



Caroline A. Rickards, PhD

Associate Professor, Department of Physiology & Anatomy
Director, Cerebral & Cardiovascular Physiology Laboratory
caroline.rickards@unthsc.edu



RESEARCH FOCUS

- Human integrative physiology – cardiovascular, cerebrovascular, autonomic
- Early detection of hemorrhagic injuries in trauma and other clinical settings
- Characterizing individuals with high vs. low tolerance to blood loss
- Development and testing of sensor technologies to improve early detection of hemorrhage
- Exploring potential therapies to improve cardiovascular and cerebrovascular responsiveness to tissue hypoperfusion, including resistance breathing, oscillatory perfusion therapy, and occlusive exercise

RESEARCH EXPERTISE

- Human integrative physiology testing, including regulatory requirements (IRB, clinical trials)
- Lower body negative pressure (LBNP) to simulate hemorrhage in humans
- Non-invasive assessments of cardiovascular and cerebrovascular function
- Invasive measurements include blood sampling, and microneurography for assessment of sympathetic nerve activity
- Signal processing for assessment of hemodynamic variability (transfer function analysis, wavelet analysis)
- Past and current experience with a variety of granting agencies, including the Department of Defense, American Heart Association, National Institutes of Health, and private foundations

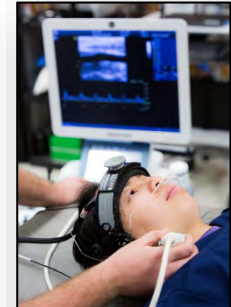
TECHNIQUES



Lower Body Negative Pressure (LBNP)
(simulated hemorrhage)



End-tidal Forcing
(control arterial blood gases)



Ultrasound
(cerebral & peripheral blood flow)



Maximal & sub-maximal exercise testing (aerobic & resistance);
spirometry, capnography, indirect calorimetry



Arterial pressure
(continuous, non-invasive)



Near Infrared Spectroscopy (NIRS)
(cerebral and muscle oxygenation)

RESEARCH GROUP

2 PhD students

1 MS student

2 medical students



UNIVERSITY OF NORTH TEXAS

THE UNIVERSITY OF NORTH TEXAS HEALTH SCIENCE CENTER at FORT WORTH