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“Free access, real educational inclusion and unlimited technologies”

**The Bulgarian Association for Education of Visually Impaired Children
and ICEVI-Europe**

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BAKER, Lynda M. Observation: A Complex Research Method. Library Trends, Vol. 55, No. 1, 2006, 171–189 p.

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Social participation of visually impaired adults – Access to leisure activities

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Abstract

Social participation is a determinant of active aging, and can produce positive physical and mental outcomes. Those outcomes satisfy the psychological needs of individuals and help him achieve appropriate life satisfaction. The number of activities in which a person participates reflects her social interaction and social relations.

The aim of this research aimed was determining the barriers that adults with visual impairment face during leisure activity of sport-recreational type, while checking whether there are differences in the self-perception of the barriers of blind and visually impaired people. Sample consisted of 137 persons with visual impairment.

Using the Assessment of Life Habits scale (LIFE-H), domain Recreation in a sample of 92 people with visual impairment, key barriers for leisure activities were highlighted: inadequate public transport, low level of independence, negative attitudes and non-acceptance in a wider environment; additionally, using the Physical Activity Barrier Scale for persons who are blind and visually impaired on a sample of 45 persons, separated barriers were singled out: the one from an inaccessible physical environment and barriers of a psychological nature. Persons with low vision participated in various sports and recreational activities significantly more frequent than blind ones, although the frequency of barriers to exercise was not statistically different.

The inaccessibility of the physical environment is a major factor limiting the social participation of adults with visual impairments in the field of leisure activities which, with inadequate attitudes of the social environment, insufficient material resources and dependence of the help of other people, limits the participation of persons with visual impairment in many domains important for social participation.

Introduction

Activities that individuals engage in in their free time, which they choose to do freely and enjoy it outside of school or professional obligations, are called leisure activities. Most often they are classified into three categories: organized group activities, informal social activities and informal individual activities (Van Naarden & Yeargin-Allsopp, 2006). Through those activities, individual meets his own psychological needs and achieve life satisfaction. The number of different activities in which a person participate reflects his or her social interaction and social relationships, while restrictions on participation in social activities, leisure activities and activities

related to work engagement together with difficulties in carrying out daily activities can impede independence, autonomy and quality of life (Dijkhuizen, Hilgenkamp, Krijnen, van der Schans, & Waninge, 2016; Kempen, Balleman, Ranchor, van Rens, & Zijlstra, 2012; Naël et al., 2017).

Previously conducted research on visually impaired people has mainly been focused on clinical and functional outcomes, while participation in society most often has been neglected. As consequence, knowledge of the social outcomes of visual impairment was limited (Alma, 2012). Contemporary research tendencies are aimed at determining the impact of chronic illnesses or any impairment on an individual's social participation. Undoubtedly, the existence of biological damage of any degree can lead to functional limitations. However, many other factors related to the physical and social environment can represent significant barriers in social participation for people with visual impairments (Stanimirov, 2016).

Theoretical considerations

Social participation (SP) is a determinant of active aging, and can produce positive physical and mental outcomes. Social participation encourages physical activity (PA), and vice versa – social support and networks gained through physical activities encourage SP (Tomioka, Kurumatani, & Hosoi, 2017). Therefore, PA is an essential component of SP. However, persons with disabilities are most often characterized by an alarmingly low level of physical fitness, which impedes inclusion in PA, has a negative impact on quality of life (Ward, Farnsworth, Babkes-Stellino, & Perrett, 2011) and over time contributes to the development of chronic diseases associated with sedentary lifestyles (heart problems, stroke, depression, obesity, etc.).

Research suggests that visually impaired people are least physically active compared to people with other types of disabilities (Haegele, Hodge, & Kozub, 2017). This situation is a consequence of numerous barriers that hinder the inclusion of people with visual impairments in various PA. Barriers may be the result of objective or subjective problems, but they also may be imposed by society (Stuart, Lieberman, & Hand, 2006; Ward, Farnsworth, Babkes-Stellino, & Perrett, 2011). Objective problems include functions of gross motor skills, manual abilities, cognitive abilities, communication skills, etc. (Bult, Verschuren, Jongmans, Lindeman, & Ketelaar, 2011). Over time, environmental barriers become predominant (Wrzesińska, Lipert, Urzędowicz, & Pawlicki, 2018). Adults with visual impairment list functional limitations, dependence on the help of others, disability itself, different physical obstacles in the environment, and fear of injury as the most significant barrier to engaging in PA (Griffin, Phoenik, & Smith, 2016, prema Brunen, Flanders, & Augestad, 2017). Additional problems are the cost, as well as the lack of a suitable company to exercise with (Haegele et al., 2017; Jaarsma, Dekker, Koopmans, Dijkstra, & Geertzen, 2014)

Methodology

The aim

The aim of this research is to identify the most common barriers that adults with visual impairments self-perceive in the exercise of leisure activity, sports and recreational type. A specific goal was to identify differences in self-perception of barriers in persons with different degrees of visual impairment (low vision and blindness).

Method and sample

The paper presents the results of two studies conducted at a time interval of two years. The first study included a sample of 92 visually impaired people (46 respondents had low vision, 46 of them was blind; 40 men and 52 women), aged 19-65 ($M=35,10$, $SD=10,78$). The goal of this study was to determine how often respondents participate in activities from recreation domain. For data collection *The Assessment of Life Habits – LIFE-H* (Fougeyrollas et al., 1998, 2003) was used.

In the second study from 2018, 45 people with visual impairment (24 blind and visually impaired people 21) of both genders (of which 21 men and 24 women) aged 18 to 39 ($M=28,78$, $SD=7,22$) were examined. This research aimed to determine the subjective experience of barriers that interfere with PA and their association with PA. For data collection *Physical Activity Barrier Scale for persons who are blind and visually impaired* (Lee, Zhu, Ackley-Holbrook, Brower, & McMurray, 2014) was used.

For purpose of this paper we showed results gained on a Recreation domain of LIFE-H from the first study. This domain consists of seven items which question degree of participation in sport or recreational activities (walking included), art and cultural activities (for example dancing), going to sports events (hockey, basketball, football, etc.), visiting cultural and artistic events (theaters, cinemas, concerts, etc.), tourist activities (trips, excursions, visits to historic sites, etc.), active nature stay (mountaineering, camping, etc.), use of recreation center services, etc. This domain allows estimation of realization of leisure activities degree, which require physical engagement of people with visual impairments.

From the second study factors that may interfere with PA were identified. *Physical Activity Barrier Scale for persons who are blind and visually impaired* contains 48 statements grouped into the following types of barriers: environmental factors, safety concerns, insufficient motor knowledge and skills, barriers arising from poor health, psychological barriers, personal limitations, limitations arising from the social environment and limitations arising from visual impairment. The Scale is three-point Likert type scale.

Data processing

For description of the significance parameters, arithmetic means, medians, standard deviations and standard measurement errors were used to. For further data processing, Man Whitney's U test was used. The analysis and statistical processing were performed using a package for statistical processing for the social sciences (SPSS for Windows, version 23.0). The results obtained are presented in tables.

Results

The self-assessment of the visually impaired respondents regarding restrictions on participation in leisure activities is shown in Table 1.

Table 1. *Self-assessment of visually impaired respondents on single items and score in general of the Recreation Domain of the Life-Scales Assessment Scale*

Item	M	SD	SE
1	5,18	4,25	0,443
2	2,39	3,77	0,393
3	0,46	1,81	0,189
4	5,75	3,60	0,376
5	6,30	3,23	0,337
6	1,82	3,32	0,346
7	6,24	3,90	0,407
Recreation score	28,14	12,146	1,266

Legend: 1 – participating in sport and recreational activities, 2 – participating in cultural and art activities, 3 – visiting sport events, 4 – visiting cultural events, 5 – tourist activities, 6 – active nature stays and 7 – visiting recreational centers.

Based on gained results, it is noticeable that people with visual impairment most often engage in tourist activities and use recreation centers, while the lowest number of respondents attend sport events.

This was followed by checking for differences in self-assessment of respondents with different degrees of visual impairment, as shown in Table 2.

Table 2. *Self-assessment of people with different degrees of visual impairment on individual scores and the overall score of the LIFE-H Scale, Recreation Domain*

Item	Degree of visual impairment	M	SD	SE _M
1	Low vision	6,37	4,084	0,602
	Blindness	4,00	4,110	0,606
2	Low vision	2,15	3,881	0,572
	Blindness	2,63	3,684	0,543
3	Low vision	0,39	1,856	0,274
	Blindness	0,52	1,786	0,263
4	Low vision	6,87	3,751	0,553
	Blindness	4,63	3,101	0,457
5	Low vision	6,91	3,741	0,552
	Blindness	5,70	2,520	0,372
6	Low vision	2,26	3,890	0,574
	Blindness	1,37	2,585	0,381
7	Low vision	6,41	4,075	0,601
	Blindness	6,07	3,756	0,554
Recreation	Low vision	31,37	11,852	1,747
	Blindness	24,91	11,686	1,723

Legend: 1 – participating in sport and recreational activities, 2 – participating in cultural and art activities, 3 – visiting sport events, 4 – visiting cultural events, 5 – tourist activities, 6 – active nature stays and 7 – visiting recreational centers.

Respondents with low vision perform more different activities compared to blind (5 vs. 2 activities). Activities that blind respondents are more likely to engage in are cultural and artistic activities and attending sport events.

Considering that visually impaired persons perform more different activities compared to blind ones, we were interested in whether there were statistically significant differences in the frequency of leisure activities between the two sub-samples of visually impaired persons. The results of Man Whitney's U test are shown in Table 3.

Table 3. *Differences between two sub-samples of visually impaired people on LIFE-H Scale, Recreation domain*

Subscale	Man Whitney's U test	Wilcoxon signed-rank test	Z	p
Recreation	740,500	1821,500	-2,493	0,013

Differences on the Recreation domain of the LIFE-H scale are statistically significant. If we look at the average results on domain as a whole shown in Table 2, it is clear that, overall, the visually impaired subjects have higher scores (M=31.37, SD=11.85), more precisely, they realize statistically significantly more leisure and recreational activities.

Considering that on Recreation domain as a whole statistically significant difference between participants with blindness and with low vision were confirmed, we checked in which areas they were most pronounced, and the results are presented in Table 4.

Table 4. Differences between participants with blindness and with low vision od single items on LIFE-H Scale, Recreation domain

Item	Man Whitney's U test	Wilcoxon signed-rank test	Z	p
1	731,000	1812,000	-2,851	0,004
2	964,000	2045,000	-0,909	0,363
3	1015,000	2096,000	-0,785	0,433
4	619,000	1700,000	-3,705	0,000
5	701,500	1782,500	-3,058	0,002
6	986,500	2067,500	-0,737	0,461
7	949,500	2030,500	-0,967	0,334

Legend: 1 – participating in sport and recreational activities, 2 – participating in cultural and art activities, 3 – visiting sport events, 4 – visiting cultural events, 5 – tourist activities, 6 – active nature stays and 7 – visiting recreational centers.

Statistically significant differences were observed when it came to participating in three activities: participation in sports and recreational activities, going to different cultural events and trips, tourist activities etc. Participants with low vision from our sample are more likely to participate in aforementioned activities compared to the blind. No statistically significant differences were observed for participating in other recreational and leisure activities.

After assessing life habits, data regarding self-assessment of barriers to PA were processed and the results are presented in Table 5.

Table 5. Self-assessment of barriers to PA

Barriers	Min	Max	M	SD
1	1	15	5,87	3,395
2	1	10	4,04	2,256
3	0	16	6,84	4,322
4	0	10	3,80	2,793
5	0	10	3,69	2,661
6	0	7	1,89	1,761
7	0	15	5,09	3,831
8	0	6	2,04	1,507
Total	4	78	33,27	18,027

Legend: 1 – psychological barriers; 2 – limitations arising from the social environment; 3 – factors arising from the physical environment; 4 – personal limitations; 5 – insufficient motor knowledge and skills; 6 – barriers resulting from poor health; 7 – limitations as a result of visual impairment and 8 – safety concerns

The results showed that the respondents with visual impairment most often encounter barriers arising from the physical environment, followed immediately by the barriers of a psychological nature, as well as the barriers resulting from the visual impairment itself. The least represented respondents were least frequently encountered safety and health barriers. Given the theoretically possible range of scores (from min 0 to max 88), the overall expression of the barriers to PA in the examined sample of visually impaired individuals may be considered low.

This was followed by checking the differences on the scale as a whole given the degree of visual impairment. The results are shown in Table 6.

Table 6. *Participants' self-assessment about the presence of barriers to PA depending on degree of visual impairment*

	Category	N	Min	Max	M	SD	SE
Barriers	Low vision	21	4	68	34,24	18,793	4,101
	Blindness	24	10	78	32,42	17,690	3,611

Descriptive analysis of the data obtained revealed that the level of self-assessment of the existence of barriers to PA is slightly higher for the participants with low vision. This was followed by a statistical check of the significance of the differences detected and the results are showed in Table 7.

Table 7. *Differences between the participants with blindness and with low vision on the barrier assessment scale for PA*

	Man Whitney's U test	Wilcoxon test	Z	p
Barriers	231,500	531,500	-0,467	0,641

Examining the significance of differences in self-assessment of barriers to PA between two groups of participants (with blindness and with low vision) it was found that there were no statistically significant differences. Since the differences weren't detected on the scale as a whole, the differences on individual items were not checked.

Discussion

This study showed that the least visually impaired people from our sample attend sports events, while the largest number of respondents said that they visit recreation centers and participate in tourist activities. In terms of the number of activities that are being realized, the respondents with low vision from our sample realize on average five activities, as opposed to the blind who realize two. Among those two activities more likely will be visiting cultural and artistic events. On the other side, participation in sport and recreational activities, going to different cultural events and trips, tourist activities etc. are all characteristic of people with low vision from this research.

Perhaps these findings can be explained by the existence of certain barriers that impede the pursuit of recreational activities. Assessing life habits, the most common obstacles to the participation of the visually impaired people were: inaccessible public transportation, high dependence on other people's help, negative attitudes and rejection by environment, and insufficient material resources as well. The most common barriers to participation in PA were: lack of motor knowledge and skills, physical environment, factors related to social environment. The least expressed were barriers related to limits of personal nature, and people with blindness and low vision did not differ in terms of the type and frequency of barriers limiting their PA.

Comparing the findings gained from two separate studies as a common factor which limits the physical and recreational activities of people with visual impairment, the inaccessibility of the physical environment was highlighted (e.g. difficulties with transportation, less opportunities for activity, accessibility to facilities etc.). Other authors had the similar conclusion – that environmental factors and safety could account for reduced physical activity among people who are blind (Legood, Scuffham, & Cryer, 2002). However, in our study, barriers related to safety were poorly represented (similar to problems arising from poor health and lack of physical exercise knowledge). Safety, i.e. fear and increased risk of falls and collisions are directly related

with visual impairment. These feelings occur among people who have visual impairments and they interfere negatively with their confidence as independent travelers (Legood et al., 2002), which can affect physical exercise, participating in leisure activities and social participation. In our study, safety barriers were poorly represented (similar as problems arising from poor health and lack of knowledge of physical exercise), because dependence of help from other people, and problems with independent travel make personal barriers significant (Jaarsma et al., 2014; Legood et al., 2002) and undoubtedly creates barriers to (physical) exercising. Our findings confirm that barriers resulting from visual impairment are highly represented as a limiting factor for the social participation of blind and partially sighted people. Regarding the existence of differences depending on the visual abilities of the participants, it was found that the blind people are more often faced with restrictions in doing sports and recreational activities, going to different cultural events (cinema, theater, etc.) and traveling, going to excursions and other tourist activities. It can be said that this is expected, since people with visual impairments have visual possibilities that enable them to perform various social activities much easier. Besides the personal barriers that are a direct consequence of visual impairment, in the realizing leisure activities (sports, recreational, cultural, etc.), for people with blindness and the ones with visual impairments cost (lack of funds) and transport (public transport) are particular problems. These findings confirm the statements of other authors (Jaarsma et al., 2014; Marston & Golledge, 2003), who point out that this may be one of the most significant barriers to engaging in non-sedentary behaviors and physical activities of visual impaired adults. Previous research states that many barriers to regular physical activity participation among adults with visual impairments is associated with lack of social support (e.g., lack of support from family and lack of peers to participate with in activities) (Haegele et al., 2017; Jaarsma et al., 2014). However, in this study the limitations arising from the social environment are less prevalent.

Conclusion

The social participation of adult people with visual impairment is, on a first place, limited by the inaccessibility of the physical environment. This factor, with inadequate social attitudes, insufficient material resources, dependence on other people's help, and barriers of a psychological nature, limit the participation of people with visual impairment in many leisure activities. The general recommendation that emerges from these studies is that it is necessary to actively work on reducing the impact of barriers arising from the unfavorable physical and social environment and which impede the social participation of adults with visual impairments. By assessing the limitations that come from the physical and social environment, areas of intervention can be identified to improve the number and range of activities that can be offered to people from this population. It is possible to design and implement strategies that will lead to increased participation and, consequently, to improvement of people with visual impairment quality of life of (Lamoureux, Hassell, & Keefe, 2004).

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The access of visual impaired children and students to aids and assistive technologies

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The current report reviews the modern aids and assistive technologies in support of the education of visually impaired children and students. The access to them is not always guaranteed and possible, which depends on a number of factors and reasons. To what extent and in what aspects do teachers know and use these tools and assistive technologies and how does the curriculum adapt through them? What is parental involvement and how does the family support the use of these assistive technologies ? There are many questions and their answers reveal what assistive technologies are available to children and what are the difficulties in using them in the educational process.

I. Aids and assistive technologies

Atanasova (2016) describes assistive technologies , as follows:

Low-tech aids to the following functional difficulties and skills, developed in the educational process:

- graphic writing skills;
- reading skills;
- mathematical skills;
- visual skills;
- Cutting skills (manual technical actions);
- communication skills;
- computer skills.

Hi-tech aids to the following functional difficulties and skills, developed in the educational process:

- writing skills and reading skills;
- mathematical skills (geometry, arithmetic skills);
- Cutting skills (manual technical actions);