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Does Weight Status Influence Cardiovascular Response to Sitting Versus Standing While Performing Computer Work?

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The long-term health benefits and efficacy of standing desks are unknown. Recently it was shown that blood pressure (BP) and cardiovascular stain may be higher while standing. These factors may also be affected by weight status. **PURPOSE:** To evaluate the cardiovascular differences between sitting and standing in normal versus overweight individuals. **METHODS:** A total of 34 individuals, 19 normal (N) and 15 overweight (OW), completed the study. Subjects participated in two 15-minute trials, sitting (SIT) and standing (STD), during which they completed simple mouse driven computer tasks. Trials were completed back-to-back in random order. Throughout the test a continuous blood pressure system monitored heart rate (HR), mean arterial pressure (MAP), stroke volume (SV), cardiac output (Q) and total peripheral difference (TPR). Data from the last five minutes of each condition was averaged. All finger BP measurements were calculated as change scores from the first 5 minutes of the seated work free baseline period. A 2x2 ANOVA was used to determine differences between weight status (N vs. OW) and condition (SIT vs. STD). **RESULTS:** The HR was lower ($p \leq 0.001$) when SIT (N 67 ± 2 bpm, OW 64 ± 2 bpm) compared to STD (N 81 ± 2 bpm, OW 74 ± 2 bpm), but not different between groups ($p = 0.118$). There were no differences in ΔMAP between conditions ($p = 0.807$) or groups ($p = 0.374$). The ΔSV was different between conditions ($p < 0.001$) and groups ($p = 0.010$). ΔSV was higher ($p = 0.010$) when N were SIT (N 6.7 ± 2.0 L/min) compared to all other groups and conditions (N: STD -9.2 ± 2.6 L/min; OW: SIT -6.3 ± 2.1 L/min, STD OW -11.0 ± 2.8 L/min). The ΔQ was not different between conditions ($p = 0.228$) or groups ($p = 0.162$), but did have a significant interaction ($p = 0.015$) with N SIT being higher than all other conditions (SIT: N 0.4 ± 0.1 L/min, OW -0.2 ± 0.1 L/min; STD: N -0.1 ± 0.2 L/min, OW -0.1 ± 0.2 L/min). The ΔTPR was not different between condition ($p = 0.233$) or groups ($p = 0.219$), but also had a significant interaction ($p = 0.039$) with N SIT being higher than all other conditions (SIT: N -0.2 ± 0.1 PRU, OW 0.1 ± 0.1 PRU; STD: N 0.1 ± 0.1 L/min, OW 0.0 ± 0.1 PRU). **CONCLUSION:** Results suggest that the cardiovascular response to siting versus standing may be influenced by the interaction of body position and weight status.