BMJ Open Influence of chronic exercise on carotid atherosclerosis in marathon runners

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Abbreviation: cIMT, carotid intima-media thickness

Abstract

Objectives: The effect of habitual, high-intensity exercise training on the progression of atherosclerosis is unclear. We assessed indices of vascular health (central systolic blood pressure (SBP) and arterial stiffness as well as carotid intima-media thickness (cIMT)) in addition to cardiovascular risk factors of trained runners versus their untrained spouses or partners to evaluate the impact of exercise on the development of carotid atherosclerosis.

Setting: Field study at Boston Marathon.

Participants: 42 qualified marathons (mean age: 56 ± 13 years, 21 women) for the 2012 Boston Marathon and their sedentary control group (46 ± 12 years, 21 women).

Outcomes: We measured arterial stiffness using the wave function, systolic arterial pressure, systolic blood pressure, and carotid intima-media thickness. The results show that carotid intima-media thickness (cIMT) was significantly reduced in the trained group compared to the untrained group.

Conclusions: Habitual endurance exercise improves cardiovascular risk profiles but does not reduce the magnitude of carotid atherosclerosis associated with age and cardiovascular risk factors.

Introduction

Carotid intima-media thickness (cIMT) is a measurement of carotid atherosclerosis and predicts future vascular events such as stroke and heart attack. Moderate habitual physical activity is associated with reduced cardiovascular deaths, but it is not clear whether the reduction in cardiac events is due to exercise-induced reductions in atherosclerotic risk factors and atherosclerosis or due to other factors such as enhanced vagal tone, increased electrical stability and a reduction in sudden death.

Several studies have examined atherosclerotic burden in athletes. Galet et al. observed that cIMT was 46% thicker in older adults, but lower in older endurance-trained athletes than sedentary controls, and increased cardiorespiratory fitness is associated with reduced cIMT in healthy and...