**ACPESS 2024 – Kaifeng, China**

**Abstract Sample Template**

**Title:** The Effects of Skin Blood Flow Response to Local Heating in Aged Skin

**Author(s):** Prince Michael

**Affiliation(s):** ABC University

**Theme:** Sports Medicine

**Presentation Type:** Oral Poster

**Disclosure/ Conflict of Interest**

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**Abstract**

The skin blood flow (SkBF) response to local heating is reduced in healthy older (O) vs. young (Y) subjects; however, the mechanisms that underlie these age-related changes are unclear. Local skin heating causes a bimodal rise in SkBF involving at least two independent mechanisms: an initial peak mediated by axon reflexes and a secondary slower rise to a plateau which is mediated by the local production of nitric oxide (NO).

**Purpose:** To determine the altered mechanism(s) underlying the attenuated SkBF response to local heating in aged skin. **Methods:** Two microdialysis fibers were placed in the ventral skin of the forearm of 10 Y (22+2 yrs) and 10 O (77+5 yrs) subjects. SkBF over each site was measured by laser-Doppler flowmetry as the skin over both sites was heated to 42° C for ~60 min. At one site, 1OmM L-NAME was infused throughout the protocol to inhibit NO-synthase (NOS). At the second site L-NAME was infused after 40 min of local heating. Cutaneous vascular conductance (CVC) was calculated as flux/mean arterial pressure and scaled as % maximal CVC (infusion of 50mM sodium nitroprusside). Age comparisons were made using two-way ANOVA with repeated measures. **Results:** Maximal CVC was reduced in the O (l56+15 vs. 192+12 mV/mmHg, p<0.05), as were the initial peak (46+4 vs. 61+2% max, p<0.05) and plateau (82+5 vs. 93+2%, p<0.05) responses. The decline in CVC with NOS inhibition during the plateau phase was similar in the Y and O groups but the initial peak was significantly lower in O when NOS was inhibited prior to local heating (38+5 vs.

52+4%, p<0.05). **Conclusion:** Age-related changes in both axon reflex-mediated and NO-

mediated vasodilation contributes to the diminished vasodilator response to local heating in aged skin.

**Keywords:** vasodilation, heat, nitric oxide