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I am a current member of the ASNR (Symposium organizers must be ASNR members): Yes

Title of Symposium: Novel Therapeutic actions of Acute Intermittent Hypoxia in Neurological Disorders

Description of Submitted Symposium (please limit to 2000 characters): In the course of human evolution, the central nervous system has developed an hierarchical array of compensatory or rescue mechanisms to deal with systemic hypoxia. This is because hypoxia, when extreme or chronic, is a life-threatening occurrence. However, modest and acute doses of hypoxia appear to enhance physiological functions without triggering pathology. In recent years, we have learned that while such compensatory mechanisms appeared initially to target respiratory muscles alone, such as those of the diaphragm and intercostal muscles, these effects are actually not confined to breathing pathways, but are also applicable to other parts of the neuromotor system, including limb and axial muscle systems. In this symposium, we will describe ways to utilize these hypoxia triggered rescue pathways to improve voluntary muscle strength and coordination in persons with incomplete spinal cord injury at either the cervical or thoracic level. It is now known that use of acute intermittent hypoxia (AIH) in which the oxygen in inspired air drops from 20% (normal atmosphere) to 9.5%, a relatively mild level of hypoxia, is still quite sufficient to induce striking improvements in voluntary strength within 90 minutes and beyond. This symposium will focus on review of practical techniques to harness mild hypoxia to improve respiration, walking, posture, and upper extremity function, with the view that these techniques may be useful in a routine clinical environment, to assist with recovery and rehabilitation in persons with spinal cord injury.

Length of time required for symposium?: 90 minutes

Additional Presenters (Limited to 4 additional presenters, list full name and email address) Please Note: Any Non-member speakers must receive prior approval from the Program Chair.: Gordon Mitchell PhD gsmitche@phhp.ufl.edu Randy Trumbower PhD PT randy.trumbower@emory.edu Milap Sandhu PhD ----- <u>m-sandhu@northwestern.edu</u> Jason Mateika PhD---- <u>JMateika@med.wayne.edu</u>

What is the role of each presenter?: Gordon Mitchell will review basic mechanisms for hypoxia induced neural plasticity Randy Trumbower will review therapeutic actions of AIH on ankle torque generation in acute studies, and on the benefits of hypoxia in overground training of

locomotion Milan Sandhu will review the competing actions of inflammation in spinal cord injury, and the benefits derived from simultaneous use of anti-inflammatory agents. Jason Mateika will address therapeutic value of intermittent hypoxia in humans with respiratory dysfunction.

Objective 1: Describe the sequence of events leading to neural recovery of respiration after spinal cord injury or phrenic nerve damage

Objective 2: Understand the potential role of neural compensatory mechanisms in restoration of breathing and motor activity in upper and lower extremities during administration of acute intermittent hypoxia for treatment of incomplete spinal cord injured persons

Objective 3: Describe the role of concurrent inflammation in limiting the beneficial actions of AIH in CNS injury

Target Audience: Neurologists, Physical Medicine, Physical therapists, neuroscientists, doctoral students, medical students and residents

Type of Educational Activity: Symposia

Lecture - oral didactic presentation: No

Forum - open dialogue and discussion among all participants: No

Panel Discussion - 3 to 6 faculty engaged in dialogue: Yes

Please explain: Need to begin with background didactic review (Mitchell) but can then introduce an organized discussion that should be meaningful to listeners

Please explain: AIH is a promising new therapy in rehabilitation of subacute and chronic spinal cord injury. Very few clinicians know about it.

How do you know the practice gap exists? (You must answer this question for your symposium to be considered): Consensus of Experts

Please describe: Few clinicians outside of the field of pulmonary medicine know of the potentially beneficial actions of AIH

What Desirable Physician Attribute(s) will your symposium address? (Select all that apply): Medical knowledge

At the end of the educational session, what will your learners have gained? (check all that apply - you must answer this question for your symposium to be considered): Knowledge (information)

Please indicate any other needs for the symposium.:

By clicking "submit form" below, I agree to adhere to all deadlines and requirements as set forth by the ASNR Executive Office and understand if I do not adhere to these deadlines and requirements I may be disqualified from presenting at the meeting.:

Line:

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