

Rejuvenating Pheidippides and the evergreen benefits of endurance training

(Letter of comment on Training for a First-Time Marathon Reverses Age-Related Aortic Stiffening, J Am Coll Cardiol 2020;75:60–71)

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We welcome the article by Bhuva et al who investigated whether real-world exercise training for a first-time marathon can reverse age-related aortic stiffening concluding that training even at relatively low exercise intensity reduces central blood pressure and aortic stiffness - equivalent to a 4-year reduction in vascular age (1). Nonetheless, while we found these data particularly interesting and novel, the report raises additional issues that should be addressed by the authors.

First, only marathon finishers were included in the study. This could represent an important bias since, as reported by Bhuva and colleagues, non-finishers could have had different vascular responsiveness. It is thus possible to speculate a different responsiveness in under-trained individuals not able to finish the marathon. Second, other behavioral factors may have affected the changes in aortic stiffness. Sport-targeted interventions such as smoking cessation, dietary regimen, training-induced weight and fat mass reduction, consumption of nutritional supplements and/or any dietary supplement intended to provide nutrients that may otherwise not be consumed in sufficient quantities (for examples supplements inorganic nitrate supplementation or supplements able to elevate endogenous nitric oxide levels) may have substantially affected the results. On top of these issues, future research on this topic would best encompass at least a blood sampling before and after the training in order to detect any possible biological or pathophysiologic change to provide novel insights concerning the molecular mechanisms by which exercise exerts its beneficial effects on aortic stiffness, such as anti-oxidant reserve and connective tissue remodeling.(2) Lastly, authors state that changes in aortic stiffness are equivalent to approximately a 4-year reduction in vascular age but the computation methods employed rely on an evident oversimplification of a complex non-linear process such as ageing. Additional sensitivity analyses, encompassing resampling methods borrowed from machine learning, are thus needed.(3)

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