

THE EFFECTIVENESS OF ACTIVE REHABILITATION CAMP ON WHEELCHAIR USERS' SELF-ESTEEM

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A – study design, **B** – data collection, **C** – statistical analysis, **D** – interpretation of data, **E** – manuscript preparation, **F** – literature review, **G** – sourcing of funding

ABSTRACT

Background: Active Rehabilitation Camps (ARC) provide access to comprehensive rehabilitation. The main goal is to assist wheelchair users in achieving the maximum possible independence in performing activities of daily living, help them accept a new lifestyle, and provide comprehensive rehabilitation in the social and vocational fields. Higher self-esteem in wheelchair users may lead to overcoming barriers in everyday living, increasing initiative, and improving mental health and well-being.

Aims of the study: The aim of the study was to evaluate the impact of Active Rehabilitation Camps on self-esteem of wheelchair users.

Material and methods: Ninety-five adult wheelchair users aged 18 to 75 took part in the study. A total of 92 participants were included in the analysis (31 women and 61 men). The research tool was a questionnaire including first part with personal data and a second part – an international and validated questionnaire the Rosenberg Self-Esteem Scale (RSES). All participants filled out the questionnaire at the beginning of the ARC and after completing a two-week camp.

Results: Participants showed improvement in self-esteem after camps. Total self-esteem, according to RSES, increased from 28.32±4.99 before a camp, to 30.8±4.85 after a camp ($p < 0.0001$). More specifically, in such domains as “on the whole, I am satisfied with myself”, “I am able to do things as well as most other people,” or “I take a positive attitude towards myself” increased after the ARC ($p < 0.001$).

Conclusions: The activities of the Active Rehabilitation Camp, including access to physical activity, health-promoting education, experience exchange and integration of wheelchair users, increase the level of self-esteem of Active Rehabilitation Camp participants. Systematic physical activities, social and emotional support, as well as appropriate education should be provided in everyday rehabilitation among wheelchair users to improve their self-esteem and everyday life functioning.

KEYWORDS: physical activity, active rehabilitation camps, self-esteem, wheelchair users

BACKGROUND

The Active Rehabilitation System was created in Poland in 1988, in accordance with the Swedish concept from 1970s [1]. The Active Rehabilitation Camps (ARC) provide access to comprehensive rehabilitation, and its activities contribute to increas-

ing the independence of wheelchair users. The main goal is to assist wheelchair users in achieving the maximum possible independence in performing activities of daily living, help them accept a new lifestyle, and provide comprehensive rehabilitation in the social and vocational fields [2]. The ARC provides both group and one-to-one sessions, goal-oriented

training, and peer-support opportunities in a community environment [3]. Such trainings influence on increased level of independence, self-care, physical performance, and social/vocational activation of wheelchair users [1-5].

Wheelchairs users are shown to have reduced opportunities for participation in community and social activities, while such participation and higher physical activity are strongly associated with their health, quality of life, and self-esteem (SE), [6-8]. It is reported that wheelchair users have lower self-esteem than healthy people [9]. Self-esteem is an important factor and essential element of well-being, defined as an individual's belief that he or she is a valuable person [10, 11]. Individuals with higher self-esteem believe more strongly in achieving success, compared to those with low self-esteem [12].

Higher self-esteem in wheelchair users help them overcome barriers in everyday living, increase initiative, improve their mental health and well-being. In addition, it indicates positive evaluation of one's own actions and acceptance [13-15]. There are few studies providing information about self-esteem among wheelchair users and different factors influencing SE, including social relationship, physical activity level, economic status, support from friends and family, time of disability, and many others [16,17].

Active Rehabilitation Camps provide a program that allows participants to improve their skills in physical and social field. To the best of our knowledge, there is one study that provides information about ARC and the impact on physical performance among participants [1, 3]. However, there is a paucity of literature regarding self-esteem among wheelchair users participating in ARC.

AIM OF THE STUDY

Therefore, the purpose of the research was to evaluate the impact of Active Rehabilitation Camps on self-esteem of wheelchair users.

MATERIAL AND METHODS

Design and procedures

The research was conducted during the Active Rehabilitation Camps, organized by the Active Rehabilitation Foundation, from 2020 to 2022 in Poland. The study was conducted at the beginning and end of the Active Rehabilitation Camp. All participants were examined by the same person. The study protocol was reviewed and approved by the Bio-ethical Committee of the Medical University of Silesia in Katowice (PCN/022/KB1/147/I/19/20).

Participants

A total of 95 adult wheelchair users aged 18 to 75 took part in the study. The inclusion criteria for the study were age over 18 and daily mobility with the help of a wheelchair, a medical certification with no contraindications to participate in the ARC, active participation in trainings during ARC. The exclusion criteria were age under 18 and lack of consent to participate in the study. 3 incorrectly completed the questionnaire. Hence, 92 participants were included in the analysis (31 women and 61 men). Written informed consent was obtained from the participants, who were also informed about the purpose of the study.

Measures

All participants filled the questionnaire at the beginning of the ARC and after two-week camp. The research tool was a questionnaire that included first part with personal data and a second part - an international and validated questionnaire the Rosenberg Self-Esteem Scale (RSES). The questionnaire consisted of 16 questions. The initial questions focused on demographics and social issues. Additionally, the respondent answered questions related to the type of dysfunction, how long he or she had been in a wheelchair, and information about past participation in an ARC. RSES in the Polish adaptation by I. Dzwonkowska, K. Lachowicz-Tabaczek and M. Łaguna [18] consists of 10 statements that play a diagnostic role. The range of points that can be obtained by completing the questionnaire is from 10 to 40 on a 4-point Likert scale ranging from "strongly agree" to "strongly disagree" [18, 19]. Questions numbered 1,2,4,6, and 7 are reversed statements, so they are scored in such a way that a higher point value is given to the answer, expressing a higher degree of self-assessment. The total score obtained is an indicator of self-esteem.

Statistical analysis

Quantitative data were presented as mean, standard deviation, and percentages. Statistical analysis was performed using Statistica 13.3. The Wilcoxon test was used to assess differences between groups. A p-value of <0.05 was considered the level of significance.

RESULTS

A total of 92 people (31 women and 61 men) between the ages of 18 and 75 participated in the study. The average age was 35.5 years (SD=15.4). Most re-

spondents had a secondary school education (3.43%) and were city residents (57.61%). Marital status was described by 56.52% of respondents as single, and 29.35% as married. Approximately 52% of respondents were spinal cord injury survivors (34.78% para-

plegics, 17.39% tetraplegics). 39.13% of respondents have used a wheelchair for more than 10 years. Most people attended the Active Rehabilitation Camp for the first time – 55.43%. 64.13% of respondents declared being physically active (Table 1).

Table 1. Characteristic of respondents, n=92

Variable		n	%
Sex	women	31	33.70
	men	61	66.30
Place of living	Village	39	42.39
	City up to 100 thousand residents	22	23.91
	City with more than 100 thousand inhabitants	31	33.70
Education	Primary	22	23.91
	Secondary	28	30.43
	Vocational	20	21.74
	Technical	14	15.22
	Higher	8	8.70
Marital status	Single	52	56.52
	Married	27	29.35
	In an informal relationship	3	3.26
	Widowed	5	5.43
	Divorced	5	5.43
Type of disability	Paraplegia	32	34.78
	Tetraplegia	16	17.39
	Myelomeningocele	2	2.17
	Cerebral palsy	26	28.26
	Cranio-cerebral injury	3	3.26
	Hemiplegia	3	3.26
	other	10	10.87
Years in a wheelchair	<1	10	10.87
	1-2 years	25	27.17
	3-6 years	14	15.22
	7-10 years	7	7.61
	>10 years	36	39.13
Number of Active Rehabilitation Camps	1	51	55.43
	2	16	17.39
	3	10	10.87
	>3	15	16.30
Are you physically active?	yes	59	64.13
	no	33	35.87

The results of our own study showed that self-assessment on all questions except “I wish I could have more respect for myself” significantly increased after the end of the Active Rehabilitation Camp among camp participants. The highest score was obtained in the question, “At time, I think I am no good at all,”

respondents disagreed with this sentence (3.14 before a camp, 3.41 after, $p=0.001$). The lowest score was obtained in a question, “I am able to do things as well as most other people” (2.65 before a camp), and the score was significantly higher after a camp (2.97, $p<0.001$) (Table 2).

Table 2. Self-esteem of the respondents according to RSES before and after the Active Rehabilitation Camp (the Wilcoxon test)

RSES		M	SD	Me	Quartiles		95%CI		p
					Q ₁	Q ₃	lower limit	upper limit	
On the whole, I am satisfied with myself	Before ARC	3.08	0.80	3.00	3.00	4.00	-0.40	-0.14	<0.001
	After ARC	3.35	0.65	3.00	3.00	4.00			
At time I think I am no good at all	Before ARC	3.14	0.70	3.00	3.00	4.00	-0.41	-0.14	0.001
	After ARC	3.41	0.60	3.00	3.00	4.00			
I feel that I have a number of good qualities	Before ARC	2.87	0.65	3.00	2.00	3.00	-0.36	-0.08	0.007
	After ARC	3.09	0.66	3.00	3.00	4.00			
I am able to do things as well as most other people	Before ARC	2.65	0.78	3.00	2.00	3.00	-0.47	-0.17	<0.001
	After ARC	2.97	0.80	3.00	2.00	4.00			
I feel I do not have much to be proud of	Before ARC	2.80	0.82	3.00	2.00	3.00	-0.38	-0.05	0.020
	After ARC	3.02	0.73	3.00	2.50	4.00			
I certainly feel useless at time	Before ARC	3.09	0.75	3.00	3.00	4.00	-0.36	-0.10	0.001
	After ARC	3.32	0.71	3.00	3.00	4.00			
I feel that I am a person of worth	Before ARC	2.89	0.75	3.00	2.00	3.00	-0.47	-0.18	<0.001
	After ARC	3.22	0.69	3.00	3.00	4.00			
I wish I could have more respect for myself	Before ARC	2.41	0.79	2.00	2.00	3.00	-0.25	0.03	0.165
	After ARC	2.52	0.79	2.00	2.00	3.00			
I am inclined to feel that I am a failure	Before ARC	2.66	0.87	3.00	2.00	3.00	-0.40	-0.14	0.001
	After ARC	2.93	0.89	3.00	2.00	4.00			
I take a positive attitude towards myself	Before ARC	2.72	0.93	3.00	2.00	3.50	-0.39	-0.13	0.001
	After ARC	2.98	0.84	3.00	2.00	4.00			

M – mean; SD – standard deviation; Me –median; Q₁, Q₃ – first and third quartiles; 95%CI – confidence interval; p – level of significance.

Results showed a significant improvement in self-esteem among the respondents after the Active Rehabilitation Camp. The total sum of RSES before a camp was 28.32 ± 4.99 , while after a camp total sum was 30.8 ± 4.85 ($p < 0.0001$), (Figure 1).

DISCUSSION

Self-esteem is lower in people with disabilities [9]. The aim of our study was to evaluate the impact of Active Rehabilitation Camps on the self-esteem of wheelchair users. The results showed a significant improvement in self-esteem among participants after camps, total self-esteem, according to RSES, increased from 28.32 ± 4.99 before a camp, to 30.8 ± 4.85 after a camp ($p < 0.0001$). Similar results were reported by Król, showing that the Active Rehabilitation Camps improved the level of independence and self-esteem among wheelchair users - camps' participants. Authors emphasized that the ARC activities not only influence the increase of independence in functioning, but also play an important role on the path to self-acceptance of disability [5].

According to the World Health Organization, adults with disability should achieve 150-300 minutes per week [20]. During the Active Rehabilitation

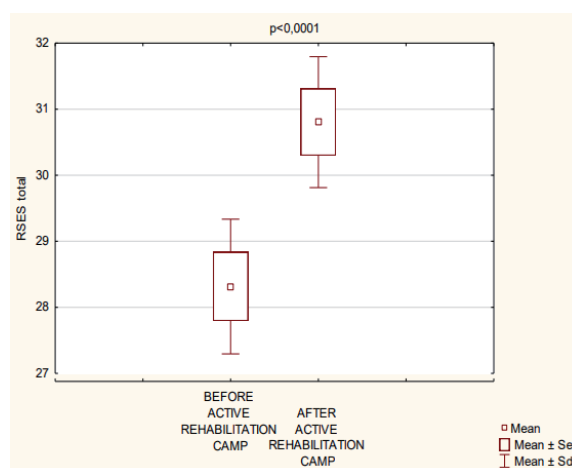


Figure 1. Self-esteem of the respondents according to total sum RSES before and after the Active Rehabilitation Camp

Camps participants have a lot of sports activities for two weeks. Studies comparing self-esteem to PA level among wheelchair users have been conducted, and those findings largely support our results, showing a positive influence of physical activity on self-esteem and self-acceptance among wheelchair users. Wheelchair users with low PA level had the lowest levels of overall self-esteem and negative feelings [21-23].

Ahn et al. also showed that participation of wheelchair user in sports activities increases their self-esteem and helps them accept their disability [24]. In our study, wheelchair users participated in sport activities for 2 weeks, and self-esteem increased. Alhumaid M.M. et al. showed that people moving on wheelchairs physically active for even 40 minutes per week reported higher self-esteem and more positive feelings [13]. Previous findings show that a physically active lifestyle in wheelchair users is probably even more important for mental and physical health and well-being than for general population [25].

Our results showed that apart from general self-esteem, SE in such domains as “on the whole, I am satisfied with myself”, “I am able to do things as well as most other people,” or “I take a positive attitude towards myself,” increased significantly after the ARC. During the Camp, participants can benefit from sports trainings, healthy lifestyles, sexuality of people with disabilities, and social classes. During this time, they can exchange experiences, learn about their abilities, and gain new knowledge. In social skills classes, participants learn about interpersonal communication and the importance of non-verbal communication. Another topic covered in these classes is the part about self-acceptance, finding our strengths and what we like about ourselves or what bothers us. Such activities allow people to see their good side and accept the situations. A detailed schedule of ARC was reported by Furmaniuk K. et

al. [4]. Similarly, Król K. indicates that such form of rehabilitation is a beneficial support for physically disabled people [5].

Increased self-esteem can be influenced by being around people with similar dysfunctions. Meeting new people, conversations and integration influence the realization of one’s own abilities. Exchanging experiences with other wheelchair users, makes it possible to learn new solutions, influences self-acceptance and gives a sense of understanding. Such findings were also reported by Niedbalski [26].

To the best of our knowledge, no other study evaluated SE after the Active Rehabilitations Camp. Our results showed that rehabilitation process from ARC should be continued and all new skills developed in the future. However, our results should be interpreted with some limitations.

CONCLUSIONS

The activities of the Active Rehabilitation Camp, including access to physical activity, health-promoting education, experience exchange and integration of wheelchair users, increase the level of self-esteem of ARC participants. Systematic physical activities, social and emotional support, as well as appropriate education should be provided in everyday rehabilitation among wheelchair users to improve their self-esteem and everyday life functioning.

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