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Effects of exercise on emerging and traditional cardiovascular risk factors.

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Abstract

BACKGROUND: Common cardiovascular disease risk factors (e.g., insulin and aerobic fitness) are improved with exercise; however, few studies have addressed the potential for training to modify emerging cardiovascular disease risk factors such as homocysteine and high-sensitivity C-reactive protein.

METHODS: Sedentary adults (n = 324, 48.9 +/- 8.4 years) were randomized to four groups differing in training intensity (moderate = 45-55% or high = 65-75% of heart rate reserve) and frequency (low = 3-4, 30-min sessions/week or high = 5-7, 30 min-sessions/week).

RESULTS: Within-group changes in homocysteine, insulin, and aerobic fitness were significant (all $P < 0.0125$). Furthermore, homocysteine increased in the high-intensity-low-frequency (0.98 +/- 2.32 micromol/L) and high-intensity-high-frequency (0.93 +/- 2.56 micromol/L) groups, while aerobic fitness increased in the moderate-intensity-high-frequency (0.99 +/- 2.01 mL min(-1) kg(-1)) and high-intensity-high-frequency (1.77 +/- 2.97 mL min(-1) kg(-1)) groups (all $P < 0.003$). The change in aerobic fitness was greater in the high-intensity-high-frequency compared to the moderate-intensity-low-frequency group (1.77 +/- 2.97 vs. 0.36 +/- 2.10 mL min(-1) kg(-1), $P = 0.0014$) (effect size estimate = 0.60 mL min(-1) kg(-1)). The main effects for intensity, with respect to the change in insulin (effect size estimate = 0.46 microU/mL), and frequency, with respect to the change in aerobic fitness (effect size estimate = 0.38 mL min(-1) kg(-1)), were significant ($P < 0.0125$).

CONCLUSION: Although frequent bouts of higher intensity exercise were particularly effective in reducing fasting insulin and improving fitness, they resulted in slightly increased homocysteine levels.

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