Cardiovascular handgrip responses during cyclic exercise - a pilot study

Pedro Henrique Santana Moreira[1], Jefferson Petto[1], Marvyn de Santana do Sacramento[2], Lis Jacques Zwecker[1], Pedro Tito Matos Leão[1], Maura Carla Cerqueira Batista[1], Ingrid Correia Santos[1]

1. UniFTC University Center – Salvador (BA), Brazil
2. Bahiana School of Medicine and Public Health – Salvador (BA), Brazil

Introduction: The practice of cyclical exercises (CE) results in a reduction in diastolic blood pressure (DBP). However, one possibility of reversing this situation would be with the association of resistance exercise (RE), such as HandGrip (HG). **Objective:** To test the hypothesis that HG performed during CE changes the behavior of cardiac work acutely. **Material and methods:** This is a comparative descriptive study of a mechanistic crossover type. The sample was non-probabilistic with 3 individuals of both sexes, aged between 18 and 30 years, sedentary or irregularly active. Inclusion and exclusion criteria were established to ensure the safety of participants during physical activity and ensure results. Participants underwent four meetings, one for physical-clinical evaluation and three for the application of intervention protocols, being randomly allocated to each protocol: reference protocol (PR), protocol 1 (P1) and protocol 2 (P2). At the first meeting, the exclusion and inclusion criteria were evaluated. In addition, the necessary parameters for applying the protocols were collected, such as maximum handgrip strength (HGSmax), resting heart rate, resting BP and the Maximum Physical Effort Test. The PR experiment consisted of performing the CS alone on an ergometric treadmill, for eleven minutes, with an intensity corresponding to 50% of the heart rate reserve (HRR). P1 and P2 consisted of applying the CS simultaneously to the HG, in the 1st one being instructed to hold the HG at 30% HGSmax, and in the 2nd one at 60% HGSmax. For both protocols, P1 and P2, CE was performed in four blocks of two minutes at 50% of HRR concomitantly with HG, with a one-minute interval of active rest at 30% of HRR between blocks without HG, totaling eleven minutes. During the protocols, HR and BP were measured every minute and four minutes after the end. **Results:** With the data collected, an increase in the average DBP value was evident during the application of the protocols associated with HG, P1 and P2, in contrast to the EC isolated PR, where the same parameter presented a lower value. More specifically, in P1 and P2, the mean value and standard deviation (SD) of SBP were, respectively, 142.68 ± 11.7 mmHg and 141.83 ± 13.05 mmHg, and of DBP, 93.57 ± 6. 8 mmHg and 90.2 ± 7.3 mmHg. In PR, the values found were SBP 132.83 ± 17.72 mmHg and DBP 81.57 ± 8.45 mmHg. **Conclusions:** It is concluded that the use of HG during CE was able to promote an acute change in cardiac work behavior.