

Near Infrared Spectroscopy is not surrogate of Venous Occlusion Plethysmography to assess microvascular function

MANUEL GOMEZ, FRANCISCO MORALES-ACUNA, ALVARO GUROVICH PT. PHD. FACSM

Clinical Applied Physiology Lab, The University of Texas at El Paso

Category: Masters

Advisor / Mentor: Gurovich, Alvaro PT, PhD, FACSM (agurovich@utep.edu)

ABSTRACT

Near infrared spectroscopy (NIRS) a non-invasive technique used to measure tissue perfusion and oxygenation. Recent studies used the combination of a Venous occlusion plethysmography (VOP) with NIRS to study microvascular function. NIRS have demonstrated to monitor effectively perfusion changes in muscle microcirculation. **PURPOSE:** of this study was to determine if NIRS can surrogate microvascular function measured via VOP. **METHODS:** A total of 20 young apparent healthy subjects, were recruited for this study. NIRS and VOP were performed simultaneously at the right forearm and right calf. VOP strain gauges placed around the widest part of both extremities between cuffs. Probes for NIRS were placed on forearm and calf both perpendicular to the longitudinal axis. Baseline levels were obtained for a minute for NIRS and VOP. Followed by a 5-min ischemic stress cuffs were inflated to a suprasystolic pressure, post ischemic stress data was collected for one minute. Strength association was evaluated by Pearson correlation and a Bland-Altman agreement test was performed for baseline and post-ischemic measurements. **RESULTS:** There were no significant correlations between NIRS and VP data in both baseline and post-ischemic stress, in both lower and upper extremity. Bland-Altman analysis showed no agreement between NIRS and VOP.

CONCLUSION: The current study showed no association between NIRS and VOP during baseline or after 5-min ischemic stress. In addition, the agreement analysis showed no agreement between NIRS and VOP. Considering that VOP is the gold standard to measured microvascular function, the current results do not support using NIRS as a method to assess for microvascular function.