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STATUS OF CHILDREN, ADOLESCENTS AND ADULTS

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**МЕЂУНАРОДНА НАУЧНА КОНФЕРENCIЈА
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DECE, OMLADINE I ODRASLIH**

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SELF-ASSESSMENT OF THE LEVEL AND INTENSITY OF PHYSICAL ACTIVITIES OF VISUALLY IMPAIRED PERSONS USING THE INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

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Introduction

Physical activities represent an essential part of a healthy lifestyle, and the personal benefit derived from it is reflected in numerous domains of physical and psychological well-being. However, disabled people are not sufficiently physically active, and usually manifest passive patterns of behavior, spending their free time at home (Majnemer et al., 2008). A study into the habits of young people with different types of impairment determined that 30% of them have a sedentary lifestyle, and that this percentage increases with age (Longmuir & Bar-Or, 1994, according to Longmuir & Bar-Or, 2000). This kind of lifestyle can lead to social isolation, discontentment with quality of life (Rae-Grant et al., 1989), and an increased risk of developing health issues related to sedentary behavior (cardio-vascular illness, hypertension, diabetes mellitus type 2, etc.) (Marmeleira, Laranjo, Marques, & Pereira, 2014). Not only does it endanger one's health state and any psychological benefit, insufficient physical activity disrupts the realization of basic life and work activities; namely self-care, care for one's home and work activities during adulthood that require appropriate mobility and physical fitness levels. These two components often present a significant challenge to persons with visual impairment.

Persons with visual impairment (VI), irrespective of their age, are more prone to a sedentary lifestyle than peoples with other types of impairment (Longmuir & Bar-Or, 2000; Holbrook, Caputo, Perry, Fuller, & Morgan 2009; Starkoff, Lenz, Lieberman, & Foley, 2016; Haegele, Hodge, & Kozub, 2017). The reason for this might be that impaired vision could limit the inclusion of individuals in activities which take place outside the home (Starkoff et al., 2016). Research data indicate that 67% of blind and low vision persons avoid leaving their homes (Marston & Golledge, 2003). However, there are few empirical studies which analyzed the way persons with visual impairment spend their time, especially adults. Starkoff et al. (2016) used a specially-designed instrument (PACE+SBQ) and determined that visually impaired adults under the age of 40, irrespective of gender, on average participate in activities which are a part of a sedentary way of life 10h a day on weekdays and 8,5h a day on the weekend (working at a computer; listening to music; watching television; reading; telephoning; handicrafts and hobbies, playing an instrument), as opposed to the 7,7h a day that sighted individuals spend in these same activities. Generally speaking, empirical research (Longmuir & Bar-Or, 2000; Houwen, Hartman, & Visscher, 2008; Starkoff et al., 2016) points out that if there is visual impairment, we can expect a greater frequency of sedentary behavior, irrespective of the age of the participants.

In addition to infrequently taking part in physical activities, peoples with visual impairment on average perform physical activities of a moderate to high intensity 48% less, than sighted ones (Willis, Jefferys, Vitale, & Ramulu, 2012) per day. At the same time, only 30% of them take part in daily physical activities of (over / at least) 30 min. per day, a level which enables optimal health maintenance (Marmeleira et al., 2014). An insufficient level of physical activity can be the result of inappropriate motor development during childhood, family being overprotective, decreased mobility or eyesight problems (Barbosa Porcellis da Silva, Marques, & Reichert, 2018). Irrespective of the sample, sedentary behavior and a low level of

physical activity resulted in an increased risk of developing obesity (Holbrook et al., 2009), combined problems, depression and functional limitations (Campbell & Crews, 2001).

Of the factors related to physical activities, visual acuity is the most frequently studied one. Studies point out that the degree of visual impairment is related to the level and intensity of those activities, meaning that lower acuity leads to infrequent participation in moderate physical activities (Holbrook et al., 2009) and, in the case of children with VI, prolonged periods of time spent in sedentary activities (Houwen et al., 2008).

Due to its strong connection with quality of life, over the past few years researchers have showed increased interest in studying the characteristics of physical activities of peoples with visual impairment (Houwen et al., 2009; Marmeleira, Laranjo, Marques, & Batalha, 2013; Sadowska & Krzepota, 2015) or barriers preventing them from performing these activities (Jaarsma, Dekker, Koopmans, Dijkstra, & Geertzen, 2014; Marmeleira et al., 2014; Haegele, Zhu, Lee, & Lieberman, 2016). Special interest was focused on the study of the physical activities of peoples with visual impairment as part of their usual, daily activities at work, at home, or during their leisure time.

The methods used to study the physical activities of persons with visual impairment

Various methods are used to evaluate the level of physical activities, including objective measurements (heart rate, accelerometry and pedometry), indirect measurements (calorimetry), direct observation and subjective evaluations using a questionnaire, or a daily physical activities log. However, questionnaires are the most frequently used means of evaluating physical activities as part of everyday life, due to their low cost and simplicity of use which enables broad application (Lee et al., 2011; Marmeleira et al., 2013).

The existing literature on the study of physical activities of adults with visual impairment cites the use of accelerometry (Kozub, 2006; Marmeleira et al., 2013; Sadowska & Krzepota, 2015), pedometry (Holbrook et al., 2009; Holbrook, Stevens, Kang, & Morgan, 2011; Holbrook, Kang, & Morgan, 2013) and various questionnaires, among which the most frequently used is the International Physical Activity Questionnaire – IPAQ, its short form (Marmeleira et al., 2013; Bláha, Frömel, & Válková, 2013) and long form (Sadowska & Krzepota, 2015; Wrzesińska, Lipert, Urzędowicz, & Pawlicki, 2018). The World Health Organization recommends the use of this questionnaire when evaluating physical activities in relation to health. However, an analysis of 23 empirical studies has determined that the correlation between physical activity (the overall weekly level and intensity) measured using the IPAQ (short form) and the objective standards indicate great variability (Lee, Macfarlane, Lam, & Stewart, 2011).

In the case of persons with visual impairment, the use of the IPAQ provides overrated data compared to the data obtained by objective methods (Marmeleira et al., 2013). Out of the six studies which focused on the comparison of the levels of physical activity of persons with visual impairment obtained from the IPAQ and accelerometry, five (Lee et al., 2011) indicated that the IPAQ significantly overrates the level of physical activity (from 36 to 173%), while one study (Ekelund et al., 2006, according to Lee et al., 2011) determined that it underrated them, by 28%. On the other hand, accelerometry, even though an objective method of evaluating physical activity, is not suitable for use when it comes to aquatic activities, and might not give precise information related to the intensity of activity such as carrying heavy loads, walking up the stairs, riding stationary bikes, or weight lifting (Hagstromer et al., 2008).

This paper presents a part of a more extensive research aimed at evaluating the connections between physical activities of young adults with visual impairment and factors that determine them. The aim of this paper was to determine the level and intensity of physical activities which adults with visual impairment perform in daily life activities, including work, transport, home and leisure time.

Sample

The participants were persons with visual impairment (N=45), aged 18 to 39 (AS=28), of both genders. The cut-off point for participation, the age of 40, was set only so that younger adults would be included in the study, and to reduce the factors associated with the aging process, namely, the emergence of chronic illness which additionally impedes physical activity. Most of the participants (88,9%), in addition to their visual impairments, did not suffer from any other conditions which would have a negative impact on their physical activities. However, 11% of the participants considered that the presence of various illnesses and conditions (such as neurological and cardiac disorders, frequent hospitalization or contraindications for excessive fatigue) could limit their mobility.

The sample was relatively homogenous in terms of gender (53% women and 47% men) and the degree of visual impairment (53% blind and 47% low vision participants). By evaluating their mobility (and) independence (based on participants' self-evaluation), it was determined that almost 40% of them effectively use a white cane (blind participants). The same percentage of participants with low vision believes that their visual impairment does not represent an obstacle to their mobility. One quarter (24,44%) of the participants cited that, when it comes to mobility, they depend on the help of a sighted guide, and if they do not have adequate help, they rarely go out. A further analysis divides the participants into two groups: persons who walked independently (N=34, 75,6%) and persons who were not able to walk independently (N=11, 24,4%).

Method

The participants were directly contacted through the Association of the Blind of Serbia and invited to take part in the study. The general questionnaire and IPAQ were adapted for internet surveys using the Google forms platforms. The data were compiled during April and May of 2018.

Instrument

A general questionnaire was designed for the purpose of this study, in order to collect the following data: age, gender, degree of visual impairment, independence in mobility, work status, and level of education.

Research was conducted using the long form of the *International Physical Activity Questionnaire – IPAQ-LF*, meant for persons aged from 15 to 69. This questionnaire consists of 27 open-ended questions for self-evaluation of the intensity and duration of physical activity on a weekly basis within four domains, including the workplace, transportation, work in and around the house, and leisure time. The evaluation of physical activity on a weekly basis is expressed in MET units (metabolic equivalents expressing the rate of energy consumption), which represent the relation between the energy needed to perform the activities and energy that the body consumes at rest. The weekly level (MET-minutes) is obtained by any combination of activities which result in the increased energy consumption (manifested as rapid breathing, increased heart rate, etc.), provided that they last longer than 10 minutes a day, while activities which last less than 10 minutes are not taken into consideration. The obtained results are represented in three categories: high, moderate and low-level of physical activities.

A level of physical activity is classified as high if an individual takes part in physical activities for at least one hour every day, or if they meet any of the following criteria:

- if they participate in energetic activities three or more days a week, for an overall duration of 1500 MET minutes,
- if they achieve a minimum of 3000 MET minutes a week, through any combination of physical activities of various intensity, or walking.

A level of physical activity is classified as moderate if an individual spends most of his days during the week taking part in physical activities which last approximately half an hour, or if they meet any of the following criteria:

- for three or more days a week they take part in energetic activities and/or walking, for at least 20 minutes a day,
- for five or more days a week they take part in activities of moderate intensity and/or walking for at least 30 minutes a day,
- for five or more days a week they take part in any combination of the aforementioned activities which in the overall score provides a minimum of 600 MET minutes.

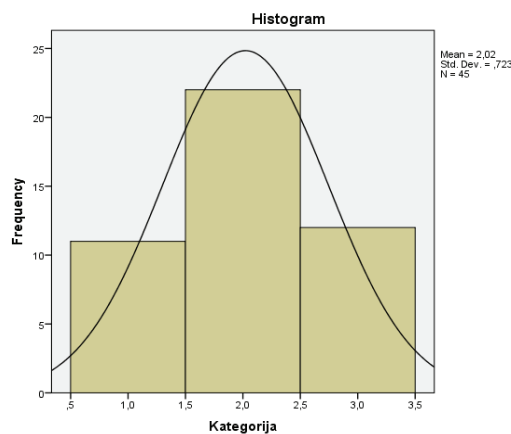
If the individual does not fulfill any of the aforementioned criteria, their overall level of physical activity is classified as low.

Results

The results indicate that the overall weekly level of physical activity of younger adults with visual impairment expressed through a MET score is very high (AS=3808,10; SD=4095,04). The maximal value was as high as 18534 MET min/week, which is almost five times greater than the average value.

We wanted to determine whether there were any statistically significant differences between the level of physical activities on a weekly basis and certain general characteristics of the participants (the degree of visual impairment, gender, work status, independence in mobility). The analyses have indicated that the participants with low vision have higher overall scores than the blind, men higher scores than the women, the employed higher than the unemployed, and persons who walk independently had higher scores than the participants who do not. However, the noted differences were not statistically significant (the degree of visual impairment: $\chi^2=0,690$, $df=1$, $p=0,406$; gender: $\chi^2=0,047$, $df=1$, $p=0,829$; work status: $\chi^2=0,419$, $df=1$, $p=0,518$; independence in mobility: $\chi^2=1,476$, $df=1$, $p=0,224$).

What followed was a categorization of participants based on the intensity of the realized physical activities on a weekly basis, which is shown in Graph 1.



Graph 1. The intensity of physical activities of persons with visual impairment

The distribution of the participants based on their level of physical activity (presented through the overall MET score) is even and similar to the normal distribution. Most of the participants (almost 50% of them) manifested a moderate level of physical activity (MET>600), while the participants whose level of physical activity was low or high were evenly distributed (24.44%; 26.68%). From a more general point of

view, persons with visual impairment have shown a satisfactory level of physical activity, while there is room for improvement for one quarter of the studied sample.

Table 1. The results and differences between the groups of participants based on the manifested intensity of their physical activities

		Category			TOTAL	χ^2	df	p
		Low FA	Moderate FA	High FA				
Degree of visual impairment	Blind	N 9 % 20.0%	8 17.8%	7 15.6%	24 53.3%	6.252	2	0.042*
	Visually impaired	N 2 % 4.4%	14 31.1%	5 11.1%	21 46.7%			
Gender	Male	N 4 % 8.9%	11 24.4%	6 13.3%	21 46.7%	0.621	2	0.796
	Female	N 7 % 15.6%	11 24.4%	6 13.3%	24 53.3%			
Work status	Employed	N 1 % 2.2%	7 15.6%	3 6.7%	11 24.4%	2.054	2	0.398
	Unemployed	N 10 % 22.2%	15 33.3%	9 20.0%	34 75.6%			
Independent mobility	Walking independently	N 6 % 13.3%	17 37.8%	11 24.4%	34 75.6%	4.351	2	0.115
	Not walking independently	N 5 % 11.1%	5 11.1%	1 2.2%	11 24.4%			

Legend: *p<0.05

Even though there were no statistically significant differences in the overall level of participants' physical activities, based on the data shown in Table 1 we can see that differences in terms of the intensity of the physical activities can be determined in relation to the degree of visual impairment ($\chi^2=6,252$, $df=1$, $p=0,042$). Most of the participants with low vision took part in moderate physical activities, while most of the blind participants took part in low-level physical activities. Compared to the remaining variables (gender, work status, independence in mobility), the differences determined in relation to the intensity of the physical activities were not statistically significant.

Discussion

In this study it was determined that the physical activities of visually impaired persons aged 18 to 39 yr. are at a high level. Almost one half of the participants (48,88%) were involved in moderate physical activities. High-level physical activities were noted for 26,68% of the participants, while one quarter (24,44%) of the participants lead a sedentary lifestyle. The average value of the MET score of the entire sample was 3808,10 (SD 4095,04). Sadowska & Krzepota (2013) used the same instrument, only its shorter form, and obtained the same results. They cited that 52% of persons with visual impairment were involved in moderate-level physical activities.

Such a high score for a population with visual impairment was not expected, but is supported by the results obtained by Kamelska & Mazurek (2015). In their research, persons with visual impairment scored 3930 MET minutes, while the athletes (tandem cyclists) scored 3835 MET minutes per week. Wrzesińska et al. (2018) cited a high level of physical activities for their participants, where the young adults with visual impairment showed a higher level of the aforementioned activities compared to the adolescents.

Actually, the results of this study, as well as the results of other studies carried out abroad (Kamelska & Mazurek, 2015; Wrzesińska et al., 2018) must not be taken at face value since they do not agree with the results of some other studies (Bláha et al., 2013; Haegele et al., 2016; Starkoff et al., 2016) which indicate a

passive attitude to leisure time activities among persons with visual impairment, and who tend to lead a sedentary lifestyle. Middle-aged visually impaired persons spend most of their time, almost ten hours a day, in sedentary activities (Starkoff et al., 2016), mostly reading or socializing, watching television, or on the computer (Haegele et al., 2017). Bearing this in mind, it is necessary to ask the question of whether there could be certain difficulties regarding this kind of evaluation of the physical activities of persons with visual impairment. A further reason to doubt the validity of the obtained data could also lie in the fact that, contrary to our and previous studies, the use of the same instruments by various authors has provided data on significantly lower levels of physical activities among persons with visual impairment: ranging from 2967 METmin./week (Bláha et al., 2013), to 2845 METmin./week (Haegele et al., 2016), 2278 METmin./week (Marmeleira et al., 2013), up to 1221 MET min./week (Sadowska & Krzepota, 2015). Considering the fact that the World Health Organization recommends a minimum of 600 MET minutes of physical activities for adults per week, it would appear that the level of physical activities of persons with visual impairment, even with these results, is more than satisfactory. However, when analyzing the structure of their weekly MET score, Haegele et al. (2016) determined that adults with visual impairment on average have only 413,79 MET minutes of moderate and energetic physical activities and 2058 minutes of sedentary activities a week. If they do participate in physical activities, persons with visual impairment usually walk (2222 METmin/week). Walking belongs to the group of low-intensity physical activities, while they rarely take part in intense and moderate physical activities (Bláha et al., 2013). Even though adults with visual impairment spend a lot of time walking, their level of physical activities realized in this way is significantly lower compared to that of sighted persons (Holbrook et al., 2009).

By evaluating the relation between the defined variables and the physical activities, no statistically significant differences were determined which supports the findings from similar studies. Of the analyzed socio-demographic variables (age, gender, ethnicity, level of education, degree of vision impairment, use of mobility aids, the time when the visual impairment occurred), Haegele et al. (2016) determined that only gender represents a significant predictor of physical activity among adults with visual impairment. In the case of relation of degree of visual impairment and the physical activities, the research results are contradictory. Some studies indicate that greater level of vision impairment leads to decreased physical activity (Hopkins et al., 1987; Barbosa Porcellis da Silva et al., 2018), while others (Holbrook et al., 2009) point out that the level of impaired vision is not related to overall level of physical activities, as was the case in this study. The degree of visual impairment (blindness or low vision) determines intensity of physical activities. However, the absence of statistically significant differences in the overall MET score among persons walking independently, and those who do not (which in our sample made up almost 25%) indicates that some other factors (not socio-demographic, or factors related to sight in general) which were not controlled in this study could have affected the obtained results.

All of the above raises the question of whether this manner of evaluating physical activities is suited to persons with visual impairment? Support for this type of evaluation can be found in the research of authors (Marmeleira et al., 2013) who studied the similarity of the data on physical activities of persons with visual impairment obtained through objective and subjective evaluations. It was determined that the time spent in moderate or intense physical activities (obtained on the IPAQ-S scale) did not match the data obtained through accelerometry. The authors believe that the shorter form of the IPAQ questionnaire is more useful for detecting persons with visual impairment who do not take part in the prescribed weekly amount of physical activities, than it is for classifying the levels and intensity of physical activities. This opinion is contrary to the conclusions reached by Sadowska & Krzepota (2015) who point out that the IPAQ (long form) is effective for monitoring physical activities of persons with visual impairment. Perhaps a solution to these kinds of dilemmas could be found in the fact that the IPAQ was designed for a general population, and so it is

possible that some concepts which are used in the questionnaire do not relate to people with limited practical experience, as is the case with persons with visual impairment (Hagstromer et al., 2008). Also, another explanation could be that, irrespective of the fact that children and the young with visual impairment are characterized by a low level of general physical fitness and an unhealthy body composition (Lieberman & McHugh, 2001; Grbović, Stojković, Dimoski, & Eminović, 2013), these features, if they persist, could result in excessive fatigue during exercises of moderate and low intensity in adulthood, which could lead to a non-objective self-evaluation.

Regarding the aforementioned, we consider the results of this study to be primarily influenced by the difficulties related to self-evaluation. That problem frequently occurs in all scientific disciplines, since self-evaluation can lead to the participants providing socially desirable responses (Marmeleira et al., 2013). Besides that, self-evaluation is far easier to perform when participating in a structured activity (such as a particular form of exercise or sport) than when participating in spontaneous activities (Hagstromer et al., 2008), as it was the case in this research (daily physical activities at work, transport, home or in leisure time). Another possibility could be that persons with visual impairment overestimate the difficulty of the activities they are taking part in and the time they spend doing them. The arguments in favor for such an attitude could be found in the fact that a similar situation regarding overestimation was also noted in the field of studying the self-concept of persons with visual impairment. The research of Stanimirov (2016) indicated that visually impaired persons have a statistically significant higher level of self-concept than sighted persons, which was contrary to expectations. The explanations for these results could be found in the studies carried out by Obiakor & Stile, (1990) who indicate that persons with visual impairment have a tendency of overrating their personal attributes. For example, Gal (2011) claims that persons with impairment analyze themselves and create an image of them in a specific manner. They are prone to rejecting negative features in order to develop and maintain a positive self-image. However, the instruments for self-evaluation certainly represent useful, effective and reliable research instruments. Even though this technique has inevitable advantages, the question is whether the self-evaluations provided by participants with visual impairment on this particular issue can be considered reliable. As far as the results are concerned, the dilemma remains: were the participants unable to properly evaluate their participation in physical activities or had they overrated them to a significant extent?

Conclusion

The results obtained using the long form of the IPAQ on a population of young adults with visual impairment must not be taken at face value. Future research should provide answers regarding the psychometric characteristics of this instrument when it is being used on a population of persons with various types of impairment. When it comes to persons with visual impairment, the recommendation is that the IPAQ should be combined with some of the objective or direct methods of evaluating physical activity. The following step should be an analysis of individual domains of the IPAQ questionnaire, and not just the overall MET score, in order to provide better insight into the structure of the physical activities of the visually impaired persons on a weekly basis.

Limitations of the study

Limitation of this study is the fact that the sample was selected and relatively small. Most studies focusing on persons with visual impairment, carried out not only in our country but also abroad, include relatively small samples. A larger sample would certainly have provided more credible data; however, motivating participants with visual impairment to participate in various studies represents a special problem, especially if limiting factors are set, as age was in this study.

In addition, the study included only persons who had computer and internet access, and who voluntarily agreed to participate. This leads us to the conclusion that participation in this study (again, generally viewed, and not only in this case), is provided by active adults with visual impairment, due to which obtained results cannot be generalized on the entire population, which is something that Haegele et al. (2017) agree with.

As another limitation we would like to point out that the data were collected by means of an online survey. In such a situation the interviewer could not respond to any possible dilemmas on the part of the participant, as is the case of an interview. On the other hand, an online survey as a means of evaluation enables the compilation of a larger sample of persons with visual impairment in a quick, economic and simple manner (Haegele et al., 2016).

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References:

- Barbosa Porcellis da Silva, R., Marques, A. C., & Reichert, F. F. (2018). Objectively measured physical activity in Brazilians with visual impairment: description and associated factors. *Disability and rehabilitation*, 40(18), 2131-2137. Doi: 10.1080/09638288.2017.1327984
- Bláha, L., Frömel, K., & Válková, H. (2013). Selected indicators of physical activities and inactivities of persons with visual impairments. *Tělesná Kultura*, 36(2), 21-45.
- Campbell, V., & Crews, J. (2001). Health conditions, activity limitations, and participation restrictions among older people with visual impairments. *Journal of Visual Impairment & Blindness*, 95(08), 453-467.
- Gal, A. S. (2011). Autostereotypes and heterostereotypes in sensory impaired students. Doctoral dissertation, Babes-Blayai University, Cluj-Napoca, Faculty of psychology and educational sciences, Department of special psychopedagogic. Retrieved July 14th 2016, from: http://doctorat.ubbcluj.ro/sustinerea_publica/rezumat/2011/psihologie/gal_amalia_sanda_en.pdf.
- Grbović, A., Stojković, I., Dimoski, S., & Eminović, F. (2013). Engagement in Physical activities and Physical fitness of Pupils with low vision, (pp.427-453). In A. Nedeljković (Eds.), *International Conference Proceedings, Effects of Physical Activity Application to Anthropological Status with Children, Youth and Adults*, Belgrade: University of Belgrade – Faculty of Sport and Physical Education. ISBN 978-86-80255-99-6
- Haegele, J. A., Hodge, S. R., & Kozub, F. M. (2017). Beliefs about physical activity and sedentary behaviors of adults with visual impairments. *Disability and health journal*, 10(4), 571-579. Doi: 10.1016/j.dhjo.2017.03.008
- Haegele, J. A., Zhu, X., Lee, J., & Lieberman, L. J. (2016). Physical activity for adults with visual impairments: impact of socio-demographic factors. *European Journal of Adapted Physical Activity*, 9(1).
- Hagströmer, M., Bergman, P., De Bourdeaudhuij, I., Ortega, F. B., Ruiz, J. R., Manios, Y., ... & Sjöström, M. (2008). Concurrent validity of a modified version of the International Physical Activity Questionnaire (IPAQ-A) in European adolescents: The HELENA Study. *International journal of obesity*, 32(S5), 42-48. Doi: 10.1038/ijo.2008.182
- Holbrook, E. A., Caputo, J. L., Perry, T. L., Fuller, D. K., & Morgan, D. W. (2009). Physical activity, body composition, and perceived quality of life of adults with visual impairments. *Journal of Visual Impairment & Blindness*, 103(1).
- Holbrook, E. A., Kang, M., & Morgan, D. W. (2013). Acquiring a stable estimate of physical activity in adults with visual impairment. *Adapted Physical Activity Quarterly*, 30(1), 59-69.
- Holbrook, E. A., Stevens, S. L., Kang, M., & Morgan, D. W. (2011). Validation of a talking pedometer for adults with visual impairment. *Medicine & Science in Sports & Exercise*, 43(6), 1094-1099. Doi: 10.1249/MSS.0b013e318205e2d6
- Hopkins, W. G., Gaeta, H., Thomas, A. C., & Hill, P. N. (1987). Physical fitness of blind and sighted children. *European journal of applied physiology and occupational physiology*, 56(1), 69-73.
- Houwen, S., Hartman, E., & Visscher, C. (2009). Physical activity and motor skills in children with and without visual impairments. *Medicine and science in sports and exercise*, 41(1), 103-109. Doi: 10.1249/MSS.0b013e318183389d
- International Physical Activity Questionnaire. (2005). *Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ)-Short and long forms*. Accessed on November 7th 2018, retrieved from: <https://sites.google.com/site/theipaq/scoring-protocol>
- Jaarsma, E. A., Dekker, R., Koopmans, S. A., Dijkstra, P. U., & Geertzen, J. H. (2014). Barriers to and facilitators of sports participation in people with visual impairments. *Adapted Physical Activity Quarterly*, 31(3), 240-264. Doi: 10.1123/2013-0119
- Kamelska, A. M., & Mazurek, K. (2015). The Assessment of the Quality of Life in Visually Impaired People with Different Level of Physical Activity. *Physical Culture and Sport. Studies and Research*, 67(1), 31-41. Doi: 10.1515/pcssr-2015-0001
- Kozub, F. M. (2006). Motivation and physical activity in adolescents with visual impairments. *RE: view*, 37(4), 149.

- Lee, P. H., Macfarlane, D. J., Lam, T. H., & Stewart, S. M. (2011). Validity of the International Physical Activity Questionnaire–Short Form (IPAQ-SF): A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, *8*, 115. Doi: 10.1186/1479-5868-8-115
- Lieberman, L., & McHugh, E. (2001). Health-related fitness of children who are visually impaired. *Journal of Visual Impairment & Blindness (JVIB)*, *95* (05).
- 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*(1), 40-53. Doi: 10.1123/apaq.17.1.40
- Majnemer, A., Shevell, M., Law, M., Birnbaum, R., Chilingaryan, G., Rosenbaum, P., Poulin, C. (2008). Participation and enjoyment of leisure activities in school-aged children with cerebral palsy. *Developmental Medicine & Child Neurology*, *50*, (10), 751–758. Doi: 10.1111/j.1469-8749.2008.03068.x
- Marmeira, J., Laranjo, L., Marques, O., & Batalha, N. (2013). Criterion-Related Validity of the Short Form of the International Physical Activity Questionnaire in Adults Who Are Blind. *Journal of Visual Impairment & Blindness*, *107*(5), 375-381. Doi: 10.1016/j.dhjo.2016.06.005
- Marmeira, J., Laranjo, L., Marques, O., & Pereira, C. (2014). Physical activity patterns in adults who are blind as assessed by accelerometry. *Adapted Physical Activity Quarterly*, *31*(3), 283-296. Doi: 10.1123/apaq.2013-0039
- Marston, J. R., & Golledge, R. G. (2003). The hidden demand for participation in activities and travel by persons who are visually impaired. *Journal of Visually Impairment & Blindness*. *97*(8), 475-488.
- Obiakor, F. E., & Stile, S. W. (1990). The self-concept of visually impaired and normally sighted middle school children. *The Journal of Psychology*, *124*(2), 199-206. Doi: 10.1080/00223980.1990.10543216
- Rae-Grant, N., Thomas, B. H., Offord, D. R., Boyle, M. H. (1989). Risk, protective factors, and prevalence of behavioral and emotional disorders in children and adolescent. *Journal of the American Academy of Child and Adolescent Psychiatry*, *28* (2), 262-268.
- Sadowska, D., & Krzepota, J. (2015). Assessment of Physical Activity of People with Visual Impairments and Individuals Who Are Sighted Using the International Physical Activity Questionnaire and Actigraph. *Journal of Visual Impairment & Blindness*, *109*(2), 119-129.
- Stanimirov, K. (2016). *Povezanost samopoimanja sa kvalitetom života i životnim navikama kod osoba sa oštećenjem vida*. Doktorska disertacija. Univerzitet u Beogradu – Fakultet za specijalnu edukaciju i rehabilitaciju. Beograd.
- Starkoff, B. E., Lenz, E. K., Lieberman, L., & Foley, J. (2016). Sedentary behavior in adults with visual impairments. *Disability and health journal*, *9*(4), 609-615. Doi: 10.1016/j.dhjo.2016.05.005
- Willis, J. R., Jefferys, J. L., Vitale, S., & Ramulu, P. Y. (2012). Visual impairment, uncorrected refractive error, and accelerometer-defined physical activity in the United States. *Archives of ophthalmology*, *130*(3), 329-335. Doi: 10.1001/archophthalmol.2011.1773
- Wrzesińska, M., Lipert, A., Urzędowicz, B., & Pawlicki, L. (2018). Self-reported physical activity using International Physical Activity Questionnaire in adolescents and young adults with visual impairment. *Disability and health journal*, *11*(1), 20-30. Doi: 10.1016/j.dhjo.2017.05.001

SAMOPROCENA NIVOVA I INTENZITETA FIZIČKIH AKTIVNOSTI OSOBA SA OŠTEĆENJEM VIDA DOBIJENA PRIMENOM MEĐUNARODNOG UPITNIKA O FIZIČKOJ AKTIVNOSTI

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Uvod

Fizička aktivnost predstavlja esencijalni deo zdravog načina života, a lična dobrobit se ogleda kroz mnoge domene fizičkog i psihičkog blagostanja. Međutim, osobe sa ometenošću nisu dovoljno fizički aktivne, najčešće ispoljavaju pasivne obrasce ponašanja, a slobodno vreme provode kod kuće (Majnemer et al., 2008). Ispitivanjem navika mladih sa ometenošću utvrđeno je da 30% njih upražnjava sedentaran stil života, a ovaj procenat se sa uzrastom povećava (Longmuir & Bar-Or, 1994, prema Longmuir & Bar-Or, 2000). To vodi riziku od socijalne izolacije, nižem nivou zadovoljstva kvalitetom života (Rae-Grant et al., 1989) i povećanom riziku za razvijanje zdravstvenih teškoća povezanih sa sedentarnim ponašanjem (kardiovaskularna oboljenja, hipertenzija, dijabetes melitus tip 2 i dr.) (Marmeleira, Laranjo, Marques, & Pereira, 2014). Osim što ugrožava zdravstveno stanje i psihičku dobrobit, nedovoljna fizička aktivnost ometa i ostvarivanje osnovnih životnih i radnih aktivnosti. Naime, briga o sebi, briga o kući i radno angažovanje u odrasloj dobi zahtevaju odgovarajuću mobilnost i fizičku spremnost. Ove dve komponente često predstavljaju značajan izazov za osobe sa oštećenjem vida.

Bez obzira na uzrast, osobe sa oštećenjem vida više su nego osobe sa drugim oblicima invaliditeta sklone sedentarnom stilu života (Longmuir & Bar-Or, 2000; Holbrook, Caputo, Perry, Fuller, & Morgan 2009; Starkoff, Lenz, Lieberman, & Foley, 2016; Haegele, Hodge, & Kozub, 2017). Razlog tome može biti to što ovaj tip oštećenja može ograničiti učestvovanje osoba u aktivnostima koje se odvijaju van kuće (Starkoff et al., 2016). Istraživački podaci govore da 67% slepih i slabovodih osoba izbegava izlaske iz kuće (Marston & Gollidge, 2003). Međutim, malo je empirijskih studija koje su proučavale način provođenja vremena osoba sa oštećenjem vida, naročito kada su u pitanju odrasle osobe. Starkoff i saradnici (Starkoff et al., 2016) su korišćenjem posebno dizajniranog instrumenta (PACE+SBQ) utvrdili da osobe sa oštećenjem vida mlađe od 40 godina, bez obzira na pol, u proseku 10h dnevno radnim danima i 8,5h dnevno vikendom upražnjavaju aktivnosti koje pripadaju sedentarnom stilu života (rad za kompjuterom; slušanje muzike; gledanje televizije; čitanje; telefoniranje; ručni rad i hobi, sviranje nekog instrumenta), za razliku osoba tipičnog razvoja koje aktivnosti ovakvog tipa upražnjavaju 7,7h dnevno. Uopšteno uzevši, empirijska istraživanja (Longmuir & Bar-Or, 2000; Houwen, Hartman, & Visscher, 2008; Starkoff et al., 2016) ističu da, ukoliko je oštećenje vida prisutno, možemo očekivati veću učestalost sedentarnih aktivnosti, bez obzira na uzrast ispitanika.

Osim što fizičke aktivnosti ređe upražnjavaju, osobe sa oštećenjem vida u proseku vrše fizičke aktivnosti umerenog do snažnog intenziteta 48% minuta dnevno kraće od osoba tipičnog razvoja (Willis, Jefferys, Vitale, & Ramulu, 2012). Pritom, samo 30% njih upražnjava ovakve aktivnosti najmanje 30 min. dnevno, što predstavlja nivo koji omogućava optimalno održanje zdravlja (Marmeleira et al., 2014). Nedovoljan nivo fizičkih aktivnosti može biti rezultat prekomerne zaštite porodice, manjeg stepena pokretljivosti, problema sa vidom ili neodgovarajućeg motoričkog razvoja u detinjstvu (Barbosa Porcellis da Silva, Marques, & Reichert, 2018). Bez obzira na uzrok, sedentarno ponašanje i nizak nivo fizičkih aktivnosti

rezultira povećanim rizikom od razvoja gojaznosti (Holbrook et al., 2009), udruženih smetnji, depresije i funkcionalnih ograničenja (Campbell & Crews, 2001).

Od faktora koji su u vezi s fizičkim aktivnostima, oštrina vida je najčešće proučavana. Studije ističu da je stepen vizuelne ometenosti povezan s nivoom i intenzitetom fizičkih aktivnosti, tako što niža oštrina vida vodi ređem upražnjavanju umerenih fizičkih aktivnosti (Holbrook et al., 2009) i dužem vremenu koje se provodi u sedentarnim aktivnostima, kada su u pitanju deca sa oštećenjem vida (Houwen et al., 2008).

Zbog snažne veze sa kvalitetom života, poslednjih godina raste interesovanje istraživača za proučavanje odlika fizičkih aktivnosti osoba sa oštećenjem vida (Houwen et al., 2009; Marmeleira, Laranjo, Marques, & Batalha, 2013; Sadowska & Krzepota, 2015) ili barijera koje ometaju upražnjavanje istih (Jaarsma, Dekker, Koopmans, Dijkstra, & Geertzen, 2014; Marmeleira et al., 2014; Haegele, Zhu, Lee, & Lieberman, 2016). Posebno interesovanje usmereno je ka proučavanju fizičkih aktivnosti koje osobe sa oštećenjem vida upražnjavaju u okviru uobičajenih, svakodnevnih aktivnosti na poslu, kod kuće i u slobodno vreme.

Metode ispitivanja fizičkih aktivnosti osoba sa oštećenjem vida

Za procenu nivoa fizičkih aktivnosti koriste se različite metode, uključujući objektivne mere (otkucaji srca, akcelerometrija i pedometrija), indirektno mere (kalorimetrija), direktne opservacije i subjektivne procene pomoću upitnika ili dnevnika fizičkih aktivnosti. Ipak, najčešće se za procenu fizičkih aktivnosti u okviru svakodnevnog života koriste upitnici jer njihova niska cena i jednostavnost primene daju mogućnost šire upotebe (Lee et al., 2011; Marmeleira et al., 2013).

Za ispitivanje fizičkih aktivnosti odraslih osoba sa oštećenjem vida u literaturi se navodi korišćenje akcelerometrije (Kozub, 2006; Marmeleira et al., 2013; Sadowska & Krzepota, 2015), pedometrije (Holbrook et al., 2009; Holbrook, Stevens, Kang, & Morgan, 2011; Holbrook, Kang, & Morgan, 2013) i različitih upitnika, među kojima se najčešće pominje Međunarodni upitnik za ispitivanje fizičkih aktivnosti – IPAQ, kratka forma (Marmeleira et al., 2013; Bláha, Frömel, & Válková, 2013) i dugačka forma (Sadowska & Krzepota, 2015; Wrzesińska, Lipert, Urzędowicz, & Pawlicki, 2018). Svetska zdravstvena organizacija preporučuje upotrebu ovog upitnika kada je u pitanju procena fizičkih aktivnosti u vezi sa zdravljem. Međutim, pregledom 23 empirijske studije utvrđeno je da su korelacije između fizičkih aktivnosti (ukupnog nedeljnog nivoa i intenziteta) merene IPAQ-om (kratkom formom) i objektivnim standardima pokazuju veliku varijabilnost (Lee, Macfarlane, Lam, & Stewart, 2011).

Kada su u pitanju osobe sa oštećenjem vida, autori ističu da se primenom IPAQ-a dobijaju precenjeni podaci u poređenju sa objektivnim merama (Marmeleira et al., 2013). Od šest studija koje su se bavile komparacijom nivoa fizičkih aktivnosti osoba sa oštećenjem vida dobijenih IPAQ-om i akcelerometrijom, njih pet (Lee et al., 2011) ističe da IPAQ znatno precenjuje nivo fizičkih aktivnosti (od 36 do 173%), dok je jedna studija (Ekelund et al., 2006 prema Lee et al., 2011) je utvrdila potcenjivanje, i to za 28%. S druge strane, akcelerometrija, iako objektivna metoda procene fizičkih aktivnosti, nije pogodna za korišćenje tokom aktivnosti u vodi i možda ne daje precizne informacije u vezi sa intenzitetom aktivnosti kao što su nošenje teških tereta, hodanje uz stepenice, vožnje sobnog bicikla ili vežbe sa opterećenjem (Hagstromer et al., 2008).

U radu je prikazan deo šireg istraživanja koje je imalo za cilj proveravanje veze fizičkih aktivnosti mlađih odraslih osoba sa oštećenjem vida i faktora koji ih određuju. Cilj ovog rada je određivanje nivoa i intenziteta fizičkih aktivnosti koje osobe sa oštećenjem vida izvode u okviru svakodnevnih aktivnosti, uključujući posao, prevoz, kuću i slobodno vreme.

Uzorak

Ispitanici su bili osobe sa oštećenjem vida (N=45), uzrasta 18 do 39 godina (AS=28), oba pola. Gornja granica od 40 godina je postavljena kako bi se ispitali samo mlađi odrasli i da bi se umanjio uticaj faktora koji mogu biti povezani sa starenjem, odnosno pojavom hroničnih bolesti koje dodatno ugrožavaju fizičke aktivnosti. Većina ispitanika (88,9%) pored problema sa vidom nema drugih problema koji bi negativno uticali na kretanje. Međutim, 11% ispitanika smatra da prisustvo različitih oboljenja i stanja (neurološke i srčane smetnje, češća hospitalizacija ili kontraindikacije za zamaranje većeg intenziteta) može ograničavati njihovu sposobnost kretanja.

Uzorak je bio relativno ujednačen prema polu (53% žena i 47% muškaraca) i stepenu oštećenja vida (53% slepih ispitanika i 47% slabovidih). Ispitivanjem stepena samostalnosti u kretanju samoprocenom ispitanika dobijeno je da skoro 40% njih efikasno koristi beli štap (slepi ispitanici). Isti procenat smatra da njihovo oštećenje vida ne predstavlja prepreku za kretanje (slabovidi ispitanici). Međutim, četvrtina (24,44%) ispitanika navodi da njihovo kretanje zavisi od pomoći drugih, odnosno retko izlaze jer nemaju adekvatnu pomoć u kretanju. U daljoj analizi su ispitanici kategorisani u dve grupe: osobe koje su samostalne u kretanju (N=34, 75,6%) i osobe koje nisu samostalne u kretanju (N=11, 24,4%).

Metod

Ispitanici su direktno kontaktirani preko Saveza slepih Srbije i pozivani su da učestvuju u istraživanju. Upitnici su adaptirani za internet anketiranje preko „Google forms“ platforme. Prikupljanje podataka je realizovano tokom aprila i maja 2018. godine.

Instrument

Opštim upitnikom konstruisanim za potrebe ovog istraživanja prikupljeni su sledeći podaci: uzrast, pol, stepen oštećenja vida, samostalnost u kretanju, radni status, obrazovni nivo.

U istraživanju je korišćena duga forma Međunarodnog upitnika o fizičkoj aktivnosti (*International Physical Activity Questionnaire – IPAQ-LF*), namenjena osobama starim od 15 do 69 godina. Ovaj upitnik se sastoji od 27 pitanja otvorenog tipa za samoprocenu intenziteta i trajanja fizičkih aktivnosti koje se realizuju na nedeljnom nivou u okviru četiri domena uključujući radno mesto, prevoz, poslove u kući i oko kuće i u toku slobodnog vremena. Procena fizičkog angažovanja na nedeljnom nivou izražava se u MET jedinicama (metabolički ekvivalent energetske potrošnje), što predstavlja odnos između energije potrebne za realizovanje aktivnosti i energije koje telo utroši tokom odmora. Nedeljni nivo (MET-minuti) se dobija bilo kojom kombinacijom aktivnosti koje rezultiraju povećanom razmenom materija u organizmu (što se ogleda kao ubrzano disanje i puls i sl.), ukoliko traju duže od 10 minuta dnevno, dok se aktivnost kraća od 10 minuta ne računa. Dobijeni rezultati se prikazuju u tri kategorije: visok, umeren i nizak nivo fizičke aktivnosti.

Nivo fizičke aktivnosti se vodi kao visok ukoliko osoba najmanje sat vremena dnevno upražnjava fizičke aktivnosti, ili ukoliko ispunjava bilo koji od sledećih kriterijuma:

- ostvaruje tri ili više dana energičnih aktivnosti, sa ukupno minimalno 1500 MET minuta,
- ostvaruje minimalno 3000 MET minuta nedeljno, bilo kojom kombinacijom fizičkih aktivnosti različitog intenziteta ili šetnje.

O umerenom nivou fizičkih aktivnosti se radi ukoliko osoba većinu dana u nedelji vrši fizičke aktivnosti u trajanju od pola sata ili ukoliko ispunjava bilo koji od sledeća tri kriterijuma:

- tri ili više dana nedeljno realizuje energične aktivnosti i/ili šetnja, u trajanju od minimalno 20 minuta dnevno,
- pet ili više dana u nedelji realizuje aktivnosti umerenog intenziteta i/ili šetnja u trajanju od najmanje 30 minuta dnevno,

- pet ili više dana u nedelji u kojima se ostvaruje bilo koja kombinacija gore pomenutih aktivnosti koja u ukupnom skoruu daje minimalno 600 MET minuta

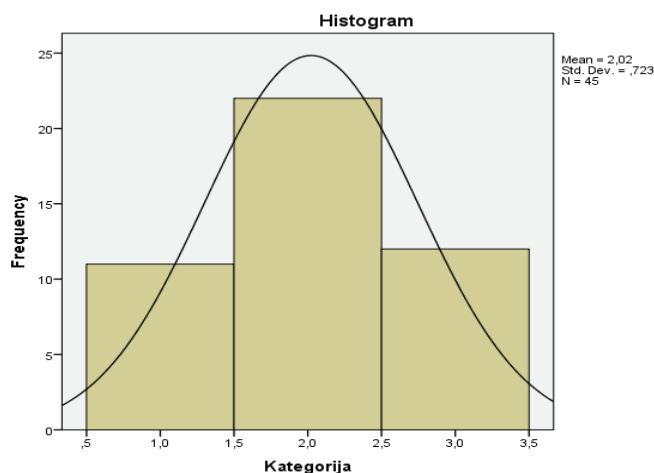
Ukoliko osoba ne ispunjava nijedan od pomenutih kriterijuma, može se svrstati u kategoriju osoba sa niskim nivoom fizičkih aktivnosti.

Rezultati

Rezultati pokazuju da je ukupan nedeljni nivo fizičkih aktivnosti mlađih odraslih osoba sa oštećenjem vida izražen preko MET skora veoma visok (AS=3808,10; SD=4095,04). Maksimalna vrednost iznosi čak 18534 MET min/nedeljno, što je skoro pet puta veće od prosečne vrednosti.

Interesovalo nas je postoje li statistički značajne razlike u nivou fizičkih aktivnosti na nedeljnom nivou u odnosu na neke opšte karakteristike ispitanika (stepen oštećenja vida, pol, radni status, samostalnost u kretanju). Analize su pokazale da slabovidni imaju više ukupne skorove od slepih, muškarci od žena, zaposleni od nezaposlenih i osobe koje su samostalne u kretanju u odnosu na ispitanike koji se ne kreću samostalno. Međutim, detektovane razlike nisu bile statistički značajne (stepen oštećenja vida: $\chi^2=0,690$, $df=1$, $p=0,406$; pol: $\chi^2=0,047$, $df=1$, $p=0,829$; radni status: $\chi^2=0,419$, $df=1$, $p=0,518$; samostalnost u kretanju: $\chi^2=1,476$, $df=1$, $p=0,224$).

Usledilo je kategorisanje ispitanika prema intenzitetu realizovanih fizičkih aktivnosti na nedeljnom nivou, što je prikazano u Grafikonu 1.



Grafikon 1. Intenzitet fizičkih aktivnosti osoba sa oštećenjem vida

Distribucija ispitanika u odnosu na nivo fizičkih aktivnosti (praćenih preko ukupnog MET skora) je ravnomerna i slična normalnoj. Najveći broj ispitanika (njih skoro 50%) ispoljava umeren nivo fizičkih aktivnosti (MET>600), dok su ispitanici čiji je nivo fizičkih aktivnosti nizak ili visok ravnomerno raspoređeni (24,44%; 26,68%). Generalno posmatrano, osobe sa oštećenjem vida imaju zadovoljavajući nivo fizičkih aktivnosti, pri čemu kod jedne četvrtine ima prostora za unapređenje.

Tabela 1. Postignuća i razlike između grupa ispitanika u odnosu na ispoljeni intenzitet fizičkih aktivnosti

			Kategorija			UKUPNO	χ^2	df	p
			Niska FA	Umerena FA	Visoka FA				
Stepen oštećenja vida	Slep	N	9	8	7	24	6,252	2	0,042*
		%	20,0%	17,8%	15,6%	53,3%			
	Slabovid	N	2	14	5	21			
		%	4,4%	31,1%	11,1%	46,7%			
Pol	Muški	N	4	11	6	21	0,621	2	0,796
		%	8,9%	24,4%	13,3%	46,7%			
	Ženski	N	7	11	6	24			
		%	15,6%	24,4%	13,3%	53,3%			
Radni status	Zaposleni	N	1	7	3	11	2,054	2	0,398
		%	2,2%	15,6%	6,7%	24,4%			
	Nezaposleni	N	10	15	9	34			
		%	22,2%	33,3%	20,0%	75,6%			
Samostalno kretanje	Samostalno	N	6	17	11	34	4,351	2	0,115
		%	13,3%	37,8%	24,4%	75,6%			
	Nesamostalno	N	5	5	1	11			
		%	11,1%	11,1%	2,2%	24,4%			

Legenda: *p<0,05

Iako nije utvrđeno prisustvo statistički značajnih razlika u ukupnom nivou fizičkih aktivnosti ispitanika, iz Tabele 1 se vidi da razlike u pogledu intenziteta fizičkih aktivnosti postoje u odnosu na stepen oštećenja vida ($\chi^2=6,252$, $df=1$, $p=0,042$). Najveći broj slabovidnih ispitanika ima umeren nivo fizičkih aktivnosti, dok najveći broj slepih realizuje fizičke aktivnosti niskog nivoa. U odnosu na preostale tri posmatrane varijable (pol, radni status, sposobnost samostalnog kretanja) detektovane razlike u odnosu na intenzitet fizičkih aktivnosti nisu se pokazale statistički značajnim.

Diskusija

Ovim istraživanjem utvrđeno je da je fizička aktivnost osoba sa oštećenjem vida uzrasta 18 do 39 godina doba na visokom nivou. Skoro polovina ispitanika (48,88%) je umereno fizički aktivna, visok nivo fizičkih aktivnosti je utvrđen kod 26,68% ispitanika, dok četvrtina (24,44%) upražnjava sedentaran stil života. Prosečna vrednost MET skora celog uzorka iznosio je 3808,10 (SD 4095,04). Sadowska i Krzepota (Sadowska & Krzepota, 2013) su istim instrumentom, ali kratkom formom dobile jednake rezultate. One navode da 52% osoba sa oštećenjem vida ima umeren nivo fizičkih aktivnosti.

Ovako visok skor za populaciju osoba sa oštećenjem vida nije bio očekivan, ali je u skladu sa rezultatima koje su dobili Kamelska i Mazurek (Kamelska & Mazurek, 2015). U njihovom istraživanju osobe sa oštećenjem vida imale su 3930, a sportisti (tandem biciklisti) 3835 MET minuta nedeljno. Wrzesińska i saradnici u svom istraživanju (Wrzesińska et al., 2018) navode visok nivo fizičkih aktivnosti ispitanika, pri čemu mlađi odrasli sa oštećenjem vida imaju viši nivo pomenutih aktivnosti u odnosu na adolescente.

Zapravo, rezultati našeg istraživanja, kao i nekih istraživanja realizovanih u inostranstvu (Kamelska & Mazurek, 2015; Wrzesińska et al., 2018) se moraju uzeti sa rezervom jer nisu u skladu studijama (Bláha et al., 2013; Haegele et al., 2016; Starkoff et al., 2016) koje govore o pasivnom provođenju slobodnog vremena osoba sa oštećenjem vida i upražnjavaju sedentarnog stila života. Osobe sa oštećenjem vida srednjih godina najviše vremena, skoro deset sati dnevno, provode u sedentarnim aktivnostima (Starkoff et al., 2016), a slobodno vreme najradije provode u čitanju ili druženju, ili uz televizor, odnosno kompjuter (Haegele et al., 2017). Imajući to u vidu, potrebno je zapitati se da li možda postoje određene teškoće u vezi sa ovakvim načinom ispitivanja fizičkih aktivnosti osoba sa oštećenjem vida. Prilog sumnji u verodostojnost dobijenih podataka može biti i to što su, za razliku od naše i prethodno realizovanih studija, primenom istog

instrumenta različiti autori utvrdili znatno niži nivo fizičkih aktivnosti osoba sa oštećenjem vida: od 2967 METmin./ned. (Bláha et al., 2013), preko 2845 METmin./ned. (Haegele et al., 2016) i 2278 METmin./ned. (Marmeleira et al., 2013), sve do 1221 MET min./nedeljno (Sadowska & Krzepota, 2015). S obzirom na to da Svetska zdravstvena organizacija odraslim osobama preporučuje minimum 600 MET minuta fizičkih aktivnosti na nedeljnom nivou, proizilazi da je nivo fizičkih aktivnosti osoba sa oštećenjem vida, čak i sa ovim rezultatima, više nego zadovoljavajući. Međutim, posmatranjem strukture nedeljnog MET skora, Hegele i saradnici (Haegele et al., 2016) su utvrdili da odrasle osobe sa oštećenjem vida u proseku upražnjavaju samo 413,79 MET minuta umerenih i energičnih fizičkih aktivnosti i 2058 minuta sedentarnih aktivnosti nedeljno. Ukoliko upražnjavaju fizičke aktivnosti, osobe sa oštećenjem vida najčešće šetaju (2222 MET-min/nedeljno), što spada u fizičke aktivnosti niskog intenziteta, dok intenzivne i umerene fizičke aktivnosti retko upražnjavaju (Bláha et al., 2013). Iako dosta vremena hodaju, nivo fizičkih aktivnosti odraslih osoba sa oštećenjem vida ostvaren na ovaj način je značajno niži u poređenju sa osobama tipičnog razvoja (Holbrook et al., 2009).

Proverom povezanosti definisanih varijabli i fizičkih aktivnosti nisu utvrđene statistički značajne razlike, što se slaže sa nalazima sličnih studija. Hegele i saradnici (Haegele et al., 2016) su, od praćenih socio-demografskih varijabli (uzrast, pol, etnička pripadnost, nivo obrazovanja, nivo oštećenja vida, upotreba pomagala za kretanje, vreme nastanka oštećenja vida), utvrdili da samo pol predstavlja značajan prediktor fizičke aktivnosti kod odraslih osoba sa oštećenjem vida. Kada je u pitanju povezanost stepena oštećenja vida i fizičke aktivnosti, rezultati istraživanja su protivrečni. Neki radovi navode da je oštećenje vida višeg nivoa povezano sa umanjenom fizičkom aktivnošću (Hopkins et al., 1987; Barbosa Porcellis da Silva et al., 2018), dok drugi (Holbrook et al., 2009) ističu da stepen oštećenja vida nije povezan sa sveukupnim nivoom fizičkih aktivnosti, kao što je utvrđeno i u ovom istraživanju. Međutim, stepen vizuelne ometenosti (slepoća ili slabovidost) u vezi je sa intenzitetom fizičkih aktivnosti. Odsustvo statistički značajnih razlika u ukupnom MET skorom između osoba koje su samostalne i onih koje nisu samostalne u kretanju (kojih je u našem uzorku bilo skoro 25%) navodi na pretpostavku da su možda neki drugi faktori (a ne sociodemografski, niti faktori u vezi sa stanjem vida) koji nisu bili kontrolisani u ovom istraživanju mogli uticati na dobijene rezultate.

Nakon svega, postavlja se pitanje koliko je ovakav način procene fizičkih aktivnosti pogodan za osobe sa oštećenjem vida. Tome u prilog govori i istraživanje inostranih autora (Marmeleira et al., 2013) kojim je proučavana podudarnost podataka o fizičkim aktivnostima osoba sa oštećenjem vida dobijenim objektivnim i subjektivnim procenama. Utvrđeno je da se vreme provedeno u umerenim ili intenzivnim fizičkim aktivnostima (dobijeno IPAQ-S skalom) nije podudaralo s podacima dobijenim akcelerometrijom. Autori smatraju da je upitnik IPAQ (kratka verzija) korisniji za otkrivanje osoba sa oštećenjem vida koje ne upražnjavaju preporučenu nedeljnu količinu fizičkih aktivnosti, nego za klasifikaciju nivoa i intenziteta fizičkih aktivnosti. Ovakvo mišljenje je u suprotnosti sa navodima Sadowske i Krzepote (Sadowska & Krzepota, 2015) koje ističu da je IPAQ (duga verzija) efikasan za praćenje fizičkih aktivnosti osoba sa oštećenjem vida. Možda se odgovor na ovakve dileme može naći u tome što je IPAQ razvijen za opštu populaciju, pa je moguće da neki pojmovi kojima se operiše u upitniku nisu razumljivi ljudima sa ograničenim praktičnim iskustvom, kao što je to slučaj sa osobama sa oštećenjem vida (Hagstromer et al., 2008). Takođe, objašnjenje može biti i to što, s obzirom na to da decu i mlade sa oštećenjem vida karakteriše nizak nivo opšte fizičke spremnosti i nezdrava telesna kompozicija (Lieberman & McHugh, 2001; Grbović, Stojković, Dimoski, & Eminović, 2013), ovakve odlike, ukoliko perzistiraju, u odrasloj dobi mogu rezultirati prekomernim umaranjem pri fizičkim aktivnostima umerenog i nižeg intenziteta, što može voditi neobjektivnoj samoproceni.

U vezi sa gore navednim, smatramo da su na rezultate ovog istraživanja najpre uticale teškoće u vezi sa samoprocenom. Problem samoprocene se konstantno javlja u svim naučnim disciplinama, jer ovakav vid ispitivanja može dovesti do toga da ispitanici daju društveno poželjne odgovore (Marmeleira et al., 2013).

Osim toga, samoprocenu je daleko lakše izvršiti kada je u pitanju učešće u nekoj strukuiranoj aktivnosti (kao što je to neki oblik vežbanja ili sporta) nego kada je u pitanju angažovanje u spontanim aktivnostima (Hagstromer et al., 2008), kao što je to slučaj u ovom istraživanju (svakodnevne fizičke aktivnosti u okviru posla, prevoza, kuće i slobodnog vremena. Takođe, postoji i mogućnost da osobe sa oštećenjem vida precenjuju težinu aktivnosti koje upražnjavaju i vreme koje provode u tome. Argumentacija za ovakav stav može biti u tome što je slična situacija sa precenjivanjem detektovana i u oblasti ispitivanja samopoimanja osoba sa oštećenjem vida. Istraživanje Stanimirov (2016) je pokazalo da odrasle slabovide osobe imaju statistički značajno viši stepen samopoimanja od osoba tipičnog razvoja, što je bilo suprotno od očekivanog. Objašnjenje za ovakve rezultate može se naći u studijama inostranih autora (Obiakor & Stile, 1990) koji kažu da osobe sa oštećenjem vida imaju tendenciju da precenjuju lične atribute. U vezi s tim, Gal (Gal, 2011) tvrdi da osobe sa invaliditetom sebe analiziraju, vide se i kreiraju sliku o sebi na specifičan način. One su sklone tome da odbacuju negativne karakteristike kako bi kreirale, razvile i održale pozitivnu sliku o sebi. Instrumenti za samoprocenu svakako predstavljaju korisne, efikasne i pouzdane instrumente istraživanja. Iako ova tehnika ima nesumnjive prednosti, pitanje je da li se samoprocena ispitanika sa oštećenjem vida po ovom pitanju može smatrati pouzdanom. Što se tiče rezultata, ostaje dilema: da li ispitanici nisu umeli na pravi način da procene svoje učešće u fizičkim aktivnostima ili su to u znatnoj meri precenjivali?

Zaključak

Rezultati dobijeni samoprocenom (primena IPAQ-a) u populaciji mlađih odraslih osoba sa oštećenjem vida moraju se uzeti s rezervom. Naredna istraživanja treba da daju odgovore o psihometrijskim karakteristikama ovog instrumenta kada se koristi u populaciji osoba sa različitim vrstama invaliditeta. Kada su u pitanju osobe sa oštećenjem vida, preporuka je da se IPAQ kombinuje sa nekom od objektivnih ili direktnih metoda procene fizičkih aktivnosti. Naredni korak biće analiza pojedinačnih domena IPAQ upitnika, a ne samo ukupnog MET skora, kako bi se stekao bolji uvid u strukturu ostvarenih fizičkih aktivnosti slepih i slabovidih osoba na nedeljnom nivou.

Ograničenja studije

Kao ograničenje studije može se smatrati to što je uzorak selekcioniran i relativno mali. Najveći broj istraživanja koja se bave osobama sa oštećenjem vida, ne samo kod nas već i u drugim zemljama, obuhvata relativno male uzorke. Svakako bi veći uzorak obezbedio verodostojnije podatke, međutim, motivisanje ispitanika sa oštećenjem vida na učestvovanje u raznovrsnim studijama predstavlja poseban problem, naročito ukoliko se postavljaju faktori kao što je to u ovoj studiji bio uzrast.

Osim toga, istraživanjem su obuhvaćeni samo pojedinci koji su imali pristup računaru i internet konekciju i dobrovoljno su pristali da učestvuju u istraživanju. To navodi na pomisao da učešće u istraživanju (opet, generalno gledano, ne samo u ovom slučaju) uzimaju aktivne odrasle osobe sa oštećenjem vida, zbog čega se dobijeni rezultati ne mogu generalizovati na celu populaciju, sa čim se slažu i Hegel i saradnici (Haegle et al., 2017).

Kao dodatno ograničenje treba istaći prikupljanje podataka putem online ankete. U takvoj situaciji ispitivač nije u mogućnosti da odgovori na eventualne nedoumice ispitanika, kao što bi to bio slučaj prilikom korišćenja intervjua. S druge strane, online anketa kao način ispitivanja omogućava prikupljanje većeg uzorka osoba sa oštećenjem vida na brz, ekonomičan i jednostavan način (Haegle et al., 2016).

Napomena: Rad je proistekao iz projekata „Efekti primenjene fizičke aktivnosti na lokomotorni, metabolički, psiho-socijalni i vaspitni status populacije R. Srbije“ ev. br. III 47015, a kao deo podprojekta „Efekti primenjene fizičke aktivnosti na lokomotorni, metabolički, psiho-socijalni i vaspitni status populacije osoba sa posebnim potrebama R. Srbije“ i „Socijalna participacija osoba sa intelektualnom ometenošću“ ev. br. 179017 (2011-2018), čiju realizaciju finansira Ministarstvo prosvete, nauke i tehnološkog razvoja Republike Srbije.

Literatura:

- Barbosa Porcellis da Silva, R., Marques, A. C., & Reichert, F. F. (2018). Objectively measured physical activity in Brazilians with visual impairment: description and associated factors. *Disability and rehabilitation*, 40(18), 2131-2137. Doi: 10.1080/09638288.2017.1327984
- Bláha, L., Frömel, K., & Válková, H. (2013). Selected indicators of physical activities and inactivities of persons with visual impairments. *Tělesná Kultura*, 36(2), 21-45.
- Campbell, V., & Crews, J. (2001). Health conditions, activity limitations, and participation restrictions among older people with visual impairments. *Journal of Visual Impairment & Blindness*, 95(08), 453-467.
- Gal, A. S. (2011). Autostereotypes and heterostereotypes in sensory impaired students. Doctoral dissertation, Babes-Blayai University, Cluj-Napoca, Faculty of psychology and educational sciences, Department of special psychopedagogic. Retrieved July 14th 2016, from: http://doctorat.ubbcluj.ro/sustinerea_publica/rezumate/2011/psihologie/gal_amalia_sanda_en.pdf.
- Grbović, A., Stojković, I., Dimoski, S., & Eminović, F. (2013). Engagement in Physical activities and Physical fitness of Pupils with low vision, (pp.427-453). In A. Nedeljković (Eds.), *International Conference Proceedings, Effects of Physical Activity Application to Anthropological Status with Children, Youth and Adults*, Belgrade: University of Belgrade – Faculty of Sport and Physical Education. ISBN 978-86-80255-99-6
- Haegele, J. A., Hodge, S. R., & Kozub, F. M. (2017). Beliefs about physical activity and sedentary behaviors of adults with visual impairments. *Disability and health journal*, 10(4), 571-579. Doi: 10.1016/j.dhjo.2017.03.008
- Haegele, J. A., Zhu, X., Lee, J., & Lieberman, L. J. (2016). Physical activity for adults with visual impairments: impact of socio-demographic factors. *European Journal of Adapted Physical Activity*, 9(1).
- Hagströmer, M., Bergman, P., De Bourdeaudhuij, I., Ortega, F. B., Ruiz, J. R., Manios, Y., ... & Sjöström, M. (2008). Concurrent validity of a modified version of the International Physical Activity Questionnaire (IPAQ-A) in European adolescents: The HELENA Study. *International journal of obesity*, 32(S5), 42-48. Doi: 10.1038/ijo.2008.182
- Holbrook, E. A., Caputo, J. L., Perry, T. L., Fuller, D. K., & Morgan, D. W. (2009). Physical activity, body composition, and perceived quality of life of adults with visual impairments. *Journal of Visual Impairment & Blindness*, 103(1).
- Holbrook, E. A., Kang, M., & Morgan, D. W. (2013). Acquiring a stable estimate of physical activity in adults with visual impairment. *Adapted Physical Activity Quarterly*, 30(1), 59-69.
- Holbrook, E. A., Stevens, S. L., Kang, M., & Morgan, D. W. (2011). Validation of a talking pedometer for adults with visual impairment. *Medicine & Science in Sports & Exercise*, 43(6), 1094-1099. Doi: 10.1249/MSS.0b013e318205e2d6
- Hopkins, W. G., Gaeta, H., Thomas, A. C., & Hill, P. N. (1987). Physical fitness of blind and sighted children. *European journal of applied physiology and occupational physiology*, 56(1), 69-73.
- Houwen, S., Hartman, E., & Visscher, C. (2009). Physical activity and motor skills in children with and without visual impairments. *Medicine and science in sports and exercise*, 41(1), 103-109. Doi: 10.1249/MSS.0b013e318183389d
- International Physical Activity Questionnaire. (2005). *Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ)-Short and long forms*. Accessed on November 7th 2018, retrieved from: <https://sites.google.com/site/theipaq/scoring-protocol>
- Jaarsma, E. A., Dekker, R., Koopmans, S. A., Dijkstra, P. U., & Geertzen, J. H. (2014). Barriers to and facilitators of sports participation in people with visual impairments. *Adapted Physical Activity Quarterly*, 31(3), 240-264. Doi: 10.1123/2013-0119
- Kamelska, A. M., & Mazurek, K. (2015). The Assessment of the Quality of Life in Visually Impaired People with Different Level of Physical Activity. *Physical Culture and Sport. Studies and Research*, 67(1), 31-41. Doi: 10.1515/pccsr-2015-0001
- Kozub, F. M. (2006). Motivation and physical activity in adolescents with visual impairments. *RE: view*, 37(4), 149.
- Lee, P. H., Macfarlane, D. J., Lam, T. H., & Stewart, S. M. (2011). Validity of the International Physical Activity Questionnaire-Short Form (IPAQ-SF): A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 8, 115. Doi: 10.1186/1479-5868-8-115
- Lieberman, L., & McHugh, E. (2001). Health-related fitness of children who are visually impaired. *Journal of Visual Impairment & Blindness (JVIB)*, 95 (05).
- 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(1), 40-53. Doi: 10.1123/apaq.17.1.40
- Majnemer, A., Shevell, M., Law, M., Birnbaum, R., Chilingaryan, G., Rosenbaum, P., Poulin, C. (2008). Participation and enjoyment of leisure activities in school-aged children with cerebral palsy. *Developmental Medicine & Child Neurology*, 50, (10), 751-758. Doi: 10.1111/j.1469-8749.2008.03068.x
- Marmeleira, J., Laranjo, L., Marques, O., & Batalha, N. (2013). Criterion-Related Validity of the Short Form of the International Physical Activity Questionnaire in Adults Who Are Blind. *Journal of Visual Impairment & Blindness*, 107(5), 375-381. Doi: 10.1016/j.dhjo.2016.06.005
- Marmeleira, J., Laranjo, L., Marques, O., & Pereira, C. (2014). Physical activity patterns in adults who are blind as assessed by accelerometry. *Adapted Physical Activity Quarterly*, 31(3), 283-296. Doi: 10.1123/apaq.2013-0039
- Marston, J. R., & Golledge, R. G. (2003). The hidden demand for participation in activities and travel by persons who are visually impaired. *Journal of Visually Impairment & Blindness*. 97(8), 475-488.
- Obiakor, F. E., & Stile, S. W. (1990). The self-concept of visually impaired and normally sighted middle school children. *The Journal of Psychology*, 124(2), 199-206. Doi: 10.1080/00223980.1990.10543216
- Rae-Grant, N., Thomas, B. H., Offord, D. R., Boyle, M. H. (1989). Risk, protective factors, and prevalence of behavioral and emotional disorders in children and adolescent. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28 (2), 262-268.
- Sadowska, D., & Krzepota, J. (2015). Assessment of Physical Activity of People with Visual Impairments and Individuals Who Are Sighted Using the International Physical Activity Questionnaire and Actigraph. *Journal of Visual Impairment & Blindness*, 109(2), 119-129.

- Stanimirov, K. (2016). *Povezanost samopoimanja sa kvalitetom života i životnim navikama kod osoba sa oštećenjem vida*. Doktorska disertacija. Univerzitet u Beogradu – Fakultet za specijalnu edukaciju i rehabilitaciju. Beograd.
- Starkoff, B. E., Lenz, E. K., Lieberman, L., & Foley, J. (2016). Sedentary behavior in adults with visual impairments. *Disability and health journal*, 9(4), 609-615. Doi: 10.1016/j.dhjo.2016.05.005
- Willis, J. R., Jefferys, J. L., Vitale, S., & Ramulu, P. Y. (2012). Visual impairment, uncorrected refractive error, and accelerometer-defined physical activity in the United States. *Archives of ophthalmology*, 130(3), 329-335. Doi: 10.1001/archophthalmol.2011.1773
- Wrzesińska, M., Lipert, A., Urzędowicz, B., & Pawlicki, L. (2018). Self-reported physical activity using International Physical Activity Questionnaire in adolescents and young adults with visual impairment. *Disability and health journal*, 11(1), 20-30. Doi: 10.1016/j.dhjo.2017.05.001

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