Influence of Functional Movement Rehabilitation on Quality of Life in People with Parkinson’s Disease

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Abstract. [Purpose] Parkinson’s disease is one of the most frequent diseases of the central nervous system. Thorough knowledge of reasons for movement defects may contribute to the ability to quality of life at a good level as far as motor abilities are concerned. The aim of the study was to evaluate the influence of functional movement rehabilitation on the degree of intensity of movement symptoms in Parkinson’s disease. [Subjects] The research was carried out in people diagnosed with stage III Parkinson’s disease, according to the Hoehn and Yahr scale classification. [Methods] In order to establish the clinical state of patients, parts I, II, and III of the Unified Parkinson’s Disease Rating Scale, the Schwab and England Activities of Daily Living scale, and the quality of life in Parkinson’s disease questionnaire were applied. The intervention group took part in 60 minutes of functional movement rehabilitation twice a week for a period of 15 weeks. The main emphasis was placed on the ability to cope with everyday activities. [Results] A significant difference in scores for the given scales between before and after research the intervention period was observed in the intervention group. [Conclusion] The obtained results revealed positive that the influence of applied rehabilitation program had a positive influence on the degree of intensity of movement symptoms in people with Parkinson’s disease.

Key words: Parkinson’s disease, Functional movement rehabilitation, Quality of life

INTRODUCTION

Despite growing interest of scientists in Parkinson’s disease (PD), the etiology remains still unknown. It is currently diagnosed based only on finding of typical clinical symptoms like: resting tremor, bradykinesia, rigidity and postural instability. Pharmacological treatment in time is becomes less and less effective over time in fighting development of the disease. Therefore, researchers have begun to look for other (non-pharmacological) treatment methods1, 2.

Rehabilitation is one of the factors that may be essential to maintain physical activity at a good level and enables people suffering from PD to lead a normal life. Therefore, it is worth noting that rehabilitation should not be restricted only to physical fitness improvement, but should also be aimed at simple daily activities, that contribute to a better standard of life for both patients and their families3, 4.

Although the need for application of means other than only pharmacological treatment is not questioned, the approaches presented in the literature are not unequivocal. Some authors state that rehabilitation does not influence improvement of the quality of patients’ lives. Therefore, in most studies regarding efficiency of physiotherapy, improvement of at least one of the examined variables has been observed5, 6.

Taking into consideration the lack of unequivocal approaches presented in the literature, the decision was made to the research allowing to assessment of changes at the level of quality of life and physical fitness induced by movement rehabilitation in people with PD5, 7.

The aim of the study was to assess the efficiency of a functional movement rehabilitation program applied to people suffering from Parkinson’s disease.

SUBJECTS AND METHODS

A group of people with Parkinson’s disease, according to criteria set by the United Kingdom Parkinson’s Disease Society Brain Bank, volunteered to participate in the study. The A Committee for Bioethics of the Academy of Physical Education in Katowice gave consent for carrying out the ex-
RESULTS

Statistical analysis revealed compliance of the obtained results with the normal distribution and that the conditions for the homogeneity variance were met. The results of the Student’s t-distribution test demonstrated the lack of a statistically significant difference between the examined groups before the start of the experiment, taking into account the results of all conducted tests.

In order to determine the influence of movement rehabilitation on physical fitness in everyday life activities, a one-way analysis of variance (ANOVA) was carried out, and post-hoc tests were conducted.

The conducted analysis of variance showed statistically significant differences between the examined groups before and after the intervention period in each of the conducted tests. To determine differences between the groups post-hoc tests were applied. The results of comparisons of the results before and after the intervention period with the division by group are presented in Table 1.

DISCUSSION

The obtained results confirm the hypothesis of a favorable influence of functional movement rehabilitation on patients with Parkinson’s disease. Significant differences were observed in the experimental group with regard to the results of all conducted tests between before and after the intervention period. In the control group, no significant differences were noted.

In the literature, different studies evaluating the efficiency of movement rehabilitation in Parkinson’s disease treatment can be found. They include studies using various types of exercises and diverse methods to assess methods of their efficiency. For instance, King et al. introduced a new framework for therapists to develop an exercise program to delay mobility disability in people with Parkinson’s disease. Frazzitta et al. reported the effects of a four-week multidisciplinary inpatient rehabilitation program on gait and balance function after completion of the intervention and one year later. The broad scope of work in this special issue is reflective of the far-reaching impact that rehabilitation may have on many aspects of PD in the individual. The work of Earhart et al. provides a multilevel understanding of PD motor problems that can be fed into clinical care and optimal rehabilitation programs for patients with disease. Improvement of physical fitness after movement rehabilitation can be observed in most cases. Furthermore, improvement of at least one of examined features can be seen immediately after an intervention. The studies in the literature have used diverse rehabilitation programs or a single specific program.

Referring to the data which may be found in the literature, this study presented a different approach to physical fitness in which the emphasis was laid on the activities performed in everyday life. The rehabilitation program and applied tests were oriented towards this specific aim. The results showed a high response of the subjects to the applied physical exercises. Furthermore, evaluation of the quality of life revealed its improvement. In the case of elderly people, physical activity prevents aging processes. This is also the case for people suffering from the Parkinson’s disease, although physical activity should be oriented towards im-
Through functional movement rehabilitation, patients be able to lead their normal lives longer. When patients start rehabilitation at an early stage of the disease, there is a high probability to slow down its progress. The following conclusions can be drawn based on the findings of this study:

1. Due to regular functional movement rehabilitation, in the experimental group, in comparison with the control group, showed improvement of physical fitness and a lack of escalation of PD’s symptoms.

2. When functional movement rehabilitation is applied on a regular basis, improvement of quality of life and everyday life activities can be noticed.

Table 1. Comparison of tests’ results from before and after the intervention period in the experimental and control group

| Variable | Before | After | Relative difference | Absolute difference |
|----------|--------|-------|---------------------|---------------------|
| UPDRS    |        |       |                     |                     |
| Part I [pkt] | 2.39  | 0.19  | 2.08                | 0.21                | 0.31 | 12.97* |
| Part II [pkt] | 16.21 | 1.54  | 12.42               | 1.01                | 3.79 | 23.38* |
| Part III [pkt] | 22.51 | 2.43  | 18.34               | 1.55                | 4.17 | 18.53* |
| Part I, II, and III [pkt] | 41.11 | 3.51  | 32.84               | 2.65                | 8.27 | 20.12* |
| Schwab and England [%] | 73.09 | 6.41  | 79.51               | 5.32                | −6.42 | −8.78* |
| PDQ-39 [pkt] | 40.12 | 2.43  | 32.78               | 3.02                | 7.34 | 18.30* |
| UPDRS    |        |       |                     |                     |
| Part I [pkt] | 2.31  | 1.03  | 2.39                | 0.95                | −0.08 | −3.46 |
| Part II [pkt] | 16.02 | 1.43  | 16.42               | 1.43                | −0.4  | −2.50 |
| Part III [pkt] | 21.96 | 1.98  | 22.65               | 2.01                | −0.69 | −3.14 |
| Part I, II, and III [pkt] | 40.16 | 3.82  | 41.42               | 3.99                | −1.26 | −3.14 |
| Schwab and England [%] | 73.64 | 6.12  | 70.82               | 6.54                | 3.16 | 4.27 |
| PDQ-39 [pkt] | 41.45 | 3.82  | 42.21               | 3.92                | −0.76 | −1.83 |

$\overline{x}_1$ : mean of the examined variables in the experimental group.

$\overline{x}_2$ : mean of the examined variables in the control group.

S : standard deviation.

* : statistically significant differences of p<0.05.