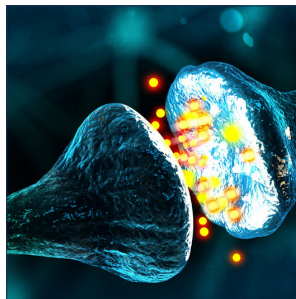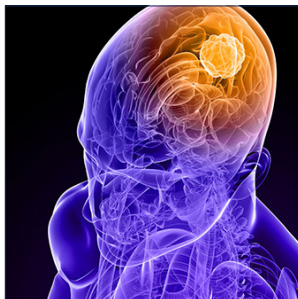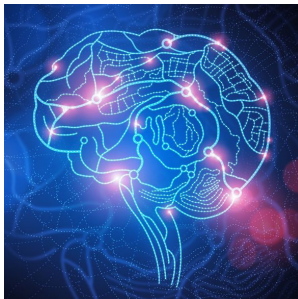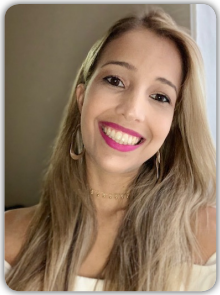# Keynote Forum
April 17, 2019

Parkinson's 2019

International Conference on

Parkinson's, Huntington's & Movement Disorders

April 17-18, 2019 | Frankfurt, Germany

Luna NMS

University Anhembi Morumbi, Brazil

Treadmill training in Parkinson's patients after deep Brain stimulation: Effects on Gait kinematic

Objective: To evaluate gait kinematic parameters in patients with PD with bilateral subthalamic nucleus DBS before and after of 2 gait training protocols.

Design: 12 patients completed the protocols (age: 60.9 ± 10.6 years; disease duration: 20 ± 7 years; and time since DBS surgery: 20 ± 4 months). The same set of patients underwent 2 trainings protocols and 4 gait analysis (before and after each training). They received 8 weeks of treadmill training without body weight support (16 sessions) in conjunction with physiotherapy program followed by 6 weeks of wash out period, followed by 8 weeks of body-weight-supported treadmill training in conjunction with a same physiotherapy program. The Gait Kinematic Analysis involved 8 infrared cameras that detected 19 reflective spherical markers attached in limb lower of patients. Statistical analysis used the Wilcoxon test ($p \leq 0.05$).

Results: Both the training no showed significant differences in linear variables. As the angular variables, only training with support showed significant increase of ranges of motion: pelvis tilt, obliquity and rotation amplitude; hip adduction-abduction and rotation amplitude; percentage of peak flexion in swing phase; foot progression amplitude.

Conclusion: The body weight supported treadmill training may promote increase of mobility of lower limbs during gait and it could be a targeted intervention for PD patients treated with DBS.

Speaker Biography

Luna NMS has completed her PhD and Master degree in biomechanics at University of São Paulo, Postdoctoral in aging and Parkinson´s Disease at University São Judas Tadeu. Physical therapist, with specialization in Sport Traumato-Orthopedics at Federal University of São Paulo. Professor at University Anhembi Morumbi and pos grad teacher in University Estácio de Sá. She also works as a researcher in the following fields: Gait training; Cognition and Parkinson´s Disease.

e: nmsluna@gmail.com

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Hassan M Khachfe

Sarah Gebai, Mohamad Hammoud

Lebanese International University, Lebanon

The use of mechanical vibration absorbers to reduce the tremor in Parkinson's disease patients

Diseases of the central nervous system may lead to severe movement disorders. Parkinson's Disease (PD) – one of these disorders - is characterized by involuntary movement of body parts resulting from antagonistic muscle contractions.   Symptoms of PD can mostly start to appear at an average age of 59 years. Although there are drugs to manage the symptoms – albeit potentially life-threatening - and social approaches to help cope with the disease, tremor progresses with time and becomes significant when the patient is elderly. Thus, to help elderly people who exhibit spatial and temporal movement variability, a mechanical treatment is suggested. Tuned vibration absorbers have been studied and designed to reduce the resting tremor of PD's patient when attached to the forearm of the upper limb. Numerical and simulation studies that are based on a three degree-of-freedom biodynamic modeling of the human hand in horizontal plane at the musculoskeletal level are used to model a system of flexion-extension planar motion of the shoulder, elbow and wrist joints. The performance of the system is assessed in terms of the percentage of reduction in the primary system's displacement amplitude and the bandwidth of each designed passive controller.

Speaker Biography

Hassan M. Khachfe1 earned a B.S. in Physics, a M.Sc. in Polymer Chemistry, and a Ph.D. in Biophysics and Molecular Medicine. He runs multidisciplinary research projects and supervises two interdisciplinary research groups. The Lebanese Institute for Biomedical Research and Application (LIBRA) deals with the structural determination and characterization of macromolecular assemblies, the analysis of complex signals, and the design of MEMS/NEMS for biomedical applications. Current projects focus on understanding the molecular details of the disease-causing plasma apolipoproteins, Apo B100 of the low density lipoprotein (LDL), on finding novel approaches for the decontamination and lengthy storage of foods, and on the design of mechanical absorbers as vibration suppressors for Parkinson's patients. Prof. Khachfe also heads the Business, Educational, and Medical Optimization REsearch (BE-MORE) group, which explores the design and implementation of automated quality management, control, assurance, and business systems for healthcare and educational institutions.

e: hassan.khachfe@liu.edu.lb

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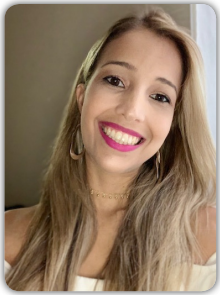
Luna NMS

University Anhembi Morumbi, Brazil

The impact of Parkinson's disease on quality of life, cognition, postural balance and functional tasks in older adults

Objective: To analyze the influence of PD on physical function, cognition and quality of life.

Design: This was a cross-sectional study involving 40 older adults of both genders, divided into two groups: Parkinson's group and Control group (without PD). Quality of life was assessed using the WHOQOL-OLD and WHOQOL-BREF instruments; cognition by MoCA assessment; postural balance by a computerized analysis on a force plate (Balance Master); and a dynamic functional test by BESTest.

Results: The group with PD presented worse performance in relation to the BESTest domains: biomechanical constraints (P= 0.03); limited stability (P= 0.01) and sensory orientation (P=0.03); Balance test: walk across (P<0.01); step up (P=0.05) and step down (P=0.01). The quality of life questionnaires showed worse scores for the Parkinson's group when making comparisons via the WHOQOL-BREF questionnaire in relation to the domains: physical, psychological and environmental. There was no difference in the cognition examinations.

Conclusion: PD negatively affects quality of life in physical, psychological and environmental aspects; and on postural balance in relation to biomechanical restriction, limited stability and sensory orientation; and on the functional tasks of step up, step down and walking across and returning.

Speaker Biography

Luna NMS has completed her PhD and Master degree in biomechanics at University of São Paulo, Postdoctoral in aging and Parkinson´s Disease at University São Judas Tadeu. Physical therapist, with specialization in Sport Traumato-Orthopedics at Federal University of São Paulo. Professor at University Anhembi Morumbi and pos grad teacher in University Estácio de Sá. She also works as a researcher in the following fields: Gait training; Cognition and Parkinson´s Disease.

e: nmsluna@gmail.com

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