**Objective**
- Demonstrate that postural stability/balance is reduced with increased core body temperature during exercise in the heat wearing either **Ebola PPE** or firefighter PPE
- Demonstrate using fMRI that specific areas in the brain responsible for motor control and coordination are affected
- To relate changes in fMRI to postural stability in subjects exercise in the heat.
- Determine if cooling strategies can mitigate the reduced postural stability

**Project Scope**
- The NPPTL will conduct studies involving human subjects exercising in a hot environment while wearing either **Ebola PPE** or firefighter PPE (Williams, PI)
- Subjects will be tested for postural stability using special force plates (AccuSway Plus Platform)
- Core temperature and other physiological variables will be monitored throughout the exercise
- Changes in postural stability will be related to increased body core temperature

**Milestones**
- FY15 - FY16: Protocol development, obtain OD and HSRB approval
- FY16: Purchase necessary instrumentation
- FY16: Completed human subject testing at NPPTL using FF PPE
- FY17: 1) Present preliminary findings at scientific conference, 2) Conduct fMRI at UC, 3) conduct human subject testing using **Ebola PPE**

**Applicable standards**
- N/A

**Key Partners**
- University of Cincinnati School of Medicine
- Children’s Hospital, Cincinnati
- NIOSH DSR

**Stakeholders**
- Healthcare workers
- Firefighters
- IAFF
- Construction industry

**Outputs**

**Outcomes**: none