“Neuronal Injury, Plasticity and Respiratory Rehabilitation”

Dr. David D. Fuller
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Director, Rehabilitation Science PhD Program
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Friday, February 12th, 2016
Lecture: 9:00 AM-10:00 AM
ENGINEERING CENTER
ROOM EC 2300
10555 WEST FLAGLER STREET
MIAMI, FL 33174

Abstract: Diminished breathing capacity, unstable breathing and/or aspiration pneumonia from inadequate airway defense are hallmarks of many neuromuscular disorders, and respiratory failure is often the cause of death. Dr. Fuller’s research program is aimed at understanding respiratory neuromuscular control in health and disease. Current projects focus on how respiratory neurons, networks and muscles change following traumatic injuries to the spinal cord, and in a lysosomal storage disorder known as Pompe disease. Considerable emphasis is also being placed on developing therapeutic approaches to improve respiratory neuromuscular function in these diseases. Ongoing research projects in the Fuller laboratory are focused on the use of adeno-associated virus (AAV) for therapeutic gene delivery to respiratory neurons, cell transplantation approaches following spinal cord injury, manipulations in inspired oxygen content as a tool for triggering neuroplasticity, and electrical stimulation of respiratory neurons and muscles. In this seminar, Dr. Fuller will discuss the basic mechanisms of respiratory control, and how these mechanisms are altered by neurologic injury. In addition, he will discuss recent advances in each of the aforementioned areas.

Biography: David Fuller, PhD received his doctoral degree in Physiology from the University of Arizona followed by post-doctoral training in Respiratory Neurobiology at the University of Wisconsin. He is currently Professor in the Department of Physical Therapy at the University of Florida, and is also the Director of the Rehabilitation Science Doctoral program and Associate Director of the Center for Respiratory Research and Rehabilitation. Dr. Fuller’s research program is aimed at understanding how plasticity in the brain, spinal cord and respiratory muscles influences the control of breathing, and how rehabilitation can be used to promote recovery in neuromuscular disorders that impair breathing. The Fuller laboratory is currently focused respiratory control and rehabilitation in two diseases: spinal cord injury and a lysosomal storage disorder known as Pompe disease. Topics to be address in the seminar will include:

The neural control of breathing, and how it is altered following spinal cord injury.
The impact of spinal cord injury and mechanical ventilation on the respiratory muscles.
Electrical stimulation of the spinal cord and respiratory muscles after spinal cord injury.
Hypoxia: a novel therapeutic modality after spinal cord injury.

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