

# Effect of Aspirin Supplementation on Hemodynamics in Older Firefighters

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## ABSTRACT

LANE-CORDOVA, A. D., S. M. RANADIVE, H. YAN, R. M. KAPPUS, P. SUN, K. BUNSAWAT, D. L. SMITH, G. P. HORN, R. PLOUTZ-SNYDER, and B. FERNHALL. Effect of Aspirin Supplementation on Hemodynamics in Older Firefighters. *Med. Sci. Sports Exerc.*, Vol. 47, No. 12, pp. 2653–2659, 2015. **Purpose:** Cardiovascular events are the leading cause of line-of-duty fatality for firefighters. Aspirin reduces the risk of cardiovascular events in men and may reduce fatalities in older (>40 yr) firefighters. We hypothesized that both chronic and acute aspirin supplementation would improve vascular function after live firefighting but that chronic supplementation would also improve resting hemodynamics. **Methods:** Twenty-four firefighters (40–60 yr) were randomly assigned to acute or chronic aspirin supplementation or placebo in a balanced, crossover design. Arterial stiffness, brachial and central blood pressures, as well as forearm vasodilatory capacity and blood flow were measured at rest and immediately after live firefighting. **Results:** Total hyperemic blood flow (area under the curve (AUC)) was increased ( $P < 0.001$ ) after firefighting with no effects for aspirin supplementation or acute versus chronic administration (AUC, from  $107 \pm 5$  to  $223 \pm 9$  in aspirin condition and from  $97 \pm 5$  to  $216 \pm 7$  mL·min<sup>-1</sup> per 100-mL forearm tissue for placebo;  $P < 0.05$  for main, and  $P > 0.05$  for interaction). Arterial stiffness/central blood pressure increased ( $P < 0.04$ ) with no effect of aspirin (from  $0.0811 \pm 0.001$  to  $0.0844 \pm 0.003$  m·s<sup>-1</sup>·mm Hg<sup>-1</sup> in aspirin condition versus  $0.0802 \pm 0.002$  to  $0.0858 \pm 0.002$  m·s<sup>-1</sup>·mm Hg<sup>-1</sup> in placebo condition), whereas peripheral and central systolic and pulse pressures decreased after firefighting across conditions ( $P < 0.05$ ). **Conclusions:** Live firefighting resulted in increased AUC and pressure-controlled arterial stiffness and decreased blood pressure in older firefighters, but aspirin supplementation did not affect macro- or microvascular responsiveness at rest or after firefighting. **Key Words:** BLOOD FLOW, ANTICOAGULANT, FIREFIGHTING, ARTERIAL STIFFNESS