

METABOD: Motor Metacognition in Healthy Aging and Alzheimer's disease

Project: Healthy ageing is characterized by many cognitive and physiological changes. For example, falls in older adults are a significant clinical concern often resulting in serious negative outcomes (Rubenstein, 2006). The perception of being at risk of a fall is sufficient to drive avoidance behaviors that could actually increase the risk of a fall. Numerous studies have also showed that the occurrence of falls in Alzheimer's patients is frequent and has consequences on cognitive decline and loss of independence (Kato-Narita & Radanovic, 2009). The strength of this research program is to bring sport sciences and experimental psychology together. We make two strong predictions. First, we predict that with age, individuals become less aware of their bodily changes, leading to falls. We base this hypothesis on the literature showing that various aspects of physical and mental health have been linked to an individual's ability to perceive the physical condition of their body ('interoception') and that interoception accuracy changes with age (Murphy et al., 2018), and on the literature showing that age stereotypes may bias older adults' self-perceptions (Emile et al., 2015) and motor performance (Chiviawosky et al., 2018). Second, we predict that physical exercise by giving physiological feedback will improve bodily awareness (i.e. motor metacognition) and reduce age-related stereotypes. The novelty of this research program lies in referring to the concept of **metacognition** (knowledge of one's own performance) to understand these population's awareness of their physical changes and their responses to those. Motor metacognition is a recent developing field and this project will therefore be at the forefront of recent research development.

Research labs: The research will foster strategic interdisciplinary links between 3 research labs in Grenoble: *The Laboratoire de Psychologie et Neurocognition* (LPNC, UMR CNRS 5105), a CNRS psychology laboratory focused on cognition, neuropsychology and neuroimaging, *The TIMC-IMAG* (UMR CNRS 5525) and in particular the *Health, Plasticity, Motricity* team with a research focus on the ontogenesis and evolution of postural and gait acquisitions through lifespan, *The Laboratoire Sport et Environnement Social* (SENS, EA 3742), a research lab in sport sciences that brings together researchers with theoretical and methodological skills in humanities and social sciences in the field of sport and *The Centre Mémoire de Ressources et de Recherche* (CMRR) with expertise in carrying research with patients with neurodegenerative disorders. This research associates the research expertise of Céline Souchay (Directeur de Recherche CNRS, LPNC, Grenoble) in the field of metacognition in healthy aging and Alzheimer's disease (Souchay et al., 2000, Souchay et al., 2007), Estelle Palluel (Maître de Conférences, TIMC-IMAG, Grenoble) in the field of postural control and bodily self-consciousness (Aspell, Palluel et al., 2012; Palluel et al., 2012) and the expertise of Aina Chalabaev (Professeur des Universités, SENS, Grenoble) in psychosocial factors of motor behaviors (Chiviawosky et al., 2018; Emile et al., 2015).

Candidate: For this project, the PhD student will have a background in Psychology and/or Sport Sciences and will therefore need a research Masters in Psychology and/or Sport Sciences. The thesis is fully funded, with an addition of 15000 euros to spend on research expenses. Start 1st October 2020.

Contact: For further information about the project, please contact celine.souchay@me.com

Applications: Applicants are invited to send a Curriculum Vitae (with their grades), a motivation letter, a letter of support.

Deadline: 15 June 2020