rehabilitation strategy for individuals with PD, including its effects beyond motor symptoms.
Objectives: To assess the effects of BCI-controlled exoskeleton use on cognition and occupational performance in individuals with PD.
Methods: This pilot study involved 10 daily intervention sessions, each lasting 60 minutes, using BCI with motor imagery combined with an exoskeleton applied to the most affected hand, followed by the execution of the imagined action. Each participant imagined and executed five problem-based activities in the domains of self-care, productivity, and leisure, focusing on tasks they found most challenging. The assessment instruments used before and after the interventions included the Parkinson's Disease Cognitive Rating Scale (PD-CRS) and the Canadian Occupational Performance Measure (COPM).
Results: A total of 12 individuals with PD participated (6 men and 6 women), with a mean age of 60.41 years. The majority were right-hand dominant (91.6%), with eight participants exhibiting contralateral motor symptoms. The average time since diagnosis was 3.9 years, with most participants classified at stage 3 (58.3%) according to the Hoehn and Yahr Scale. Participants demonstrated significant improvement in subcortical frontal cognitive functions ($p = 0.016$), including sustained attention, working memory, alternating and verbal action fluency, clock drawing, and immediate and delayed free recall verbal memory; posterior cortical functions ($p = 0.001$), including confrontation naming and clock copying; as well as in the total PD-CRS score ($p = 0.007$). Both occupational performance and satisfaction significantly improved ($p < 0.001$) according to the COPM, with sustained benefits observed in a follow-up assessment after four weeks.
Conclusion: BCI-controlled motor imagery intervention using a robotic glove is a viable approach for individuals with PD, as it significantly improved cognitive functions and participants' perceived performance and satisfaction in daily activities. Further studies, particularly randomized clinical trials with larger sample sizes and long-term interventions, are necessary to determine whether BCI application plays an effective role in PD rehabilitation.
Implications: The use of an exoskeleton appears to have positive implications for the functional rehabilitation of individuals with PD. BCI has the potential to enhance neuronal activation, promoting brain reorganization and plasticity, thereby stimulating cognitive functions. A notable aspect of this study is its individualized approach, tailoring imagined and executed activities to each participant's specific needs while incorporating key neurofunctional rehabilitation principles, including neurofeedback, repetitive training, and treatment intensity.
Keywords: Brain-Computer Interfaces, Neurological Rehabilitation, Parkinson's disease

Conflict of interest: The authors declare no conflict of interest.
Funding: Not applicable.
Ethics committee approval: CAAE: 64338122.0.0000.5411.
Registration: Not applicable.

https://doi.org/10.1016/j.bjpt.2025.101433

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FUNCTIONALITY, WORK ABILITY, AND REHABILITATION BARRIERS IN YOUNG ADULTS POST-STROKE: A CROSS-SECTIONAL ANALYSIS

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Background: Stroke is a leading cause of disability worldwide, with significant consequences for young adults, including functional limitations, reduced work capacity, and challenges in rehabilitation adherence. Although the impact of stroke on older populations is well-documented, studies on young stroke survivors remain limited, particularly regarding barriers to rehabilitation and return to work. Identifying the factors influencing functionality, work ability, and rehabilitation participation is important for improving post-stroke outcomes in this population.
Objectives: This study aimed to (1) assess functionality and work ability among young adults post-stroke, (2) evaluate perceived barriers to rehabilitation, and (3) examine the relationship between functional status, work capacity, and rehabilitation barriers.
Methods: A cross-sectional study was conducted with 50 young adult stroke survivors (ages 18–65). Functional assessments included the National Institutes of Health Stroke Scale (NIHSS), Modified Rankin Scale (mRS), Barthel Index (BI), and Stroke Impact Scale (SIS). Work ability was measured using the Work Ability Index (WAI), and barriers to rehabilitation were assessed using the Cardiac Rehabilitation Barriers Scale (CRBS). Correlation analyses explored associations between functionality, work ability, and rehabilitation barriers.
Results: Participants exhibited moderate functional impairment (median NIHSS: 6, IQR: 4; BI: 88, IQR: 32; mRS: 2, IQR: 1), with SIS subdomains indicating significant mobility and hand function deficits. Work ability was generally low (median WAI: 10, IQR: 9), with a strong positive correlation between higher functional status and work ability (e.g., BI and WAI, $r = 0.56$, $p < 0.001$). Rehabilitation barriers were prevalent, particularly in perceived needs and accessibility. Higher CRBS scores were associated with lower functional status and work ability, suggesting that socioeconomic and logistical factors significantly impact rehabilitation adherence.
Conclusion: Young stroke survivors face substantial functional limitations and work restrictions, compounded by socioeconomic and accessibility barriers to rehabilitation. Addressing these challenges through targeted rehabilitation programs and improved access to services may enhance functional outcomes and work reintegration.
Implications: These findings highlight the need for integrated post-stroke rehabilitation strategies that consider functionality, work capacity, and rehabilitation barriers. Policymakers and healthcare providers should focus on reducing structural and socioeconomic obstacles to optimize recovery and reintegration into professional life.
Keywords: Barriers to Access of Health Services, Stroke Rehabilitation, Rehabilitation

Conflict of interest: The authors declare no conflict of interest.
Funding: CAPES - Finance Code 001, and 88881.708719/2022-01 and 88887.708718/2022-00, and FAPERJ N°. E26/211.104/2021.
Ethics committee approval: Not applicable.
Registration: PROSPERO - CRD42024516853.

https://doi.org/10.1016/j.bjpt.2025.101434

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KNOWLEDGE ABOUT RISK FACTORS FOR STROKE PREDICTS THE ADOPTION OF HEALTHY LIFESTYLE BEHAVIORS POST-STROKE: A CROSS-SECTIONAL STUDY

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Background: Recurrent stroke significantly contributes to the global burden of stroke. Stroke secondary prevention, which promotes healthy lifestyle behaviors, is seen as a priority solution to reduce this burden. However, many post-stroke individuals maintain unhealthy lifestyles, often citing a lack of stroke education as a barrier to adopting healthier habits. Understanding whether knowledge about stroke influences the adoption of healthy behaviors can help guide secondary prevention strategies, where health education plays a crucial role in empowering individuals to make informed lifestyle choices.
Objectives: This study aimed to assess whether knowledge about stroke—its definition, signs, symptoms, risk factors, and the individual's belief in the possibility of another stroke —predicts the adoption of healthy lifestyle behaviors during the chronic phase post-stroke.
Methods: A cross-sectional study was conducted through telephone interviews with individuals in the chronic post-stroke phase, collecting data on sociodemographic, lifestyle behaviors, and stroke-related knowledge. Descriptive statistics and binary logistic regression (a = 5%) were used for analysis. The dependent variables were smoking cessation, safe alcohol consumption, healthy diet, physical activity, and the simultaneous adoption of all four healthy behaviors. Predictor variables related to stroke knowledge included knowing what a stroke is, its signs, symptoms, risk factors, and belief in the risk of a new stroke.
Results: Seventy-five individuals participated (mean age: 63 ± 13 years; 50% male). Of them, 65 (87%) did not smoke, 74 (89%) consumed alcohol safely, 48 (64%) ate at least two servings of fruits/vegetables daily, 25 (33%) engaged in = 1 hour of physical activity weekly, and 14 (19%) adopted all four healthy behaviors. Regarding stroke knowledge, 43 (57%) knew what a stroke is, 41 (55%) knew its signs and symptoms, 29 (39%) knew its risk factors, and 33 (44%) believed they were at risk of a new stroke. Knowledge of stroke risk factors was found to significantly predict physical activity participation (B: 1.08, OR: 2.95, 95% CI: 1.03-8.41, p = 0.043) and the simultaneous adoption of all healthy behaviors (B: 1.45, OR: 4.27, 95% CI: 1.15-15.82, p = 0.030).
Conclusion: Knowledge of stroke risk factors significantly predicted physical activity participation and the combined adoption of smoking cessation, safe alcohol consumption, a healthy diet, and post-stroke physical activity. Screening for knowledge of stroke risk factors could help identify individuals who need targeted secondary prevention education. Health education on this topic is essential in promoting the adoption of healthy lifestyle behaviors for stroke secondary prevention.
Implications: This study highlights the importance of health education in secondary stroke prevention, particularly in addressing knowledge about stroke risk factors to encourage healthy lifestyle behaviors. It also underscores the need for screening knowledge on stroke risk factors to identify individuals who require targeted education. These findings are relevant for healthcare professionals involved in secondary stroke prevention and suggest that future studies should explore whether providing knowledge about stroke risk factors can promote healthier behaviors and reduce recurrence rates.
Keywords: Stroke, Secondary Prevention, Healthy Lifestyle Behaviors, Knowledge

Conflict of interest: The authors declare no conflict of interest.
Funding: CAPES - Finance Code 001, FAPEMIG, CNPq, PRPq/UFMG and WUN.
Ethics committee approval: CAAE: 78496324.3.0000.5504.
Registration: Not applicable.

https://doi.org/10.1016/j.bjpt.2025.101435

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QUALITY OF LIFE IN INDIVIDUALS AT DIFFERENT STAGES OF PARKINSON'S DISEASE: A COMPARATIVE ANALYSIS

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Background: Parkinson's disease (PD) is a progressive neurodegenerative condition characterized by motor and non-motor symptoms that significantly impact individuals' functionality and independence, reducing their quality of life (QoL). The QoL of people with PD can be influenced by several factors, including disease progression, the presence of comorbidities, and treatment response. Thus, understanding the relationship between PD severity and QoL is essential for optimizing rehabilitation strategies, enabling the implementation of more effective and personalized approaches to minimize the negative impacts of the disease.
Objectives: To assess the relationship between PD severity and the quality of life of individuals affected by Parkinson's disease.
Methods: A cross-sectional study was conducted with individuals diagnosed with PD, recruited from Parkinson's disease associations in Rio Grande do Sul, Brazil. The study was approved by the Research Ethics Committee. Disease severity was measured using the Hoehn & Yahr Scale (H&Y), which classifies Parkinson's disease into stages based on a combination of clinical characteristics and disability. Quality of life was assessed using the Parkinson's Disease Questionnaire-39 (PDQ-39), which evaluates individuals' perceptions of QoL, participation, and disease-related restrictions. The comparison between variables was analyzed using a four-way ANOVA test, with post hoc analyses corrected by Bonferroni adjustments.
Results: A total of 27 individuals were included (mean age: 70.14 years, 66% male). The four-way ANOVA indicated a significant effect on QoL among individuals with different levels of PD severity (p = 0.011). Post hoc tests revealed large and moderate effect sizes, with Cohen's d ranging from -0.460 to -1.084. Statistical significance was reached only in the comparison between the H&Y 1.5 and H&Y 3 groups (d = -1.084, p = 0.042). Descriptive analysis showed a progressive increase in PDQ-39 scores, from 23.6 ± 5.4, 28.0 ± 12.8, 36.0 ± 9.2, and 48.0 ± 17.6 for stages 1.5, 2, 2.5, and 3, respectively, indicating that higher disease severity levels are associated with poorer quality of life.
Conclusion: PD severity is directly related to poorer QoL, highlighting the critical need for early and targeted interventions to minimize the negative impacts of disease progression. As the disease advances, individuals experience increasing disability and limitations, significantly affecting their daily lives. The findings of this study emphasize that individuals in more advanced disease stages, particularly those classified as H&Y stage 3, are particularly vulnerable to substantial reductions in their quality of life.
Implications: This study reinforces the importance of early and individualized rehabilitation strategies to address PD progression in its initial stages. Early recognition of disease severity through tools such as the Hoehn & Yahr scale allows for interventions that may help slow the decline in functional abilities and reduce the impact of PD on patients' lives. Furthermore, understanding the relationship between disease severity and QoL enables healthcare teams to tailor treatment plans more effectively, meeting the unique needs of each patient as they progress through the disease stages.
Keywords: Parkinson's disease, PDQ39, Hoehn & Yahr Scale

Conflict of interest: The authors declare no conflict of interest.
Funding: Not applicable.