

# Engineering Neuroscience & Health

Department of Biomedical Engineering

Division of Biokinesiology and Physical Therapy



## ENH SEMINAR SERIES



**Presents:**

**Dr. Minoru Shinohara**

Georgia Institute of Technology

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**Thursday**

**January 22, 2009**

**3:00 p.m.**

**Refreshments will be served 2–3 p.m.**

### **Sympathetic modulation of afferent input and motor output variability**

Minoru Shinohara, PhD, FACSM

Associate Professor, School of Applied Physiology, Georgia Institute of Technology

Research Physiologist, Rehabilitation R&D Center of Excellence, Atlanta VA Medical Center

Fine motor skills are influenced by motor output variability that is known to increase in patients with certain neurological disorders and in healthy adults due to age, inactivity, and fatigue. Stress also increases motor output variability, and fine motor skills are impaired in people with cardiovascular problems who often have heightened sympathetic nerve activity. Potential influences of heightened sympathetic nerve activity on the sensorimotor function in humans are unclear although sympathetic innervation to skeletal muscle fibers has been demonstrated in animals. Our most recent findings on this topic will be presented that tested the hypothesis that heightened muscle sympathetic nerve activity influences Ia afferent input and motor output by altering muscle spindle sensitivity. The hypothesis was tested with the analysis of single motor unit activity, muscle sympathetic nerve activity (microneurography), stretch reflex, and H-reflex in humans.

### **BIOSKETCH**

#### **Education**

Ph.D., Exercise Physiology and Biomechanics, University of Tokyo, Japan M.Ed.,  
Exercise Physiology and Biomechanics, University of Tokyo, Japan B.Ed.,  
Exercise Physiology and Biomechanics, University of Tokyo, Japan

#### **Research Interests**

Dr. Shino's research interests include physiological and biomechanical mechanisms underlying unilateral and bilateral fine motor skills and their adjustments and adaptations to stress, neuromuscular fatigue, aging, and practice in humans. He uses state-of-the-art techniques in neuroscience, physiology, and biomechanics (e.g., transcranial magnetic stimulation, single motor unit recordings, microneurography, and mechanomyography) in identifying these mechanisms

### **Locations:**

*Seminar is simultaneously presented*

**HSC: CHP 147 - LIVE**

**Center for the Health Professional**

HSC Campus Map/Directions:

<http://www.usc.edu/about/visit/hsc/>

**Organized by Prof. Valero-Cuevas** <http://bme.usc.edu/valero/>

**Web Cast**

<http://capture.usc.edu/college/Catalog/?cid=af180d48-ceff-42b9-a35c-eb199daed320>

**Information about all seminars can be found at**

<http://www-clmc.usc.edu/~heiko/ENH>