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**Deadline for abstract submission: April 15st, 2018**.

**The relationship between cerebral oxygenation and skin blood flow at the frontal lobe during progressive hypoxia: The impact of acute hypotension**

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**Abstract:** Acute hypoxia reduces dynamic cerebral autoregulation, which can maintain cerebral oxygenation (COX) via blood flow to brain. In COX assessments with near-infrared spectroscopy (NIRS), several studies have demonstrated that it is impacted by skin blood flow (SkBF), especially, during exercise. Regardless, it is unclear if COX is impacted by SkBF at rest in hypoxia. A maintained COX in hypoxia can prevent certain high-altitude incidents, such as syncope. Additionally, the level of hypoxia that is necessary to exert COX is unclear. Accordingly, we evaluated COX with NIRS and SkBF with laser Doppler flowmetry at the left frontal lobes of ten healthy young men during progressive hypoxia (∼1 h at each of 21, 18, 15, and 12% of inspired oxygen [FiO2]). Acute hypotension was manipulated by the thigh-cuff-release technique, wherein the pressure of 220 mmHg was applied at both thigh muscles for three min and the cuff was immediately released to induce acute hypotension. While the resting baseline for COX before thigh-cuff release manipulation decreased gradually with the reduction of FiO2 (63.9% in 21% O2 to 52.8% in 12% O2, *P* < 0.05), those in SkBF were unaffected by FiO2 (696 ~ 786 mV across conditions, *P* > 0.05). Acute hypotension that was induced by thigh-cuff release decreased both COX, and SkBF; thereafter these values recovered toward the baseline values. However, the time course responses in these two were different. During the hypotension phase, while the time to nadir values in COX was slowed progressively with reductions in FiO2 (14.8 s in 21% O2 to 28.5 s% in 12% O2, *P* < 0.05), those in SkBF were unaffected by FiO2 (6.2 ~ 7.3 s across conditions, *P* > 0.05). These results suggest COX may not be associated with SkBF from protocol or the present study’s subjects.

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