

( $p = 0.036$ ,  $B = 1.896$ ,  $OR = 6.659$ ,  $95\%CI = 1.137-39.013$ ). Individuals without emotional stress/depression were more likely to be non-smokers. The model for adopting all four behaviors (correct classification = 82.7%) identified age as a significant predictor ( $p = 0.023$ ,  $B = -0.072$ ,  $OR = 0.931$ ,  $95\%CI = 0.875-0.990$ ), with older individuals less likely to adopt all healthy behaviors.

**Conclusion:** Emotional stress/depression and age were predictors of adopting healthy lifestyle behaviors post-stroke in a middle-income country, highlighting their importance in targeting secondary prevention interventions.

**Implications:** Smoking cessation interventions should consider additional support for individuals experiencing emotional stress/depression. Secondary prevention strategies should also target older individuals to enhance their adherence to multiple healthy behaviors. While age cannot be modified, older individuals may require intensive behavioral strategies to reduce stroke recurrence risk. The low physical activity rate (22%) aligns with findings from another study conducted in a middle-income country, emphasizing the need for targeted interventions. Despite the high smoking cessation rate, relapse remains a concern, reinforcing the need for sustained prevention efforts. Additionally, studies should incorporate feasible clinical measurements to refine these findings further.

**Keywords:** stroke, healthy behaviors, risk factors

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## EVALUATING BALANCE, GAIT VELOCITY, AND FUNCTIONAL STRENGTH IN INDIVIDUALS WITH SPINOCEREBELLAR ATAXIA VERSUS HEALTHY ONES: EXAMINING DISEASE SEVERITY

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**Background:** Spinocerebellar ataxia (SCA) is a family of dominant hereditary cerebellar ataxias that progressively degenerate the cerebellum and its pathways, causing postural instability and incoordination. Despite the importance of assessing functionality in individuals with SCA, data on performance in these tests is scarce.

**Objectives:** To assess the impact of SCA over functionality based on disease progression and symptom severity by comparing the performance of individuals with SCA to healthy ones.

**Methods:** Thirty-nine individuals with SCA were invited to participate. Four decline the invitation. Thirty healthy participants, matched in gender and age, were also recruited. Individuals with SCA was assessed through the Scale of the Assessment and Rating of Ataxia (SARA) and the Inventory of Non-Ataxia Signs (INAS) to characterize disease gravity and presence of non-ataxic symptoms, respectively. All participants were evaluated with the Five times sit to stand (5TSTS), 10m walk test (10MWT) and Functional reach test (FRT) with accelerometry. During FRT, a linear artifact was acquired using signals from 3D accelerometers integrated into an Apple smartphone (Iphone 13, designed by Apple in California USA,

assembled in Brazil) positioned in the lumbar region. The individuals with SCA were subdivided into three groups, according to the scores obtained on the SARA scale associated to the level of dependence when performing ADL (minimum-moderate, maximum, and severe-total dependence). To compare the control group and individuals with SCA subgroups, a one-way ANOVA was performed, followed by posttests in case of a significant main effect. Analysis of accelerometer recording during FRT was performed by comparing the groups using a t test for independent samples.

**Results:** For the analyzes of the 5TSTS, FRT and 10MWT, data from the 35 individuals with SCA as well as 30 height controls were used. For the analysis of the movement pattern during FRT with accelerometry, data from only 28 individuals with SCA and 22 controls were included due to the enough quality of signals found needed to analysis. There was a main effect when comparing groups for all variables: 5TSTS ( $P < 0.001$ ); TAF ( $P < 0.001$ ); Time in the 10MWT ( $P < 0.001$ ); and number of steps in the 10MWT ( $P < 0.001$ ). The distances achieved in the FRT by the control group were significantly higher than those of the maximum and severe-total dependence groups, while for the minimal-moderate dependence group, there were no significant differences compared to the control group. Regarding the TAF movement phases, there were no significant differences for any variable ( $P < 0.132$ ).

**Conclusion:** The results indicate that SCA impacts gait and postural control. In general, individuals with SCA with greater dependence for ADL and worse disease severity had the worst performance in the tests. Although the distances reached in the FRT were smaller for patients with SCA, the movement phases did not show significant differences between them, indicating that the movement pattern is not significantly altered.

**Implications:** These results help to improve the treatment of individuals with SCA, highlighting the changes that can cause disease progression, identifying the areas in which patients have more difficulties, and helping in designing their plans of assistance.

**Keywords:** Spinocerebellar ataxia, Mobility, Functional strength, Postural control

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## COMPARISON AND CORRELATION BETWEEN THE NUMERICAL PAIN SCALE AND THE VISUAL ANALOG SCALE IN PAIN PERCEPTION AMONG INDIVIDUALS WITH MIGRAINE

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**Background:** Chronic migraine (CM) is a highly prevalent neurological condition and a leading cause of disability, particularly among women. Pain assessment is crucial for managing this condition, and scales such as the Numerical Pain Scale (NPS), which evaluates pain on a scale from 0 to 10, and the Visual Analog Scale (VAS), consisting of a 100-mm line ranging from "no pain" to "worst possible pain," are widely used for this purpose.

**Objectives:** To compare the VAS and NPS and correlate them with a functional disability scale in patients with chronic migraine.

**Methods:** This was a cross-sectional observational study with a non-probabilistic convenience sample. Subjects included were those diagnosed with CM by a neurologist, on stable CM medication for at least three months, and without other associated headaches. Pain levels were assessed using the VAS, NPS, and the Migraine Disability Assessment Scale (MIDAS). Upon inclusion, participants were asked, "What is the intensity of your headache during a migraine attack?", which was quantified using the NPS. Next, the second part of the assessment was conducted, where the MIDAS and VAS were applied. Data were analyzed descriptively and inferentially using SPSS software, version 20. The Kolmogorov-Smirnov test was used to assess data normality; the Wilcoxon test was applied to compare NPS and VAS scores; and Spearman's correlation was used to evaluate the relationship between the variables and the MIDAS scale. A 95% confidence interval and a p-value < 0.05 were considered statistically significant.

**Results:** The sample comprised 80 women, with a mean age of  $35.99 \pm 2.17$  years. The median NPS pain score was 10 (2.00), while the median VAS score was 8.35 (2.78). The MIDAS median score was 81.5 (88.75), indicating a significant functional impact of migraine. A statistically significant difference ( $p < 0.05$ ) was observed in the comparison between the scales, with a positive correlation ( $r_s = 0.27$ ;  $p < 0.05$ ). The NPS showed a stronger correlation with the MIDAS scale ( $r_s = 0.33$ ;  $p < 0.01$ ) compared to the VAS ( $r_s = 0.27$ ;  $p < 0.05$ ), though both correlations were significant.

**Conclusion:** The NPS demonstrated a stronger correlation with pain-related functional impairment, suggesting it may be a more sensitive tool for this purpose.

**Implications:** The stronger correlation between the NPS and MIDAS suggests that the NPS may be more effective in monitoring the impact of pain on patients' functionality, aiding in therapeutic decision-making. Further studies are needed to confirm these findings and expand the understanding of the clinical applicability of pain assessment scales.

**Keywords:** Pain scales, Chronic migraine, Functional disability

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# **PASSIVE MOBILIZATION PERFORMED BY AN AUTOMATED KINESIOTHERAPY DEVICE: IMMEDIATE EFFECTS OF ON GAIT BIOMECHANICS IN HEMIPARETIC PATIENTS**

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**Background:** Brain injuries refer to damage in cerebral structures, either vascular or traumatic in origin, leading to impairments in postural, balance, and muscle tone. These manifestations result in significant movement limitations, thus affecting daily activities and increasing the risk of falls, pain, and discomfort. Passive mobilization is a therapeutic approach that can influence joint range of motion and the properties of muscle and connective tissues. Automated devices enable passive movement repetition with greater intensity, reproducibility, and specificity while also reducing the physical strain on physical therapists. However, studies assessing the effects of this intervention on the lower limbs of spastic and hemiparetic patients remain scarce.

**Objectives:** This study evaluated the immediate effects of passive mobilization performed with a kinesiotherapy device on spatiotemporal gait parameters in hemiparetic patients.

**Methods:** This clinical trial included 18 hemiparetic patients diagnosed with brain injury. We performed gait assessment using an Inertial Measurement Unit (IMU) with an accelerometer and gyroscope and evaluated discomfort using the Visual Analog Scale (VAS). The intervention protocol involved passive kinesiotherapy using an automated device for 30 minutes, with all tests applied pre- and post-intervention.

**Results:** The intervention improved cadence, symmetry, step length, and propulsion for both the affected and unaffected hemibody, with a significant increase in walking speed ( $p = 0.02$ ). Step length of both the affected and unaffected limbs, as well as propulsion of the affected limb, showed a moderate effect size.

**Conclusion:** The results of this study demonstrate that passive mobilization using an automated kinesiotherapy device has immediate effects on gait biomechanics in hemiparetic patients. It is well established that muscle joint complex function depends on the integrity of the mechanical components of the tissue, and the passive kinesiotherapy device protocol suggests that passive mobilization positively impacts components related to muscle-joint integrity.

**Implications:** These findings represent a new perspective on applying automated passive mobilization to complement conventional physiotherapy in neurological rehabilitation. An important point to highlight is that the device is intended for home use and does not replace physiotherapy but should be considered a complementary treatment. This approach can maximize gains and minimize losses, optimizing rehabilitation goals based on the ICF framework, as patients can continue guided rehabilitation at home.

**Keywords:** brain injury, muscle spasticity, gait, hemiparesis, continuous passive motion therapy

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# **ASSOCIATION BETWEEN ABDOMINAL PERFORMANCE AND BICEPS BRACHII ACTIVATION RANGE DURING FOUR IRRADIATION MANEUVERS: A CROSS-SECTIONAL STUDY**

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**Background:** Proprioceptive Neuromuscular Facilitation (PNF) is a therapeutic approach with principles and procedures used to promote motor rehabilitation. One of the principles of PNF is motor irradiation, in which the application of resistance to a stronger body segment promotes muscle contraction in another weaker limb. This is useful in motor recovery when voluntary contraction is not possible, such as in cases of paralysis of a segment. Abdominal strength is fundamental to the effectiveness of various training and rehabilitation techniques. But, in clinical practice, it is commonly observed that people with greater abdominal strength produce weaker contractions in target muscle during the application of irradiation maneuvers.

**Objectives:** To investigate the relationship between abdominal strength and the amplitude of activation of the biceps brachii