

PE3-019 Acute Effect of Whole-Body Periodic Acceleration on Heart Rate Variability and Brachial Flow-Mediated Vasodilatation

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Whole-body periodic acceleration (WBPA) is reported to up-regulate endothelial nitric oxide (NO) synthase (eNOS) in animal studies and to improve brachial artery endothelial function (BAEF) measured by brachial artery flow-mediated vasodilatation (FMD) in humans. These findings were obtained by repeated application of WBPA. However, single acute effect of WBPA on BAEF in humans is not fully understood. In addition, the effect of WBPA on cardiac autonomic function assessed by heart rate variability (HRV) has not been studied. Thus, we performed 45 min WBPA in 14 healthy volunteers aged 30 ± 10 years old and measured BAEF and HRV before and after WBPA. HRV indices were measured by Holter ECG as LF, HF Mean RR, SDNN, SD index, rMSSD and pNN50. WBPA increased FMD (from 6.4 ± 3.4 to $7.5 \pm 3.0\%$, $P < 0.01$) and increased Mean RR, HF, rMSSD and pNN50. **Conclusions:** These results suggest that single application of WBPA acutely and effectively improves BAEF and increases cardiac vagal activity. WBPA could ameliorate ischemic arrhythmias in humans.

Keywords: heart rate variability, endothelial function, whole-body periodic acceleration