prekopová (2014).

Cognitive development can be acceptably stimulated in the family, but social learning requires a different kind of experience that cannot be guaranteed by the parents of a child with a disability. A suitably chosen stay in a team at a convenient time is beneficial for a disabled child (Velemínský 2011). A child with a disability has, on a legislative basis,

the right to participate in all aspects of social life, including the participation in controlled movement activities. Controlled movement activities should be accessible to all children. They allow them to participate in the game, recreation or sporting activity. The aim is optimal physical fitness, relaxation, fun and distraction (Švestková and Hoskovcová 2010). Children with a sensory disability are usually reluctant to movement. Therefore, they often have a problem with poor physical condition. This brings additional health problems and complications, including bad posture (Bolach and Buliński 2012). The educational challenge in children with disabilities aged 8–15 is to strengthen their positive attitude toward movement (Šauerová et al. 2013). Due to the present lifestyle, hypokinesia is induced by long-term daily sitting at school and at home, spending time on computers, mobile phones and tablets, and also spending time in vehicles, etc. (Harada et al. 2013). Within “motor learning” we attempt to deepen children’s knowledge of their own weakness, and teach them the possibilities of its compensation by selecting the right exercise. Easy-to-use and accessible programmes of controlled movement activities (with a quick and good effect on integration and inclusion) are for example: dancing, walking, yoga, gaming activities using the natural and aquatic environment, which are based on active movement learning experience (Kornatovská et al. 2015).

An important factor for controlled movement activities in children with a sensory disability is the fact that the conditioning in the somatic area occurs at the same time as mental and social conditioning. There are examples available (Clair 2012, Górný 2013) where the application of controlled movement activities in people with a hearing or visual impairment led to a positive shift in the ability to distinguish the size, shape, colour, and to estimate distance, the direction of movement, and the orientation in space. The organization of controlled movement activities in children with a hearing and visual impairment requires increased attention to safety, as the ability of space control is limited. Contraindications include bending forward and maintaining this bent position, and activities inflicting blows to the head. All extreme power exercises are also inappropriate: diving into water, falls, and long-term endurance activities. Sudden tem-

perature changes are not recommended. The social skills of the trainer are very important, especially their communication with the child with a disability (Kornatovská et al. 2015).

Psychomotor specifics of a child with a hearing impairment

In 11–40% of cases, a hearing impairment is usually combined with other impairment, depending on aetiology. The symptoms are characterized by a number of specifics in the area of thinking and memory, where insufficient abstraction and generalization are the main features. Válková (2014) presents the following somatic specifics in relation to motor learning in children with a hearing impairment: reduced motivation in the field of physical learning, problems with coordination and the feeling of rhythm, and communication difficulties caused by noise generated in the environment where physical activities are performed.

The social specifics of a child with a hearing impairment lie in the field of safety. In the case of a child that can hear, the environment is controlled by the auditory sensation outside his or her visual field, and any sound signalling a risk will trigger an immediate spontaneous defensive or escape response. A child with a hearing impairment becomes significantly more vulnerable in this sense (Anděl 2014).

Psychomotor specifics of a child with a visual impairment

Cognitive processes in children with a visual impairment, including motor learning, are based on the development of compensatory factors. For the education of children with a visual impairment it is necessary that, above all, the children have well developed hearing and tactile perceptions. Spatial orientation training requires particular attention (Janečka and Bláha 2014, Ješina et al. 2015). The child should receive continual motivation for controlled movement activities, developing independent motor skills and self-service skills. Emotional-motivational processes reflect the development of self-knowledge and coping with a particular impairment. At school, the child learns to use a compensatory aid for blind people – a white stick, and becomes more independent in moving around. Górný's research studies (2013) confirm the positive

effects of movement relaxation and even saturation in the aesthetics of motion in children with a visual impairment within the context of specific controlled movement activities.

The aim of the present study is to discover whether a significant improvement in physical and psychosocial health scores will be achieved on the basis of an applied intervention programme in the experimental group of children with a hearing impairment and in the experimental group of children with a visual impairment.

MATERIALS AND METHODS

Experimental investigation was carried out on the basis of a randomized, stratified selection of 80 children with disabilities (40 boys, 40 girls) aged 8 to 15 years, with an average age of 12.4 years.

Experimental group (EG):

- EG_h – children with hearing impairment ($N = 20$, 10 males, 10 females) with an average age of 12.8 years.
- EG_v – children with a visual impairment ($N = 20$, 10 males, 10 females) with an average age of 12.3 years.

Control group (CG):

- CG_h – children with a hearing impairment ($N = 20$, 10 males, 10 females) with an average age of 12.7 years.
- CG_v – children with a visual impairment ($N = 20$, 10 males, 10 females) with an average age of 12.5 years.

The respondents from both groups were living in the region of South Bohemia and were educated in the same school institutions. The diagnoses of the respondents regarding the investigated impairment are listed in Table 1.

The examination of the parameters of the experimental (EG) and control groups (CG) was carried out 3 times during 10 months, always before the start of a specific EG intervention programme, 5 months later, and 10 months later (after the end of the EG intervention programme). Examinations were performed in both the EG and the CG at the same time each day, in the same room under the same conditions. Methods were non-invasive, not time-consuming, and accessible. The data were subjected to statistical processing.

Table 1 – The characteristics of the diagnoses of respondents in the experimental research (N = 80, 40 males, 40 females, age 8–15 years)

IMPAIRMENT	DIAGNOSIS	Σ RESPONDENTS
Hearing	complete deafness	16
	medium hearing loss	24
Visual	amblyopia + astigmatisms	10
	hypermetropia	14
	strabismus	01
	glaucoma	05
	aniridia	04
	myopia gravis	03
	nystagmus	03

Diagnostic method

PedsQL 4.0 Pediatric Quality of Life Inventory (Varni et al. 2004) in observed dimensions, scored:

- Physical Functioning
- Emotional Functioning
- Social Functioning
- School Functioning

Statistical data analysis

The relationships of dependent variables to the sex of the respondents, of the experiment and its individual phases were evaluated by the ANOVA repeated measures analysis model, which included the following factors: subject (explaining interindividual variability), phase of experiment (within-subject factor), and gender and experiment (between subject factors). In addition, the model included the interactions of Gender × Experiment, Gender × Phase of Experiment, Experiment × Phase of Experiment, and Gender × Experiment × Phase of Experiment. Before the ANOVA model test, the dependent variables with asymmetric distribution and non-constant dispersion were transformed to symmetry and homoscedasticity by the Box-Cox transformation (Meloun et al., 2000). Statistical evaluation was conducted by means of the Statgraphic Centurion software, version XVI by Statpoint Inc.

Intervention programme of controlled movement activities (Kornatovská 2016)

The intervention programmes consisted of 3 three-month training cycles of controlled movement activities, which were specifically didactically formulated for the given type

of impairment. Consequently, the diagnostic examinations were performed in 3 ten-day blocks, i.e. before the beginning, in the middle and at the end of the intervention programme.

The content of the intervention programmes was based on the experience gained during analytical investigations in the British region of the West Midlands. Beginning with the theme of walking, it was followed by dance activities, selected yoga exercises and hot water exercises with elements of “floatation” (hovering). The controlled movement activities were performed in such a way as to avoid confrontational tension (competitive anxiety). The character of the intervention programme was regular training with leisure time that overlaps into the social competencies of the everyday life of children with disabilities. The aim was to teach them interesting motor skills that can be done in co-education manner and can be applied or presented by the children to someone else (“I can do it”). The centre of attention and the main medium was controlled movement expression, in which it was easy to choose the pace of execution and thus best achieve the development of the technique and the realization of the movement task. During the realization of the strain in partial intervention training units, the current physical fitness of the respondents was respected. One relevant intervention training unit was applied in the afternoon, with a regular duration of 90 minutes once a week. Care was taken to ensure that the children had adequate clothing and shoes for each type of controlled movement activity in each interventional exercise unit. It was about developing habits in children with disabilities, and

allowing them to gain competencies in how to dress appropriately and engage in various leisure activities. It was also ensured that each intervention unit of controlled movement activities took place at least 1–2 hours after the children's main meal. Each intervention training unit was designed to overlap with the next six days of the week (into a new intervention training unit) through motivational tasks. This ensured repetition – which is so needed and important for the creation of a movement memory engram.

RESULTS

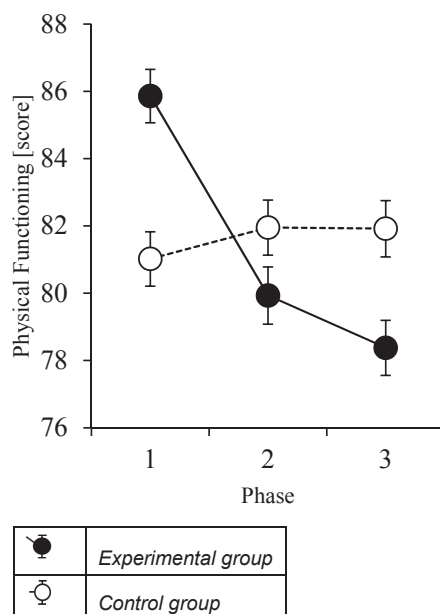
The results of the Pediatric Quality of Life Inventory (PedsQL 4.0)

The Physical Health Summary Score in respondents with a hearing impairment

The analysis of the obtained data proved that the Physical Health Summary Score of respondents with a hearing impairment was very high in the first examination – ranking 81–86 points. In the second and the third examination, the EG_h values gradually decreased to 78 points ($F = 29.92$, $p = 0.001$). The decrease of values was completely continuous in girls from the EG_h, where the shift started at the value of 87.9 in the first examination, reached the values of 82.2 in the second examination and 79.1 points in the third examination. The difference in values was evaluated as significant ($F = 12.49$, $p = 0.001$) – Chart 1.

The Psychosocial Health Summary Score in respondents with a hearing impairment

The first examination showed in both groups EG_h and CG_h analogous values of the Psychosocial Health Summary Scores, which means 68 points in EG_h and 67.5 in CG_h. The following phases of the examination were represented by an improvement, i.e. progressive significant decline of the score to 56.7 points in the third examination ($F = 21.87$, $p = 0.0001$). The values of the CG_h not only did not decline, but even ascended up to 69 points in the second examination, and up to 71 points in the third examination; i.e. there was a statistically significant increase in the final phase ($F = 58.3$, $p = 0.001$) – Chart 2.



* Symbols for the groups are valid for all charts.

Chart 1 – Development of the “Physical Functioning” score of the PedsQL 4.0 in the respondents with a hearing impairment – experiment in comparing the EG_h, CG_h and the phases ($N = 40$, EG_h = 10 boys, 10 girls, CG_h = 10 boys, 10 girls)

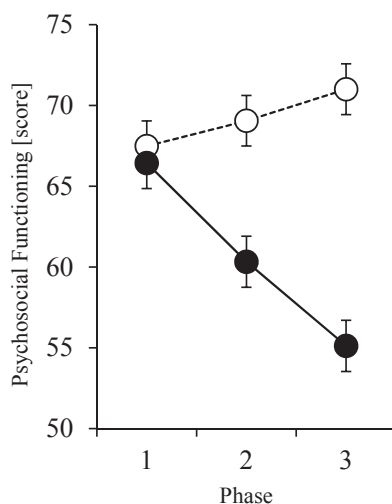


Chart 2 – Development of the “Psychosocial Functioning” score of the PedsQL 4.0 in respondents with a hearing impairment – experiment comparing the EG_h, CG_h and the phases ($N = 40$, EG_h = 10 boys, 10 girls, CG_h = 10 boys, 10 girls)

In addition, the results are presented for respondents with a hearing impairment in the dimensions of Emotional Functioning, Social Functioning and School Functioning, which have been shown to be highly correlated. Excellent shifts occurred in the EG_h in the area of Emotional Functioning (Chart 3).

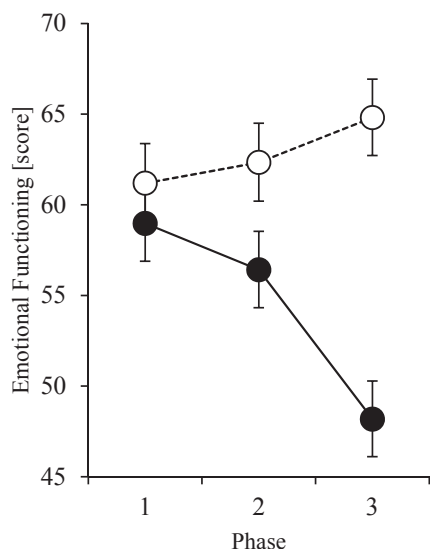


Chart 3 – Development of the “Emotional Functioning” score of the PedsQL 4.0 in respondents with a hearing impairment – the experiment compares the EG_h, CG_h and the phases (N = 40, EG_h = 10 boys, 10 girls, CG_h = 10 boys, 10 girls)

The results of Social Functioning for respondents with hearing impairment show that there was a significant difference in the EG_h scores from 67 points to 57.3 points ($F = 10.6$, $p = 0.001$). The CG_h values were without significant changes (74.7 – 74.7 – 75.0). The results of School Functioning in respondents with hearing impairment show that the values of the EG_h (68.6 points) and the CG_h (65 points) were not significantly different in the first phase of the examination. Then the score of the EG_h significantly decreased to 61.3 points ($F = 16.33$, $p = 0.001$), while in the CG_h there was a significant increase in value to the final 72.6 points ($F = 19.61$, $p = 0.001$) – Chart 4.

Based on these positive changes, we can confirm our assumption that a significant improvement will be seen in the experimental

group of children with a hearing impairment in Physical and Psychosocial Functioning scores.

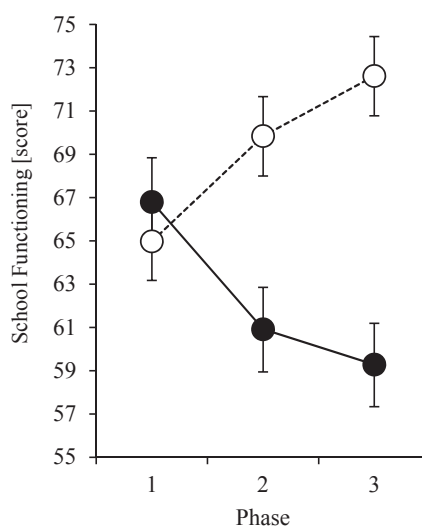


Chart 4 – Development of the “School Functioning” score of the PedsQL 4.0 in respondents with a hearing impairment – the experiment compares the EG_h, CG_h and the phases (N = 40, EG_h = 10 boys, 10 girls, CG_h = 10 boys, 10 girls)

The Physical Health Summary Score for respondents with a visual impairment

The Physical Health Summary Score for respondents with visual impairment was again classified as very high, albeit lower than for the group with a hearing impairment, with the value of 80 points for the EG_v compared to 78 points for the CG_v, the norm being 100%. In the second examination, the EG_v scores dropped to 72.8 points ($F = 15.71$, $p = 0.001$), and in the third examination to 72.6 points (Chart 5). The second examination of the CG_v showed a steep increase in the score to 80 points, and to 87.8 in the third examination ($F = 58.6$, $p = 0.001$). A positive decline in the Physical Health Summary Score for respondents with visual impairment was recorded in the experimental study for both sexes in the EG_v, and it was more considerable in girls with a significant positive score decline from 82.6 points to 69.4 points ($F = 51.09$, $p = 0.001$) – Chart 5.

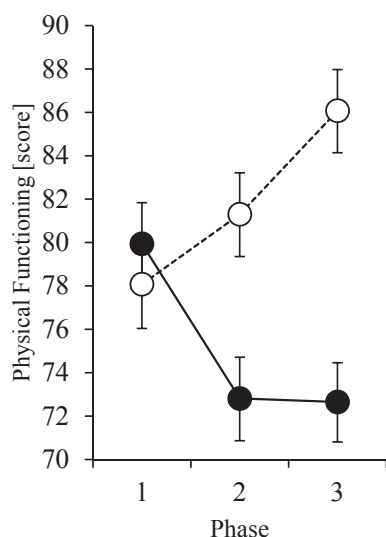


Chart 5 – Development of the “Physical Functioning” score of the PedsQL 4.0 in respondents with a visual impairment – the experiment compares the EG_h, CG_h and the phases ($N = 40$, EG_h = 10 boys, 10 girls, CG_h = 10 boys, 10 girls)

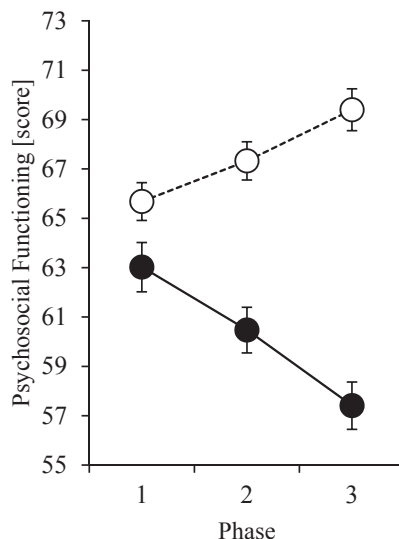


Chart 6 – Development of the “Psychosocial Functioning” score of the PedsQL 4.0 in respondents with a visual impairment – the experiment compares the EG_h, CG_h and the phases ($N = 40$, EG_h = 10 boys, 10 girls, CG_h = 10 boys, 10 girls)

The Psychosocial Health Summary Score for respondents with a visual impairment

The Psychosocial Health Summary Scores summarized by scales: Emotional Functioning + Social Functioning + School Functioning, was better for respondents with visual impairment than the Physical Health Summary Score. In the first examination, the EG_v and CG_v scores were equivalent to the Psychosocial Health Summary Score, i.e. 63 points for the EG_v and 66.5 for the CG_v. In the subsequent phases of the EG_v examination, the progressive positive trend expressed by a significant decrease in the score was 57.4 points in the third examination ($F = 26.97$, $p = 0.001$) – Chart 6. In comparison, the CG_v score values rose to 68.1 points in the second examination and to 70.2 points in the third examination (Chart 6). The overall score development regarding gender showed better progression in girls than in boys, with a significant difference in score values ($F = 582.88$, $p = 0.001$). For both sexes in the EG_v, a positive decline in scores was detected, while for both sexes in CG_v the score had a slight upward tendency (Chart 6).

In addition, the results of the respondents with a visual impairment are presented in the dimensions of “Emotional Functioning”, “Social Functioning” (Chart 7) and “School Functioning”. In the third phase of the examination, an increase in Emotional Functioning score was recorded at 67.7 points of the rough CG_v score, while a significant difference was observed for the EG_v, a positive decline to 60.7 points ($F = 14.82$, $p = 0.001$). The results of the analysis of the Social Functioning of the respondents with visual impairment during the experimental investigation clearly showed a positive significant decline in the EG_v values ($F = 14.33$, $p = 0.001$) from 59.5 points to 48.5 points, while for the CG_v the values of Social Functioning had a slightly worsening trend, with an increase to the final value of 72.1 points. The results of School Functioning of the respondents with visual impairment correlate with the results of the social fitness, where the score for the EG_v gradually decreased to the final 60.5 points, while the CG_v score increased to a final 71.2 points, which represents a significant difference between the scores for the EG_v and the CG_v in the final third examination ($F = 88.42$, $p = 0.001$).

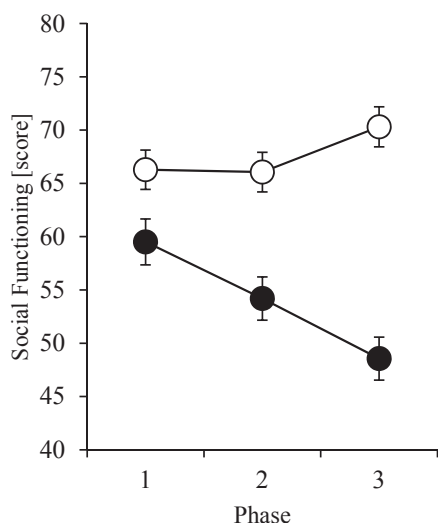


Chart 7 – Development of the “Social Functioning” score of the PedsQL 4.0 in respondents with a visual impairment – the experiment compares the EG_h, CG_h and the phases (N = 40, EG_h = 10 boys, 10 girls, CG_h = 10 boys, 10 girls)

Based on these positive changes we can confirm our assumption that a significant improvement will be seen in the experimental group of children with a visual impairment in the Physical and Psychosocial Functioning score.

DISCUSSION

Discussion on the Pediatric Quality of Life Inventory (PedsQL 4.0)

The results of the Psychosocial Functioning were obtained through the PedsQL 4.0 questionnaires administered repeatedly to the experimental and control groups, in which the overall Psychosocial Health Summary Score is summarized from the scales: Emotional Functioning + Social Functioning + School Functioning. These scales also show significant changes during the experimental investigation and are therefore discussed especially where the effects were statistically significant.

As mentioned above, the results of the PedsQL 4.0 questionnaire were evaluated in four multidimensional scales within the Physical Functioning, Emotional Functioning, So-

cial Functioning and the School Functioning scales. From these multidimensional scales, two summary scores were determined – the Physical Health Summary Score, summarized from the Physical Functioning score and the Psychosocial Health Summary Score.

The analysis of the PedsQL 4.0 results for respondents with a hearing impairment showed that the overall Physical Functioning Scores for both the EG and CG respondents were very high in the first examination (81–86 points), indicating poor physical health. Due to the interventional movement programme of controlled movement activities, a positive reversal in the EG_h occurred after 3 months, both for boys and girls. In the second and third examinations, a positive significant reduction of the score was observed compared to the first examination and the CG_h results. The evaluated difference shows a positive effect of the intervention programme on the somatic development of respondents with a hearing impairment and hence their physical health. The overall Psychosocial Functioning Score for the respondents with a hearing impairment was better than their overall Physical Functioning Score, but the figure was still quite high – 68 points for EG_h and 67.5 for the CG_h. In the next stages of the EG_h examination, a significant reduction in the score to 56.7 points was achieved in the third examination. The CG_h did not show any decline in the values in the next stages, but did show a rise to 71 points in the third examination, which could be due to increased school demands before the end of half-term. Positive health benefits in the psychosocial field due to the influence of controlled movement activities were demonstrated again in the group of respondents with a hearing impairment. Physical intervention works effectively on the reduction of overall psychical tension.

The Psychosocial Health Summary Score for the respondents with a visual impairment was better in the initial examination than the Physical Health Summary Score. Even so, the value of the score in the first examination for both the EG_v and CG_v groups was relatively high – 63 points for the EG_v and 66.5 for the CG_v. In the subsequent phases of the examination, the EG_v score significantly decreased to 57.4 points in the third examination. For the CG_v, the worsening of the overall score scores reached up to 70.2 points in the third

examination. The total statistical analysis of the Emotional Functioning showed a positive decline in the score to 60.7 points for the EG_v vs. CG_v. Still, it is relatively high in children aged 8–15 years. In addition, the analyzed differences in the EG_v and CG_v were not confirmed as statistically significant. These results again demonstrate the complexity of emotional experience in respondents with visual impairment. For this reason, it was gratifying that the results of the analysis of Social Functioning in respondents with visual impairment during the experimental investigation clearly showed a significant decrease in the EG_v compared to the CG_v. In addition, the correlation between improved School Functioning and Social Functioning results has been demonstrated. This has again been demonstrated by the fact that the “strength” of people with a visual impairment is the ability to develop social functioning. In this respect, the programmes of controlled movement activities could be a suitable tool to be recommended.

It should be noted that we have not recorded any negative attitudes of the respondents to the intervention programme of controlled movement activities. Children enjoyed the regular training; they were proud to be able to show people around their social environment and tell them that they “have training”, or that they “go to training”. Children participating in the intervention programmes of controlled movement activities were taught how to get ready for training individually in order to encourage them to return to the environment of controlled movement activities with joy. Having completed the intervention programme of controlled movement activities, children learned to orient themselves well in the training environment where the physical activities and the phases of movement learning took place. However, it has to be noted that in most cases, they were familiar with the environment because the intervention training units took place mostly in their school and its surrounding area (park, playground). Thus there was no manifestation of social maladaptation.

CONCLUSION

Through the selected research methods, changes in the monitored indicators of Physical

and Psychosocial Functioning in a given population of children were determined. The data obtained were analyzed by a statistical procedure and evaluated.

The objective of this study was confirmed. On the basis of the applied intervention programme, an experimental group of children with a hearing impairment and an experimental group of children with a visual impairment showed a significant improvement in Physical and Psychosocial Functioning scores over the control group.

The current lifestyle of children is accompanied by hypokinesia, which intensifies in the cases of children with disabilities. The benefit of the study lies in the results of Physical Functioning analysis, in which all groups of respondents at the beginning of the experiment showed highly negative values of the Physical Functioning Score (80 or more), indicating a very poor state of health in such a young population. As demonstrated by the results, the negative state can be reversed through the intervention programme of controlled movement activities. The research study has shown that positive effects in psychosocial indicators in children with both types of the examined disabilities can be achieved under the influence of controlled movement activities. The application of the acquired outcomes lies in health and social prevention and in the rehabilitation of children with a hearing or a visual impairment. The presented study was designed to become not only an inspiration, but also a proven source of knowledge that it is possible to lead children with disabilities to movement skills and to facilitate within them a joyful interest in movement learning and engaging in leisure time physical activities. The outputs obtained can be beneficial for the social rehabilitation of children with disabilities in the area of reducing fearful behaviour and increasing independent behaviour.

CONFLICT OF INTERESTS

The author has no conflict of interests to disclose.

REFERENCES

1. Anděl J (2014). Postižení normalitou [Disabled by normality]. Praha: DOX Prague (Czech).
2. Bolach E, Buliński PE (2012). Ocena sprawności motorycznej dzieci w wieku przedszkolnym. *Rozprawy Naukowe*. 39/1: 120–125 (Polish).
3. Clair JM (2012). Disability in the global sport arena: a sporting chance. New York: Routledge. 247 p.
4. Górný M (2013). Estetika pohybu dětí se zrakovým postižením [The movement aesthetics of children with a visual impairment]. Olomouc: Univerzita Palackého v Olomouci, 181 p. (Czech).
5. Harada T, Wada K, Akimitsu O, Krejčí M, Noji T, Nakade M, Takeuchi H (2013). Education to healthy life style with the accent to sleep habits – intervention programs. *Acta Salus Vitae*. 1/1: 13–27.
6. Janečka Z, Bláha L (2014). Motorické kompetence osob se zrakovým postižením [Motor competences of people with a visual impairment]. Olomouc: Univerzita Palackého v Olomouci, 246 p. (Czech).
7. Ješina O, Kudláček M, Bartoňová R (2015). Metodika práce asistenta pedagoga [Work methodology for teachers' assistants]. Olomouc: Univerzita Palackého v Olomouci, 113 p. (Czech).
8. Kornatovská Z (2016). Komparace dostupnosti a nabídky řízených pohybových aktivit pro žáky se zdravotním postižením ve vybraných regionech ČR a Velké Británie [Comparison of the availability and supply of controlled movement activities for pupils with disabilities in selected regions of the Czech Republic and Great Britain]. *Tělesná kultura*. 39/1: 3–14 (Czech).
9. Kornatovská Z, Bláha P, Hill M (2015). Antropometrické charakteristiky hmotnosti a tělesné výšky dětí s mentálními disabilitami ve vztahu k řízeným pohybovým aktivitám [Anthropometric characteristics of the weight and body height of children with mental disabilities in relation to controlled movement activities]. *Česká antropologie*. 65/1: 23–29 (Czech).
10. Meloun M, Hill M, Militky J, Kupka K (2000). Transformation in the PC-aided biochemical data analysis. *Clin Chem Lab Med*. 38: 553–559.
11. Pfeiffer J, Švestková O (2008). Mezinárodní klasifikace funkčních schopností, disability a zdraví: MKF. Překlad z originálu. [International Classification of Functioning, Disability and Health: ICF. Translation of the original]. Praha: Grada Publishing, 280 p. (Czech).
12. Porkertová H (2017). Nevidomá zkušenost: disability jako asambláž a vztah mezi diskurzem, tělem a zkušeností [Blind experience: disability as an assemblage and relationship between discourse, body and experience]. Brno: Masarykova univerzita, Fakulta sociologie, 125 p. (Czech).
13. Prekopová J (2014). Rodina žije z lásky [Family lives from love]. Bratislava: Premedia, 129 p. (Czech).
14. Šauerová M, Špačková K, Nechlebová E (2013). Speciální pedagogika v praxi [Special pedagogy in practice]. Praha: Grada Publishing, 248 p. (Czech).
15. Švestková O, Hoskoclová S (2010). Nové přístupy k náhledu na občana se zdravotním postižením a Mezinárodní klasifikace funkčních schopností, disability a zdraví [New approaches to the view of a citizen with a disability and the International classification of functional abilities, disabilities and health]. *E-psychologie*. 4/4: 27–40 (Czech).
16. Válková H (2014). Teorie aplikovaných pohybových aktivit pro užití v praxi 1 [Theory of applied physical activities for use in practice 1]. Olomouc: Univerzita Palackého v Olomouci, 180 p. (Czech).
17. Varni JW, Burnwinkle TM, Seid M (2006). The PedsQL 4.0 as a school population health measure: Feasibility, reliability, and validity. *Qual Life Res*. 15/3: 203–215.
18. Velemínský M (2011). Celebritami proti své vůli [Becoming a celebrity against my will]. Praha: Triton, 124 p. (Czech).
19. Velemínský M, Sr., Velemínský M, Jr. (2017). Dítě od početí do puberty – 1500 otázek a odpovědí [Child from conception to puberty – 1500 questions and answers]. Praha: Triton, 224 p. (Czech).

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