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IMPACT OF SELECTED FACTORS ON EFFECTS OF HAND REHABILITATION IN STROKE PATIENTS - A PILOT STUDY

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Introduction

- Rehabilitation in spa conditions is an important and recommended form of post-stroke rehabilitation in the outpatient period combined with rest. The goal of physiotherapy during this period is to improve of hand function, functional fitness, and return to maximum high self-sufficiency as well as psychophysical balance.

Aim

- The study aimed to assess recovery of hand function in patients after stroke and to determine impact of selected factors, i.e., age, sex and time from stroke onset, on effects of hand therapy.



Materials and Methods

- The study was conducted in a spa in south-eastern Poland.
- A total of 17 people with ischemic stroke were included in the study.



Materials and Methods

Table 1. Characteristics of the examined group.

Variable		Mean	SD
		66.31	8.20
		N	%
Place of residence	Urban area	10	58.8%
	Rural area	7	41.1%
Sex	Male	12	70.5%
	Female	5	29.4%
Education	Primary	2	11.7%
	Secondary	5	29.4%
	Vocational	6	35.2%
	Higher	4	23.5%
Side of paresis	Right	7	41.1%
	Left	10	58.8%
Dominant hand	Right	14	82.3%
	Left	3	17.6%
Time from stroke	< 2 years	10	58.8%
	> 2 years	7	41.1%

Eligibility criteria

- **Inclusion criteria:** age over 50 years, complete first ischemic stroke, completion of 3 weeks of spa treatment and patient's consent to participate in the study. The study included patients whose functional fitness on the day of admission was rated in Rankin scale was rated on 2 -3
- spastic tension in the paretic hand, no more than 1 plus on the modified Ashworth scale
- elementary (basic) hand grip capacity

All of the patients who qualified for the study had never received a spa therapy stay before.

Exclusion criteria:

- lack of patient consent, incomplete ischemic stroke (e.g. TIA), second or subsequent stroke,
- mechanical and thermal injuries that may limit the grasping function of the hand
- permanent contractures that may affect the grasping ability of the hand
- failure to complete the 3-week spa treatment, significant random events during observation (such as death of a family member, divorce, etc.), other forms of therapy implemented during observation and refusal to participate in the follow-up study

Research procedure

examination I

The first examination took place on the first day of therapy

(n=17)



examination II

The second (examination II) was conducted after a 3-week rehabilitation stay on the day of discharge from the spa

(n=17)

Rehabilitation Program

The rehabilitation stay lasted three weeks from Monday to Friday (15 days of treatment). Each patient staying in the spa hospital participated in a comprehensive rehabilitation program lasting from 120 to 150 minutes. The rehabilitation program was individually selected by the therapeutic team for the needs of each patient.

All patients participated in individual exercises, group gymnastics in water, mud therapy, hydrotherapy with mineral water and crenotherapy (hydrogen sulphide and inorganic sulphide water, hydrogen chloride-bicarbonate-sodium, iodide, and acidified water). The specification of hydrogen sulphide and inorganic sulphide water is Na⁺, K⁺, Li⁺, Ca²⁺, Mg²⁺, Fe²⁺, M - Cl⁻,. Mineralization of this water is 710-820 mg / dm³. The level of hydrogen sulphide is 34.7-49.6 mg / dm³. The specification of hydrogen chloride, sodium carbonate, iodide and acidified water is Na⁺, K⁺, Li⁺, Ca²⁺, Mg²⁺, Fe²⁺ Sr²⁺ Ba²⁺, M - Cl⁻, Br⁻, J - Mineralization of this water is 10806.3974 mg / dm³.

Research Tools

- The Box and Bloks test was used to assess the functional performance of the hand.
- Muscle tone (spasticity) was assessed by the modified Ashworth scale.
- The Rankin scale to assess the degree of disability.

Results

Table 2. Spasticity and functional efficiency of the hand.

			Ashworth before hand	Box and Blocks dominant hand before	Box and Blocks dominant hand after
rho Spearman	Ashworth przed reka	rho	1,000	-,667	-,585
		p		,0034	,0136
		N	17	17	17
	Box and Blocks dominant hand before	rho	-,667	1,000	,875
		p	,003		,000
		N	17	17	17
	Box and Blocks dominant hand after	rho	-,585	,875	1,000
		p	,014	,000	
		N	17	17	17

Results

Table 3. The degree of disability .

			Box and Blocks dominant hand before	Box and Blocks dominant hand after	Box and Blocks dominant hand before	Box and Blocks dominant hand after
rho	Rankin	rho	-,410	-,523	,187	-,485
Spearman		P	,1022	,0313	,4723	,0484
		N	17	17	17	17

Results

Table 4. Functional efficiency of the hand and time of stroke.

Effekct Box and Blocks (before-after)						
Time from stroke	Mean	SD	Me	Min	Max	N
< 2 years	5,80	6,05	5,00	-5	18	10
> 2 years	-3,29	10,13	-3,00	-24	6	7
Total	2,06	8,96	4,00	-24	18	17
p						0,0431

Conclusions

- It was shown that a change in the function of the paretic hand was affected by the degree of disability and severity
- of spasticity. Additionally, better effects of the rehabilitation program were found in patients up to two years from stroke onset. The findings showed no relationship between the selected factors, i.e., age and sex, and effects of hand rehabilitation. Given the fact that this was a pilot study, the findings should be validated by further research taking into account a larger group of patients with stroke.

Thank you for your attention

