

The effect of inflammation on arterial function: Impact of age, exercise and physical activity.

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Inflammation is associated with mortality and morbidity and a number of disease processes. Inflammation also increases with age, and generally impairs vascular function. Arterial stiffness increases and endothelial function decreases with age, but it is unclear how inflammation may influence this process. Although physically active populations exhibit lower levels of inflammation than sedentary populations, exercise training or increased physical activity may or may not decrease inflammation. However, vascular function is often improved (decreased arterial stiffness and increased endothelial function) with exercise training even if inflammatory biomarkers are not changed. In general, most studies have been a combination of cross-section and longitudinal designs, that is, experimental changes in inflammation are rare, or in studies where inflammation has been experimentally altered, the effect of exercise training has rarely been studied. It appears that arterial stiffness is higher and endothelial function is lower in populations with higher levels of inflammation but the influence of age is somewhat unclear. We will present compelling data to show that although baseline inflammation may alter vascular function, age per se is a more important contributor to declines in vascular function. However, experimentally decreasing inflammation through medication improves vascular function in sedentary but not in physically active older individuals, suggesting that baseline inflammation primarily affects sedentary older individuals. Furthermore, changes in vascular function in response to induced acute inflammation decreases vascular function only in young but not older subjects, suggesting that age influences the vascular responses more than inflammation per se. Thus, the interaction of inflammation, age, physical activity, exercise training and vascular function (as measured by arterial stiffness and endothelial function) is complex, but age per se appears to most important variable.