

CARDIOVASCULAR

Whole-body periodic acceleration enhances brachial endothelial function.

全身周期性加速度提升肱血管內皮功能

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Background: Periodic acceleration in the direction of the spinal axis through repetitive movement increases the shear stress on the vascular endothelium. In the present study it was assessed whether whole-body periodic acceleration with a new device would enhance endothelial function in sedentary adult volunteers.

Methods and results: Twenty-six sedentary subjects (44 \pm 3 years) were randomly assigned to remain sedentary or perform exercise training for 4 weeks, followed by crossover. Periodic acceleration was applied with a horizontal motion platform at 2-3 Hz and approximately \pm 2.2 m/s² for 45 min. Increases in the brachial artery diameter were examined at rest, during reactive hyperemia (flow-mediated dilatation: %FMD) and after sublingual administration of 0.3 mg nitroglycerin (%NTG) using high-resolution ultrasound. All subjects completed the study with no adverse side-effects. There were no significant changes in the resting heart rate or arterial pressure, body weight, or lipid profiles during the study. Although %FMD did not change during the non-training period with periodic acceleration, it significantly increased from 7.3 \pm 0.4% at baseline to 8.4 \pm 0.4% after the training period (p <0.05), while %NTG remained unchanged.

Conclusions: Whole-body periodic acceleration with a horizontal motion platform improved vascular endothelial function in sedentary adults. This device might offer an alternative to active exercise for patients whose medical condition limits physical activity.

結論:

以水平移動平台所完成的全身周期性加速度，改善久坐成人的血管內皮功能。此機台可以提供因健康狀況限制體能活動的病人積極運動的選擇。