Physical activity throughout life reduces the atherosclerotic wall process in the carotid artery.

Abstract:

BACKGROUND: Good cardiorespiratory fitness has been associated with a reduced risk for clinical events of atherosclerotic vascular diseases. It is still unclear how this relates to a slower progression of the early atherosclerosis wall process. Method: Using a dynamic model, we generated new parameters for describing the pathologic wall process in the carotid artery, based on an automatic layer detection system. In this study, we scrutinised the influence of two ultrasonographic parameters, intima-media thickness (IMT) and roughness, by comparing two groups: a healthy inactive group (PIP) (mean (SD) age 64.37 (5.10) years; n = 50) and a healthy lifelong physically active group (PA) (mean (SD) age 64.48 (3.45) years; n = 51). All subjects underwent a blood test, spiroergometry, echocardiography and carotid ultrasound examination. RESULTS: There was a significant difference in the well known risk factors for cardiovascular disease (for example, high density lipoprotein cholesterol, triglyceride) between groups. PIP compared to PA had a significantly higher roughness (PIP 0.073 (0.015) vs PA 0.065 (0.0156); p<0.01). No significantly higher IMT was found for PIP (PIP 0.89 (0.18) vs PA 0.90 (0.22); p = 0.63) compared to PA. In this cross sectional study of middle aged men, Vo(2)max was inversely associated with carotid atherosclerotic parameters. CONCLUSION: In this study, good
cardiorespiratory fitness was associated with an increase of the proven risk factors and a reduction of atherosclerosis in the common carotid artery. Roughness seems to be significantly more sensitive than IMT for characterising the changes of the arterial wall. We suggest measuring roughness in addition to IMT to gain additional information about the atherosclerotic wall.