

Publication

Cardiorespiratory Fitness and Endothelial Function in Aging Healthy Subjects and Patients With Cardiovascular Disease

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Individuals with a higher lifelong cardiorespiratory fitness show better vascular health with aging. Studies on fitness-related effects on endothelial function either analyzed samples with a narrow age-range or incompletely assessed endothelial responsiveness. This study aims to assess the impact of cardiorespiratory fitness on the association of brachial-arterial flow-mediated vasodilation (FMD) and low flow-mediated vasoconstriction (L-FMC) with age in healthy adults and patients with cardiovascular diseases.; FMD, L-FMC and; V; .; O; 2; peak were prospectively measured in a population-based sample including 360 healthy adults and 99 patients with cardiovascular disease of European descend. Non-linear models were applied to assess; V; .; O; 2; peak-associated variations in age-related differences of endothelial function independent of classical cardiovascular risk factors.; FMD was negatively associated with age in healthy adults (adjusted R; 2; = 0.27, partial R; 2; = 0.07;; p; < 0.001) and in cardiovascular patients (adjusted R; 2; = 0.29, partial R; 2; = 0.05;; p; = 0.002). L-FMC showed no association with age. In models predicting the change of FMD with higher age;; V; .; O; 2; peak accounted for 2.8% of variation in FMD (χ^2 ; 2; (5) = 5.37;; p; = 0.372;; s; = 1.43). Thereby;; V; .; O; 2; peak-stratified changes of FMD started to fan out at around 30 years of age in women and 50 years of age in men, with 7-12% lower values at old age with; V; .; O; 2; peak \leq 3rd percentile compared to; V; .; O; 2; peak \geq 97th percentile) in both, the healthy sample and in cardiovascular patients.; The statistical effect of cardiorespiratory fitness on the association of FMD with age independent of classical cardiovascular risk factors was small in both, healthy aging adults as well as patients with cardiovascular diseases. Its clinical significance should be assessed further.

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