Effects of periodic body acceleration on the *in vivo vasoactive response to N-w-nitro*-L-arginine and the in vitro nitric oxide production.

周期性加速度作用在活的有機體內對L硝基精氨酸甲酯的反應，及在試管內一氧化氮的產量。

Adams JA, Moore JE, Jr., Moreno MR et al.

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Periodic acceleration (pGz), a novel method of ventilatory support, is achieved using a platform that moves cyclically in the headward-footward direction. PGz has been shown to increase vascular shear stress and regional blood flows, as well as decrease pulmonary and systemic vascular resistances. PGz also increases nitric oxide (NO) production. This study was undertaken to determine the effects of pGz on the NO inhibiting effects of N-w-nitro-L-arginine (L-NAME) in vivo, and to determine if increased NO production due to pGz could be reproduced in vitro with isolated arteries. Pigs were assigned to conventional ventilation (CV), or pGz, with no additional breathing assistance. L-NAME was infused in cumulative doses of 1, 3, 10, 30, and 100 mg/ kg. Cardiac output decreased in both groups by 50%. There was also a dose-dependent increase in blood pressure, pulmonary artery pressure, and vascular resistances. However, pGz attenuated the vascular response of L-NAME. Isolated porcine aortas exposed to nonpulsatile, pulsatile, and pulsatile flow plus pGz exhibited an increase in nitrites with the addition of pulsatile flow (300%, relative to steady flow), and a further increase with pGz (1000%, relative to steady flow). It has been determined that pGz, a novel method of increasing shear stress on the vascular endothelium, attenuates the vasoactive response to L-NAME. The in vitro experiments demonstrated that increases in NO production in vivo could be reproduced in vitro, which provides the opportunity to investigate the mechanisms of cardiovascular pGz effects.

已經確定的是，周期性加速度(pGz)，一項在血管內皮增加抗剪應力的新式方法，減弱對L-硝基精氨酸甲酯(L-NAME)的血管活性。試管實驗證明，一氧化氮(NO)在活的有機體內產量的增加，可以在試管內被複製，此舉提供了調查心血管周期性加速度(pGz)作用的機會。