

Vascular Health Improves with a 4-Week Functional Exercise Program in Volunteer Firefighters

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Cardiovascular disease is the leading cause of death in the United States, and, in addition, over 50% of line-of-duty death in volunteer firefighters are a result of a cardiac incident. Exercise has been shown to improve cardiovascular health, yet volunteer agencies are not required to fitness test or have a fitness program for firefighters. Furthermore, there is a paucity of research that examines vascular health of volunteer firefighters. **PURPOSE:** To determine if a 4-week self-report functional exercise intervention improves vascular health measures in volunteer firefighters. **METHODS:** Twenty-six seemingly healthy volunteer firefighters completed the 4-week functional exercise program. Blood pressure (BP), blood glucose and cholesterol levels, body fat, carotid artery intima media thickness (IMT), and brachial artery flow-mediated dilation (FMD) were measured after an overnight fast, pre- and post- intervention. For the intervention, participants completed 3 cycles of a 6-station exercise circuit, 3 times per week. The circuit included functional exercises such as weighted carries, stair climbs, balance exercises, and core strength exercises. **RESULTS:** Participants' average age was 37.96 ± 13.5 yrs, and body weight was 194.9 ± 35.9 lbs. Adherence to the four-week exercise program was 97.8%. We found significant improvements in cardiovascular and vascular health measures; systolic BP (126.5 ± 10.49 to 121.1 ± 10.9 mmHg), diastolic BP (76.8 ± 5.5 to 73.9 ± 6.3 mmHg), triglyceride levels (115.0 ± 59.8 to 95.3 ± 54.8 mg/dL), percent FMD (7.2 ± 3.2 to 9.6 ± 3.9 %), FMD/shear (0.5 ± 0.2 to 0.6 ± 0.2), core systolic BP (112.5 ± 11.8 to 107.9 ± 10.79 mmHg) and diastolic BP (76.3 ± 8.7 to 73.5 ± 6.2 mmHg), body fat percent (33.6 ± 7.7 to 32.1 ± 8.0 %), and an increase in VO_{2peak} (35.5 ± 4.3 to 36.8 ± 4.6 mL/kg-min). **CONCLUSION:** Our results suggest that 4 weeks of functional fitness exercises may improve vascular health and fitness in the volunteer firefighter population.