Abstract Group: 9.2. Physiotherapists

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Title: Functional capacity and cardiac autonomic modulation during resistance exercise at critical load in the elderly

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Body: Background: Resistance exercise (RE) has been strongly encouraged in the elderly. However, the responses and relationships between functional capacity and cardiac autonomic modulation (CAM) during RE at critical load (CL), which indicates the transition of moderate to intense exercise, remains to be investigated. Objective: To evaluate the cardiorespiratory and CAM responses during RE at CL in young and elderly volunteers and to assess the relationship between them. Methods: 12 young (21.9±1.9 yrs) and 10 elderly (68.9±3.5 yrs) males were evaluated. Tests included: - 1 repetition maximum (1RM); - 3 RE constant load tests (60, 75 and 90% 1RM) to obtain CL by linear regression (load X reverse of time) and; - RE test at CL on Leg Press. At rest and CL test were performed: pulmonary gas exchange breath-by-breath and obtained oxygen uptake (VO₂), carbon dioxide production (VCO₂), minute ventilation (VE) and recorded heart rate and R-R intervals. Heart rate variability (HRV) indices (rMSSD, SD1, SD2, DFAα1 and ApEn) were analyzed. Data analysis included unpaired t test and Pearson correlation. Results: Elderly volunteers presented lower HRV values of change (RE at CL – rest) compared to young. At CL test, VO₂ and VCO₂ were well correlated with SD2 (r = 0.95, P=.01), and DFAα1 (r = 0.90, P=.03), respectively. ApEn was correlated with number of RE repetitions (r = 0.88, P=.04), as well as, SD2 with CL in kg (r = 0.94, P=.01). Conclusion: These findings suggest attenuated cardiac autonomic response to RE at CL in the elderly and that functional capacity truly reflect cardiac autonomic modulation during RE at CL in elderly subjects. Financial support: CAPES, CNPq and FAPESP.