

## **The Impact of Sprint Exercise Training on Vascular Functions in 50-70 y Olds**

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### ABSTRACT

**PURPOSE:** Aging is a major risk factor for the development of cardiovascular disease due in part to increased oxidative stress and arterial stiffening. Lifestyle modifications, such as exercise, are among the first-line of approach for preventing vascular dysfunction. Exercise training has been shown to foster antioxidant states and improve vascular health. Therefore, the purpose of this study was to determine the effect of 8-weeks of sprint exercise training using inertial loading on vascular health in 50-70 y old.

**METHODS:** Thirty-one apparently healthy middle-aged and older adults ( $59 \pm 5$  years, 17 females) participated in the study. The participants performed 15 sprints per training session week 1, 20 sprints per session weeks 2-4 and 30 sprints per session weeks 5-8 with 56s, 41s, and 26s of rest, respectively, between sprints. Training sessions occurred three times per week for 8 weeks. Each sprint consisted of 4s of all-out cycling where the participants accelerated a heavy flywheel from a stationary position to maximal angular velocity. They were instructed to keep pedaling throughout the duration of the 4s to achieve maximal power and cadence. Baseline and post intervention measurements of flow-mediated dilation (FMD; index of endothelium-dependent vasodilation), cardio-ankle vascular index (CAVI; indicator of arterial stiffness), and arterial blood pressure were made. **RESULTS:** CAVI decreased significantly following the 8-weeks of inertial load exercise training (2.38%;  $p=0.048$ ). Additionally, grouping the participants by age or sex did not influence the reduction observed with CAVI. However, FMD and blood pressure did not change significantly ( $p \geq 0.05$ ). **CONCLUSIONS:** The 8-weeks of exercise training using an inertial load ergometer decreased arterial stiffness in men and women 50-70 y. Future studies are needed to determine the efficacy of this type of exercise intervention in clinical populations to improve vascular function.

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