

Miler Adrian, Podhorecka Marta, Nicpoń–Nożewska Klara, Zukow Walery. The importance of neurophysiological-Bobath method in multiple sclerosis. *Journal of Education, Health and Sport*. 2018;8(2):85-94. eISSN 2391-8306. DOI <http://dx.doi.org/10.5281/zenodo.1168719> <http://ojs.ukw.edu.pl/index.php/johs/article/view/5260>

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26.01.2017).
1223 Journal of Education, Health and Sport eISSN 2391-8306 7

© The Authors 2018;

This article is published with open access at Licensee Open Journal Systems of Kazimierz Wielki University in Bydgoszcz, Poland
Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.
This is an open access article licensed under the terms of the Creative Commons Attribution Non Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.
The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 05.01.2018. Revised: 10.01.2018. Accepted: 04.02.2018.

Znaczenie neurofizjologicznej metody-Bobath w stwardnieniu rozsianym **The importance of neurophysiological-Bobath method in multiple sclerosis**

Adrian Miler¹, Marta Podhorecka², Klara Nicpoń–Nożewska², Walery Zukow³

1. University of Bydgoszcz (Bydgoska Szkoła Wyższa), Poland

2. Faculty of Health Sciences, Department and Clinic of Geriatrics, Nicolaus Copernicus University, Toruń, Poland, M. Skłodowskiej-Curie 9, 85-094 Bydgoszcz, Poland

3. Department of Spatial Management and Tourism, Faculty of Earth Sciences, Nicolaus Copernicus University in Torun, Torun, Poland

Streszczenie

Postępowanie rehabilitacyjne w stwardnieniu rozsianym powinno być prowadzone w sposób ciągły, może odbywać się w warunkach szpitalnych, ambulatoryjnych, jak również środowiskowych. W podejściu tradycyjnym koncentruje się na redukowaniu objawów choroby, takich jak: niedowłady, spastyczność, ataksja, bóle, zaburzenia czucia, zaburzenia mowy, zaburzenia widzenia, uczucie zmęczenia, dysfunkcja neurogenna pęcherza moczowego, zaburzenia funkcji poznawczych. W kinezyterapii u osób z niedowładami najbardziej rozpowszechnionymi metodami są: metoda (Bobathów).

Poprawę można uzyskać poprzez wypracowanie umiejętności utrzymywania prawidłowej postawy ciała w różnych pozycjach (tzw. wyrównywanie posturalne), wzorców opartych na prawidłowych reakcjach nastawczych i równoważnych. W trakcie

terapii stosuje się różne techniki mające za zadanie hamowanie patologicznych wzorców ruchowych i stymulowanie reakcji. Twórcy metody uważają, że każdy wzorec ruchowy ma swój układ posturalny, z którego może być on zapoczątkowany, przeprowadzony i skutecznie kontrolowany. Prawidłowy ruch nie może odbywać się w nieprawidłowej pozycji ciała. Fizjoterapeuta omawia z chorym sposoby wykonywania poszczególnych wzorców ruchowych, co chroni go przed samoistną patologiczną kompensacją.

Celem pracy jest określenie znaczenia oraz zastosowania metody - Bobath w terapii osób chorych na MS

Abstract

Rehabilitation treatment in multiple sclerosis should be carried out continuously, can take place in the hospital, ambulatory as well as environmental conditions. In the traditional approach, it focuses on reducing the symptoms of the disease, such as paresis, spasticity, ataxia, pain, sensory disturbances, speech disorders, blurred vision, fatigue, neurogenic bladder dysfunction, and cognitive impairment. In kinesiotherapy in people with paresis, the most common methods are the (Bobathian) method.

Improvement can be achieved by developing the ability to maintain a correct posture in various positions (so-called postural alignment), patterns based on corrective and equivalent responses. During the therapy, various techniques are used to inhibit pathological motor patterns and stimulate the reaction. The creators of the method believe that each movement pattern has its own postural system, from which it can be initiated, carried out and effectively controlled. Correct movement can not take place in the wrong position of the body. The physiotherapist discusses with the patient how to perform individual movement patterns, which protects him against spontaneous pathological compensation.

The aim of the work is to determine the meaning and application of the Bobath method in the therapy of people with MS

Słowa kluczowe: metoda Bobath, fizjoterapia, stwardnienie rozsiane, spastyczność,

Key words: Bobath method, physiotherapy, multiple sclerosis, spasticity

Introduction and aim

Multiple sclerosis (MS - ang. Multiple sclerosis) is a neurodegenerative polietiologic disorder. Underlying MS pathogenesis is wrong - an excessive reaction of the immune system, which attacks its own nervous system - in particular, myelin neurons included in the central nervous system (CNS) [1, 2, 3, 4].

Multiple sclerosis is a chronic and today remains incurable. The current state of knowledge does not allow to eliminate the reasons for which there is a development of the disease. You can only modify the course of the disorder, whose task is primarily - to reduce nuisance symptoms, lowering their intensity or extending periods of remission (clinical improvement) throws between periods of disease (health deterioration and deepening of symptoms). Since the essence of MS refers to degenerative changes occurring in the CNS, clinical symptoms depend primarily on which areas of the central nervous system have been attacked. Therefore, the image the disease can vary widely in individual patients. In all, however, the MS is a progressive, a vast majority occur in increased disability (mainly motor). It is, therefore, necessary not only to carry out therapeutic measures (symptomatic) to patients with multiple sclerosis but also provide them with systematic rehabilitation [1, 2, 3, 4, 5, 6].

The aim of this study is to determine the meaning and application of NDT-Bobath therapy in patients with MS and to evaluate its efficacy in this particular group of patients.

Current knowledge

The clinical picture of MS is dependent on the fact that the structure of the central nervous system is damaged, the degree of destruction which will take place, and at this rate occurs. Consequently, the therapeutic and rehabilitation can be directed at the symptoms of various types of [1, 2, 3, 4, 5, 6].

The most common symptoms associated with the conduct of MS include:

- vision problems - eg. diplopia or nystagmus,
- general fatigue, weakness, pain or impaired sensation, paraesthesia or hypoaesthesia,
- mental symptoms such as a decline in well-being, depression or mood swings,
- symptoms speech engine - for example. dysarthria,

- symptoms associated with the digestive system - from problems with swallowing, constipation or diarrhea by up to fecal incontinence,
- with effects on the locomotor system - for example. muscular weakness, ataxia, and cramps [1, 2, 3, 4, 5, 6].

While all of the above symptoms require treatment, whereas some of them are particularly important for the purpose of a physiotherapist working with a patient. Physiotherapist usually has to do with muscle symptoms, which - in the case of multiple sclerosis patients - primarily include: trouble with balance and gait disorders [1, 2, 3, 4, 5, 6].

Smedal et al., conducted a study to evaluate the use of physiotherapy Bobath by patients suffering from MS and gait disturbances. For this purpose, the clinical condition score and performance of each test according to the scheme ABAA (ang. ABAA phases) in which the individual components meant:

- A - output state (1-3 weeks)
- B - provide therapy (4-6 weeks)
- A - Early follow-up phase (7-9 weeks)
- A - the subsequent late phase (15-17 weeks) [7].

From application, evaluation pattern was to standardize results obtained from individual patients such that each patient was a self "control group" was compared with that achieved by him later, the results [7].

The efficiency and condition of the test were also evaluated based on the following tests and scales:

- a) Scale (BBS called. Berg Balance Scale) - used to assess the balance of the patient,
- b) GAITRite scale - used to assess the patient's gait,
- c) TUG scale (called. Timed Up & Go) - used to evaluate the efficiency of mobility (scale evaluates the time, and which the patient overcome the distance of 3 meters after getting up from a sitting position, and then return the same way and sit down again)
- d) RVGA scale (called. Rivermead Visual Gait Assessment) - evaluates the correctness of a walk (move the limbs relative to the body) [7].

Subjects were assigned values, in addition, EDSS (ang. *Expanded Disability Status Scale*) Evaluating the level of disability [7].

Moreover, patients were asked to make an independent assessment of their condition and well-being - is performed on the basis of:

- a) VAS (ang. Visual Analogue Scale) - used in this case to assess the difficulties in walking,
- b) RPE scale (called. Rating of Perceived Exertion) - is used to assess patient effort.
- c) RMI scale (called. Rivermead Mobility Index) - used to assess the ability to move and perform some action (from the simplest - turning from side to side in bed, the most difficult - running)
- d) PGIC scale or CGIC (ang. Patient Global Impression of Change, Clinical Global Impression of Change) - used to assess changes and the effects of the therapy [7].

After determining the condition of patients and physiotherapy diagnosis, charges were subjected rehabilitation program - designed individually for each patient. Therapists who use the Bobath method for patients with multiple sclerosis have focused primarily on:

- a) improved functioning of the motor muscles,
- b) emphasis on learning nervous and muscular normal traffic pattern.
- c) optimizing the posture of the patient, and therefore the operation of the muscular system,
- d) traffic analysis performed during the functional activities of the patient (in order to determine what component of movement disorders is the most important and the most significant obstacle to a patient)
- e) We guidance patient motion, to give the proper pattern learning motor using neuroplasticity nervous system (both regarding the structural plasticity as well as learning to respond to changing needs) [7].

After completion of the program of physiotherapy method Bobath juxtaposing the results achieved by patients - according to the scheme ABAA.

The results proved that patients have improved their scores on a scale (BBS at all stages: BAA better than the results obtained during the initial state). They increased their walking speed (in Step B, in some cases at the stage AA). Increased stride length in a subsequent late stage, in some cases at an early stage and during subsequent therapy. Execution time and TUG test results RVGA improved in all cases, at any stage of the evaluation. Rating VAS improved in all cases at the stage of therapy and

subsequent early stage, and in some cases also in the late phase of the subsequent. The rating exercise carried out within the framework of the RPE scale has improved in all cases at the stage of therapy and in some cases the stage of the early and late phase of the subsequent. In addition, all participants gained a better research results in the EDSS scale [7].

From the results obtained by the authors shows that:

- a) Physiotherapy Bobath method improved balance in patients with multiple sclerosis,
- b) therapy in accordance with the concept of Bobath improved gait and improved the patients with MS.
- c) Physiotherapy Bobath method improved the mechanics of motion in patients with multiple sclerosis,
- d) Therapy Bobath concept in line with the reduced level of disability of MS patients,
- e) Physiotherapy Bobath method has increased the overall efficiency and ability to perform movements by patients with multiple sclerosis,
- f) therapy in line with the concept of Bobath improved their gait assessment for patients with MS,
- g) physiotherapy Bobath by decreased levels experienced during the movement of the fatigue in multiple sclerosis patients [7].

Similar conclusions were reached Øygard et al., Who used the Bobath concept to patients with multiple sclerosis. The authors confirm that physiotherapy performed by NDT improves patients with MS. Primarily affects the movement of the camera, leading to an increase in walking speed, step elongation, narrowing the spacing of the limbs in motion. [8]

Øygard et al. Note that the effects were satisfactory in all patients in the late phase of subsequent - after treatment, but in some of them improve gait parameters was observed after six minutes after completion of the treatment phase. At the same time, as the authors point out - elongation step occurred only in those subjects in whom the initial state was pathologically reduced. On the other hand, patients who showed normal step length to avoid the elongation after rehabilitation [8].

Rasova et al. Point out that the most important aspect of physiotherapy in patients with multiple sclerosis is the desire to maintain their efficiency, and to improve the functioning of individual systems - in that - the movement. For the application of

rehabilitation in accordance with the Bobath concept in relation to patients with MS, according to the authors suggest the following factors:

- a) Bobath method develops the ability of the movement to "learn" - as a result of appropriate action comes to so-called re-education of muscles,
- b) NDT assumes the concept of focusing on the formation of normal and pathological denial movement patterns, and thus relieves the locomotor system in a natural way,
- c) The Bobath method is adapted to operate at a specific purpose - dependent on the patient's condition and the stage of therapy - this objective makes it easier for patients with metastatic induration desire to increase efficiency
- d) BAT concept is subject to effective verification by recognized tests and scales of efficiency, allowing you to assess the patient's progress during rehabilitation,
- e) The bobath method may be substantially modified and is always directed to a particular problem or failure of the patient - especially for motor stopping invalid scheme [9].

Wiles et al., Evaluated the performance of different variations with respect to physiotherapy in patients with multiple sclerosis - including the treatment by Bobath. The aim of the study was to identify the most optimal methods of rehabilitation. Subject to assessment parameters such as:

- a) level of physical disability - based on the scale RMI
- b) gait disturbance,
- c) manual dexterity,
- d) the level of patient compliance.
- e) subjective evaluation of therapeutic progress made by the patient,
- f) subjective evaluation of therapeutic progress made by his guardian [10].

From the results obtained by Wiles et al. indicate that neurodevelopmental physical therapy is applicable in the treatment of people with MS. Patients undergoing rehabilitation this method to obtain an therapeutic advances, and increased the level of their performance. At the same time, the authors noted that the results obtained did not affect the place where the treatment was carried out (home or hospital). Wiles et al., They pay attention to the fact that home rehabilitation was preferred by both patients and their therapists. At the same time, it was considered more effective. Meanwhile, the studies showed that patients with MS rehabilitated in accordance with the concept of

neurodevelopmental achieve the same good results - regardless of whether the treatment is carried out in a hospital or in the patient's home,

With regard to patients with multiple sclerosis, it seems to be particularly important to adapt the program to their needs physiotherapy. Therapists can often not be aware of - even trivial, as one might think - factors that largely hinder the functioning of patients with MS and rehabilitation. For many syndromes in which the observed physical disability the patient's condition is stable or even fully known. Meanwhile - in the case of patients with multiple sclerosis should be considered even a rapid deterioration of health that may occur after subsequent outbreak disease. It should also take into account the fact that even a patient with poorly developed mental functioning of the locomotor system may have other problems - for example, incontinence. [11, 12, 13, 14, 15].

These arguments support the research and Pérennou Rousseaux, who pay special attention to the aspect of daily comfort in rehabilitation proceedings with the patient [12].

Notable conclusions were reached Smedal et al., Who have tried to determine the impact of various factors on the effectiveness of physiotherapy Bobath method conducted in patients with multiple sclerosis. Researchers focused primarily on the results achieved by the combination of MS patients during rehabilitation carried out in Spain (in warm climates) and in Norway (in cold climates). The Physiotherapy both groups of patients was based on the NDT method and was similar in both cases. The results were analyzed based on standard scales to assess the efficiency of the patient, the correctness of its movement and subjective evaluation of the patient [16].

The obtained results showed that:

- a) patients rehabilitated in warmer climates to obtain an significantly better results in the test verifying their gait speed (6MWT test - called. 6 Minute Walk Test)
- b) Patients undergoing physiotherapy Bobath method, which takes its exercise in warm climates showed lower fatigue test evaluation exercise intensity,
- c) rehabilitated patients in warm climates achieved better results in almost every test requiring a subjective evaluation of their efficiency, the improvement obtained by the treatment, and being [16].

It seems that aspect that makes the physical therapy method Bobath is used in patients with multiple sclerosis is the fact that this method is particularly focused on the individual needs of the patient - note how Graham et al [17].

The authors used the NDT method many times in your practice, and among its advantages primarily cite:

- focus the analysis of the scheme and the motor causes the motor dysfunction,
- continuous monitoring of the correctness of movement and posture of the patient,
- attitude to perform specific tasks (called. task performance)
- selective focus on the performance of individual movements,
- special emphasis on proper coordination [17].

Summary

Systematic approach to physiotherapy in patients with multiple sclerosis is one of the most important aspects of the therapeutic treatment of patients with MS. Method Bobath seems to be particularly indicated rehabilitation concept with regard to this group of patients - mainly due to the case approach dysfunction and particular emphasis being placed on the adjustment movements and those pathological [18, 19, 20].

References

1. Compston A., Coles A., Multiple Sclerosis, *Lancet* 2008, 372: 1502–1517
2. Wiles C.M., Physiotherapy and related activities in multiple sclerosis, *Multiple Sclerosis* 2008, 14, 7: 863-871
3. Henze T., Managing Specific Symptoms in People with Multiple Sclerosis, *The International MS Journal* 2005, 12: 60–68
4. Henze T. et al., Symptomatic Treatment of Multiple Sclerosis, *Eur Neurol* 2006, 56: 78–105
5. Cameron M.H., Lord S., Postural Control in Multiple Sclerosis: Implications for Fall Prevention, *Curr Neurol Neurosci Rep* 2010, 10: 407 –412
6. Padua L. et al., Motor assessment of upper extremity function and its relation with fatigue, cognitive function and quality of life in multiple sclerosis patients, *Journal of the Neurological Sciences* 2007, 253: 106
7. Smedal T. et al., Balance and gait improved in patients with MS after physiotherapy based on the Bobath concept, *Physiotherapy Research International* 2006, 11, 2: 104–116
8. Oygard K. et al., Physiotherapy, based on the Bobath concept, may influence the gait pattern in persons with limb-girdle muscle dystrophy: a multiple case series study, *Physiother Res Int.* 2011, 16, 1: 20-31
9. Rasova K. et al., Emerging evidence-based physical rehabilitation for Multiple Sclerosis - Towards an inventory of current content across Europe, *Health and Quality of Life Outcomes* 2010, 8:76-81

10. Wiles C.M. et al., Controlled randomised crossover trial of the effects of physiotherapy on mobility in chronic multiple sclerosis, *J Neurol Neurosurg Psychiatr* 2001, 70: 174–179
11. Thompson A.J., The effectiveness of neurological rehabilitation in multiple sclerosis, *Journal of Rehabilitation Research and Development* 2000, 37, 4: 455-461
12. Rousseaux M., Perennou D., Comfort care in severely disabled multiple sclerosis patients, *Journal of the Neurological Sciences* 2004, 222: 39 – 48
13. Chetta A. et al., Cardio respiratory response to walk in multiple sclerosis patients, *Respiratory Medicine* 2004, 98: 522–529
14. Conklyn D. et al., A Home-Based Walking Program Using Rhythmic Auditory Stimulation Improves Gait Performance in Patients With Multiple Sclerosis: A Pilot Study, *Neurorehabil Neural Repair* 2010, 24, 9: 835-842
15. Simmons R.D. et al., What affects your MS? Responses to an anonymous, Internet-based epidemiological survey, *Multiple Sclerosis* 2004, 10, 2: 202-211
16. Smedal T. et al., The influence of warm versus cold climate on the effect of physiotherapy in multiple sclerosis, *Acta Neurol. Scand.* 2011, 124: 45–52
17. Graham J.V. et al., The Bobath Concept in Contemporary Clinical Practice, *Rehabil.* 2009, 16, 1: 57–68
18. Karpatkin H.I., Multiple Sclerosis and Exercise A Review of the Evidence, *Int. J. MS Care* 2005, 7: 36-41
19. Lerdal A. et al., A prospective study of patterns of fatigue in multiple sclerosis, *European Journal of Neurology* 2007, 14: 1338–1343
20. Rasova K. et al., Is it possible to actively and purposely make use of plasticity and adaptability in the neurorehabilitation treatment of multiple sclerosis patients? A pilot project, *Clin Rehabil* 2005, 19, 2: 170-181

Adres do korespondencji:

Adrian Miler

Bydgoska Szkoła Wyższa w Bydgoszczy

ul. Unii Lubelskiej 4C

85-059 Bydgoszcz

adrian.miler@interia.pl