

Impact of Excess Body Weight on Arterial Structure, Function, and Blood Pressure in Firefighters

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Cardiovascular disease is the leading cause of death among firefighters. The purpose of the present study was to examine the effect of excess body weight on arterial structure and function and blood pressure (BP) in relatively young, apparently healthy, firefighters. The body mass index, brachial BP, carotid BP, aortic BP, radial augmentation index, central pulse wave velocity, forearm blood flow, forearm vasodilatory capacity, carotid arterial compliance, carotid intima-media thickness, and brachial flow-mediated dilation were assessed in 110 firefighters (aged 29.7 ± 8.0 years). The group was divided into equal tertiles according to the body mass index (<25.9 , 25.9 to 29.4 , and ≥ 29.5 kg/m²). Group differences in hemodynamics, anthropometrics, microvascular function, and macrovascular structure and function were tested using multivariate analysis of variance. The obese group was older, heavier, and had a larger waist circumference compared to the lean and overweight groups ($p < 0.05$). The overweight group was also older, heavier, and had a larger waist circumference than the lean group ($p < 0.05$). Compared to the lean group, the overweight and obese groups had a greater systolic BP ($p < 0.05$). The obese group also had a significantly greater mean arterial BP and carotid systolic BP than the lean group ($p < 0.05$). The obese group had greater β stiffness and elastic modulus compared to the lean and overweight groups ($p < 0.05$), but no group differences were found in endothelial function. In conclusion, in a population of relatively young firefighters, an increased body mass index was associated with elevated peripheral BP and arterial stiffness, with no apparent decrements in endothelial function. © 2009 Elsevier Inc. All rights reserved. (Am J Cardiol 2009;104:1441–1445)
