THE IMPACT OF PHYSICAL ACTIVITY ON TOTAL ANTIOXIDANT CAPACITY AND ENDOTHELIAL FUNCTION: IKARIA STUDY

Oral Contributions
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Authors: Evangelos Oikonomou, Gerasimos Siasos, Christine Chrysohoou, Dimitris Tousoulis, Demosthenes Panagiotakos, Evangelia Christoforatou, Marina Zaromitidou, Konstantinos Zisimos, Stamatis Kioufis, Georgios Marinos, Christos Pitsavos, Athanasios Papavassiliou, Christodoulos I Stefanadis, 1st Cardiology Department, University of Athens Medical School, "Hippokration" Hospital, Athens, Greece

Background: Physical activity (PA) has substantial vascular and cardiac health benefits. Endothelial function is a well validated surrogate marker of arterial health. Oxidative stress has a significant impact in the pathophysiology of cardiovascular diseases (CVD). We evaluated the effect of habitual physical activity on total antioxidant capacity (TAC) and endothelial function in middle aged and elderly residents of Ikaria Island.

Methods: The study was conducted on a subgroup population of IKARIA study consisted of 327 (aged 40-91, 155 males) inhabitants of Ikaria Island. Endothelial function was evaluated by ultrasound measurement of flow-mediated-dilation (FMD). TAC was measured through colorimetric test in serum. We evaluated PA using the self-reported International Physical Activity Questionnaire (IPAQ). Overall the study sample was divided in three groups according to the score achieved in IPAQ questionnaire: low PA (< 500 Metabolic Equivalent of Task (MET)/min/week, n=75), moderate PA (500-2500 MET/min/week, n=200) and vigorous PA (>2500 MET)/min/week, n=48). Subjects in the low PA group were recorded as physical inactive and the rest as physical active.

Results: Of the study population 23% were classified as inactive and the rest as active. There was no difference between low, moderate and high PA groups in the presence of diabetes mellitus, hypertension, hypercholesterolemia, history of CVD and in age (p=NS for all). Importantly, there was a significant increase from low to moderate and vigorous PA groups in FMD (4.95±3.02% vs. 6.10±3.21% vs. 5.88±3.32%, p=0.03) as well as in logTAC levels (0.088±0.064 vs. 0.098±0.078 vs. 0.134±0.113mmol/l, p=0.01). Interestingly, subjects in the higher tertile of TAC and in the vigorous PA group had significantly higher FMD after adjustment for age compared to subjects in the lower tertiles (b=3.65 95%CI:0.65 to 6.55, p=0.017).

Conclusions: Habitual PA is associated with improved endothelial function and increased serum levels of TAC. These findings introduce another mechanism of how a physical active lifestyle pattern can beneficially affect arterial wall properties; ameliorating atherosclerosis progression and CVD risk.