BALNEO RESEARCH JOURNAL
English Edition
eISSN 2069-7619 pISSN 2069-7597 ROMANIAN ASSOCIATION OF BALNEOLOGY

The effectiveness of ergo- and psychotherapy in the process of sanatorium-resort treatment of spinal patients

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Balneo Research Journal DOI: http://dx.doi.org/10.12680/balneo.2020.384 Vol.11, No.4, December 2020 p: 485–490

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Abstract

The aim is to explore the possibilities of improving motor and sensitive disorders to ensure the highest possible social adaptation - the expansion of self-service skills, opportunities for affordable employment, or the restoration of professional activity flax. **Methods:** To study the possibilities of improving the social reintegration of patients during rehabilitation in a mud resort, we observed 240 patients who had an injury to the cervical spine 24 years. Disease duration ranged before 3 years, 4-7 years, more 7 years. We studied the occupational therapy method and group psychotherapy method. All patients were divided into three representative groups: 91 patients (group 1) received a course of balneoplasty therapy in the form of mud applications on the spine and lower limbs at a temperature 42-44 ^{0}C, exposure time 20 min, placement of procedures - every other day, for a total of 12-15 procedures per treatment; on days free of mud cure, hydrokinesitherapy was performed in a pool with warm (29-32 ^{0}C) brine water, 12-15 procedures, and also apparatus physiotherapy procedures, massage and exercise therapy. In addition to the course of balneopedotherapy, 149 patients also received ergo-therapy and psychotherapy (90 people - group 2) and only occupational therapy - 59 people (group 3). **Results:** Improvement of post-traumatic organic neurological disorders caused by balneo-mud therapy creates a favorable basis for conducting training activities that expand patients' functionality. The inclusion of ergotherapy in the rehabilitation process of spinal patients in a balneo-mud resort is appropriate and justified. It allows not only to expand the functionality of patients but also to reduce the time to master the essential self-care skills and consolidate them. **Conclusion:** The inclusion of psychotherapy in the complex of occupational therapy is desirable. It allows you to influence the psycho-emotional state of the patient and improve the effectiveness of training activities, especially in male patients. Changing the hospital and closed home atmosphere to the conditions of the resort, the possibility of broad communication, participation in various social events significantly change the psycho-emotional state of patients, increasing their activity, causing an increase in the setting for inclusion inactive life..

Keywords: *ergotherapy, psychotherapy, spinal injuries, activity and participation, rehabilitation, social adaptation,*

Introduction

The consequences of severe spinal injuries are acute problems, not only medical but also social and psychological problem. The profound impairments of motor and other vital functions caused by them, lead to the inability to move independently and the need for outside help, to recognize in a significant number of cases profound changes in the psychological sphere of patients: depressive states, reactions to stress, adaptation disorders, apathy, unwillingness to use even their potential (1-4, 15). This, in addition to movement disorders, dramatically reduces the quality of life of spinal patients. Therefore, the rehabilitation process's task is to create conditions for the maximum possible social adaptation with recovery based on the maximum possible recovery of the patient's motor functions, family, the professional status of the patient, or his inclusion in other available labor activities (5-6, 9).

Most of the specialists who dealt with the issue of social rehabilitation of patients with the consequences of spinal injury noted that its effectiveness directly depends on the degree of recovery of the patient's motor, sensitive and psychological sphere (2, 4). Many researchers consider that balneo- and mud therapy are among the most potent factors in the recovery of organic disorders in patients with spinal injury (7-10).

Objective

The study aims to explore the possibilities of improving motor and sensitive disorders to ensure the highest possible social adaptation - the expansion of self-service skills, opportunities for affordable employment, or the restoration of professional activity flax.

Materials and methods

All the patients that were observed were located in DP "Pirogov Clinical Sanatorium", Kuyalnik resort.

To study the possibilities of improving the social reintegration of patients during the course of rehabilitation in a mud resort, we observed 240 patients who had an injury of the cervical spine.

The overwhelming majority were men aged from 24 to 46 years. Disease duration ranged from 3 to 7. The distribution of patients by sex, age, and period of injury are presented *in Table 1.*

Thus, middle-aged persons prevailed among male patients (53%), while among women, more than half were under the age of 34 years. By the age of the disease, in both women and men, persons with a prescription of 4-7 years prevailed.

Table 1. The distribution of patients by sex, age and duration of the disease

Patients	%	Age of patients			Duration of illness (years)		
		24-34 years	35-55 years	more 55 years	1 -3 years	4-7 years	more 7 years
Women (n=29)	12,1	19	6	4	6	16	7
Men (n=211)	87,9	34	112	65	39	93	79

All patients examined by us had a lesion of the cervical spine at the level of C6-C8 and suffered from mixed tetraparesis - peripheral paresis of the upper and spastic paresis of the lower extremities. The severity of paresis of the upper limbs ranged from moderate (72 %) to severe (28 %) degree. It included lesions of the flexors and extensors of the fingers of the hand and flexors and extensors of the hands. The range of movements in the upper limbs was insignificantly limited in 29 %, limited to a moderate degree in 45 % of patients, and significantly limited in 26 %. The severity of spastic paresis of the lower extremities was severe, leading to the impossibility of independent movement - 100% of the observed patients moved in wheelchairs. With self-help, 19 % of patients owned self-care skills. The rest needed varying degrees of help from accompanying persons: while dressing and undressing (73 %), use zipper or velcro fastener of 44 %, when wash hands (64 %), with other, more complex hygienic procedures (84 %). 39 % of patients could independently use cutlery, 32% used limited food assistance, 29% of patients needed considerable help with eating. From survey data indicated that a little more than half of all the patients we observed (59 %) actively participate in household duties. Of them: to use household appliances – 41 %, to join in cleaning the apartment – 34 %, to help in cooking – 31 %, to clean the table and washing dishes - 19 %.

The distribution of the development of self-service skills depending on gender, age, and duration of the disease are presented in *Table 2.*

Table 2. The dependence of the development of self-care skills on gender, age and duration of illness in patients with spinal trauma

Type of self-care skills used	Gender	Distribution of skills used according to gender and age (%)			Distribution of skills used according to gender and duration of illness (%)		
		24-34 years	35-55 years	more 55 years	1-3 years	4-7 years	more 7 years
Use of household appliances	men	64,7	53,6	21,5	46,1	53,7	58,2
	women	80,1	66,6	25,0	75,0	75,0	57,1
Vacuuming	men	8,8	10,7	3,0	-	11,8	29,1
	women	52,6	50,0	-	333	56,2	57,1
Need help with dressing and undressing, including the use of zippers	men	88,2	71,4	61,5	76,9	40,2	46,4
	women	31,5	25,0	25,0	75,0	50,0	42,8
Can independently use cutlery	men	29,4	32,1	30,7	23,0	32,2	48,1
	women	31,5	33,3	50,0	33,0	50,0	42,8
Hygienic procedures are performed independently	men	23,5	8,9	23,0	23,0	29,0	30,3
	women	42,1	33,3	-	33,3	37,5	25,0
Can use the simplest tools (scissors, screwdrivers, etc.)	men	-	-	18,4	25,6	25,8	31,1
	women	63,1	66,6	50,0	33,3	62,5	25,0

Results. Analysis of the obtained data allows us to identify patterns of development of therapeutic capabilities in patients with spinal injury. So, even though the fact that 72% of the surveyed had relativly moderate movement disorders of the upper limbs and the muscles of the shoulder girdle, in general, their functionality was not used enough. The development of self-care skills among patients entering the sanatorium rehabilitation, their participation in family responsibilities, and possession of the most straightforward household tools ranged between 40 and 50 percent, which can be assessed as insufficient. At the same time, the presence of self-service skills is associated not with the age of patients as with the duration of the disease - like the duration of the disease increases - the level of autonomy of patients within the studied age group tends to increase. Moreover, the development of self-care skills in patients with female spinal trauma is more active than in male patients. It also draws attention that only a tiny part of the surveyed is familiar with special devices that facilitate the independent execution of various daily procedures (such as eating, washing, dressing, etc.), as well as the simplest manipulations and simple labor processes - working with scissors, screwdriver, file, etc.

At the same time, the problem of gaining the highest possible independence is essential not only in terms of the patient's emotional state, self-esteem, and well-being but also in terms of family relationships, the social role of each family member and the quality of life of the patient and his family as a whole.

Of particular interest was the question of the status of the former professional or other work activity in the patients observed, and the presence of a device for its renewal in case of its absence. Naturally, this issue is crucial for the majority in the post-traumatic period (1). Its role cannot be overestimated in terms of its impact on the patient's social status, family relationships, and the psycho-emotional state generally (14). At the same time, the transferred spinal trauma, the dramatic changes in the patient's whole life caused by her, immobility and dependence on others cause a negative attitude to the possibility of continuing work and the need to master a new profession.

Analysis of the employment status of patients showed that male patients are young and, especially mature (35-55 years), sufficient actively continue to be engaged in labor activity in their former specialty (*Table 3*). This applies primarily to people involved in mental work.

Thus, among our patients who continued their work were university professors, programmers, accountants, enterprise managers, economists, and private entrepreneurs. In the same group, we attributed the students of higher educational institutions. The second category consisted of people of the so-called "sedentary" labor - a watchmaker, a master in mending leather goods,

a bookbinder, etc. Naturally, in the first years of post-injury, the number of workers was minimal among persons of almost all professions.

Table 3. Labor activity and installation for its renewal in spinal patients admitted to the course of balneotherapy and mud therapy

Employment	Gender	Features of work depending on age patients (%)			Features of work depending on the duration of the disease (%)		
		24-34 years	35-55 years	more 55 years	1-3 years	4-7 years	more 7 years
Continues to engage in previous employment	men	20,5	38,3	16,9	17,9	41,9	16,4
	women	21,0	16,6	-	16,6	18,7	14,2
Has a set to continue the previous work	men	26,6	22,3	8,0	35,8	16,1	20,2
	women	10,5	-	-	-	12,5	-
Works on a new specialty	men	26,4	14,2	8,0	7,6	10,7	17,7
	women	15,7	50,0	-	-	31,2	57,1
Has a setup for retraining	men	8,82	8,9	7,6	12,8	9,6	5,0
	women	21,0	33,3	75,0	33,3	25,0	-
Not going to work	men	32,3	16,0	47,6	25,6	21,5	37,9
	women	31,5	-	25,0	50,0	12,5	28,5

At the same time, about 1/3 of the victims had an installation to continue their previous work during this period. With an increase in the duration of the post-traumatic period, the number of those who returned to the past profession increases, and, accordingly, the number of people who have hope for its continuation decreases. This is especially true for people of young age who are students of higher and secondary educational institutions. The number of people working in a new profession or daring to install equipment is slightly increasing. He draws attention to the fact that the number of workers decreases with age, not to mention the desire to acquire a new profession, although in this age group there were enough people of working age.

In a small group of women observed by us, a high percentage of middle-aged and older patients with medium and high disease durations (80% overall) are actively engaged in working in the new profession: foreign languages, school tutoring, programming - or with available manual labor - knitting, cooking culinary products for sale. Thus, a significant number of women were already actively engaged in labor activity when they entered the sanatorium.

It is known that the psycho-emotional state of a post-traumatic spinal patient, which largely determines his desire and ability to self-service, to return to work, is closely related to the state of his motor system as a whole. The more pronounced are the shifts on the part of movement disorders, the more active the process of recovery and development of self-service skills is, the higher the chances of the patient returning to active life and work (2, 13).

Balneotherapy, long known as one of the most effective rehabilitation treatment method of post-traumatic disorders, is a fertile ground for the development on its basis of an increase in the ability of patients to self-service, for the development of installation for further labor activity. For this purpose, there were unique teaching methods. The occupational therapy method was chosen as the primary teaching method (11, 12). A group psychotherapy method was chosen to improve the psycho-emotional status and develop the appropriate installation.

All patients were divided into three representative groups: 91 patients (group 1) received a course of balneoplasty therapy in the form of mud applications on the spine and lower limbs (“pants”) at a temperature 42-44 ^{0}C, exposure time 20 min, placement of procedures - every other day, for a total of 12-15 procedures per treatment; on days free of mud cure, hydrokinesitherapy was performed in a pool with warm (29-32 ^{0}C) brine water, 12-15 procedures, and also apparatus physiotherapy procedures, massage and exercise therapy. In addition to the course of balneopedotherapy, 149 patients also received ergo-therapy and psychotherapy (90 people - group 2) and only occupational therapy - 59 people (group 3).

When performing ergotherapy, two main factors were taken into account: orientation towards mastering the patient’s most significant actions and taking into account the patient's motor capabilities. As additional factors, cognitive abilities, everyday situations of everyday life, role family relationships were taken into account. Occupation therapy classes were held throughout the patient's stay in a sanatorium, in the afternoon, during the time free from basic medical procedures, two days in a row with a break on the third day, four times a week, the total for the course - 15- 16 lessons. In addition to efforts to restore lost functions, achieving maximum autonomy and independence in everyday life, the students were also familiarized with technical aids that help develop the maximum possible independence and autonomy in daily activities and the possibility of self-manufacturing of some of them. Patients of this group, in addition to these classes, also received a course of psychotherapeutic measures. The group psychotherapy method was used in a group of 8-10 people. Classes were held twice a week in the first half of the day for one hour and were aimed at maximizing the motivation to adapt to living conditions with the consequences of spinal injury, the active involvement of the patient in the rehabilitation process, and in further active life. The main goal of the program was to train skills for psychological and social difficulties for further integration into family life and to develop an orientation towards continuing a previous professional activity or retraining new work skills. 59 patients (group 3) received occupations only by occupational therapy.

As a result of a 45-day course of spa and balneo-mud therapy, an improvement in post-traumatic organic

disorders was registered in 89% of patients. Especially pronounced positive changes were observed in the muscles of the shoulder girdle: in 63,8% of patients with mild and moderate limitation of movement and 7,2 % with a significant barrier, the range of movements in the upper limbs, in the flexors and extensors of the fingers increased, muscle tone decreased in the flexors of the hand and forearm, which led to an increase in range of motion. Muscle hypertonus in the legs also slightly decreased, but the range of movements in the lower extremities did not undergo significant changes. Positive changes were also manifested by a decrease in trophic disorders, improved peripheral circulation in the arms and legs. In 36 patients (17,1 %), the pelvic organs' function improved (constipation decreased, the urge to urinate became less pronounced). All these changes constituted a positive background for the psycho-emotional state of patients. Despite the positive changes in patients who received only a course of balneotherapy and mud therapy (group 1), there was no noticeable expansion of self-care skills. 9 patients (10 %) noted that it became more comfortable for them to own cutlery, 21 (23,0 %) were able to independently perform certain hygienic procedures (ability to wash hands, use a towel after washing and shower), 8 (8,7 %) began to use zippers and Velcro freely). At the same time, changes in social adaptation and psycho-emotional status of patients who received ergo- and psychotherapy were significantly more pronounced are presented in table 4.

Table 4. The dynamic of self-care skills at the end of the course of spa balneotherapy with ergo- and psychotherapy

Self-service skills	Gender	Indicator dynamics depending on age (%)			Indicator dynamics depending on duration of illness (%)		
		24-34 years	35-55 years	more 55 years	1-3 years	4-7 years	more 7 years
Use of household appliances before treatment	men	64,7	53,6	21,5	46,1	53,7	58,2
	women	80,1	66,6	25,0	75,0	75,0	57,1
2 group	men	91,1	82,2	50,7	76,9	75,2	82,2
	women	89,4	100,0	25,0	100,0	82,3	71,4
3 group	men	85,1	74,2	29,2	74,3	78,4	79,7
	women	89,4	100,0	25,0	100,0	82,3	71,4
Need help with dressing and undressing	men	88,2	71,4	61,5	76,9	40,2	46,4
	women	31,5	25,0	25,0	75,0	50,0	42,8
2 group	men	64,7	59,8	58,4	51.2	36,5	43,0
	women	26,3	25,0	25,0	50,0	37,5	42,8
3 group	men	64,7	63,4	58,4	62,1	38,7	46,4
	women	31,5	25,0	25,0	50,0	37,5	42,8
Hygienic procedures are performed independently	men	23,5	8,9	23,0	23,0	29,0	30,3
	women	42,1	33,3	-	33,3	37,5	25,0
2 group	men	30,7	19,2	28,0	41,7	39,5	36,6
	women	60,1	60,0	25,0	66,6	45,5	40,0
3 group	men	30,0	18,6	27,3	41,7	39,5	36,6
	women	60,1	60,0	25,0	66,6	45,5	40,0
They can use the simplest tools (scissors, screwdrivers)	men	-	-	18,4	25,6	25,8	31,1
	women	63,1	66,6	50,0	33,3	62,5	25,0

Table 4

2 group	men	47,6	44,6	40,0	45,8	56,0	37,5
	women	55,5	75,0	50,0	40,0	69,2	-
3 group	men	44,6	40,0	55,5	56,0	37,5	40,0
	women	75,0	50,0	45,8	69,2	-	47,6

Analysis of the data obtained shows that carrying out occupational and psychotherapy allows spinal patients to significantly increase the degree of mastering the skills of self-service and some of the simplest work processes. At the same time, some differences in efficacy are revealed, depending on gender, duration of illness, and type of occupation. Thus, in the group of women, mastering the possibilities of self-service, learning the ability to perform certain hygienic procedures independently, and use household appliances proceeded much more intensively than among men, especially in the group up to 45 years old and the age of the disease was no more than 7 years. There was no clear difference in the groups that received psycho- and ergotherapy simultaneously and only received occupational therapy. At the same time, mastering the simplest work skills within everyday needs was less intensive. In the group of men, especially with the duration of the disease from 4 to 7 years old, on the contrary, there was a clear interest in learning how to use the simplest tools.

The relatively low percentage in the group of ill (more than 7 years) men most likely is related to the fact that the majority of patients in this group already possessed these skills, as well as some self-care opportunities, such as the ability to do some hygiene with little help or completely independently procedures.

Regarding mastering other self-service skills, occupational ergotherapy alone was significantly less effective than in women. Only carrying out occupational therapy in parallel with psychotherapeutic exercises, with the development of appropriate attitudes, has helped to increase the number of people able to dress and undress by yourself, use velcro, hook or zipper fasteners, independently take food and use cutlery, increase interest in participating in family activities (cleaning, household appliances, etc.).

Gender differences did not significantly affect age-related learning opportunities. In women, as in men, younger people were quicker and more perceived and more comfortable to master the necessary skills. The older the sick were, the less their interest in learning new skills was, the more they were oriented towards outside help.

The results obtained as a whole, show that the use of both methods - ergotherapy and ergotherapy combined with psychotherapy - has led to a definite increase in attitudes towards labor activity. Particularly striking were the changes regarding retraining opportunities. So among middle-aged males, interest in obtaining a new specialty and the desire to master it more than tripled. It notes that these changes relate to both groups, so we can assume that the acquisition of new household skills, increased

autonomy and reduced dependence on other factors that increase the patient's self-esteem, self-confidence, and desire more actively mobilize your abilities and capabilities.

Table 5. Installation for the resumption of work and retraining in spinal patients, after a course of ergo-and psychotherapy in a balnea-mud resort

Installation for labor activity	Gender	Value of indicators depending on age and gender (%)			Value of indicators depending on gender and duration of the disease (%)		
		24-34 years	35-55 years	more 55 years	1-3 years	4-7 years	more 7 years
Has a set to continue the previous labor activity:							
- before treatment	men	26,6	22,3	8,0	35,8	16,2	20,0
	women	10,5	-	-	-	12,5	-
- 2 group	men	35,4	32,6	12,0	33,3	27,0	36,0
	women	20,0	20,0	-	-	45,4	-
- 3 group	men	20,0	37,0	18,0	30,0	36,6	36,0
	women	22,2	-	-	30,3	40,0	50,0
Has a setup for retraining:							
- before treatment	men	8,8	8,9	7,0	12,8	9,6	5,0
	women	21,0	33,3	75,0	33,3	25,0	20,0
- 2 group	men	23,0	38,4	12,0	16,6	41,6	10,0
	women	50,0	80,0	25,0	33,3	54,5	20,0
- 3 group	men	40,0	40,7	18,0	-	20,0	26,0
	women	-	66,6	-	-	20,0	-

Thus, in the group of male patients of middle age, with the disease's uration from four to 7 years, the installation for retraining increased almost four times. The desire to continue the previous labor activity was significantly less pronounced. So, the work of most of the patients we observed was associated with hard physical labor, and therefore, naturally, could not be continued. The intention to stay in the same job arose among a relatively small number of middle-aged and young people associated with mental activity, work that does not require physical effort, and students in higher and secondary educational institutions. Some patients explained their unwillingness to continue their previous professional activities or training with difficulties of movement and physical inaccessibility of the place of prior work or study.

It should be noted that restoring social skills in women is much more active than in men; they are more likely to master new professions if it is impossible to continue their previous employment. This fact explains the relatively low rates of retraining new professions - they have already learned them earlier. A small percentage of those who wish to continue their previous work activity is determined by the fact that it was associated with hard physical labor and could not be restored after an injury.

It is impossible not to express the assumption that the sanatorium situation played a significant role in achieving the results. Conducting therapeutic measures not in hospital conditions, the ability to go beyond the walls of your apartment, expanding the circle of communication, and abundance of new impressions, have already changed the psycho-emotional state of patients, creating a favorable background for learning and psychological impact. And the beneficial effect of balneotherapy and mud therapy on trauma-induced organic neurological disorders made it possible for new motor skills to be trained and consolidated in a relatively short time, which made it possible to extend the rehabilitation process. The expansion of the independence and independence of the patient is not only important in and of itself. It leads to an improvement in family relationships, which is particularly significant in this particular case; obtaining a new profession and employment improves the social status of the patient, expands his interpersonal relations, increases self-esteem, and all this together leads to an increase in the quality of life of the patient and his family as a whole.

Conclusions.

1. Improvement of post-traumatic organic neurological disorders caused by balneo-mud therapy creates a favorable basis for conducting training activities that expand patients' functionality.

2. The inclusion of ergotherapy in the rehabilitation process of spinal patients in a balneo-mud resort is appropriate and justified. It allows not only to expand the functionality of patients but also to reduce the time to master the most important self-care skills and consolidate them.

3. The inclusion of psychotherapy in the complex of occupational therapy is desirable. It allows you to influence the psycho-emotional state of the patient and improve the effectiveness of training activities, especially in male patients.

4. Changing the hospital and closed home atmosphere to the conditions of the resort, the possibility of broad communication, participation in various social events significantly change the psycho-emotional state of patients, increasing their activity, causing an increase in the setting for inclusion inactive life.

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