

Methods: This is a cross-sectional study conducted with elderly smokers of conventional cigarettes who had been smoking for at least one year, of both sexes, aged 60 years or older, capable of walking without assistance, and understanding the instructions for tests and questionnaires. Body composition was measured with tetrapolar bioimpedance and cardiorespiratory capacity through the cardiopulmonary exercise test (CPET) using ramp protocol. Statistical analysis was performed using Jamovi 2.6.26 software. Linear regression was conducted to analyze the associations between variables, with a significant level of $p < 0.05$.

Results: Eight individuals (62.5% males, 66.2 ± 14.3) years presents body max index of $26.5 \pm 3.6 \text{ kg/m}^2$. The average smoking duration was 47.3250 ± 6.923 years, and the average tobacco load was 34.700 ± 29.5477 packs/year. In body composition and CPET assessments, the phase angle was 5.775 ± 0.465 , which is considered borderline for this population and may indicate compromised cellular integrity due to smoking. The FVC was 2.751 ± 0.706 liters, and the relative VO_2 peak was $20.913 \pm 5.515 \text{ ml/min/kg}$. Linear regression analysis indicated that smoking duration was associated with a reduction in relative VO_2 peak ($\beta = -0.613$; $95\% \text{ CI: } -1.408 \text{ to } -0.131$; $p = 0.026$), explaining 59% of the VO_2 peak variation ($R^2 = 0.592$). There was no statistically significant association between smoking duration and phase angle ($p = 0.996$) or FVC ($p = 0.924$).

Conclusion: Smoking duration was inversely associated with VO_2 peak, suggesting a negative impact of chronic smoking on cardiorespiratory capacity. Although no significant association was found with phase angle, the observed values indicate a possible compromise of cellular integrity. Studies with larger samples and considering other outcomes, such as body composition, may provide a deeper understanding of the mechanisms by which smoking affects the functionality of elderly individuals.

Implications: Cardiorespiratory decline is associated with a higher risk of morbidity and mortality in the elderly. Therefore, cessation strategies should be initiated early and associated with cardiorespiratory rehabilitation programs. These findings highlight the importance of monitoring functional capacity in elderly smokers.

Keywords: Aged, Cardiorespiratory Fitness, Smoking

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TRANSCRANIAL NEUROSTIMULATION AND AEROBIC EXERCISE IN FUNCTIONAL CAPACITY, MUSCLE METABOLISM, AND QUALITY OF LIFE OF INDIVIDUALS WITH PERIPHERAL ARTERIAL DISEASE

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Background: Peripheral arterial disease (PAD), commonly caused by atherosclerosis, reduces blood flow to the extremities, resulting in muscle ischemia and intermittent claudication. Aerobic training is

an effective strategy for treating individuals with PAD, and high-definition transcranial direct current stimulation (HD-tDCS) has been studied as an adjunct therapy due to its positive effects on exercise endurance, perceived effort, and functional capacity (FC).

Objectives: To identify the effects of combining aerobic exercise and transcranial neurostimulation on quality of life (QoL), FC, peripheral muscle metabolism, and subjective perception of effort in individuals with PAD.

Methods: This case study was conducted with four volunteers diagnosed with PAD. FC was assessed using the Incremental Shuttle Walking Test (ISWT), muscle metabolism through Near-Infrared Spectroscopy (NIRS), QoL using the Short Form 36 (SF-36), and subjective perception of effort through the Modified Borg Scale. Assessments were conducted before and after 12 weeks of intervention. Participants were divided into two groups: the intervention group (IG) and the control group (CG), with two volunteers in each. The IG received active stimulation on the left dorsolateral prefrontal cortex (DLPFC-L) during exercise on a cycle ergometer, while the CG received placebo stimulation, both for 30 minutes.

Results: Regarding QoL, only the two IG participants were reassessed, as the CG participants declined to participate in the reassessment. An improvement in QoL was observed in Volunteer 1 (V1) in the following domains: general health perception (55/100), vitality (95/100), social function (100/100), and mental health (92/100); and in Volunteer 2 (V2) in the domains of physical functioning (60/100), emotional role limitation (67/100), bodily pain (68/100), general health perception (70/100), and mental health (80/100). In terms of subjective perception of effort, both volunteers reported an effort level of "too light" (Borg = 1) at the beginning, end, and recovery phases of the exercise test. FC showed a clinically significant minimal difference in three cases ($?V2 = 500\text{m}$; $?V3 = 110\text{m}$; $?V4 = 70\text{m}$). No significant differences were observed between the CG and IG regarding improvements in muscle metabolism after the intervention, except for resistance time ($?V1 = 31.6\text{s}$; $?V2 = 225.2\text{s}$; $?V3 = 26.4\text{s}$; $?V4 = 101.6\text{s}$) in both the occlusion maneuver and the ISWT and lower-limb cycle ergometer tests.

Conclusion: The combination of HD-tDCS and aerobic exercise may contribute to increased QoL and FC in individuals with PAD. Additionally, an improvement in subjective perception of effort and walking distance in the ISWT was observed in the IG. However, no significant changes were noted in tissue oxygenation behavior.

Implications: These findings highlight the need for further robust studies and emphasize the importance of additional research on HD-tDCS as an adjunct therapy for PAD treatment, aiming for its integration into clinical practice. Despite limitations, this intervention may contribute to symptom mitigation and functional capacity restoration.

Keywords: Peripheral Arterial Disease, Exercise, Transcranial Direct Current Stimulation

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DOES CARDIOVASCULAR REHABILITATION IN PATIENTS WITH DIABETIC NEUROPATHY INFLUENCE FUNCTIONING AND NEUROPATHIC SYMPTOMS?

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