

number of steps of the first TME2 [101.3(2,7)]. The mean difference between the two tests was 6.3 steps.

Conclusion: The two-minute step test presented good and excellent reliability and a significant learning effect.

Implications: The 2MST has proven to be a reliable tool for assessing functional capacity. Additionally, it demonstrated a significant learning effect, suggesting that repeated testing can enhance performance.

Keywords: Physical fitness, Physical Functional Performance, Exercise test

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

Funding: CAPES - Finance Code 001.

Ethics committee approval: CEP/UFMG 4.710.667.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101274>

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HEEL-RAISE TEST FOR CALF MUSCLE ASSESSMENT IN CVI: CORRELATION WITH STRENGTH AND FUNCTIONAL PERFORMANCE TESTS

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Background: Chronic venous insufficiency (CVI) is a progressive condition affecting the venous system, involving superficial, deep, or both venous networks. The pathophysiology is primarily attributed to valvular incompetence and dysfunction of the calf muscle pump, which includes deficits in lower limb muscle strength. Given the pivotal role of the calf muscles in venous return, their functional assessment should be integrated into the routine clinical evaluation of patients with CVI. The Heel-Raise Test (HRT) has been proposed as a method to evaluate calf muscle function; however, its correlation with other validated strength and functional performance assessments remains underexplored.

Objectives: To determine the applicability of the HRT in assessing calf muscle strength and endurance in CVI patients through its association with other muscle strength and endurance tests, as well as functional performance measures.

Methods: A cross-sectional study was conducted involving 40 patients diagnosed with CVI (mean age 67.4 ± 11.3 years, 37% females). Participants underwent the HRT, where they performed maximal plantar flexion repetitions until exhaustion. The total number of repetitions and the time taken to complete the test were recorded. Additionally, participants were subjected to the Five-Times Sit-to-Stand Test (STS-5), Ten-Times Sit-to-Stand Test (STS-10), 30-Second Sit-to-Stand Test (STS-30), and 1-Minute Sit-to-Stand Test (STS-60), which evaluated lower limb strength (STS-5 and STS-10) and muscular endurance (STS-30 and STS-60). Complementary assessments included handgrip dynamometry and the Human Activity Profile (HAP) questionnaire. Pearson and Spearman correlation analyses were performed to examine associations between the HRT and other measures.

Results: The number of HRT repetitions demonstrated significant correlations with STS-5 ($r = -0.751$; $p < 0.001$), STS-10 ($r = -0.741$; $p < 0.001$), STS-30 ($r = 0.724$; $p < 0.001$), STS-60 ($r = 0.765$; $p < 0.001$), handgrip dynamometry ($r = 0.325$; $p = 0.041$), maximum HAP score ($r = 0.401$; $p = 0.014$), and adjusted HAP score ($r = 0.330$;

$p = 0.046$). Similarly, the time required to complete the HRT correlated with the STS-5 ($r = -0.386$; $p = 0.005$), STS-10 ($r = -0.399$; $p = 0.003$), STS-30 ($r = 0.347$; $p = 0.012$), STS-60 ($r = 0.406$; $p = 0.003$), maximum HAP score ($r = 0.427$; $p = 0.002$), and adjusted HAP score ($r = 0.360$; $p = 0.011$), but not with handgrip dynamometry ($r = 0.236$; $p = 0.092$).

Conclusion: The number of repetitions and time spent in the HRT are indicators of calf muscle strength, endurance, and functional capacity in individuals with CVI. Its inclusion in functional assessments can enhance the clinical evaluation of these patients.

Implications: The HRT emerges as a viable, practical tool for complementing clinical and functional assessments, particularly in the early to moderate stages of CVI, facilitating targeted interventions and patient management strategies.

Keywords: Chronic venous insufficiency, Muscle strength, Muscle weakness

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

Funding: CAPES - Finance Code 001, FAPEMIG.

Ethics committee approval: No. 5.639.330.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101275>

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ACUTE HEMODYNAMIC EFFECTS PROMOTED BY RESPIRATORY AND RESISTANCE MUSCLE TRAINING WITH BLOOD FLOW RESTRICTION IN INDIVIDUALS WITH COPD

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Background: Chronic Obstructive Pulmonary Disease (COPD) is a chronic airflow limitation that impairs the cardiovascular and respiratory systems, reducing the functional capacity of individuals. As a result, this group has low tolerance for physical exercise with high loads. In this context, intervention strategies such as low-load (LL) and moderate-load (ML) resistance training (RT), inspiratory muscle training (IMT), and blood flow restriction (BFR) have emerged as therapeutic potentials, capable of eliciting acute hemodynamic responses similar to those observed in high-load training.

Objectives: To assess the effects of IMT and RT with or without BFR on: blood pressure (BP) and heart rate (HR) in individuals with COPD.

Methods: This study is a randomized crossover experimental clinical trial. The sample consisted of 14 elderly individuals (67.5 ± 1.76 years) of both sexes, diagnosed with mild, moderate, or severe COPD. Initially, they were evaluated for body composition, ankle-brachial index (ABI), arterial occlusion pressure (AOP), inspiratory muscle strength (MIP), dynamometry, and 1RM test. Then, they performed 3 experimental protocols: 1) RT with low load (30% 1RM) + IMT (30% MIP); 2) RT with low load (30% 1RM) + BFR (50% AOP) + IMT; 3) RT with moderate load (50% 1RM) + IMT (50% MIP), with a wash-out period of 48 to 72 hours. BP and HR were measured before, immediately after, and 10 minutes after the exercises. Data

analysis was performed using the Statistical Package for the Social Sciences (SPSS – 26.0), with a significance level set at $P = 0.05$.

Results: A significant reduction in HR was observed in the TRLB+RFS+IMT protocol when comparing pre-intervention to 10 minutes post-intervention and immediately post-exercise to 10 minutes post-intervention. In the TRMB+IMT protocol, there was also a reduction at 10' post when compared to pre-intervention, with no intergroup differences observed. In the TRLB+RFS+IMT protocol, systolic blood pressure (SBP) decreased when comparing pre vs. 10' post-intervention and immediately post vs. 10' post-intervention across all three protocols. Diastolic blood pressure (DBP) did not show significant intergroup differences; however, the Friedman ANOVA test indicated a significant reduction in the TRLB+RFS+IMT protocol between pre-intervention vs. 10' post and immediately post vs. 10' post.

Conclusion: RT, associated with IMT, with or without BFR, promoted a hypotensive effect on SBP and a decrease in HR. However, the TRLB+RFS+IMT was the only protocol that showed a hypotensive effect on DBP. Therefore, further studies are needed to evaluate the chronic effects of these protocols to identify the long-term efficacy of the intervention.

Implications: The reduction in BP and HR provided by RT associated with IMT, with or without BFR, was able to optimize gains in the clinical rehabilitation of COPD, as exercise tolerance and functional capacity increased.

Keywords: COPD, BFR, Diastolic blood pressure

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

Funding: CAPES - Finance Code 001.

Ethics committee approval: CAAE: 70493823.5.0000.5259.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101276>

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DUKE ACTIVITY STATUS INDEX: CORRELATION WITH FUNCTIONAL MEASURES IN CHAGAS DISEASE PATIENTS FROM AN ENDEMIC REGION

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Background: Chagas disease is a neglected tropical disease that can progress to a chronic cardiac form, leading to functional impairment and reduced exercise tolerance. Assessing functional capacity in this population is essential for guiding rehabilitation strategies. The Duke Activity Status Index (DASI) is a questionnaire-based tool commonly used to estimate functional capacity, but its correlation with other objective and subjective functional measures in Chagas disease remains unclear.

Objectives: To evaluate the correlation between the DASI and functional performance measures, including the Human Activity Profile (HAP), the Sit-to-Stand Test (STS), and handgrip dynamometry, in patients with Chagas disease.

Methods: A cross-sectional study was conducted with 50 patients diagnosed with Chagas disease (66 ± 8 years) in an endemic area for Chagas disease. Participants completed the DASI and HAP questionnaires and underwent physical performance tests, including the STS (5-repetition, 10-repetition, 30-second, and 1-minute protocols) for lower limb strength and endurance, as well as handgrip dynamometry for overall muscle strength. Correlation analysis was performed using Pearson's or Spearman's correlation coefficients, depending on data distribution.

Results: The mean DASI score was 25.3 ± 9.4 . The DASI showed a significant correlation only with the maximum ($r = 0.714$; $p < 0.001$) and adjusted HAP scores ($r = 0.635$; $p < 0.001$), suggesting an association with self-reported physical activity levels. However, DASI did not correlate with the STS or handgrip strength, indicating that it may not reflect actual lower limb strength or endurance in patients with Chagas disease.

Conclusion: The DASI showed a strong correlation with self-reported physical activity levels but did not correlate with objective functional tests, suggesting it may not fully reflect the physical performance of patients with Chagas disease. These findings highlight the importance of combining subjective and objective measures for a more comprehensive assessment of functional capacity in this population.

Implications: These findings suggest that the DASI may not fully capture the functional performance of patients with Chagas disease, particularly regarding muscle strength and endurance. While the DASI correlates with subjective measures of activity levels, its lack of association with objective tests highlights the need for complementary functional assessments in clinical practice. Therefore, incorporating performance-based tests such as STS and handgrip strength alongside self-reported questionnaires may provide a more comprehensive evaluation for guiding rehabilitation programs in this population.

Keywords: Chagas disease, Cardiac Impairment, Functional Assessment

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

Funding: CAPES - Finance Code 001.

Ethics committee approval: CAAE:13529913.7.0000.5259.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101277>

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ASSESSMENT OF PERIPHERAL MUSCLE STRENGTH OF PEOPLE WITH DIFFERENT LEVELS OF POST-COVID-19 DYSFUNCTION

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Background: The late impact of Covid-19 has proven to be significant, largely affecting the functionality, ability to perform daily activities and the quality of life of its survivors. In Brazil, more than 39 million people have recovered from Covid-19, however, many of them still face persistent symptoms and are referred to rehabilitation programs. Muscle weakness is one of the post-Covid changes that causes concern, given the range of problems inherent to the loss of muscle strength for global health, especially among the elderly and in people with chronic illnesses.

Objectives: To evaluate the peripheral muscle strength of people undergoing post-COVID-19 rehabilitation, with different levels of post-COVID-19 dysfunction. In the post-covid period, point to the discriminatory aspect of this scale in the assessment and assertive therapeutic prescriptions for this population.

Methods: Sectional study with a convenience sample composed of adults recovered from Covid-19. The degree of post-Covid dysfunction was assessed on admission using the post-Covid-19 Functional Status (PCFS) scale, in grades I to IV, characterized by the presence of persistent symptoms (grade I), with limitations in usual tasks (grade II), or with inability to perform some activities (grade III), and even severe dysfunctions including self-care (grade IV). Muscle strength was obtained by the handgrip strength (HGS) test in