

## Forearm Vascular Responses to Rhythmic Handgrip Exercise in Young Healthy Hispanic Men

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### ABSTRACT

Hispanic American (HA) men have higher prevalence of Type 2 Diabetes (T2D) when compared to Caucasian American (CA) men (15.3% vs 10.8%). Impaired vascular function is a hallmark of T2D, increasing the risk of cardiovascular morbidity and mortality in this clinical population. However, vascular function in the Hispanic population has not been investigated thoroughly. To date, only two studies have examined the resting flow mediated dilation (FMD) and found a higher FMD in young, healthy, HA adults. Whether exercise-induced reactive hyperemia is preserved in HA adults remains unknown. **PURPOSE:** We tested the hypothesis that young, healthy HA men would have a higher response in forearm blood flow (FBF) and forearm vascular conductance (FVC) when compared to age-matched CA men. **METHODS:** In young, healthy HA ( $n = 7$ , BMI =  $25 \pm 2$  cm/kg<sup>2</sup>) and CA men ( $n = 6$ , BMI =  $24 \pm 3$ ), FBF (Duplex doppler ultrasound), heart rate (3-lead ECG), and mean arterial pressure (MAP; finger plethysmography) were measured at rest and during rhythmic handgrip exercise performed for 3 min at 15%, 30%, and 45% of their maximum voluntary contraction (MVC). FVC was calculated by FBF/MAP. Lean muscle mass was measured via dual-energy X-ray absorptiometry (DEXA). **RESULTS:** Baseline MAP (HA:  $85 \pm 7$  mmHg, CA:  $84 \pm 7$ , Mean  $\pm$  SD,  $p = 0.85$ ), and MVC (HA:  $74 \pm 18$  kg, CA:  $80 \pm 17$ ,  $p = 0.51$ ) were not significantly different between the groups at baseline. Baseline FBF (HA:  $83.9 \pm 21.9$  mL/min, CA:  $135.5 \pm 39.7$ ,  $p < 0.05$ ) and FVC (HA:  $1.0 \pm 0.3$  mL/min/mmHg, CA:  $1.6 \pm 0.5$ ,  $p < 0.05$ ) were significantly greater in CA when compared to HA. In both groups, an intensity dependent increase in FBF and FVC was observed with a significant ethnicity effect between the groups but no significant interaction effect (repeated-measures 2-way ANOVA; interaction effect:  $p = 0.63$ , intensity effect:  $p < 0.01$ , ethnicity effect:  $p = 0.006$ ). For example, increase in FVC from baseline (% $\Delta$ FVC) at 45% MVC in HA men was  $442 \pm 82\%$ , compared to  $311 \pm 97\%$  CA men, with similar increases in MAP from baseline (45% MVC  $\Delta$ MAP; HA:  $15 \pm 12$ , CA:  $7 \pm 5$ ,  $p = 0.17$ ) or lean muscle mass (HA:  $57 \pm 4$  kg, CA:  $61 \pm 9$  kg,  $p = 0.41$ ). **CONCLUSION:** Our preliminary data indicate a higher forearm blood flow and vascular conductance response in response to rhythmic handgrip in HA men compared to matched CA men.