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EFFECT OF EXERCISE TRAINING ON MICROVASCULAR FUNCTION IN AFRICAN AMERICAN AND CAUCASIAN WOMEN

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African Americans (AA), especially women, exhibit long-standing disparities in cardiovascular disease (CVD) and obesity. The prevalence of endothelial dysfunction, directly linked to hypertension, is considerably greater in AA than Caucasians (C). Vascular smooth muscle function (mediating endothelium-independent vasodilation) is also related to CVD risk factors but is underappreciated because most literature in C suggest endothelium-independent vasodilatory response is resistance to change with disease (hypertension) or exercise training. Furthermore, the regulation of local skeletal muscle blood flow (an important site of peripheral resistance) has not been sufficiently assessed. Microdialysis is the only method that allows monitoring of microvascular blood flow while affecting the local tissue with pharmacological agents in the absence of systemic, or organ level, effects in humans. Microvascular blood flow was assessed by microdialysis *in vivo* in skeletal muscle before and after 12 weeks of aerobic exercise training in young, obese AA and C women. Our preliminary data suggested that microvascular endothelial function, assessed by percent change in blood flow from basal (Δ Blood Flow) in response to acetylcholine perfusion was improved in both obese AA (n=5) and obese C (n=4) women. Microvascular endothelium-independent blood flow, assessed by percent change in blood flow from baseline (Δ Blood Flow) upon addition of sodium nitroprusside to the perfusate, was improved in AA (n=3) but not in C (n=9) women.

Exercise training may improve endothelium-dependent vascular function in both AA and C, but improve endothelium-independent vascular function only in AA. Results of this study have potential to inform preventive interventions including lifestyle and pharmacological approaches designed to reduce disparities in hypertension and end-organ damage.

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