

Observation of Inter-arm Systolic Blood Pressure Difference during Exercise

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Interarm systolic blood pressure difference (ISBPD), wherein a difference of ≥ 10 mmHg in systolic pressure between arms is noted, has been reported in the medical literature during resting measurement in normotensive as well as hypertensive individuals. The presence of ISBPD has been linked with peripheral vascular disease, and an increased risk of cardiovascular disease and mortality. Exercise as a perturbation often reveals underlying cardiovascular pathologies that are otherwise absent during resting conditions. To the authors' knowledge, there have been no investigations into ISBPD during exercise. **PURPOSE:** To quantify ISBPD in normotensive individuals, and determine if exercise may reveal ISBPD, or exacerbate ISBPD seen at rest. **METHODS:** The difference between arterial blood pressure measurement in the right and left arm (measurement order randomized) was used to quantify ISBPD (Δ systolic blood pressure arm_1 and arm_2). Blood pressure measures were acquired using standard auscultation methods by an experienced investigator. ISBPD was first determined at rest. Participants then cycled at a cadence of 50 rpm at two different exercise intensities (3 and 6 METS; metabolic equivalents) and during active recovery, with ISBPD recorded upon achieving a steady-state heart rate at each intensity. Pearson's correlation coefficient and descriptive statistics were used to determine the incidence of ISBPD, and relationship between resting and exercise ISBPD. **RESULTS:** Sixty-nine participants (28 male, 41 female) completed all of the requirements of the study. ISBPD was noted with an incidence of 10.1% at rest, 13.0% during 3 MET exercise, 36.2% during 6 MET exercise, and 15.9% in recovery. In the seven individuals who demonstrated ISBPD at rest, strong correlations were found with EX-6 (.786) and recovery (.781) measures. In the 62 individuals who did not demonstrate ISBPD at rest, ISBPD was present in 9.7% of participants at 3 METS, 32.3% at 6 METS, and 12.9% during recovery. **CONCLUSION:** Incidence of ISBPD with exercise is increased independent of an inter-arm SBP difference of 10 mmHg or more at rest.