

Background: Interstitial Lung Disease (ILD) encompasses a heterogeneous group of over 200 diffuse parenchymal lung disorders, primarily characterized by pulmonary interstitial involvement, frequently affected by inflammation and fibrosis. Signs and symptoms vary depending on the underlying ILD condition but generally include dyspnea, fatigue, persistent cough, bibasilar crackles, digital clubbing, and psychological symptoms. These manifestations contribute to a decline in quality of life, reduced functional capacity, and low tolerance to physical exercise.

Objectives: This study aimed to investigate the association between functional disability, health status, quality of life, physical performance, muscle strength, and physical activity level in people with ILD.

Methods: This is a preliminary cross-sectional, multicenter study, part of a larger project, conducted with people diagnosed with ILD. In addition to clinical history and spirometry for pulmonary function assessment, specific instruments were applied, including the 12-item short version of the World Health Organization Disability Assessment Schedule (WHODAS 2.0), which assesses the impact on daily activities and social participation; the King's Brief Interstitial Lung Disease Questionnaire (K-BILD), which evaluates the quality of life and health status; the Participation Scale, measuring self-perceived social participation and daily activities; the Human Activity Profile (HAP), classifying physical activity level; the Handgrip Strength Test (HST), assessing peripheral muscle strength using a Jamar dynamometer; and the 6-Minute Walk Test (6MWT), which measures functional exercise capacity and cardiorespiratory endurance.

Results: The sample comprised 13 participants, with a mean age of 55.82 years (± 13.84 years), ranging from 33 to 81 years. The majority were male (7 participants, 53.8%), and five people (38.5%) were classified as overweight. Regarding educational background, 7 participants (53.8%) had completed high school, and in terms of self-reported ethnicity, 7 (53.8%) identified as mixed-race. Additionally, 4 participants (30.8%) had a prior diagnosis of post-COVID-19 pulmonary fibrosis. The mean WHODAS 2.0 score was 32.39 (± 19.14), ranging from 15 to 67 points. Correlation analysis revealed an association only between the WHODAS 2.0 short version and K-BILD (ICC = -0.56; $p = 0.05$).

Conclusion: Preliminary results indicate that a more significant functional disability in people with ILD is associated with poorer health status, as assessed by the K-BILD. The lack of significant associations with other variables may be attributed to the small sample size of this preliminary study. However, the findings suggest relevant trends that warrant further exploration in future analyses.

Implications: These findings suggest that physiotherapeutic assessments and interventions for people with ILD should consider not only pulmonary aspects but also functional and social dimensions. An integrated approach may be essential to improving the quality of life and social participation in this population.

Keywords: Lung Diseases, Interstitial, Functional Disability, WHODAS

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INTER-RATER RELIABILITY AND VALIDITY OF THE PERME ICU MOBILITY SCORE IN PEDIATRIC INTENSIVE CARE AND WARD SETTINGS

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Background: Early mobilization in pediatric intensive care units (PICUs) is essential to minimize complications and promote functional recovery. However, there is a lack of validated tools specifically designed to assess mobility in children with critical illness. The Perme ICU Mobility Score (Perme Score), originally developed for adults, assesses mobility considering barriers such as medical devices and ventilatory support. The validation of the Perme Score for pediatric use is crucial to guide rehabilitation strategies in this population.

Objectives: To validate the Perme Score for evaluating mobility in patients admitted to PICU and pediatric wards, by analyzing its inter-rater reliability and its correlation with the Functional Status Scale (FSS), a widely used instrument in the pediatric population.

Methods: A cross-sectional observational study was conducted in two hospitals including pediatric patients aged 6 to 17 years. The Perme Score and FSS were applied independently by trained physical therapists. Inter-rater reliability was assessed using the intra-class correlation coefficient (ICC), while the correlation between the two tools was analyzed using Pearson's test. P -value < 0.05 was defined statistically significant.

Results: A total of 166 participants were included, with a median age of 11 years. The initial assessment showed a mean Perme Score of 26.13 ± 7.89 and a mean FSS of 7.25 ± 2.21 . A moderate to strong negative correlation was observed between the Perme Score and FSS ($r = -0.642$; $p < 0.01$), indicating that better mobility is associated with less functional impairment. Interrater reliability was excellent (ICC = 0.99).

Conclusion: The Perme Score proved to be a valid and reliable tool for assessing mobility in hospitalized pediatric patients. Its structured approach allows for the identification of mobility barriers and effective monitoring of functional progress throughout hospitalization.

Implications: Validating the Perme Score for the pediatric population supports its integration into clinical practice in both ICU and ward settings. The Perme Score can support early mobilization protocols and contribute to personalized rehabilitation strategies by objectively assessing mobility status of patients. Consequently, it has the potential to improve functional outcomes for critically ill children and promote evidence-based decision-making in physical therapy.

Keywords: Pediatric Intensive Care, Physical Functional Performance, Mobility Limitation Assessment

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VIVIFRIL TRAINING IMPROVES FUNCTIONAL CAPACITY OF INSTITUTIONALIZED ELDERLY PEOPLE: A RANDOMIZED CLINICAL TRIAL

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Background: Aging is associated with changes that lead to a decline in functionality, limiting the performance of activities of daily living (ADLs). Older adults living in long-term care facilities (LTCFs) have fewer opportunities to actively engage in these activities, which affects their independence and autonomy. So far, there is limited evidence on the effects of interventions aimed at improving functionality in LTCF residents, as most studies focus on community-dwelling older adults.

Objectives: To evaluate the effectiveness of the Vivifrail program in combating frailty syndrome in institutionalized older adults by analyzing the program's effects on improving balance and muscle function in this population.

Methods: The study is a randomized clinical trial conducted over a three-month period with two weekly sessions in long-term care facilities (LTCF). A total of 30 female volunteers over the age of 60 participated, forming two groups: the Vivifrail Group (VG), which underwent multicomponent training, and the Control Group (CG), which received usual care. The training followed the Vivifrail model, adjusted according to the participants' initial functional capacity, categorizing them as "frail," "pre-frail," or "independent." Participants were assessed before starting the intervention and four weeks after its completion.

Results: Thirty older women were included in the study, with a mean age of 86 years. There were no statistically significant differences between the groups at the pre-intervention stage. However, post-intervention analysis revealed statistically significant differences in frailty levels, with lower frailty scores in the intervention group. Notably, the intervention group showed an improvement of nearly two points in the SPPB assessment, an increase of approximately 5 kg/f in handgrip strength, and a reduction of nearly 5 seconds in the time required to complete the five-times sit-to-stand test.

Conclusion: In this sample, the Vivifrail program proved effective as a strategy for combating and preventing frailty syndrome, according to Fried's Frailty Phenotype.

Implications: The results suggest that the Vivifrail program can be implemented to reduce frailty and the risk of falls. Furthermore, its adoption in LTCFs may promote greater independence and quality of life for this population.

Keywords: Multicomponent Training, Elderly, Frailty

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EVALUATION OF THE OPTIMIZATION OF POSTURAL BALANCE CONTROL DURING THE USE OF VISUAL BIOFEEDBACK

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Background: Limiting postural sway within specific boundaries while standing is essential for maintaining stability and preventing falls. This has driven the development of biofeedback-based balance training protocols designed to minimize postural sway. Although visual biofeedback protocols have been shown to effectively reduce sway, this reduction is frequently associated with increased muscular effort.

Consequently, it remains uncertain whether biofeedback-induced sway reduction results in optimal postural control.

Objectives: This study aims to investigate whole-body stability during upright posture using biofeedback protocols by applying a set of variables characterizing the mathematical optimization process that minimizes the postural sway in terms of CoP coordinates.

Methods: Seventeen participants performed three 60-second postural tasks: (1) eyes open (EO) as a control; (2) center of pressure (CoP) biofeedback; and (3) wrist-controlled laser biofeedback. Posturographic variables were extracted to characterize the optimization process, focusing on downhill, stability, and convergence properties. The downhill property included: (1) percentage of signal duration with a strictly decreasing cost function (t , %), and (2) average maximum absolute convergence rate ($|\dot{p}|$, mm/s). Stability was quantified by: (1) number of local minima ($\min_N$), (2) their average values ($\min_L$, mm), and (3) variability ($\min_SD$, mm). Convergence was assessed by: (1) global minimum value ($\min_G$, mm), and (2) absolute difference between global and expected minima ($|\dot{p}_GL|$, mm). Statistical analysis used repeated measures ANOVA with Holm correction ($p < 0.05$) to assess condition effects.

Results: Significant main effects of condition were revealed on the following outcomes: Expected Local Minimum ($\min_L$) ($F(2, 32) = 3.320$, $p = 0.049$; BF COP: $M = 3.364$, $SD = 7.064$; BF Laser: $M = 10.761$, $SD = 19.650$; OA: $M = 0.691$, $SD = 1.062$), Dispersion of Local Minima ($\min_SD$) ($F(2, 32) = 3.622$, $p = 0.038$; BF COP: $M = 3.185$, $SD = 6.777$; BF Laser: $M = 11.126$, $SD = 20.083$; OA: $M = 0.553$, $SD = 0.972$), and Error (δGL) ($F(2, 32) = 3.351$, $p = 0.048$; BF COP: $M = -3.263$, $SD = 6.862$; BF Laser: $M = -10.579$, $SD = 19.308$; OA: $M = -0.651$, $SD = 1.023$). Post hoc comparisons showed significant differences between BF Laser and OA for dispersion ($p = 0.044$) and trends for Expected Local Minimum ($p = 0.055$) and Error ($p = 0.054$). No significant effects were found for other outcomes ($p > 0.05$).

Conclusion: This study shows that different biofeedback protocols affect postural control optimization differently. Wrist-controlled laser biofeedback (BF Laser) led to higher local minima, greater dispersion, and larger errors compared to center of pressure (CoP) biofeedback and the eyes-open (EO) condition, suggesting BF Laser imposes greater stability demands. In contrast, CoP biofeedback and EO demonstrated more stable and convergent control, indicating a more efficient optimization process.

Implications: These results highlight the importance of selecting biofeedback protocols that align with the goals of postural training, as not all protocols equally promote optimal postural control. Future research should explore the underlying mechanisms and long-term effects of these protocols to refine biofeedback-based balance training strategies.

Keywords: Postural Control, Biofeedback, Optimization

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THE SIX MINUTE WALK TEST CAN ESTIMATE THE PHYSICAL ACTIVITY LEVELS OF COMMUNITY-DWELLING OLDER ADULTS: A CROSS-SECTIONAL STUDY

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