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Prescribing exercise at varied levels of intensity and frequency: a randomized trial.

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Abstract

BACKGROUND: Regular physical activity produces beneficial effects on health, but the exercise prescription needed to improve cardiovascular disease risk factors in free-living sedentary individuals remains unclear.

METHODS: Sedentary adults (N = 492, 64.0% women) were randomized to 1 of 4 exercise-counseling conditions or to a physician advice comparison group. The duration (30 minutes) and type (walking) of exercise were held constant, while exercise intensity and frequency were manipulated to form 4 exercise prescriptions: moderate intensity-low frequency, moderate intensity-high frequency (HiF), hard intensity (HardI)-low frequency, and HardI-HiF. Comparison group participants received physician advice and written materials regarding recommended levels of exercise for health. Outcomes included 6- and 24-month changes in cardiorespiratory fitness (maximum oxygen consumption), high-density lipoprotein cholesterol (HDL-C) level, and the total cholesterol-HDL-C ratio.

RESULTS: At 6 months, the HardI-HiF, HardI-low-frequency, and moderate-intensity-HiF conditions demonstrated significant increases in maximum oxygen consumption ($P < .01$ for all), but only the HardI-HiF condition showed significant improvements in HDL-C level ($P < .03$), total cholesterol-HDL-C ratio ($P < .04$), and maximum oxygen consumption ($P < .01$) compared with physician advice. At 24 months, the increases in maximum oxygen consumption remained significantly higher than baseline in the HardI-HiF, HardI-low-frequency, and moderate-intensity-HiF conditions and in the HardI-HiF group compared with physician advice ($P < .01$ for all), but no significant effects on HDL-C level ($P = .57$) or total cholesterol-HDL-C ratio ($P = .64$) were observed.

CONCLUSIONS: Exercise counseling with a prescription for walking at either a HardI or a HiF produced significant long-term improvements in cardiorespiratory fitness. More exercise or the combination of HardI plus HiF exercise may provide additional benefits, including larger fitness changes and improved lipid profiles.

Comment in

How much and what type of physical activity is enough? What physicians should tell their patients. [Arch Intern Med. 2005]

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