

Heart Rate and Blood Pressure Recovery Responses to Different Modes of Recovery Following Moderate Intensity Exercise in Females

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ABSTRACT

Heart rate (HR) and blood pressure (BP) increases during exercise to meet metabolic demands through parasympathetic nervous system (PNS) withdrawal and sympathetic nervous system (SNS) stimulation. Heart rate recovery (HRR) and blood pressure recovery (BPR) following exercise are both important factors related to cardiovascular health. **PURPOSE:** The purpose of this study was to examine the effects of a slow-breathing technique compared to other forms of recovery on HRR and BPR following moderate-intensity exercise. **METHODS:** Nine moderately-active (20.22 ± 0.97 years) female participants cycled at 70% of their heart rate maximum (HR_{max}) on a cycle ergometer for 15 min, followed by one of three 5 min recovery interventions: 6 breaths per minute (BRE), active recovery (ACT) at 60 RRM and 25 W resistance, and passive recovery (PASS). All participants completed each recovery protocol on three separate occasions. HR and BP were recorded during each recovery protocol and converted to HRR and BPR by subtracting the recovery values from the average HR and BP of the last 5 min of exercise. Repeated measures ANOVA with a Greenhouse-Geisser correction was used for statistical analyses for both HRR and BPR. **RESULTS:** Repeated measures ANOVA revealed there was a significant main effect of protocol ($p < 0.05$, $\eta_p^2 = 0.67$) and time ($p < 0.001$, $\eta_p^2 = 0.93$) for HRR. There was no interaction effect found for HRR ($p = 0.12$). BRE resulted in the fastest HRR (40.12%) at the end of the 5 min recovery period compared to PASS (36.57%) and ACT (27.34%). A significant main effect of time ($p < 0.001$, $\eta_p^2 = 0.73$) was found for BPR with no main effect for protocol ($p = 0.43$) nor interaction effect ($p = 0.68$) found. **CONCLUSION:** A slow-breathing recovery protocol enhances HRR, but not BPR, when compared to active recovery and passive recovery in moderately-active females.