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Relationship of plasma homocysteine levels to physical activity and aerobic fitness in young men

JLP Roy, MT Richardson, JF Smith, Y Neggers, R Lomax, R Pieroni, GR Hunter

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Recent evidence has suggested elevated plasma Homocysteine (Hcy) level is an independent risk factor for vascular diseases. Although its association with other established risk factors for cardiovascular disease (CVD) has been studied, there is inconclusive evidence regarding the relationship between aerobic fitness (AF)/physical activity (PA) levels and plasma Hcy. The purpose of this study was to examine the relationship between aerobic fitness/PA and plasma Hcy level. Subjects included 30 healthy males aged 20-35 years who were non-smokers, not diabetic, and ate a diet that was not deficient in folic acid. Subjects performed a Bruce VO2max test to assess AF; answered the comprehensive Stanford Seven-Day Recall questionnaire (Stanford 7-DR) to assess total physical activity (S-PA), very hard physical activity (S-VPA), and hard and very hard physical activity (S-HVPA), and a single-item, four-level PA questionnaire to assess global PA (G-PA). A fasting blood sample was drawn and analyzed for plasma Hcy, triglycerides (Trig), total cholesterol, high density lipoprotein cholesterol (HDL-C), and low density lipoprotein cholesterol (LDL-C) levels. The following correlation coefficients between plasma Hcy level and VO2max, G-PA, S-PA, S-HVPA and S-VPA were not statistically significant (i.e.  $r$  values ranged from -0.05 to -0.18,  $P > 0.05$ ). This study did not demonstrate a significant relationship between plasma Hcy and AF or PA assessed by the Stanford 7-DR. However, the relationship between Hcy and G-PA approached statistical significance ( $r = -0.32$ ,  $P = 0.08$ ). There were 5 subjects who were classified as having hyper Hcy (mean Hcy level =  $26.1 \pm 8.96$  mmol/L) and 25 who were within the normal range (mean Hcy level =  $8.0 \pm 1.46$  mmol/L). T-tests revealed no significant differences between the hyper Hcy and normal Hcy groups, except for percent body fat (%BF) ( $P = 0.023$ ). In conclusion, plasma Hcy level was not associated with AF/PA, with the possible exception of G-PA and %BF.

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