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Family History of Hypertension and Heart Rate Results from the Variable Height Step Test

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Adults with a family history of hypertension (+FHH) have been shown to exhibit exaggerated sympathetic and heart rate (HR) responses to static exercise and decreased resting baroreflex control of HR. Less is known about exercise responses to dynamic exercise in +FHH adults. Additionally, this may have implications for submaximal cardiorespiratory fitness tests that rely on HR. **PURPOSE:** To examine dynamic exercise HR responses to the variable height step test (VHST) between +FHH and negative family history of hypertension (-FHH) adults. **METHODS:** 40 healthy participants (+FHH: $n = 15$, 22 ± 4 yrs; M 8, W 7; -FHH: $n = 25$, 25 ± 5 yrs; M 8, W 17) self-reported family history of hypertension status and self-palpated 60s HR at rest and post VHST from three step test trials performed on different days. **RESULTS:** Repeated measures ANOVA results across all three trials found significant differences between groups for Δ HR values (post VHST HR – resting HR) (+FHH mean: 39 ± 19 ; -FHH mean: 30 ± 12 Δ BPM; group $p = 0.031$, $\eta^2 = 0.199$; trial $p = 0.463$, $\eta^2 = 0.009$; interaction $p = 0.364$, $\eta^2 = 0.010$), but not absolute HR values (+FHH mean: 106 ± 26 ; -FHH mean: 98 ± 18 BPM; group $p = 0.179$, $\eta^2 = 0.101$; trial $p = 0.325$, $\eta^2 = 0.007$; interaction $p = 0.821$, $\eta^2 = 0.001$). **CONCLUSIONS:** These preliminary findings suggest that a positive family history of hypertension status increases heart rate responses to dynamic exercise, but likely has minimal impact on heart rate-based cardiorespiratory fitness tests such as the variable height step test.