

Frey test, which applies stimuli with nylon monofilaments (0.05 to 300 g) to the animal's paw, with an expected response of shaking, cleaning, or lifting the paw if the stimulus is felt. Each filament was applied 10 times, and a positive result occurred when the animal responded 40% of the time to the same filament. Tests were conducted before injury and on days 7, 14, 21, and 28 post-CCI. Statistical analyses included the Shapiro-Wilk normality test and one-way ANOVA with Tukey's post hoc test, using Prism 9 software. p -values < 0.05 were considered significant.

Results: In the Von Frey sensory test, all groups showed worsened sensitivity on day 7, with no significant differences ($p = 0.89$). On day 14, the CCI + VE group improved, matching the SHAM group, while the CCI group maintained significantly worse sensitivity compared to the other groups (one-way ANOVA, $F(3,11) = 5.6$; $p = 0.001$). On days 21 and 28, the CCI group aligned with the SHAM and CCI + VE groups ($p = 0.35$).

Conclusion: VE combined with EE accelerated the recovery of the CCI + VE group, which showed a faster improvement in mechanical sensitivity starting on day 14, compared to the CCI group, which only improved from day 21 onwards.

Implications: The findings suggest that the combined intervention may be a more effective strategy for neuropathic pain modulation. Translating to clinical practice, outdoor or group exercises are recommended as a form of enrichment.

Keywords: Physical Exercise, Hyperalgesia, Nervous System

Conflict of interest: The authors declare no conflict of interest.

Funding: FAPESP.

Ethics committee approval: CAAE: 71084523.0.0000.8093.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101431>

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EDUCATIONAL LEVEL AND INCOME ARE ASSOCIATED WITH KNOWLEDGE OF STROKE IN USERS OF SUS IN SOUTH OF BRAZIL

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Background: Stroke is the primary cause of disability among adults in Brazil and imposes a substantial financial burden on the Unified Health System (SUS). This burden can be alleviated through primary care preventive measures focused on identifying risk factors and early disease diagnosis. However, few studies evaluate SUS users' knowledge about stroke.

Objectives: This study aimed to assess the knowledge of stroke among the population using the SUS in the South of Santa Catarina and explore the association of educational level and income with knowledge of stroke in this population.

Methods: This cross-sectional study was conducted between January and April 2023, using a questionnaire developed by researchers which evaluated knowledge about stroke regarding signs and symptoms, pathophysiology, risk factors and sequelae. A total of 350 individuals participated. The collected data were organized and analyzed using the Statistical Package for Social Sciences (SPSS) version 22 for Windows. The chi-square test was used to assess the association between sociodemographic variables and questionnaire responses.

Results: The sample was mostly female, with a mean age of 36 ± 14.33 years, mostly white, married/stable union, with an income of 1.5 minimum wages. It was observed that most participants believed to know in about pathophysiology, signs and symptoms,

risk factors and sequelae of stroke, but few responded correctly. Among the responses that were considered adequate, it was possible to observe a significant association between education level and giving an adequate response, demonstrating that the variable education level influences the adequacy of the participant's response. It was also possible to see that individuals with lower incomes (up to 1.5 minimum wages) make more mistakes regarding the pathophysiology of stroke. When comparing income and knowledge of the signs and symptoms of stroke, it was observed that there is a tendency to be statistically significant, with individuals with lower incomes (up to 1.5 minimum wages) presenting more inadequate responses. During the analyses, it was possible to observe a statistically significant association between those who say they know the risk factors and family history of stroke ($p = 0.001$; $X^2 = 11.343$). Individuals who had a history said they knew more about the risk factors (71.3%) when compared to those who did not have a family history (53.7%). However, when evaluating only the yes answers, classified as adequate or inadequate, it was seen that this difference was not significant ($p = 0.758$; $X^2 = 0.095$), demonstrating that having a family member with stroke does not increase knowledge of the risk factors of the disease. There was also no statistically significant relationship between family history and responding adequately to the pathophysiology of stroke ($p = 0.543$; $X^2 = 0.371$), sequelae ($p = 0.678$; $X^2 = 0.172$) and signs and symptoms ($p = 0.697$; $X^2 = 0.152$).

Conclusion: This study showed that most of the interviewees do not know in general about stroke, and that lower incomes and level of education are associated with answers that are inadequate, while having a family member with stroke does not increase knowledge of stroke.

Implications: It became evident that educational interventions are essential for the general population to enhance stroke prevention and minimize its impact.

Keywords: Knowledge, Unified Health System (SUS), Stroke

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: CAAE: 78901724.4.0000.5133.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101432>

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BRAIN-COMPUTER INTERFACE IN COGNITIVE REHABILITATION FOR INDIVIDUALS WITH PARKINSON'S DISEASE AND IMPROVEMENT IN OCCUPATIONAL PERFORMANCE: A PILOT STUDY

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Background: Parkinson's disease (PD) causes non-motor symptoms such as cognitive impairments, which can progress to dementia, leading to occupational performance issues. The use of a non-invasive brain-computer interface (BCI) is a promising approach in neurofunctional rehabilitation, such as the application of an upper-limb exoskeleton. Although BCI has been validated for other neurological conditions, further research is needed to investigate its impact as a

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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