TACSM Abstract

Biomechanical Characteristics of the Carotid Artery during Aerobic Exercise

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ABSTRACT

Cardiovascular disease is known as the leading cause of death, including coronary artery disease and stroke. Atherosclerosis is responsible for 9 in every 10 cases of stroke. The prevention of stroke and other cardiovascular diseases is possible through aerobic exercise (AE). However, not much is known about the biomechanical characteristics of the carotid artery during AE. **PURPOSE**: To estimate arterial stiffness in-vivo during submaximal cycling exercise at three different exercise intensities. **METHODS**: 20 apparently healthy young adults participated in two laboratory visits. First visit, subjects were laid down on a medical bed, in which resting pressure, maximal/minimal artery diameter, and blood flow velocity of the carotid artery were obtained. Three recordings were obtained with a coefficient of variation (CV) of less than 5%. Compliance and stiffness were calculated from the collected data. Thereafter, subjects performed a cardiopulmonary exercise test (CPET) with a graded exercise test protocol. In session two, participants performed for three submaximal intensities stages, three minutes per stage, in which the intensities were determined via lactate levels of initial CPET, low intensity: <2.0 mmol/L. moderate intensity: 2-.0 – 4.0 mmol/L, and high intensity >4.0 mmol/L. Throughout each stage, the same data as resting conditions were obtained as well as blood flow patterns. **RESULTS**: There were no differences in any of the biomechanical characteristics between resting and any of the exercise intensities (p>0.05). However, there was a significant interaction by participants (p<0.05). **CONCLUSION**: Even though the estimation of arterial stiffness per condition was not significantly different, a larger sample size, due to a significant interaction by subject, might show a different result.

Research reported was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number SC2GM140952.