DIPARTIMENTO DI INGEGNERIA DELL'ENERGIA ELETTRICA
E DELL'INFORMAZIONE "GUGLIELMO MARCONI"

Ciclo di seminari nell'ambito del corso di Bioingegneria della Riabilitazione presso il Campus di Cesena, via dell'Università 50

Balance dysfunction in Parkinson's disease: from pathophysiology to instrumented assessment

Docente invitata: *prof. Martina Mancini, PhD, Oregon Health & Science University*

Abstract

Parkinson's disease (PD) is a chronic neurodegenerative disease associated with substantial morbidity, increased mortality, and high economic burden. PD is characterized by hallmark signs of bradykinesia, rigidity, tremor, and postural instability, and it is superseded only by Alzheimer's disease as the most common neurodegenerative disorder. This mini-course will start describing the pathophysiology, symptoms, and clinical assessment of Parkinson describing advantages and limitations of clinical assessment. Then, the role of technology in characterizing mobility will be presented with its related advantages and challenges. Finally, neurorehabilitation approach for mobility impairments will be described. The course will end with practical implementation of technology to recognize hallmark signs of PD.

Programma delle lezioni

Giovedì 3 ottobre – ore 11-13 – Aula 2.8: "*Parkinson's disease - Pathophysiology, motor and non-motor signs, treatment, and clinical evaluation"*

Venerdì 4 ottobre – ore 11-13 – Aula Magna: "*Balance and gait disturbances in Parkinson's disease - the role of technology*"

Lunedì 7 ottobre – ore 14-18 – Aula 2.8 & LIB: "*Future perspectives and laboratory practice with hands-on experience on real data collected on patients with PD*"

Martina Mancini, got her PhD in Biomedical Engineering from the University of Bologna in 2009. She is currently Assistant Professor of Neurology at the School of Medicine, and Research Scientist at the Department of Bioengineering of the Oregon Health & Science University (OHSU), Portland, OR, USA. She is the Co-director of the Balance Disorders Laboratory at OHSU. Dr. Mancini studies how to improve everyday functional mobility and prevent falls with rehabilitation interventions by investigating the pathophysiology of motor impairments and objectively characterizing them with new technologies. Using a variety of body worn sensors to characterize movement (i.e EMG, inertial sensors) and brain activity, this line of research will help in determine how the central nervous system integrates sensory information in healthy individuals and those with movement disorders, with a particular focus on Parkinson's disease. These novel, objective metrics of movement, combined with neurophysiological information, allows for the determination of optimal variable(s) to integrate with biofeedback, resulting in more effective rehabilitation interventions. This approach will bring new possibilities to monitor and condition functional mobility on a daily basis directly at home.