

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>

171

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

Paulo César de Lima Andreilino, Erika Rodrigues, Laura Alice Santos de Oliveira, Arthur de Sá Ferreira
Programa de Pós-Graduação em Ciências da Reabilitação, Centro Universitário, Augusto Motta, Rio de Janeiro, RJ, Brazil

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>

172

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

Luma Amendoeira, Jéssica Melo dos Santos, Paula da Cruz Peniche, Lidiane Lima, Olive Lennon, Christina Danielli Coelho de Moraes Faria
Department of Physical Therapy, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil