



E2108

JACC March 27, 2012

Volume 59, Issue 13



Vascular Disease

FAVORABLE EFFECTS OF HABITUAL PHYSICAL ACTIVITY ON VASCULAR FUNCTION: IKARIA STUDY

ACC Moderated Poster Contributions

McCormick Place South, Hall A

Saturday, March 24, 2012, 11:00 a.m.-Noon

Session Title: Peripheral Vascular Disease State of the Science III

Abstract Category: 35. Peripheral Arterial/Carotid Disease/Aortic Disease

Presentation Number: 1120-227

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Background: Physical activity (PA) has substantial vascular and cardiac health benefits and can ameliorate cardiac risk. Measurement of endothelial function is well validated in large population studies as strong predictor of adverse cardiovascular outcomes. In the present study we evaluated the effect of habitual physical activity on vascular function in residents of Ikaria Island. The inhabitants of this island show increased longevity and high prevalence of healthy aging.

Methods: The study was conducted on a subgroup population of IKARIA study consisted of 327 subjects (155 men) aged 40-91 years, permanent inhabitants of Ikaria Island. Endothelial function was evaluated by ultrasound measurement of flow-mediated-dilatation (FMD). We evaluated PA using the shortened version of the self-reported International Physical Activity Questionnaire (IPAQ). Overall the study sample was divided in three groups according to the categorical score achieved in IPAQ questionnaire: low PA (n=75), moderate PA (n=200) and vigorous PA (n=48). Subjects in the low PA group were recorded as physical inactive and the rest as physical active.

Results: Mean FMD (5.79±3.19%) was inversely associated with age (r=-0.242, p<0.001). Inactive subjects had significantly lower FMD compared to active subjects (4.95±3.02% vs. 6.06±3.23%, p=0.008). Multiple linear regression analysis after adjustment for several known confounders (age, diabetes mellitus, hypertension, smoking, hypercholesterolemia, cardiovascular disease, body mass index) revealed significant differences in FMD values between moderate vs. low PA group [b=1.24, 95%CI: (0.28, 2.20), p=0.011] whereas a trend was evident between vigorous and low PA group [b=1.11, 95%CI: (-0.16, 2.38), p=0.089]. Moreover subjects walking for more than 10 minutes less than two times weekly had significantly lower FMD compared with subjects walking three to five days weekly or almost every day (5.13±2.82% vs. 6.95±3.84% vs. 6.00±3.23%, p=0.005).

Conclusions: The present study revealed another cardioprotective mechanism of habitual PA through beneficial modification of endothelium function.