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Passive Arm Movement to Induce an Inter-Arm Difference in Systolic Blood Pressure

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Previous research in our lab has shown that both acute aerobic and isometric exercise can alter the inter-arm difference (IAD) in systolic blood pressure (BP). Further, based on initial resting systolic IAD status, differential responses have been reported. Physiological mechanisms behind these responses remain unclear, however. While the exercise pressor reflex is known to be mediated by contraction-dependent (i.e., mechanoreceptors, metaboreceptors) and contraction-independent (i.e., nitric oxide) factors, passive limb movement (PLM) may allow a partitioning of these mechanisms for deeper understanding. **PURPOSE:** To determine if PLM in the upper extremities alters IAD. **METHODS:** BP was simultaneously measured using two automated, auscultatory BP monitors in apparently healthy individuals at rest, immediately following a series of three-minute active (i.e., unweighted) and passive (i.e., unweighted, arm moved by investigator) bicep curl sets. Sets were randomized by both arm and condition, and controlled by a metronome. A five-minute recovery period separated each condition. Descriptive statistics were generated and a 2x2 (IAD and Condition) repeated-measures ANOVA was performed. **RESULTS:** Twenty-five individuals completed all of the requirements of the study. Thirty-two percent (n=8) of the cohort was IAD+ (i.e., left/right BP difference $\geq$10mmHg at rest). An overall difference in the PLM response was noted between IAD- (i.e., left/right BP difference <10mmHg at rest) and IAD+ individuals ($P<0.05$). **CONCLUSION:** Both passive and active limb movement mediated IAD similarly, and the observed effect was consistent with previously reported exercise.