

Orthostatic Regulation of Blood Pressure in Patients with Vestibular Disorders and Neurodegenerative Diseases

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Orthostatic hypotension (OH) is a cardiovascular disorder characterized by a severe drop in blood pressure following postural transitions. It is associated with a range of conditions, including Parkinson's disease and vestibular disorders. The relationship between physiology and OH is complex and likely disease specific. Current knowledge is largely derived from animal studies whose relevance in human disease is so far insufficiently understood. Furthermore, due to the episodic nature of OH, challenges remain for its detection during standard clinical assessments.

To better investigate these aspects, a collaborative effort was established between the Centre Hospitalier Emile Mayrisch and the Luxembourg Centre for Systems Biomedicine aiming to improve our understanding of OH in patients with vestibular dysfunction and Parkinson's disease. Two clinical studies were completed, enrolling more than 150 participants in total. During these studies, participants underwent a standardized Schellong test with manual blood pressure measures and symptom assessment at 1, 2, 3, and 6 minutes after standing. Simultaneously, continuous electrocardiogram and finger photoplethysmography signal were recorded (SOMNOtouch NIBP), enabling extraction of beat-to-beat digital cardiovascular biomarkers.

Preliminary analyses showed that for the group of participants with vestibular dysfunction the ones with recent onset present a higher likelihood of experiencing OH. This suggests that, at least in some recent onset vestibular patients, OH could be a complication of the vestibular disorder. In addition, photoplethysmography-based digital biomarkers associated with OH were identified, which could represent novel tools for the detection and diagnosis of this condition.

Biosketch – Alex Bisdorff

Alexandre René Bisdorff, Prof, Dr, PhD

Head of the Vertigo Clinic, Centre Hospitalier Emile Mayrisch
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CURRENT AND PAST POSITIONS

Since 2017: Head, multidisciplinary Vertigo Clinic, Centre Hospitalier Emile Mayrisch, Esch-sur-Alzette, Luxembourg.

Since 1995: Consultant Neurologist, Department of Neurology, Centre Hospitalier Emile Mayrisch, Esch-sur-Alzette, Luxembourg.

2015–2025: President, Société Luxembourgeoise de Neurologie.

2006–2026: Chair, Classification Committee of Vestibular Disorders, Bárány Society (www.thebaranysociety.org).

1993–1995: Research Fellow, MRC Movement and Balance Unit, National Hospital for Neurology and Neurosurgery, London, UK.

EDUCATION

2013: PhD, epidemiology of vertigo and its comorbidities, Université de Lorraine, France.

1991: Completed specialty training in neurology, BK Trier, Germany.

Doctorate (MD), Institut für Klinische und Pathologische Biochemie der Charité, Berlin, Germany.

Medical studies, Humboldt University, Berlin, Germany.

OTHER RELEVANT PROFESSIONAL ACTIVITIES AND ACCOMPLISHMENTS

Contributed to the construction of the training program for neurologists at the University of Luxembourg.

Biosketch – Stefano Sapienza

Stefano SAPIENZA, PhD

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CURRENT AND PAST POSITIONS

Current: Postdoctoral Researcher, Digital Medicine Group, Luxembourg Centre for Systems Biomedicine (led by Dr. Jochen Klucken).

2016–2021: Researcher, Spaulding Rehabilitation Hospital, Boston (a major teaching affiliate of Harvard Medical School) – applied machine learning and signal processing methods to the analysis of multiple clinical studies across diverse patient populations, including individuals with Parkinson's disease and children with cerebral palsy.

EDUCATION

2016: PhD in Physics, Italian Institute of Technology (IIT) – research on the development and validation of wearable sensor technologies for the quantitative assessment of human movement.

OTHER RELEVANT PROFESSIONAL ACTIVITIES AND ACCOMPLISHMENTS

Current research focuses on the clinical utility of digital biomarkers and wearable devices, with a particular emphasis on translating insights derived from innovative algorithms and sensing technologies into tools that support clinical decision-making, improve patient care, and enhance the design and evaluation of clinical interventions.