



WISE 2005: responses of women to sublingual nitroglycerin before and after 56 days of 6 degrees head-down bed rest

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Résumé en anglais

This study tested the hypothesis that cardiovascular effects of sublingual nitroglycerin (NG) would be exaggerated after 56 days of 6 degrees head-down bed rest (HDBR) in women, and that an aerobic and resistive exercise countermeasure (EX, n = 8) would reduce the effect compared with HDBR without exercise (CON, n = 7). Middle cerebral artery maximal blood flow velocity (CBFV), cardiac stroke volume (SV), and superficial femoral artery blood flow (Doppler ultrasound) were recorded at baseline rest and for 5 min following 0.3 mg sublingual NG. Post-HDBR, NG caused greater increases in heart rate (HR) in CON compared with EX (+24.9 +/- 7.7 and +18.8 +/- 6.6 beats/min, respectively, P < 0.0001). The increase in HR combined with reductions in SV to maintain cardiac output. Systolic, mean, and pulse pressures were reduced 5-10 mmHg by NG, but total peripheral resistance was only slightly reduced at 3 min after NG. Reductions in CBFV of -12.5 +/- 3.8 cm/s were seen after NG, but a reduction in the Doppler resistance index suggested dilation of the middle cerebral artery with no differences after HDBR. The femoral artery dilated with NG and blood flow was reduced approximately 50% with the appearance of large negative waves suggesting a marked increase in downstream resistance, but there were no effects of HDBR. In general, responses of women to NG were not altered by HDBR; the greater increase in HR in CON but not EX was probably a consequence of cardiovascular deconditioning. These results contrast with the hypothesis and a previous investigation of men after HDBR by revealing no change in cardiovascular responses to exogenous nitric oxide.

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