

**The Blood Pressure Variability Responses to Light Cycling in Individuals With Different Resting Heart Rates**

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Blood pressure variability (BPV) is a non-invasive measure that includes the influence of sympathetic modulation. There are also other numerous factors contributing to the variability, some of which are not fully understood, such as resting or exercising heart rates.

**Purpose:** To determine if the relative workload needed to bring the steady state heart rate (HR) to 80bpm affects BPV differently in individuals with different resting HR.

**Methods:** Forty young healthy subjects had HR, blood pressure, and respiration measured for 5 min during upright rest, followed by cycling at relative workload to sustain the heart rate at 80 beats $\times$ min<sup>-1</sup> (Ex80). Participants were instructed to breathe at a pace of 12 breaths $\times$ min<sup>-1</sup> during both the resting and exercise phases. Groupings were based on Low and High resting HRs of <70 or >70 beats $\cdot$ min<sup>-1</sup>, respectively. Due to non-compliance with paced breathing or the inability to attain a steady state HR of 80 beats $\cdot$ min<sup>-1</sup>, only 21 subjects were included.

**Results and conclusions:** Data are shown in the table. We did not find any group differences in response to exercise. However, exercise affected in frequency analysis of systolic arterial pressure (SAP) (LF<sub>SAP</sub>) and the beat-to-beat measurements of diastolic arterial pressure deviations (DAP<sub>dev</sub>) in both groups similarly. This might indicate that LF<sub>SAP</sub> and DAP<sub>dev</sub> are susceptible to cyclic changes in external vascular pressure due to muscle pump activity. The increase in SAP with exercise is likely due to increases in venous return, as there were no increases in DAP, indicating no significant sympathoexcitation.

\*: Group difference P<0.05 ‡: Exercise effect P<0.05; †: interaction P<0.05

	Low Rest	High Rest	Low Ex80	High Ex80
<i>n</i>	10	11		
Age	25.2 ± 4.1	25 ± 4.4		
Height*	178 ± 6.3	168 ± 8.9		
Weight*	77 ± 11	67 ± 10.8		
BMI	24 ± 2.5	23 ± 1.8		
VO <sub>2MAX</sub> *	45 ± 6.9	33 ± 5.3		
Rel WL*			14.9 ± 8.53	6.3 ± 2.53
HR†‡	61 ± 6.5	81 ± 6.8*	79 ± 2.1	82 ± 4.5
SAP†	117 ± 13.2	112 ± 9.8	132 ± 17.3	127 ± 5.1
SAP <sub>dev</sub>	5.8 ± 1.61	6.1 ± 1.61	5.9 ± 1.5	5.7 ± 0.8
DAP	66 ± 9.3	65 ± 5.3	66 ± 5.7	69 ± 3.9
DAP <sub>dev</sub> †	2.7 ± 0.69	3.4 ± 0.91	3.5 ± 0.6	3.8 ± 0.55
LF <sub>SAP</sub> †	5.6 ± 6.63	7.7 ± 3.03	9.4 ± 6.3	10.3 ± 5.58
VLF <sub>SAP</sub>	9.9 ± 18.7	16 ± 13.4	11.3 ± 6.3	8.3 ± 4.82