

Improving postural control by innovative stimulation of the proprioceptive system
(IMPULSES)

FULLY FUNDED 3-YEAR PHD SCHOLARSHIP

PHD SCHOLARSHIP

A fully funded (ERA-NET NEURON) 3-yr PhD scholarship is available at the University of Brussels (Belgium).

The successful applicant will become part of a unique training and research environment as the project will be completed in collaboration with Jean Monnet University in Saint-Etienne (France) and the University of Thessaloniki (Greece).

As PhD student, you will be responsible for:

- ☐ Independently carrying out research and completing a PhD dissertation within three years;
- ☐ Collecting and analyzing neuromuscular function data (EMG, peripheral nerve stimulation, transcranial magnetic stimulation), as well as biomechanics of locomotion;
- ☐ Reporting the results in international peer-reviewed scientific journals and conferences.

Remuneration: around 1800€ monthly (healthcare included) from September 2021 to August 2024.

LOCATION

Laboratory of Applied Biology & Research Unit in Applied Neurophysiology (LABNeuro)
Faculty for Motor Sciences, Université libre de Bruxelles
Campus Erasme, Route de Lennik, 808, CP 640, 1070 Bruxelles
Supervisor : Prof. Stéphane Baudry (Project coordinator)

PROJECT SUMMARY

Proprioception, i.e. the sense of body position and movements, provides crucial information for balance control. Accordingly, impaired proprioception alters postural control and gait, as observed in children with cerebral palsy (CP) and older adults, with deleterious consequences for their independence. On the other hand, increasing proprioceptive information may represent a critical trigger for sensorimotor adaptations. IMPULSES investigates an innovative approach, combining local vibration (LV) or somatosensory electrical stimulation (SES) with postural exercises to stress the sensorimotor integration of the proprioceptive signals, and thereby improve postural and gait control. Three main hypotheses will be challenged by IMPULSES :1/ Changes in ankle proprioception across lifespan will parallel the change in postural control and gait; 2/ Intervention based on combined SES or LV with postural exercises can further improve postural control, compared with postural exercises alone, through better proprioception in two populations differing by several aspects; 3/ Improved postural control after intervention will be associated with neural plasticity at spinal and corticospinal levels. Confirming these hypotheses will open new perspectives in rehabilitation therapies and preventive interventions, and will offer fundamental knowledge regarding sensorimotor integration in relation with posture and gait, which can be extended to other purposes and clinical populations.



APPLICANT PROFIL

- ☐ The candidate should have a strong background in neuromuscular function.
- ☐ Knowledge of electrophysiological techniques will be an asset.
- ☐ Since experiments will be performed in older adults, communication skills are required.
- ☐ French is not mandatory but the candidate must be willing to learn French during her/his stay and she/he must be able to communicate in English.
- ☐ Please contact me for any information (stephane.baudry@ulb.be).
- ☐ To apply, please send me a detailed CV, one academic reference letter and a motivation letter. I will then contact you for an interview.