

# Assessment of the impact of the educational program carried out on the change of health behavior related to physical activity in people over 65 with diagnosed ischemic heart disease

## Analiza wpływu przeprowadzonego programu edukacyjnego na zmianę zachowań zdrowotnych dotyczących aktywności fizycznej u osób po 65. roku życia z rozpoznaną chorobą niedokrwienną serca

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### Abstract

**Introduction.** Cardiovascular diseases, including ischemic heart disease, are still the most common cause of death in Poland, especially in the elderly population. Systematic physical activity has a beneficial effect on the circulatory system, prevents disability and it facilitates successful aging. **Aim.** The aim of the study was to assess the impact of the conducted educational program on changing physical activity of older people with diagnosed ischemic heart disease. **Material and methods.** The study included 200 patients treated in a specialist cardiology clinic, divided into two groups (educated group A – 100 people and the uneducated group B – 100 people). Among the participants group A, an educational program was implemented. After six months, the result of the training program was audited and detailed group A1 – 93 persons (educated after 6 months) and B1 – 97 people (uneducated after 6 months). The research tool was the author's questionnaire and exercise test. **Results.** After completing the educational program in the educated group (A1), the frequency and length of physical exercise increased, 3 times a week and above the active ones increased from 32% to 57%. There was an increase in interest in both slow and fast walks (from 73% to 91.4%, from 16% to 31.2%) and greater interest in other forms of physical activity. **Conclusions.** In the conducted study, after the implementation of the training program, an improvement in physical activity was observed. The subjects require further systematic education regarding physical activity in order to improve health. (Gerontol Pol 2018; 26; 251-257)

**Key words:** physical activity, education, the elderly, ischemic heart disease

### Streszczenie

**Wstęp.** Choroby układu krążenia, w tym choroba niedokrwienna serca są nadal najczęstszą przyczyną zgonów w Polsce, szczególnie w grupie osób starszych. Systematyczna aktywność fizyczna wpływa korzystnie na układ krążenia, zapobiega niepełnosprawności oraz sprzyja pomyślnemu starzeniu. **Cel.** Celem badania była ocena wpływu przeprowadzonego programu edukacyjnego na zmianę aktywności fizycznej osób starszych z rozpoznaną chorobą niedokrwienną serca. **Materiał i metody.** Badaniem objęto 200 pacjentów leczonych w specjalistycznej poradni kardiologicznej, których podzielono na dwie grupy (grupa edukowana A - 100 osób oraz grupa nieedukowana B – 100 osób). Wśród uczestników grupy A zrealizowano program edukacyjny. Po upływie sześciu miesięcy przeprowadzono kontrolę wyniku przeprowadzonego programu szkoleniowego i wyszczególniono grupę A1 – 93 osoby (edukowana po 6 miesiącach) oraz B1- 97 osób (nieedukowana po 6 miesiącach). Narzędziem badawczym był autorski kwestionariusz ankiety oraz test wysiłkowy. **Wyniki.** Po zrealizowaniu programu edukacyjnego w grupie edukowanej (A1) zwiększyła się częstość i długość stosowania ćwiczeń fizycznych, 3 razy w tygodniu i powyżej odsetek aktywnych zwiększył się z 32% do 57%. Nastąpił wzrost zainteresowania odbywaniem zarówno wolnych jak i szybkich spacerów odpowiednio (z 73% do 91,4%; z 16% do 31,2%) oraz zwiększone zaintereso-

wanie innymi formami aktywności ruchowej. **Wnioski.** W przeprowadzonym badaniu po zrealizowaniu programu szkoleniowego zaobserwowano poprawę aktywności fizycznej. Badani wymagają dalszej systematycznej edukacji dotyczącej aktywności fizycznej w celu poprawy zdrowia. (*Gerontol Pol* 2018; 26; 251-257)

**Słowa kluczowe:** aktywność fizyczna, edukacja, osoby starsze, choroba niedokrwienna serca

## Admission

Cardiovascular diseases in Poland are the most common cause of illness, hospitalization, deaths and disability. Educational activities an important factor preventing the progression of the disease [1], which should provide knowledge on the elimination of the risk factors. The results of effective education are comparable to pharmacological and surgical treatment [2]. Elderly people fearing that physical activity may be bound with an increased risk of injuries often seek to reduce the level of physical activity. However, maintaining regular physical activity in this age group is conducive to the successful aging, protects against disability, reduces dependence on the environment, delays the aging process [3]. The number of people hospitalized in older age is lower among those who lead an active lifestyle [4,5]. Meanwhile, elderly people usually reduce physical activity to perform everyday home activities [6]. For people with cardiology conditions, it is recommended to use physical exercise 3-5 times a week, lasting at least 30 minutes. Depending on the clinical condition and physical performance, an individual exercise program can be established [7].

## Objective of the work

The aim of the study was to impact assessment of the conducted educational program on the change of health behaviors associated with the use of physical activity in the group of elderly people treated for ischemic heart disease.

## Material and methods

The study was conducted among 200 patients treated at the Specialist Cardiology Clinic in Warsaw. Patients were familiarized with the study design and offered to participate in a series of training meetings in the field of healthy lifestyle. Some participants expressed their willingness to participate in the training program, the remaining patients were the control group. Then the subjects were divided into two groups, the educated (study group A) and uneducated group (control group B). Each group initially consisted of 100 patients. However, eventually, 93 patients participated in the educational program

(7 people resigned from the project). After the training program, the group was marked as group A1. While, 97 patients remained in the control group (3 patients did not report for the remainder of the study), which were then designated as group B1. Physical activity was assessed on the basis of a self-prepared questionnaire and performed stress test. Exercise test was performed on a treadmill according to the Bruca protocol expressed in MET (metabolic units), in which during five stages a load of up to 15 MET can be achieved (1 MET - oxygen-free resting unit, which is approximately 3.5 ml O<sub>2</sub> / kg body weight) / min). The value of the result depends on the physical condition, current diseases, age and gender [8]. Exercise below 5 MET was considered a low physical capacity. The approval of the Bioethics Committee at the Institute of Cardiology in Warsaw, number IK-NP.-0021-34/1433/14, was obtained for the tests. The calculations were performed in IBM SPSS 23.0. The  $p < 0.05$  was accepted as the borderline significance level.

## Results

In the first stage of the study, an initial assessment of the use of physical activity was made and it was shown that the respondents most often used the form of physical activity which were free walks, in which 73% of people in group A and 76% of people in group B participated. As one of the most common reasons for the lack of physical activity, a knowledge deficit about exercise safety was mentioned as one of the most common reasons for the lack of physical activity (group A - 32.4%, group B - 29%). Analyzing physical activity again after completing the training program, changes in the selection of preferred types of physical activity were observed. In group A1 compared to group A, there was an increase in the interest in walking alike slow and fast respectively (from 73% to 91.4%, from 16% to 31.2%). Also marches with sticks, gymnastics, cycling for physical activity were included by the majority of respondents. The frequency and length of using exercise, 3 times a week and above the active ones increased from 32% to 57%. Similar differences were found between A1 and B1 groups. There were no changes in groups B and B1.

Comparing A1 to A, groups after completing the educational program, it was observed that the majority of

people in the A1 group changed their lifestyle from sitting to active (from 32% to 58.1%). With the increase in the percentage of people leading an active lifestyle, the frequency and duration of exercise increased. The statistically significant differences were found in the evaluated parameters. However, in the control group, the majority of respondents still had a passive lifestyle. Detailed data is presented in tables I-V.

**Table I. Types of physical activity in groups A, A1, B, B1**

Type of activity n		Tested A		Tested A1		Tested B		Tested B1	
		%	n	%	n	%	n	%	n
Free walk	Not	27	27.0	8	8.6	24	24.0	20	20.6
	Yes	73	73.0	85	91.4	76	76.0	77	79.4
Fast walk over 30 minutes	Not	84	84.0	64	68.8	84	84.0	79	81.4
	Yes	16	16.0	29	31.2	16	16.0	18	18.6
Running	Not	96	96.0	88	94.6	97	97.0	94	96.9
	Yes	4	4.0	5	5.4	3	3.0	3	3.1
March with sticks	Not	88	88.0	65	69.9	90	90.0	85	87.6
	Yes	12	12.0	28	30.1	10	10.0	12	12.4
Gymnastics	Not	74	74.0	55	59.1	71	71.0	66	68.0
	Yes	26	26.0	38	40.9	29	29.0	31	32.0
Swimming	Not	95	95.0	88	94.6	92	92.0	89	91.8
	Yes	5	5.0	5	5.4	8	8.0	8	8.2
Cycling	Not	60	60.0	41	44.1	61	61.0	59	60.8
	Yes	40	40.0	52	55.9	39	39.0	38	39.2
Dance	Not	98	98.0	91	97.8	99	99.0	96	99.0
	Yes	2	2.0	2	2.2	1	1.0	1	1.0

**Table II. Which leads a lifestyle A, A1, B, B1**

Watch leads a lifestyle	Tested A		Tested A1		Tested B		Tested B1	
	n	%	n	%	n	%	n	%
Sitting	68	68.0	39	41.9	70	70.0	68	56.3
Active	32	32.0	54	58.1	30	30.0	29	43.7
Altogether	100	100.0	93	100.0	100	100.0	97	100.0

**Table III. The frequency of physical activity in groups A, A1, B and B1**

Frequency of physical activity	Tested A		Tested A1		Tested B		Tested B1	
	n	%	n	%	n	%	n	%
I do not do it at all	21	21.0	12	12.9	23	23.0	22	22.6
3 x a week and above	32	32.0	53	57.0	30	30.0	30	31.0
Less than 3 x per week	47	47.0	28	30.1	47	47.0	45	46.4
Altogether	100	100.0	93	100.0	100	100.0	97	100.0

**Table IV. The length of physical activity in groups A, A1, B and B1**

The length of physical activity	Tested A		Tested A1		Tested B		Tested B1	
	n	%	n	%	n	%	n	%
I do not do it at all	21	21.0	12	12.9	23	23.0	22	22.7
30 minutes and above	33	33.0	54	58.1	32	32.0	35	36.1
Less than 30 minutes	46	46.0	27	29.0	45	45.0	40	41.2
Altogether	100	100.0	93	100.0	100	100.0	97	100.0

Table V. Comparative characteristics of physical activity parameters in groups A, A1, B, B1

Parameter	Group	Ch <sup>2</sup>	p
Free walk	<b>A Vs A1</b>	<b>10.99</b>	<b>0.001</b>
	<b>A1 Vs B1</b>	<b>5.46</b>	<b>0.019</b>
	B Vs B1	0.32	0.569
Fast walk over 30 minutes	A Vs A1	6.21	0.001
	<b>A1 Vs B1</b>	<b>4.06</b>	<b>0.004</b>
	B Vs B1	0.22	0.635
Running	A Vs A1	0.20	0.650
	A1 Vs B1	0.61	0.433
	B Vs B1	0.01	0.970
March with sticks	<b>A Vs A1</b>	<b>9.62</b>	<b>0.000</b>
	<b>A1 Vs B1</b>	<b>8.99</b>	<b>0.000</b>
	B Vs B1	0.28	0.597
Gymnastics	<b>A Vs A1</b>	<b>4.80</b>	<b>0.003</b>
	A1 Vs B1	1.63	0.202
	B Vs B1	0.20	0.652
Swimming	A Vs A1	0.01	0.906
	A1 Vs B1	0.61	0.433
	B Vs B1	0.00	0.949
Cycling	A Vs A1	4.89	0.027
	A1 Vs B1	5.34	0.002
	B Vs B1	0.00	0.980
Dance	A Vs A1	0.00	0.942
	A1 Vs B1	0.38	0.536
	B Vs B1	0.00	0.983
Watch leads a lifestyle	<b>A Vs A1</b>	<b>13.25</b>	<b>0.000</b>
	<b>A1 Vs B1</b>	<b>15.31</b>	<b>0.000</b>
	B Vs B1	0.00	0.987
Frequency of physical activity	<b>A Vs A1</b>	<b>12.22</b>	<b>0.002</b>
	<b>A1 Vs B1</b>	<b>13.19</b>	<b>0.001</b>
	B Vs B1	0.02	0.990
The length of physical activity	<b>A Vs A1</b>	<b>12.23</b>	<b>0.002</b>
	<b>A1 Vs B1</b>	<b>9.44</b>	<b>0.009</b>
	B Vs B1	0.40	0.817

The next category examined in the field of physical activity was stress test. The average duration of the test was 6.58 MET for group A and 6.45 MET for group B. However, after completing the educational program, the average duration of the exercise test in the A1 group was 6.86 MET, for the comparison with the group B1-6.47 MET. The examined groups were also differentiated in terms of the result of the exercise test depending on the lifestyle. Alike in group A and group B, people with an active lifestyle achieved higher exercise test results. Also

in the distribution of the frequency of performed physical activity, depending on the lifestyle of the subjects, there were statistically significant differences. Individuals in groups A and B who lead an active lifestyle exercised more often. Also, the duration of physical activity was longer among patients who were physically active. The results are presented in tables VI-VII.

**Table VI. Schedule results of the stress test in groups A, A1, B, B1 depending on the lifestyle**

Exercise test n		≤ 5 MET		> 5 MET < 10 MET		≥ 10 MET	
		%	n	%	n	%	n
Tested A n = 100	Sitting	30	30.0	37	37.0	1	1.0
	Active	0	0.0	21	21.0	11	11.0
Tested A1 n = 93	Sitting	20	21.5	19	20.4	0	0.0
	Active	1	1.1	42	45.1	11	11.8
Tested B n = 100	Sitting	28	28.0	42	42.0	0	0.0
	Active	1	1.0	21	21.0	8	8.0
Tested B1 n = 97	Sitting	28	28.8	40	41.2	0	0.0
	Active	0	0.0	21	21.6	8	8.2

**Table VII. Comparative characteristics of the exercise test result in groups A, A1, B, B1 depending on the lifestyle**

Parametr	Chi <sup>2</sup>	p
A [active] Vs A [sitting]	34.22	0.001
A1 [active] Vs A1 [sitting]	35.36	0.001
B [active] Vs B [sitting]	28.74	0.001
B1 [active] Vs B1 [sitting]	31.30	0.001

## Discussion

Physical activity has been well documented as a very important health factor in both primary and secondary prevention of cardiovascular disease. Physical exercise exerts an extremely beneficial health effect among different age groups, not only young people, but also the elderly, which is a very important factor of a healthy lifestyle. Regular use of proper physical activity in a group of people with coronary artery disease reduces the risk of cardiovascular events by 26%, and hospitalization by 31% [9].

In one of the studies conducted in Brazil, in a group of 3296 older participants over 60 years of age, it turned out that 50% of them spend only four hours each day sitting [10].

Another study, a the total of 1288 people participated, confirms the low level of physical activity in the older community. The participants were divided into two groups in terms of age, and so 703 people were aged 60-69 and 585 people aged 70-80. This study was aimed at indicating differences regarding the use of physical activity in particular age ranges. A significant decrease in the level of physical activity among people aged 70-80 was confirmed [11].

Taking into account the upward trend in the decrease in the percentage of people who are physically active with age, similar results were obtained in the own study.

In group A, the percentage of people leading a passive lifestyle was 68%, while in group B - 70%. As a result of the training program, the percentage of patients leading a passive lifestyle in the A1 group decreased to 41.9%.

In the next study, which involved 86 patients after coronary incidents aged 42-78 (average age 61.7) and 88 healthy participants, even lower results than in the own study. In the group burdened with the disease, only 16.7% of men and 9.9% of women were physically active, while in the healthy group 16.22% of men and 11.3% of women were exercising [12].

Interesting information is provided by a study in which 60 people took part

with ischemic heart disease. For 4 weeks, 20 people performed intense physical training, 20 people moderate exercise and 20 people were a control group. The final assessment concerned the impact of physical activity on the development of the collateral circulation. Significant changes were noted in the group with a high intensity of exercise (39.4%) and moderate activity (41.3%) [13]. Systematic physical training had an impact on the development of collateral circulation, which is important due to the further progression of the disease. Comparable results of the percentage of active people after the training was obtained in the own study. Benefits in the form of lowering blood pressure, weight loss and LDL cholesterol reduction from the use of the exercise program in a group of women > 55 years (average 65.4 ± 7.3 years) were presented in his work by Mazurek et al. [14].

Also in the conducted social diagnosis of Poles in 2013 very low level of physical activity was demonstrated, people who do not practice any exercise are 64% women and 57.2% men. In the group of older people more than once 14.6% of people practiced sports during the week. Any form of sport, but irregularly in the group of people aged 65-69, used 25.6%; 70-74 years (17.1%); 75-79 years (14.3%); 80 ≥ 6.4% [15].

Also in the conducted research by the Central Statistical Office in 2014 was observed that 52% of seventy year olds had a problem with overcoming the entrance and descent from the first floor, moreover 45% of 70-year olds had a problem with the passage of 500 meters, in the group of people aged 80 and more the problem recognized in to 74% of people [16].

More probable results were provided by another epidemiological study conducted in Poland in the group of 1910 elderly people, aged 65 and over, where 57.7% were people aged 65-74. This trial showed that 88% of people undertook varied physical activity. 43% declared regular sports, 39% apply medium activity, mainly related to home activities and sporadic physical exercise, 6% apply light intensity activities in the form of shopping, light housework, and meal preparation [17].

## Conclusions

1. Before applying the educational program in the group of elderly people with diagnosed coronary heart disease, a low percentage of people using regular physical activity was observed.
2. The prepared and applied educational program among elderly people burdened with cardiology significantly affected the health behavior related to physical activity, which has improved significantly.
3. The statement in the elderly, in people with ischemic heart disease, of inappropriate health behaviors, including low physical activity, should lead to the construction of due educational programs targeted at the needs of this age group.

Conflict of interest

None

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