ISPGR 2017 Florida: Presentation Abstract & Posters

using GAITRite® Technology

Laura Avanzino, University of Genoa, Italy Effect of emotion on gait in Parkinson disease BACKGROUND AND AIM: Gait dysfunction is one of the most disabling motor symptoms of Parkinson's disease (PD). Freezing of gait (FOG) is a symptom that affects over 50% of patients and increasing evidence suggests that non-motor systems (i.e., limbic cortico-basal ganglia-cortical circuits) might be involved in its underlying mechanisms. Indeed, it has been showed that the autonomic nervous system might be activated during FOG with an increase in heart rate due to stress or increased anxiety. Recently, by directly comparing FOG episodes in anxious and non-anxious situations it has been showed that that anxiety is an important mechanism underlying FOG. The aim of the present research is to provide direct evidence about the involvement of the limbic basal ganglia circuit in FOG pathophysiology. To this aim, we evaluated the impact of emotional stimuli on gait initiation in patients with PD, with and without FOG.METHODS. Thirty-six participants, divided into three groups (12 PD patients with FOG, 12 PD patients without FOG and 12 controls) stood on a sensorized mat and were asked to take a step forward when a pleasant image appeared on a screen placed in front of them and a step backward in response to an unpleasant image (congruent task) or to take a step backward when a pleasant image appeared on the screen and a step forward in response to an unpleasant image (incongruent task). The experiments were made in two separate days and the order was randomized. Reaction time and step size were recorded by means of a sensorized mat (GaitRite).RESULTS: In PD patients with FOG, gait initiation was influenced by emotion-inducing stimuli. Indeed, in PD patients with FOG, for steps forward, the reaction time was longer and the step size was shorter than in the other groups only in the incongruent task (i.e., to take a step forward in response to an unpleasant image).CONCLUSIONS: The results confirmed that negative emotions exert an influence on motor control. In PD patients with FOG the valence of emotional stimuli influenced not only step preparation (reaction time), but also step execution (step size) supporting the theory on the role of the non-motor systems (e.g., limbic system) in the pathophysiological mechanisms of FOG. FOG is likely to be caused by a complex interplay between motor, cognitive and affective factors, rather than being a pure motor problem. These results offer speculations to novel therapeutic approach.

Concurrent Validity of APDM Opal Sensors and GAITRite Walkway in Older Adults Chitra Balasubramanian[1], Alys Cook[2], Sarah Humphrey[3], Jane Freund[2], Srikant Vallabhajosula[2] [1]University of North Florida, [2]Elon University , [3]Elon University

Attentional demands of curved- vs straight-path walking in older adults Michael Schwenk[1], Thomas Gerhardy [1], Lars Schwickert[2], Katharina Gordt[1] [1]Heidelberg University, [2]Robert-Bosch Hospital

Gait parameters change according to physical exercise features in Parkinson's disease. Lilian Gobbi[1], Juliana Lahr[1], Diego Jaime[1], Mayara Pestana[1], Paulo Pelicioni[2] [1]São Paulo State University (UNESP), [2]University of New South Wales

The dynamics of daily-life walking in older adult fallers and non-fallers: Is loss of complexity a reflection of loss of dynamic stability? Espen Alexander Ihlen[1], Aner Weiss[2], Jorunn Helbostad[1], Jeffrey Hausdorff[2] [1]Norwegian University of Science and Technology, [2]Tel Aviv Sourasky Medical Center 1-N-68 Fear of falling in dizzy patients depends on external conditions Klaus Jahn[1], Roman Schniepp[1], Cornelia Schlick[1] [1]University of Munich

Measuring the Subjective Postural Vertical: Evaluation of the Test Procedure Carmen Krewer[1], Jeannine Bergmann[1], Friedemann Müller[1], Klaus Jahn[1] [1]Schön Klinik Bad Aibling

Visualization of gaze shifting performance of healthy subjects and patients with neurodegenerative diseases Karin Srulijes[1], Christoph Schulz[2], David Mack[3], Jochen Klenk[1], Lars Schwickert[1], Michael Schwenk[1], Walter Maetzler[4], Daniel Weiskopf[2], Clemens Becker[1] [1]Robert-Bosch-Hospital, [2]VISUS, University of Stuttgart, Stuttgart, Germany, [3]Clinic for Neurology, University Hospital Zurich, Switzerland, [4]Clinic for Neurology, University Hospital Schleswig-Holstein, Campus Kiel, Germany

Automated detection of multidirectional compensatory balance responses during gait using wearable IMUs James Tung[1], Mina Nouredanesh[1], Katharina Gordt[1], Michael Schwenk[2] [1]University of Waterloo, [2]Robert-Bosch Hospital

Gait disturbance in patients with orthostatic tremor Ken Möhwald[1], Max Wuehr[1], Katharina Feil[1], Fabian Schenkel[1], Cornelia Schlick[1], Roman Schniepp[1] [1]University Hospital of Munich, LMU, Campus Großhadern

The reliability of gait variability measures in Parkinson's disease - Effects of gait speed. Linda Rennie[1], Niklas Löfgren[2], Rolf Moe-Nilssen[3], Erika Franzén[4] [1]Sunnaas Rehabilitation Hospital, [2]Karolinska Institutet, [3]University of Bergen, [4]KarolinskaInstitutet AND Karolinska University Hospital, Stockholm

Is Faster Always Better? A Description of How Temporal Gait Asymmetry Changes with Increased Walking Speed Following Stroke Lucas Crosby[1], Elizabeth Inness[2], Jennifer Wong[2], Svetlana Knorr[2], Avril Mansfield[2], Kara Patterson[1] [1]University of Toronto, [2]Toronto Rehabilitation Institute - University Health Network

Instrumented assessment of wheeled walker use in geriatric rehabilitation patients Jochen Klenk[1], Felix Buhnar[1], Clemens Becker[1], Ulrich Lindemann[1] [1]Robert-Bosch Hospita

Obstacle height or quantity: which causes more gait adaptations during approach phase in Parkinson's disease? Diego Orcioli-Silva[1], Fabio Barbieri[2], Paulo Santos[1], Victor Beretta[1], Lucas Simieli[2], Rodrigo Vitório[1], Lilian Gobbi[1] [1]São Paulo State University (Unesp), Institute of Biosciences, Rio Claro, Brazil., [2]São Paulo State University (Unesp), School of Sciences, Bauru, Brazil

Time course of gait improvement in patients with idiopathic normal pressure hydrocephalus after lumbar puncture over 72 hours Roman Schniepp[1], Max Wuehr[1], Ken Moehwald[1], Klaus Jahn[2], Roman Schniepp[1] [1]Ludwig-Maximillians UniversitätMünchen, [2]Schön Klinik

MoCA Item Score Analysis and Relationship to Rehabilitation Outcomes in Lower Extremity Amputees
Courtney Frengopoulos[1], Michael Payne[2], Ricardo Viana[2], Susan Hunter[1] [1]University of Western Ontario, [2]Parkwood Institute

Phase- and speed-dependent modulation of vestibular contributions to balance control during walking
Max Wühr[1], Roman Schniepp[1], Haike Dietrich[1] [1]Ludwig-Maximilians-University Munich

Measurement Properties of the Community Balance and Mobility Scale in Young-Older Adults
Katharina Gordt[1], Michaela Weber[1], Jeanine Van Ancum[2], Ronny Bergquist[3], Kristin Taraldsen[3], Andrea Maier[4], Jorunn Helbostad[3], Clemens Becker[5], Michael Schwenk[1] [1]Network Aging Research, [2]VU University Amsterdam, [3]Norwegian University of Science and Technology, [4]University of Melbourne, [5]Departement of Geriatric Rehabilitation

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