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EVALUATION OF VENTILATION DURING EXERCISE TESTS IN PEOPLE WITH POST-COVID-19 SYNDROME

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Background: In addition to deconditioning, persistent low-grade inflammation following acute SARS-CoV-2 infection may contribute to systemic problems, which supports the need for further assessment of cardiopulmonary conditioning. In fact, the impairment of the respiratory system in the acute phase of COVID-19 has the potential to significantly impact functional capacity in patients with post-COVID-19 syndrome (PCS), with dynamic hyperinflation (DH) and reduced ventilatory reserve (RV).

Objective: To investigate the dynamic ventilatory responses and their influence on the functional capacity to exercise in these patients.

Methods: Between March and October 2022, a cross-sectional study was carried out with 16 patients with PCS aged $\geq$18 years attended at the Piquet Carneiro Polyclinica, at the State University of Rio de Janeiro. Patients with a history of COVID-19 pneumonia with persistence of respiratory symptoms after 3 months of the acute phase were included. Patients without a previous diagnosis of COVID-19 confirmed by RT-PCR (reverse-transcription polymerase chain reaction) and those who failed to perform the protocol tests were excluded. Patients underwent impulse oscillometry (IOS), spirometry, 6-minute walk test (6MWT) with Spiropalm®-6MWT, and cardiopulmonary exercise test (CPET). A $\geq$100 ml decrease in inspiratory capacity (IC) during exercise was defined as HD. Ventilatory reserve (VR) indicates how close minute ventilation (VE) approaches maximum voluntary ventilation (MVV) during a given activity and was calculated as the difference between MVV and VEpeak ([MVV-VEpeak]/MVV); VR <30% was considered to be ventilatory limitation on exertion.

Results: Median age and time since diagnosis of COVID-19 were 57 (50−59) years and 98 (93−106) days, respectively. Regarding spirometry, 12.5% and 50% of the participants had an abnormal spirometry and an altered IOS, respectively, and the difference in resistance between 4 Hz and 20 Hz (R4-R20) was detected in 31.2% of the participants. cases. Regarding cardiopulmonary performance during exercise, the median distance in the 6MWT was 83 (78−97) % of predicted, with HD and VR <30% observed in 62.5% and 12.5% of participants, respectively. In CPET, the median peak oxygen consumption (VO2peak) was 19 (14−37) ml/kg/min. There was a significant correlation of the distance covered in the 6MWT with both R4-R20 (rs = -0.499, P = 0.039) and VO2peak (rs = 0.628, P = 0.009).

Conclusion: Our findings suggest that HD and, to a lesser extent, low VR are contributors to poor exercise performance that is associated with peripheral airway disease.

Implications: Based on these results, we obtained precise ventilatory and metabolic measurements, which we can consider as an important factor for more assertive exercise prescription during the rehabilitation of these patients. Moreover, these results are promising if we consider that they were obtained with simple, cheap, and portable ventilatory and metabolic measurement systems, easily applicable in real-world environments.

Keywords: Post-COVID-19 Syndrome, Functional capacity, Cardiopulmonary stress test

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EFFECTIVENESS OF TELE-INTERVENTIONS FOR BEHAVIOR CHANGE AND SELF-MANAGEMENT IN STROKE SECONDARY PREVENTION: OVERVIEW OF SYSTEMATIC REVIEWS

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Background: Recurrent stroke contributes to the high burden of stroke. Secondary prevention guidelines recommend addressing modifiable risk factors. Despite the increased use of tele-interventions with individuals after stroke, the use of these interventions for behavior changes and self-management in secondary prevention has a low level of evidence in these guidelines.

Objective: To critically appraise and consolidate evidence from systematic reviews (SR) on the effectiveness of theoretically informed person-centered tele-interventions for behavior change and self-management in stroke secondary prevention.

Methods: An overview of SR that followed the Cochrane Guidelines was performed, involving the identification, screening, and synthesis of SR (with and without meta-analyses) and of eligible primary studies from the SR. When it was possible, meta-analyses were performed with data from primary studies for the outcomes of interest: primary (reduction in mortality, recurrent stroke and other cardiovascular events), secondary (adherence to health behaviors), and tertiary (control of cardiovascular risk factors).

Results: 12 SR and 14 primary studies were included. Seven SR were rated as having a high risk of bias, mainly because they did not define the eligibility criteria. Six SR performed meta-analyses with the outcomes of interest. Only one SR performed meta-analysis with primary outcomes (mortality, recurrent stroke and other cardiovascular events), and no significant difference between groups was found. Secondary outcomes: significant improvement was found for medication adherence, but it was not found for management of depressive symptoms. Tertiary outcomes: meta-analyses were performed for systolic and diastolic blood pressure (SBP and DBP), cholesterol and blood glucose and significant improvements were found for SBP and low-density lipoprotein (LDL). The methodological quality of the primary studies showed that blinding of participants and personnel, and of outcome assessment were the domains with the highest risk of bias. Meta-analyses of tele-interventions compared with usual care were performed for recurrent stroke, medication and healthy eating adherence, physical activity participation, and control of cardiovascular risk measures (SBP, DBP, total cholesterol and triglyceride). A significant difference between group, favoring tele-intervention, was identified for improve in medication adherence (mean difference, MD: 0.41; confidence interval of 95%, 95%CI: 0.16, 0.65; I^2: 69%) and healthy eating adherence (standardized MD, SMD: 0.41; 95%CI: 0.19, 0.63; I^2: 17%), and for the decrease in SBP (MD: -9.18; 95%CI: -12.96, -5.39; I^2: 0%).

Conclusions: Theoretically informed person-centered tele-interventions for stroke secondary prevention resulted in significant improvement in medication and healthy eating adherence, and a