SEMINAR SERIES

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The Center for Research in Human Movement Variability (MOVCENTR)

Can a Biomarker Signature Predict Recovery of Walking Mechanics Post-stroke?

Featuring Dr. Carolynn Patten

The University of California, Davis

Friday, Feb. 10 | 12:00 - 1:15 pm | BRB 167

PRESENTATION ABSTRACT

The majority of individuals who suffer a stroke face lifelong walking impairments. However, current outcomes of stroke rehabilitation are disappointing; only 50% of individuals improve in response to walking rehabilitation. One contributor to these poor outcomes is the vast heterogeneity of stroke-related sensorimotor impairments that are not well-defined by lesion location. Although recognized, this heterogeneity it is poorly understood. Clinical and functional assessments lack the specificity and responsiveness to robustly evaluate important individual differences in motor impairment following stroke. As a result, there remains a critical, unmet need to determine an individual's capacity for recovery. Using a combination of neurophysiological and biomechanical tools, our current work seeks to develop biomarker signatures that predict motor recovery following stroke and facilitate our ability to identify an individual's rehabilitation potential. A biomarker signature is a combination of variables yielding a patient-specific indicator of biological processes or responses. This seminar will discuss results of our investigations of corticospinal, transcortical, associative, and kinetic responses acquired concurrently during walking as they reveal novel insights regarding individual subject capacity for neuroplasticity and recovery.

ABOUT DR. PATTEN

Dr. Patten is a neuroscientist and physical therapist who specializes in assessment and treatment of motor dysfunction associated with aging and adult neuropathologies, such as stroke. She directs the UC Davis Biomechanics, Rehabilitation, and Integrative Neuroscience (BRaIN) Lab and Co-Directs the UC Davis Center for NeuroEngineering and Medicine. Dr. Patten's research focuses on understanding the neural basis of human movement, investigating human motor control and learning from a perspective of neuromechanics. Using concurrent behavioral and neurophysiological methods, her laboratory has developed assays sensitive to motor impairment. Emphases of the lab's current work are development of biomarkers to predict motor recovery following stroke and identification of critical factors that contribute to rehabilitation efficacy. To achieve these goals, projects in the BRaIN lab investigate: neural mechanisms and biomechanical consequences of CNS pathologies causing motor dysfunction; novel means to induce neuroplasticity and motor recovery; and individual differences in both the natural history of motor recovery and response to rehabilitation interventions. Dr. Patten's research is supported by the NIH (NIBIB, NIA, NINDS), NSF, Dept. of Veterans Affairs (Rehabilitation R&D), Healthy Aging in a Digital World –a UC Davis Big Idea, and UC Berkeley Center for Information Technology Research in the Interest of Society (CITRIS).

more info at **cobre.unomaha.edu**

*This seminar was supported by the National Institutes of General Medical Sciences of the National Institutes of Health under Award Number P20GM109090 Center for Research in Human Movement Variability. |

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