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**MOVEMENT ACTIVITIES AND QUALITY OF LIFE OF**  
**VISUALLY IMPAIRED STUDENTS**

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***Abstract***

The quality of life is a far-reaching concept influenced in a complex way not only for physical health, but also for the psychic state, the level of independence, social relations and environmental factors. The World Health Organization (WHO) has defined the quality of life as the individual perception of their position in life in the context of the culture and system of values in which they live, as well as in terms of objectives, expectations, standards and perceptions. The purpose of this study was to evaluate the quality of life of visually impaired people. We also wanted to look at how the movement activities influence the health related quality of life for people with visual impairment. The KINDL<sup>R</sup> instrument for assessing Health-Related Quality of Life in children and adolescents aged 3 years and older was applied to 100 visually impaired children aged between 8-16. 30 children for 12 weeks attended swimming twice a week (each session lasted 60 minutes), 15 children practiced bouldering twice a week for 12 weeks (each session lasted 60 minutes) and 15 children jumped the trampoline for 12 weeks three times a week for 30 minutes a session. 50 children did not practice any kind of sport. Blind children who are practicing sport had higher scores for the KINDL<sup>R</sup> questionnaire. The emotional well-being, self-esteem and friends dimensions of the questionnaire showed the highest scores.

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**Keywords:** Visually impaired, quality of life, movement activities.



## 1. Introduction

37 million of people are affected by blindness and 124 million by visual impairment worldwide, declared the World Health Organization (2006). Severity of visual impairment was associated with low health related quality of life compared with population with normal vision (Park et al., 2015).

Over the last decade, health and eye care assessments have increasingly focused on quality of life related health (QOL) as a treatment criterion (Kuyk et al., 2008).

We can define quality of life as a multidimensional model with includes factors as health, physical functioning, life satisfaction, sense of happiness and social wellbeing (Kamelska & Mazurek, 2015).

Visual disability affects quality of life by limiting social interactions and independence (Klein, Klein, Lee, & Cruickshanks, 1998). Visually impaired persons report lower health related quality of life than peers without visual impairment (Justin, Haegele, & Zhu, 2019).

The study of quality of life of disabled persons has become increasingly prioritized. Research about the quality of life of the blind and partially sighted is insufficient and limited to clinical results (Vuletić, Šarlija, & Benjak, 2016).

Assessing the influence of visual impairment on daily activities, social participation and emotional state is very valuable. It is important to consider the impact of non-clinic factors as school support, relations with the family and friends. These may play an important role in the level of quality of life for visually impaired children (Chadha & Subramanian, 2011).

Practicing regular exercise is a beneficial behaviour in maintaining adequate mental and physical health (Barbosa, Andrade, Pelegrini, & Felden, 2019). Persons with disability generally presents lower level of physical activity compared with population without disabilities (Rimmer & Marques, 2012; Engel-Yeger & Hamed-Daher, 2013; Starkoff, Lenz, Lieberman, Foley, & Too, 2017).

Regular practice of physical activity is beneficial to maintain good physical and mental health (Sallis et al., 2015) Sufficient level of physical activity is associated with higher quality of life (Haegele, Famelia, & Lee 2016), greater satisfaction of life (Łabudzki & Tasiemski, 2013; Haegele et al., 2016) and prevention of diseases (Mazzocchi & Trail, 2011; Benjamin et al., 2017).

Physical training is an effective method to increase the quality of life, to all the parameters pursued: pain, physical function, daily activities, mobility, activities during free and social activities, the appreciation of the state of health in ensemble, mental function (Irsay et al., 2011).

## 2. Problem Statement

Blindness or visual impairment has lifelong implication for the child and the family. It affects the child's development, education and the care given by the professionals but also the family. It also shapes the adult the child will become, affecting employment and social prospects (Rahj & Cable, 2003).

Quality of life and visual disturbances are two concepts that can be connected on a large scale, as evidenced when, in a more critical view, thought is extended to all perspectives that give the individual a good quality of life in the face of their difficulties (Rebouças, Araújo, Fernanda, Taveira, & Cavalcante 2016).

Participation in regular physical activities has positive effects on in achieving psychophysical health with an overall improvement of quality of life (Miles, 2007).

Regular physical activities are important to prevent diseases and to maintain health in both people with and without disabilities (Kim & Park 2018).

### **3. Research Questions**

The question of these research is: does physical activity influence the health related quality of life of visually impaired students?

How does practicing physical activity influence the level of health related quality of life?

### **4. Purpose of the Study**

The purpose of the study is to follow aspects of health related quality of life influenced by practicing physical activities.

We assessed the influence of practicing movement activities in the following domains on the quality of life: physical well-being, emotional well-being, self-esteem, family, social relations (friends) and school.

We also followed if it is a difference in the level of the quality of life between visually impaired students who practice physical activities or not.

### **5. Research Methods**

The research theme was studied in the context of an analytical, interventional, prospective study by defining a study sample according to the cohort model.

#### **5.1. Subjects**

The study participants were recruited from the pupils of the Special School for Visually Impaired, Cluj - Napoca

We selected 100 visually impaired or blind students. 50 students practiced movement activities (20 children for 12 weeks attended swimming twice a week, each session lasted 60 minutes, 15 children practiced bouldering twice a week for 12 weeks, each session lasted 60 minutes and 15 children jumped the trampoline for 12 weeks three times a week for 30 minutes a session. 50 students did not practiced any physical activity during the study.

The age of participants in the study is between 8 and 16 years.

The inclusion criteria in the program were: diagnosis, ability to follow simple verbal instructions. No child was under medical treatment during the study. All study participants belong to the Caucasian breed. Parents of the subjects enrolled in the study signed a pre-entry information form before entering the study.

## 5.2. Methods

To evaluate the level of health related quality of life we used the KINDL R questionnaire.

The KINDL<sup>R</sup> is a generic instrument for assessing Health-Related Quality of Life in children and adolescents aged 3 years and older.

The KINDL<sup>R</sup> provides 24 items and thus is a short, methodologically suitable, psychometrically sound and flexible measure of Health-Related Quality of Life in children and adolescents.

The statistical analysis was performed with the MedCalc Statistical Software version 19.0.3 (MedCalc Software bvba, Ostend, Belgium, <https://www.medcalc.org>). Continuous variables were expressed by mean and standard deviation. Comparisons between measurements were performed with the two-way ANOVA test for repeated measurements. A  $p < 0.05$  value was considered statistically significant.

## 6. Findings

100 visually impaired and blind students participated in our study. 50 students practiced movement activities twice a week 50 students did not practiced any kind of physical activities or any kind of leisure activities.

Out of the students who practiced sport during the study according to the classification of the International Blind Sports Federation (IBSA), B1 (blind) level was the most common type of reported visual disability (26 students), followed by B2 (severely sight-impaired) (14 students) and B3 (mildly sight-impaired) (10 students) levels.

Out of the students who did not practiced any kind of physical activities during the study according to the classification of the International Blind Sports Federation (IBSA), B1 (blind) level was the most common type of reported visual disability (26 students), followed by B2 (severely sight-impaired) (14 students) and B3 (mildly sight-impaired) (10 students) levels.

After 12 weeks of intervention the sport practicing group presented higher levels of quality of live.

**Table 01.** Comparison between the group practicing movement activities (MA) and the group not practicing for the total scores of KINDL<sup>R</sup>

Total KINDL score		N	Mean	Standard deviation
Total initial score	Yes MA	50	51,16	0,7113
	No MA	50	51,13	0,7141
Total final score	Yes MA	50	80,03	1,3768
	No MA	50	52,27	1,0981

Table 01 displace the comparison of total KINDL<sup>R</sup> scores between the practicing and not practicing groups.

The total scores for the KINDL<sup>R</sup> showed statistically significant improvement for the practicing group  $p \leq 0.000$ , while for the not practicing group we did not observed significant differences.

We observed significantly higher final scores for the practicing group 80,03 than the not practicing group 52,27 for the total final score,  $p \leq 0.000$

**Table 02.** Comparison between the group practicing movement activities (MA) and the group not practicing for the domains scores of KINDL<sup>R</sup>

Domains score		N	Mean	Standard deviation
<b>Physical well-being</b> Initial score	Yes MA	50	56,37	2,09
	No MA	50	56,40	2,09
<b>Physical well-being</b> Final score	Yes MA	50	76,04	1,03
	No MA	50	57,02	2,42
<b>Emotional well-being</b> Initial score	Yes MA	50	54,57	1,36
	No MA	50	54,71	1,50
<b>Emotional well-being</b> Final score	Yes MA	50	85,11	2,22
	No MA	50	55,25	1,46
<b>Self-esteem</b> Initial score	Yes MA	50	54,16	1,41
	No MA	50	54,15	1,34
<b>Self-esteem</b> Final score	Yes MA	50	84,53	2,43
	No MA	50	55,18	1,13
<b>Family</b> Initial score	Yes MA	50	46,16	1,23
	No MA	50	46,30	1,07
<b>Family</b> Final score	Yes MA	50	76,92	1,33
	No MA	50	46,74	1,26
<b>Social relations (friends)</b> Initial score	Yes MA	50	44,89	1,82
	No MA	50	44,44	1,64
<b>Social relations (friends)</b> Final score	Yes MA	50	85,51	1,06
	No MA	50	46,26	3,39
<b>School</b> Initial score	Yes MA	50	51,46	1,45
	No MA	50	51,57	1,30
<b>School</b> Final score	Yes MA	50	74,12	1,22
	No MA	50	53,11	1,51

Table 02 displace the comparison of the KINDL<sup>R</sup> domains scores between the practicing and not practicing groups.

For the “**physical wellbeing**” domain we observed statistically significant higher final scores for the practicing group  $p \leq 0.000$ . The scores of the practicing group were 76, 04, while the scores for the not practicing group were 57, 02.

For the “**emotional well-being**” domain we observed statistically significant higher final scores for the practicing group  $p \leq 0.000$ . The scores of the practicing group were 85, 11, while the scores for the not practicing group were 55, 25.

For the “**self-esteem**” domain we observed statistically significant higher final scores for the practicing group  $p \leq 0.000$ . The scores of the practicing group were 84, 53, while the scores for the not practicing group were 55, 18.

For the “**family**” domain we observed statistically significant higher final scores for the practicing group  $p \leq 0.000$ . The scores of the practicing group were 76, 92, while the scores for the not practicing group were 46, 74.

For the “**social relations (friends)**” domain we observed statistically significant higher final scores for the practicing group  $p \leq .000$ . The scores of the practicing group were 85, 51, while the scores for the not practicing group were 46, 26.

For the “**school**” domain we observed statistically significant higher final scores for the practicing group  $p \leq .000$ . The scores of the practicing group were 74, 12, while the scores for the not practicing group were 53, 11.

The scores for all the KINDL<sup>R</sup> domains showed statistically significant improvement for the practicing group  $p \leq .000$ , while for the not practicing group we did not observed significant differences.

The emotional well-being, self-esteem and friends dimensions of the questionnaire showed the highest scores.

## 7. Conclusion

Regular practicing of movement activities such as swimming, climbing and trampoline jumping improve level of health related quality of life for blind or visually impaired students.

Practicing sport is a good solution to improve social life for visually impaired and blind students.

Movement activities can improve emotional well-being and can raise self-esteem for visually impaired or blind students.

### 7.1. Discussion

Disabled persons could reach a personal development and improve their self-esteem and social skills through practice different sports or physical activities with consequent improvement of the health related quality of life (Mirandola et al., 2019; Maniu, Maniu, & Benga, 2013).

In a study a group of blind people participating in torball activities has been shown to display higher levels of socialization and better psychological well-being than non-players (Di Cagno et al., 2013).

Visually impaired student athletes playing goalball shows higher socialization levels than visually impaired non-athletes (Movahedi, Mojtahedi, & Farazyani, 2011).

In our study students attended 12 weeks one of the following activities twice a week: swimming, climbing and trampoline jumping and showed great improvement for all domains of the KINDL<sup>R</sup>. The social relations (friends) domain showed the highest scores for the final evaluation.

It is acknowledged that the benefits of participation in physical activity are not limited to physical well-being but also includes mental health. In fact, physical activity clearly contributes to physical well-being enhancing mood and relieving stress, as well as improving self-confidence and self-acceptance (Di Cagno et al., 2013; Fiorilli et al., 2013; Movahedi, Mojtahedi, & Farazyani, 2011).

After attending swimming, climbing and trampoline jumping our participants improved self-esteem and emotional well-being considerably.

Movement activities and sports are viable strategies for improving the quality of life defined as a personal sense of physical and mental health, social functioning and emotional well-being (Di Cagno et al., 2013; Fiorilli et al., 2013; Movahedi et al., 2011).

Physical activity in free time and participation in sports can help to overcome disability-related psychological fears, leading to better self-esteem, self-confidence and self-competence that are essential to increase social skills (Fiorilli et al., 2013).

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